



TURKISH ENERGY EXCHANGE



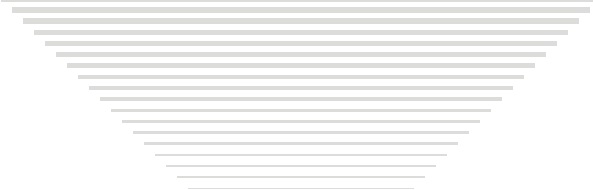
**ANNUAL REPORT  
2018**



TURKISH ENERGY EXCHANGE  
**ANNUAL REPORT 2018**

1 JANUARY – 31 DECEMBER 2018

This annual report has been submitted to the General Assembly for approval pursuant to the decision taken at the meeting of Board of Directors of Energy Exchange Istanbul held on 28 February 2019.



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## ABDULLAH TANCAN

### VICE-CHAIRMAN

*“The primary objective of EPIAŞ is to be the leading energy trade hub of the region as an efficient, transparent, and reliable energy market providing world-class services, and capable of competing with energy exchanges of the developed countries.”*

## CHAIRMAN'S MESSAGE

There is an ever-increasing demand for energy as our country's economy is developing and life standards improve. Our sector is developing each passing day and contributes to growth of our country thanks to intensive and diligent efforts of Ministry of Energy and Natural Resources and other relevant institutions and organizations that have ensured development of fair and sustainable energy policies among all stakeholders, enabling production of high quality, safe, sufficient, affordable, and environment-friendly energy.

For our country, 2018 was a year of significant progress in the field of energy. Groundbreaking ceremony of Akkuyu Nuclear Power Plant, commissioning of TANAP, i.e. the Silk Road of energy, completion of offshore construction works and commencement of land works under the TurkStream project are clear evidences of magnitude, diversity, and profoundness of our country's progress in the field of energy.

Turkey is an energy dependent country in terms of primary sources of energy. Effective and efficient use of energy is as important as opening new plants and increasing the capacity. In this sense, the Ministry has introduced the “National Energy Efficiency Action Plan” as a guideline encompassing all sectors and parties. The most affordable energy is the one that is used efficiently. I believe that we will cover a significant distance in the upcoming years with a consciousness approach by all parties at household and industrial level.

The primary objective of EPIAŞ is to be the leading energy trade hub of the region as an efficient, transparent, and reliable energy market providing world-class services, and capable of competing with energy exchanges of the developed countries.

As an entity that has been continuously diversifying its product range in the energy market since the very first day it was established, EPIAŞ will contribute to our country's target to be the energy trade hub of its region with the Organized Wholesale Natural Gas Market whose software was developed by EPIAŞ in 2018 using its own resources.

To introduce new approaches and innovations in furtherance of those we have shared with our sector since the very first day of our establishment, we continue our efforts with such zeal and determination as we had in our very first day. To that effect, we will continue our studies regarding the physical delivery electricity futures market which is included in the 2019-2023 Strategic Plan.

EPIAŞ carries out corporate and social responsibility activities, and attaches great importance to trainings intended to increase the level of knowledge in the rapidly developing energy sector, enabling the market participants to conduct their business activities in a healthy manner, and ensuring conscious use of energy by the society.

I would like to thank to my dear colleagues who contributed to our projects, activities, and efforts in 2018. I respectfully present the EPIAŞ Annual Report 2018 to the energy sector, our all shareholders and stakeholders; and I wish we continue to have a healthy and reliable energy market.

Sincerely Yours,

Abdullah TANCAN  
Vice-chairman



## AHMET TÜRKOĞLU

### GENERAL MANAGER

*“A natural gas market, opening of which is one of the goals included in the ‘100-day Action Plan’ of the President, was put into operation on 1 September 2018 with participation of Minister of Energy and Natural Resources Mr. Fatih Dönmez, and prominent names of the sector.”*

## GENERAL MANAGER’S MESSAGE

Energy is used and needed in every stage of production process of goods and services. Accordingly, one of the most essential responsibilities of all related parties –from producers to consumers– is to ensure a continuous, reliable, affordable, and accessible energy supply. Reducing energy costs and increasing efficiency are the major elements of a sustainable development.

EPIAŞ has been operating the energy markets – efficiently, transparently, reliably, and without discrimination between equal parties– since 2015 under a license granted by the Energy Markets Regulatory Authority.

In line with the goal to make Turkey the energy trade hub of its region, EPIAŞ has –in addition to the electricity market it has been operating– put into practice the natural gas market through the Continuous Trading Platform which EPIAŞ developed by using its own resources. The natural gas market –the opening of which is one of the goals included in the ‘100-day Action Plan’ of the President– was put into operation on 1 September 2018 with participation of Minister of Energy and Natural Resources Mr. Fatih Dönmez, and prominent names of the sector.

In the day-ahead market operated by EPIAŞ, the annual market clearing quantity was registered as 149,39 TWh in 2018, which shows a 21,14% increase compared to previous year. In 2018, Intraday Market matching quantity increased significantly, boosting up to 2,39 TWh with a 70,35% rise compared to 2017. Nearly 40% of transactions realized in the Turkish Electricity Market were performed at markets operated by EPIAŞ.

The Transparency Platform developed by EPIAŞ in order to ensure an efficient, transparent, and fair market is enhanced each year with new data entries. This year, more data have been offered to market participants as a result of new data inflows,

including Natural Gas Transmission and Trading data following introduction of natural gas market, as well as dam data received from the General Directorate of State Hydraulic Works, and new data from EPIAŞ and Turkish Electricity Transmission Corporation (TEİAŞ).

In line with the goal: “providing an infrastructure for establishment of regional electricity markets in line with the developments in the neighboring countries” as defined in the 2015-2019 Strategic Plan of Ministry of Energy and Natural Resources, EPIAŞ continues its attempts for ensuring exchange of knowledge and experience with the neighboring countries.

In improving its activities and products, EPIAŞ tries to comprehend the developments in the energy sector and understand expectations of its stakeholders, and continues enhancement of such products after realization of projects. EPIAŞ has introduced to its market participants the EPIAŞ mobile application which will make things easier for the market participants, and send them push notifications on electricity prices.

Next year, EPIAŞ will continue its operations in its new premises which will enable EPIAŞ to provide better service to the sector and market participants, and improve efficiency and productivity of its activities.

I would like to thank to my dear colleagues who performed their duties with great diligence and continuously improved themselves in 2018; and I respectfully present this Annual Report 2018 to our stakeholders.

Sincerely Yours,

Ahmet TÜRKOĞLU  
General Manager



## MEMBERS OF BOARD OF DIRECTORS



**ABDULLAH TANCAN**  
VICE-CHAIRMAN



**TAHSİN YAZAR**  
BOARD MEMBER



**HİMMET KARADAĞ**  
BOARD MEMBER



**ÖMER DEMİRHAN**  
BOARD MEMBER



**MUSTAFA KARAHAN**  
BOARD MEMBER



**FARUK BOSTANCI**  
BOARD MEMBER

FULL NAME	TITLE	SHARE GROUP	TENURE
Fatih DÖNMEZ	Chairman	A	22.03.2016 to 09.07.2018
Abdullah TANCAN	Vice-chairman	A	22.10.2018 to Present
Tahsin YAZAR	Board Member	A	22.03.2016 to Present
Himmet KARADAĞ	Board Member	B	06.05.2016 to Present
Ömer DEMİRHAN	Board Member	B	01.08.2017 to Present
Mustafa KARAHAN	Board Member	C	12.03.2015 to Present
Faruk BOSTANCI	Board Member	C	12.03.2015 to Present



EPIAŞ 3<sup>rd</sup> ORDINARY GENERAL ASSEMBLY MEETING

Energy Exchange Istanbul’s 2017 Ordinary General Assembly Meeting was held on 6 April 2018 in Istanbul.

Company’s articles of association, share ledger, Board of Directors Annual Activity Report, financial statements, independent auditor reports, board of directors’ profit distribution proposal, articles of association amendment draft prepared by the board of directors, the agenda, list of attendants, and relevant documents and information relating to the meeting were completely made available in the meeting.

Upon examination of the list of attendants, it was understood that the company’s capital amounted to TRY 61.572.770 divided into 61.572.770 shares each with a nominal value of TRY 1, of which 50.248.964 shares were represented in person/by proxy, thus ensuring the minimum meeting quorum as stipulated by the law and articles of association. Thereupon, the meeting was held with participation of Board Members Fatih Dönmez, Tahsin Yazar, Ömer Demirhan, Himmet Karadağ, Mustafa Karahan, and Faruk Bostancı, independent auditor Erman Durmaz, and Ministry Representative İsmail Aslanlar.

Following opening remarks by the Chairman of Board of Directors Fatih Dönmez, an informative presentation was delivered by Acting General Manager Mustafa Kayırcı on activities in 2017. Board of Directors Activity Report, Balance Sheet & Income Statement, and Articles of Association Amendment Draft were unanimously approved.

For the Board membership seat which had been vacated in

2017 upon resignation of Talat Ulussever, a Board Member representing Group B shares, Ömer Demirhan was proposed and unanimously decided to be appointed for such vacant membership position pursuant to Article 8 of Articles of Association and Article 363 of Turkish Commercial Code. Thereafter, upon voting, it was decided to release the Chairman and Board Members with respect to company’s accounts and transactions in 2017.

Pursuant to Decision No. 9 taken at the Board Meeting No. 2018/3 dated 02.03.2018, it was decided that, with respect to company’s net profit as shown in the financial statements issued according to the Financial Legislation for the period between 01.01.2017 and 31.12.2017, such portion of the net profit as required to be set aside as legal reserve fund pursuant to the Articles of Association and Turkish Commercial Code No. 6102 shall be subtracted from the net profit and set aside as legal reserve fund; of the amount remaining after subtraction of legal reserve fund, TRY 4.711.229,13 shall be distributed to the shareholders pro rata their shares; the ultimately remaining amount shall be set aside as extraordinary reserve fund; and the board of directors is authorized to determine the payment schedule for distribution of profit.

Finally, based on the opinion of Audit and Compliance Committee of the board of directors, it was unanimously decided to elect KPMG A.Ş. as company’s independent auditor for one year for auditing 2018 financial statements of the company pursuant to the decision taken by the Board of Directors on its meeting dated 05.01.2018.

COMMITTEES OF THE BOARD OF DIRECTORS

EARLY DETECTION OF RISK COMMITTEE

Early Detection of Risk Committee (EDRC) has been operating since 06.11.2015 pursuant to Paragraph Seven, Article Nine of EPIAŞ Articles of Association, Articles Eight and Ten of the Regulation on Organizational Structure and Operating Rules of EPIAŞ, and in line with such duties as assigned under the Directive on Duties and Operating Rules of EDRC.

EDRC members in 2018 included Mustafa Karahan, Himmet Karadağ, and Ömer Demirhan; and the committee was chaired by Mustafa Karahan. EDRC’s secretarial affairs are carried out by the Risk Management Department.

In 2018, total 6 risk reports were prepared, and included in agenda items of the Board of Directors.

AUDIT AND COMPLIANCE COMMITTEE

Audit and Compliance Committee (ACC) has been operating since 06.11.2015 pursuant to Paragraph Seven, Article Nine of EPIAŞ Articles of Association, Articles Eight and Nine of Regulations on Organizational Structure and Operating Rules of EPIAŞ, and in line with such duties as assigned under the Directive on Duties and Operating Rules of ACC.

ACC members in 2018 included Ömer Demirhan, Mustafa Karahan, and Faruk Bostancı; and the committee was chaired by Ömer Demirhan. ACC’s secretarial affairs are carried out by the Internal Audit Department. ACC convened four times in 2018, and activities of ACC during the year can be summarized as follows:

- 2018 Audit Plan was assessed, and decided to be put it into effect.
- Internal audit activities carried out in 2018 were assessed based on information obtained about such activities.
- The 2017 independent audit report was assessed, and submitted to the board of directors.
- ACC 2017 Activity Report was submitted to the board of directors.

## DIRECTORS



**NEZİR AY**

DEPUTY DIRECTOR, MARKET OPERATIONS



**AVNİ ÇEBİ**

DEPUTY DIRECTOR, STRATEGY DEVELOPMENT



**MUSTAFA KAYIRICI**

DIRECTOR, INFORMATION TECHNOLOGIES



**MEHMET HALUK YILMAZ**

DIRECTOR, INTERNAL CONTROL AND  
RISK MANAGEMENT



**RAMİS KULAK**

DIRECTOR, FINANCE AND SUPPORT SERVICES



**MUHARREM ELİŞ**

LEGAL ADVISOR





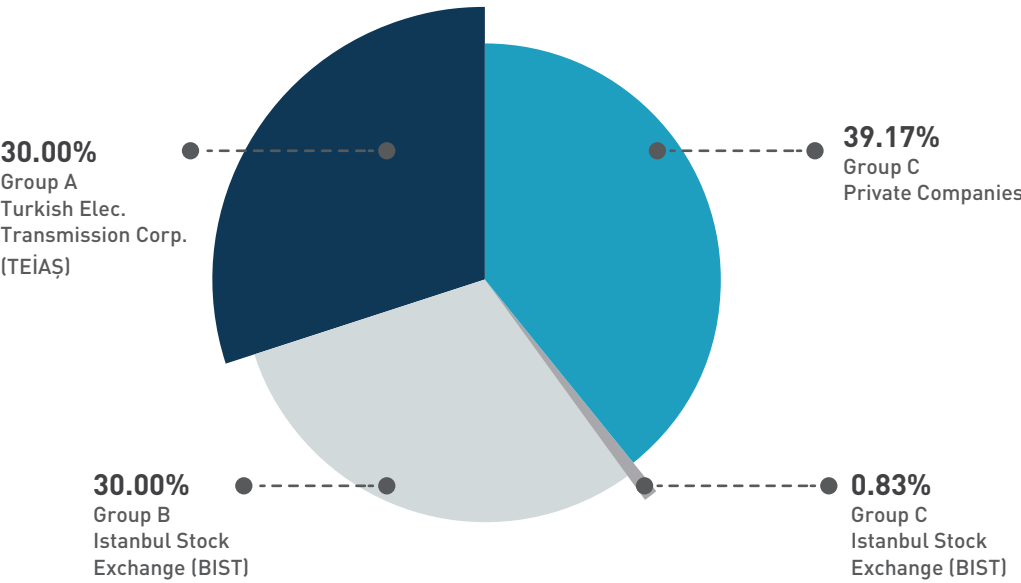
# EPIAŞ

## GENERAL INFORMATION

# EPIAŞ AT A GLANCE

EPIAŞ, was established on 18.03.2015

NUMBER OF EMPLOYEES 189



## MANAGEMENT SYSTEMS

- TS EN ISO 9001 Quality Management System
- TS ISO 10002 Customer Satisfaction Management System
- TS 18001 Occupational Health and Safety Management System
- TS ISO IEC 27001 Information Security Management System

## EPIAŞ IS A MEMBER OF BELOW MENTIONED INSTITUTIONS

EUROPEX  
APEX  
ENTSO-E  
EUROGIA2020  
DEK TURKEY

# TURKEY IN 2018 EPIAŞ ENERGY MARKETS DATA

## ELECTRICITY MARKET DATA

- DAM (Day-ahead Market) Average Market Clearing Price (MCP) **TRY 231.64 per MWh**
- DAM Matching Quantity **149,39 TWh**
- DAM Trading Volume (Total of purchases and sales) **TRY 69,69 Billion**
- IDM (Intraday Market) Matching Quantity **2,93 TWh**
- IDM Trading Volume TRY **1.368,08 Million**
- Block Sales Matching Ratio **32%**, Hourly Sales Matching Ratio **68%**
- EPIAŞ Registered Market Participant **1140**
- Market Quantity Distribution: Bilateral Contracts **60,1%**, Day Ahead Market **37,1%**, Balancing Power Market **2%**, Intraday Market **0,7%**
- Total Production **300,7 TWh**
- Total Consumption **300,1 TWh**
- Installed capacity of the plants registered to EPIAŞ **88.526 MW**
- Installed Capacity by Resource: Thermal **51,90%** Hydraulic Resources **31,96%**, Wind **7,91%**, Solar **5,73%**, Geothermal **1,42%**
- RERTP (Renewable Energy Resources Total Price) **TRY 26,17 Billion**
- RERSM (Renewable Energy Res. Support Mechanism) Average Unit Cost **TRY 55,41 per MWh**
- Installed Capacity of Plants Covered under RERSM Scheme **19.266 MW**
- Transmission System Loss Coefficient Approximately **1,93%**
- Eligible Consumer Limit **2.000 kWh**

## NATURAL GAS MARKET DATA

- EPIAŞ Registered Market Participants **43**
- Annual Total Number of Bids **8361**
- Daily Average Number of Bids **68,5**
- Average Gas Reference Price (GRP) TRY **1.552,18 per 1000 Sm3**
- Highest Gas Reference Price (GRP) TRY **1.656,45 per 1000 Sm3**
- Lowest Gas Reference Price (GRP) TRY **1.303,33 1000 Sm3**
- Annual Total Market Matching Quantity **587,3 Million Sm3**
- Annual Total Market Matching Amount **TRY 890,1 Million**

MISSION & VISION

MISSION

Efficient, transparent, and sustainable operation  
and development of energy markets

VISION

Being a global reference point for  
energy markets

CORPORATE PRINCIPLES

FAIR APPROACH

RELIABILITY

TRANSPARENCY

CUSTOMER  
ORIENTATION

SUSTAINABILITY

PARTICIPATION

INNOVATION

TREAT EMPLOYEES  
WITH RESPECT

SOCIAL RESPONSIBILITY





# EPIAŞ FIELD OF ACTIVITY

Liberality process in electricity market has been prompted pursuant to Electricity Market Law No. 4628 in order to create an electricity market that is based on transparency, integrity, and competitiveness, and that enables integration of electricity markets of other countries. In line with that purpose, plenty of planned steps have been taken to create a more dynamic and powerful electricity market, and significant progress has been made on a market model which can be followed by market participants through best methods, and where market participants have an active role.

The first step that transformed the energy market from a single-buyer & single-seller model into a liberal and competitive model was taken by transition into the hourly settlement scheme on production side and 3-period monthly settlement scheme on consumer side on 1 August 2006, and transition into 3-month financial settlement scheme on 1 July 2006.

The following step was initiation of Day-ahead Planning system operations on 1 December 2009. Those transition periods have great importance in transforming the electricity market into a more powerful and dynamic structure. They provided considerable experience and forecasting relating to new market models to parties that had previously played a role in the market transactions and operations. The Turkish organized wholesale electricity market model is a bilateral contracts market that has day-ahead balancing through

spot market and real-time balancing through balancing power market. Introduction of spot market and balancing market ensures creating a competitive electricity market and promotes investments. Balancing mechanism consists of day-ahead market and intraday market operated by the market operator EPIAŞ, and the balancing power market operated by Turkish Electricity Transmission Corporation (TEİAŞ). Day-ahead market has been operational since 1 December 2011, and intraday market has been operational since 1 July 2015. Besides, imbalances are settled on an hourly basis.

EPIAŞ, a private company incorporated under Energy Market Law No. 6446, operates Day-ahead Market and Intraday Market, and carries out settlement of Balancing Power Market operated by TEİAŞ, the organized wholesale natural gas market which was officially started on 1 September 2018, and the auxiliary services market.

The Electricity Market Law describes a new activity known as “market operating” along with operation of organized wholesale electricity markets, settlements in such markets, and other financial operations. Such operations were previously conducted by Market Financial Settlement Center (MFSC), a subordinate unit of TEİAŞ.

EPIAŞ holds an Energy Market Operating License granted by the Energy Market Regulatory Authority (EMRA).

Main activities of EPIAŞ include efficient, transparent and reliable planning, creation, development, and operation of energy markets as defined under the market operating license. EPIAŞ determines reliable reference prices without discriminating its participants, as a result of which the liquidity increase has been secured through increase in the number of market participants, range of products, and trading volume. In order to be able to

compete with energy markets of other countries, and in line with Turkey’s goal to be the energy hub of it region, EPIAŞ has started the organized wholesale Natural Gas Market on 1 September 2018 under a market operating license granted by EMRA.

Besides operating electricity and natural gas markets under authorization of Ministry of Energy and Natural Resources and EMRA, EPIAŞ is also responsible for creating new markets such as oil, green certificate, and carbon.

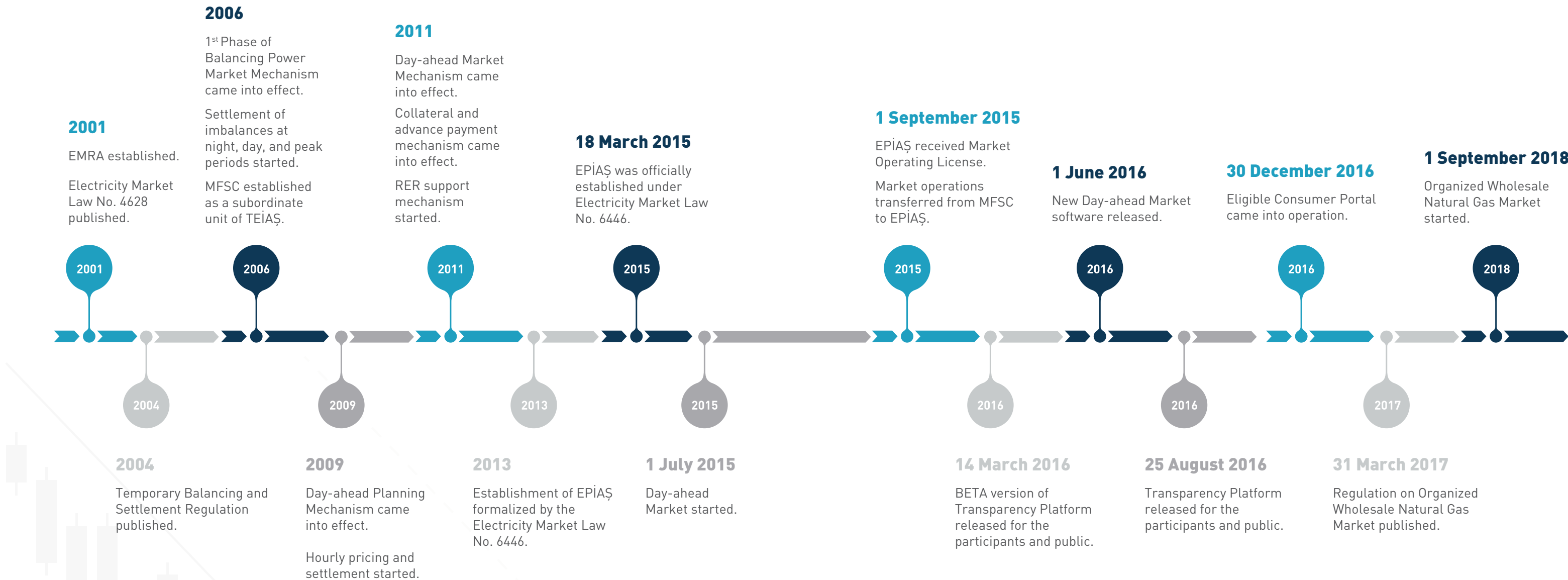
# EPIAŞ FIELD OF ACTIVITY

- Electricity Market Day-ahead Market Operations
- Electricity Market Intraday Market Operations
- Natural Gas Market Operations
- Day-ahead, Intraday, Balancing Power, and Natural Gas Markets Settlements and Financial Operations
- Auxiliary Services Market Settlements
- RERSM Operations
- Invoicing (Credit and Debit Notices for Market Participants)
- Eligible Consumer Operations



# ENERGY MARKETS

## DEVELOPMENT PROCESS AND EPIAŞ





## EPIAŞ SHAREHOLDING STRUCTURE

The paid-in capital of EPIAŞ amounts to TRY 61.572.770. The company capital is divided into 61.572.770 shares each with a nominal value of TRY 1. Company's share capital is classified under 3 groups: 18.471.831 shares are classified as Group (A), 18.471.831 shares are classified as Group (B), and 24.629.108 shares are classified as Group (C) shares.

EPIAŞ has not acquired any shares for itself and it has no direct or indirect contribution and shares. Group A shares corresponding to 30% of total shares of EPIAŞ are held by TEİAŞ. According to Article 7 of Articles of Association of EPIAŞ which reads: "50% (fifty percent) of Group (A) shares shall be transferred to the legal entity which will operate the national natural gas transmission system after separation of Petroleum Pipeline Corporation (Boru Hatları İle Petrol Taşıma Anonim Şirketi) provided however that it is in accordance with provisions of the regulation", half of the Group A shares shall be transferred to BOTAŞ on a later date in line with the ongoing studies on natural gas market. Group B shares corresponding to 30% of the total shares of EPIAŞ

-are held by Borsa İstanbul A.Ş. (Istanbul Stock Exchange). With respect to the shareholders of the Group C shares which constitutes 40% of total shares of EPIAŞ, Paragraph 3, Article 7 of the Articles of Association of EPIAŞ provides that: "Any Group (C) shares can only be transferred among the legal entities, holding of electricity market supply license or production license to the extent that the production facility thereunder has been put into operation, the legal entities, holding of wholesale, import, export license in natural gas market, or the legal entities, holding retailer license and Borsa İstanbul A.Ş. (Istanbul Stock Exchange). 39,17% of company's Group C shares are held by the licensed companies mentioned above and the remaining 0,83% is held by Borsa İstanbul A.Ş.

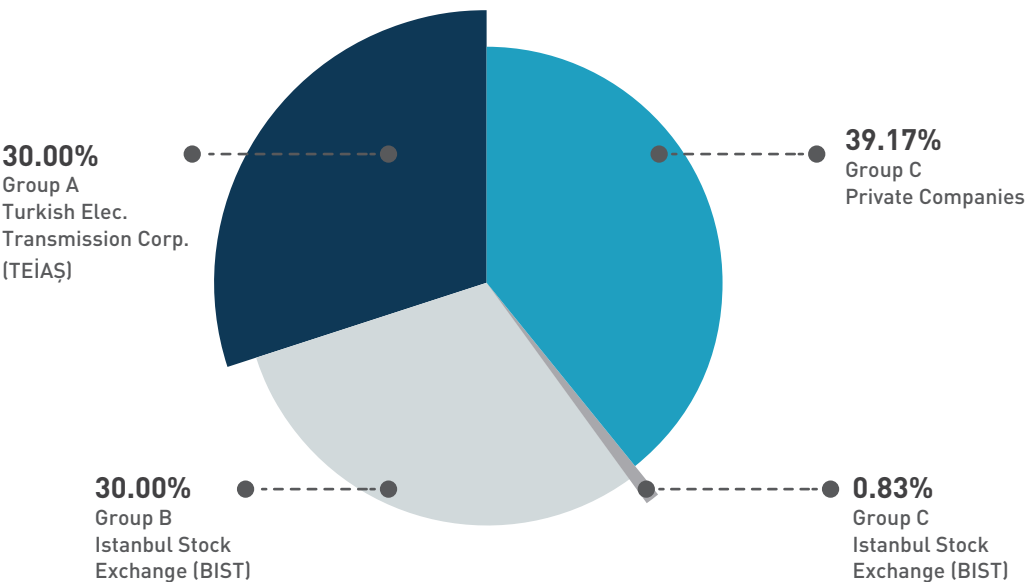
As end of 2018, there are no preferential shares regarding dividends and voting rights.

Share transfers during 2018 are as follows:

TRANSFEEE	TRANSFEROR	SHARE GROUP	NUMBER OF SHARES	SHARE RATE (%)
Egenda Ege Üretim A.Ş.	Antalya Enerji Üretim A.Ş.	C	50.000	0,08
Socar Turkey Petrokimya A.Ş.	Socar Gaz Ticareti A.Ş.	C	250.000	0,41
Elestaş Elektrik Üretim A.Ş.	Beytek Elektrik Üretim A.Ş.	C	412.408	0,67
Galata Wind Enerji A.Ş.	D Tes Elektrik Enerjisi Toptan Satış A.Ş.	C	50.000	0,08

List of shareholders by share groups is as follows:

SHAREHOLDERS	GROUP	NUMBER OF SHARES	NOMINAL SHARE AMOUNT (TRY)	RATE (%)
Turkish Electricity Transmission Corporation (TEİAŞ)	A	18.471.831	18.471.831	30.00
Istanbul Stock Exchange (BIST)	B	18.471.831	18.471.831	30.00
Istanbul Stock Exchange (BIST)	C	511.590	511.590	0.83
Other	C	24.117.518	24.117.518	39.17
<b>TOTAL</b>		<b>61.572.770</b>	<b>61.572.770</b>	<b>100.00</b>

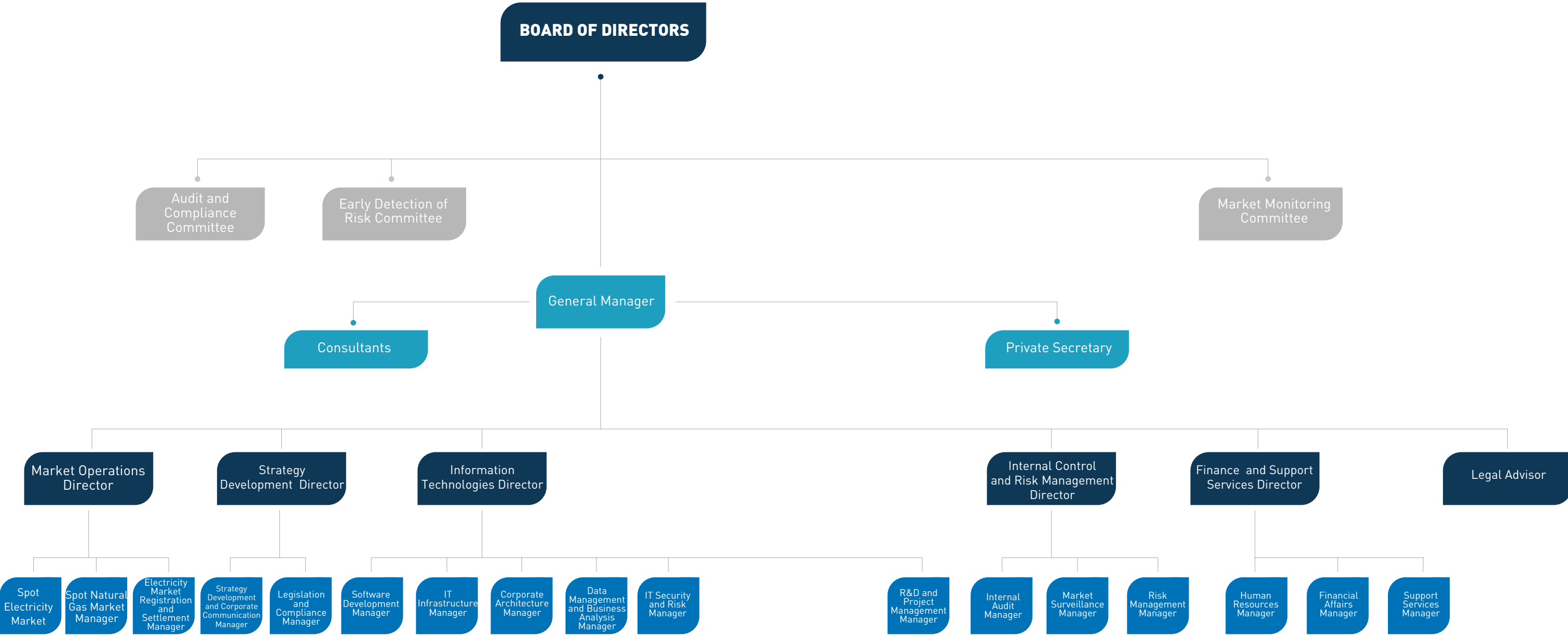


# ORGANIZATION CHART

Organizational structure of EPIAŞ is regulated under Regulations on Organizational Structure and Operating Rules of EPIAŞ and EPIAŞ Organization Directive issued by the EPIAŞ Board of Directors.

Organizational structure of EPIAŞ consists of five Directorates, Legal Consultancy, Private Secretariat Department and Consultants reporting to the General Manager. In EPIAŞ organizational structure, there are 17 departments that are subordinate to directorates.

Organization chart of EPIAŞ by the end of 2018 is as follows:

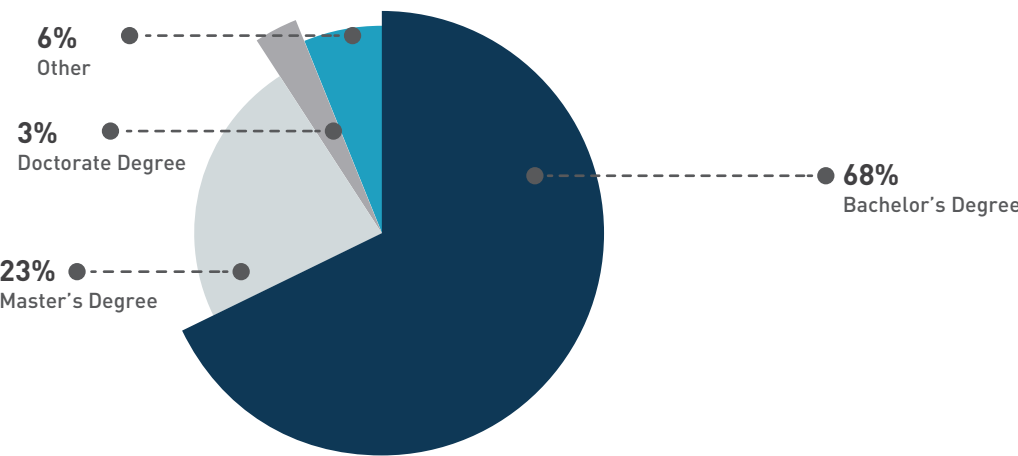


# EMPLOYEE PROFILE

EPIAŞ employs the human resources it needs on permanent staff basis as per EPIAŞ Organization Directive and according to the Labor Law No. 4857 and Article 4/a of Social Insurances and General Health Insurance Law No. 5510. By the end 2018, EPIAŞ has total 189 employees.

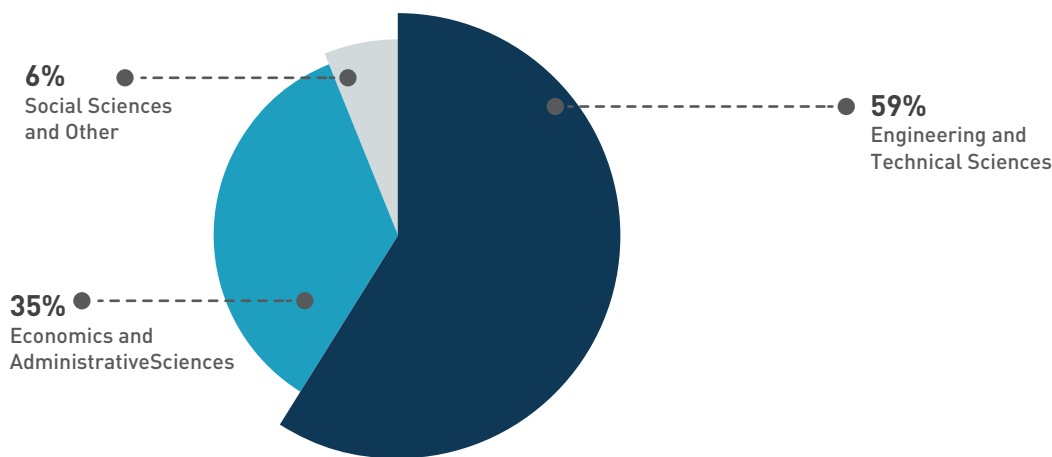
By the end of 2018, 68% of employees have bachelor's degree, 23% have master's degree, and 3% have doctorate degree. 94% of EPIAŞ employees have graduate or post graduate degrees.

## LEVEL OF EDUCATION



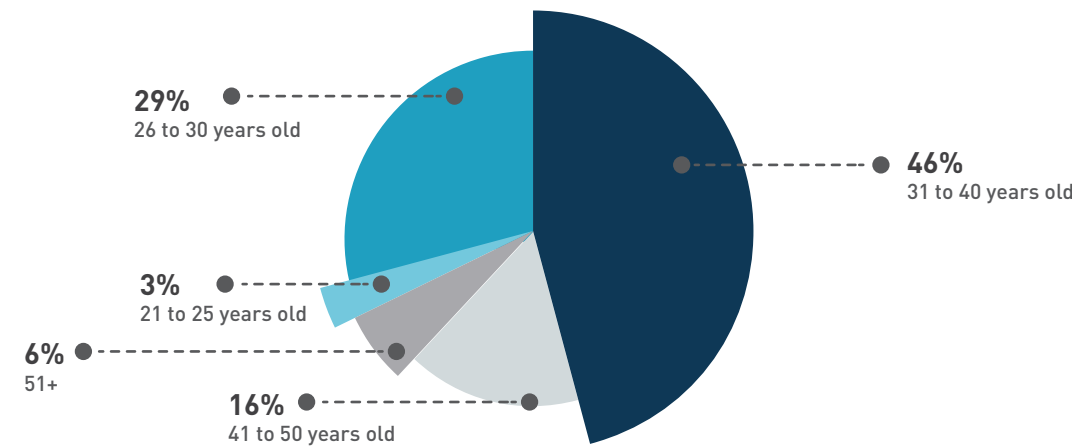
Of EPIAŞ employees, 59% graduated from faculties of engineering or technical sciences, 35% graduated from faculties of economics and administrative sciences, and 6% graduated from faculties of social sciences and other faculties.

## DEPARTMENTS GRADUATED

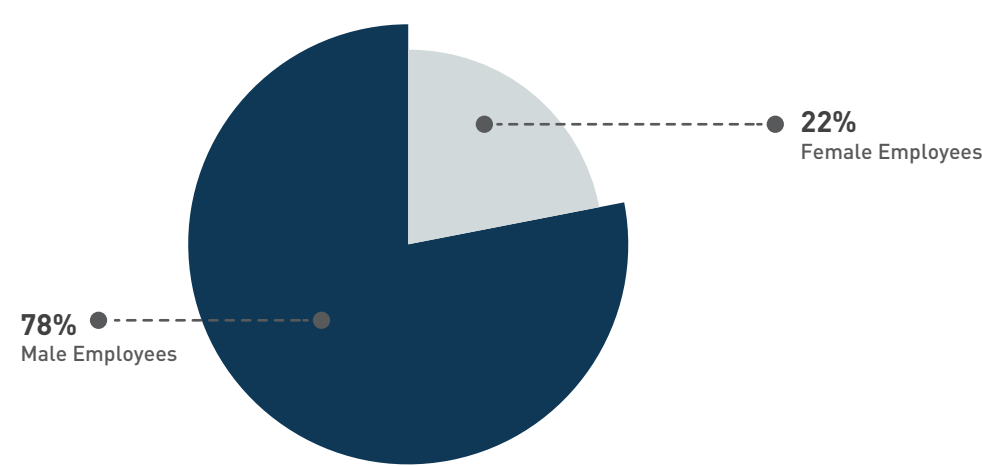


By the end of 2018, age range of EPIAŞ employees is as follows: 3% of employees are 21 to 25 years old; 29% of employees are 26 to 30 years old; 46% of employees are 31 to 40 years old; 16% of employees are 41 to 50 years old. Out of total employees, the ratio of our employees who are 51 years old and older is 6%. Age average of company employees is 36, and female employee rate is 22% (41) while male employee rate is 78% (148).

## AGE RANGES



## RATE OF FEMALE AND MALE EMPLOYEES





A low-angle, upward-looking shot of several modern skyscrapers with glass and steel facades. The buildings are arranged in a way that they converge towards the top of the frame, creating a sense of height and scale. The sky is a clear, deep blue. The overall image has a cool, corporate aesthetic.

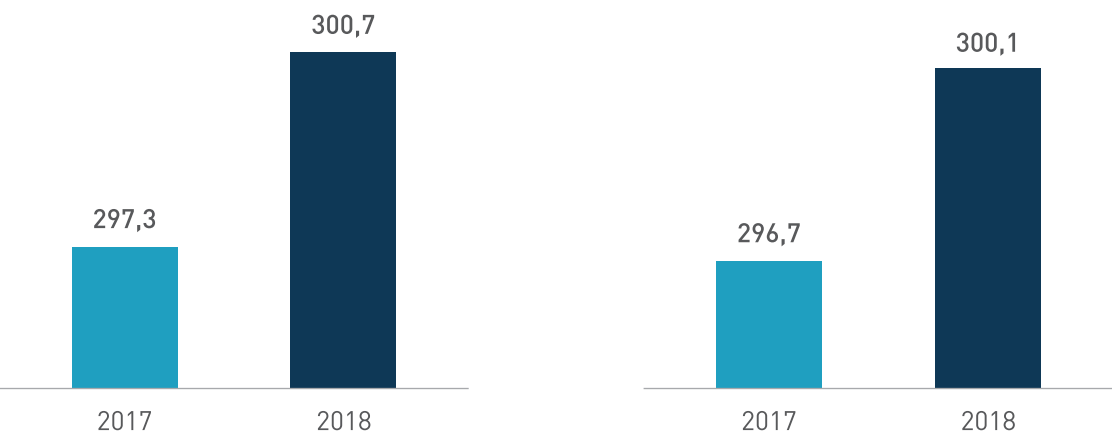
# **COMPANY** ACTIVITIES

# TURKISH ENERGY SECTOR OUTLOOK IN 2018

## SOME IMPORTANT DEVELOPMENTS IN 2018 ARE LISTED BELOW:

- 2018 MCP arithmetic average was calculated as TRY 231,64 per MWh which shows a 41,34% increase compared to 2017.
- Installed capacity of Turkey increased by 3.326 MW rising up to 88.526 MW.
- Annual production increased by 1,2% to 300,7 TWh , and consumption increased by 1,1% to 300,1 TWh.
- Highest MCP value in 2018 was TRY 375,79 per MWh as calculated on Monday, September 5th, at 14:00 hrs.
- Trading volume was 149,39 TWh in the Day-ahead Market, and 2,93 TWh in the Intraday Market.
- 50,01% of the Turkish electricity consumption was traded in the Day-ahead Market.
- Of the annual market quantity, 60,1% was through Bilateral Contracts, 37,1% through Day-ahead Market, 2,00% through Balancing Power market, and 0,7% through Intraday Market.
- Figures relating to production rates by resources show that natural gas – LNG dropped to 30% with a 7,2% decline, and import coal resources rose up to 20,7% with a 3,5% increase.
- The highest hourly peak value was 45.996 MWh on Friday, August 3rd at 17.00 hrs; and the lowest instantaneous peak was 18.212 MW on Thursday, June 16th, at 06.00 hrs.
- Installed capacity of the power plants benefiting from RERSM which was 17.400 MW according to the final list issued by EMRA for 2017 increased by 1.866 MW to 19.266 MW in 2018.

## 2017 & 2018 PRODUCTION AND CONSUMPTION FIGURES



2017 & 2018 Production Figures (TWh)

2017 & 2018 Consumption Figures (TWh)

2017-2018 production and consumption figures indicate a 1,2% increase in production quantity, and a 1,1% increase in consumption quantity.

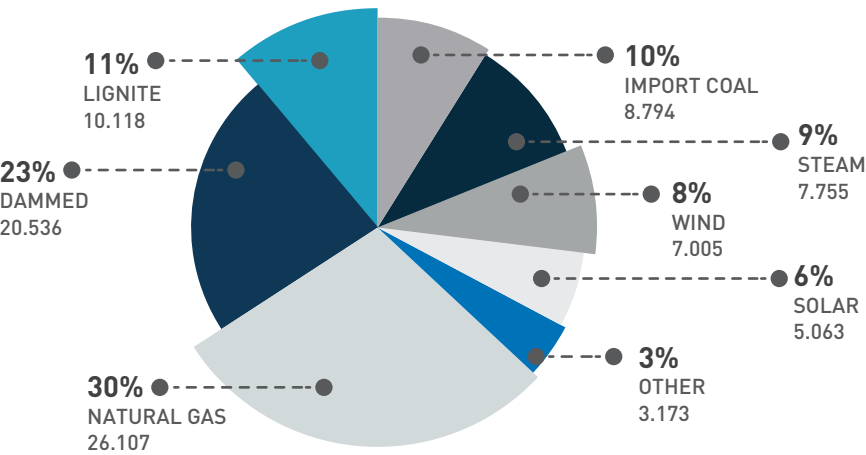
## NUMBER OF PLANTS BY RESOURCES IN 2018

TYPE OF RESOURCE	NUMBER OF PLANTS (LICENSED)
Stream	524
Natural Gas (including Liquefied + Natural Gas)	298
Wind	175
Dammed	118
Biomass	110
Lignite (including Solid + Liquefied)	50
Geothermal	48
Fuel Oil	9
Import Coal	11
Hard Coal	2
Waste Heat	14
Other (LNG, Naphtha, Asphaltite, Solar, Pyrolysis Oil)	16

TYPE OF RESOURCE	NUMBER OF PLANTS (UNLICENSED)
Solar	5.859
Wind	74
Waste Heat	2
Biomass	33
Natural Gas	69
Stream	11

Number of Plants by Resources in 2018

## INSTALLED CAPACITY BY RESOURCES



Total Installed Capacity by Resources in 2018: 85.551 MW (including unlicensed plants)

\* Data contained in this section are obtained from Turkish Electricity Transmission Corporation (TEİAŞ) and Load Distribution Information System (LDIS).



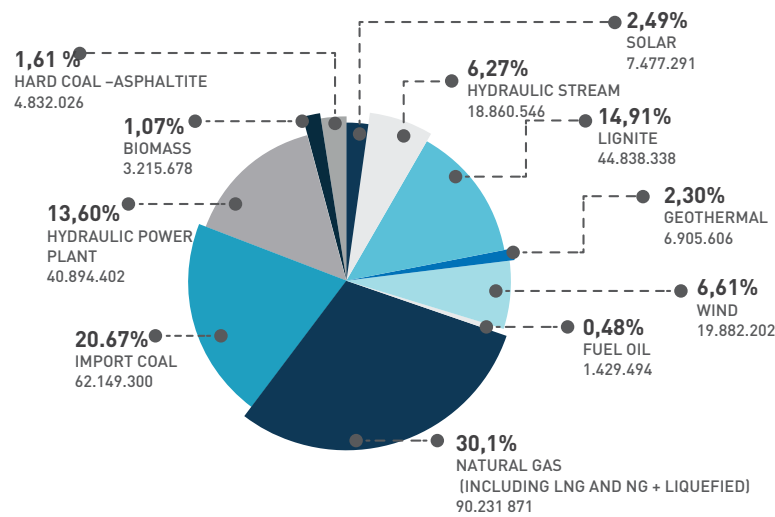
As of 01.01.2019, Turkey’s installed capacity is 88.551 MW, of which 83.199 MW is licensed, and 5.352 MW is unlicensed. According to the final RER list issued by EMRA, installed capacity of plants benefiting from RER support mechanism has reached up to 19.771 MW.

Share of renewable energy plants in the installed capacity is 47,9%.

A comparison of 2017 & 2018 installed capacities by resources shows that the Solar Power plants increased their installed power most compared to other resources.

Of the total installed capacity, 79,1% is provided by private (free production, BOT, BO, and TOOR) power plants, and 20,9% is provided by public power plants.

TOTAL PRODUCTION FIGURE BY RESOURCES IN 2018 (MWh)



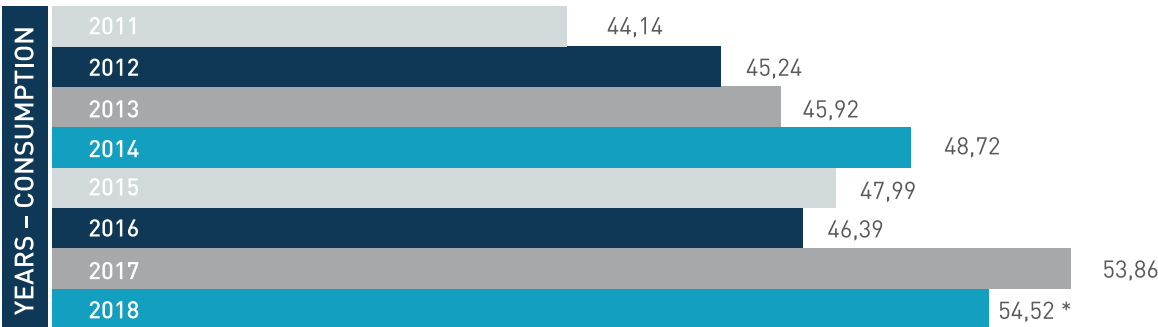
Comparison of 2018 production figures by resources with 2017 production figures shows that solar power plants achieved the highest increase (158,8%) in terms of increase rates.

Annual production of natural gas power plants declined by 18,3% while import coal power plants’ annual production increased by 21,6%

2018 Total Production Figure by Resources: 300.716.754 MWh

NATURAL GAS MARKET

Turkey’s 2018 Natural Gas Consumption is 54.52\* Billion Sm3.



\*Estimated Data



# MARKET ACTIVITIES

## SPOT ELECTRICITY MARKETS ACTIVITIES

Day-ahead and intraday markets are operated by EPIAŞ within the scope of the market operations.

In day-ahead market, purchase and sale quantities formed as per bids submitted by the participants and market clearing prices are announced. In the intraday market, on the other hand, matching is performed through continuous trading method.

English language option has been included in the software for day-ahead and intraday markets for convenience of the foreign users trading in the market. User manuals of both market software programs have been prepared in Turkish and English languages, and are made available to the users.

Call center services are offered to market participants in order to ensure provision of efficient and fast service 24/7. Participants are notified when they first enter the markets,

and quick services are provided to users who experience problems in entering bids. Objections by participants relating to transactions in the spot electricity market are examined and finalized. In case of any possible technical problems and extension of process, users are notified through website, mobile application, and SMS.

Studies intended to ensure that market trading volumes will be determined by EPIAŞ in order to prevent any possible material errors that may result from any erroneous bid entries by participants on day-ahead and intraday market software have been completed.

Development requests made by the market participants and required to be performed as per the legislation are quickly considered and satisfied.

## ACTIVITIES RELATING TO PUBLICATION OF MARKET-RELATED DATA

In the scope activities concerning data publication, statistics regarding price formation and transactions performed are published with a view to ensure liberality, transparency, and no discrimination among the parties.

Daily, weekly, and annual reports have been regularly published since 2016, and monthly reports have also started to be published by September 2018 in addition to other reports. These reports are in "Bulletins" menu on the EPIAŞ website, as well as on EPIAŞ mobile application, and official social media accounts of EPIAŞ.

Surveys are being conducted in order to learn opinions and suggestions relating to bulletins published which have been continuously improved in line with survey results.

## DAILY PRICE EVALUATIONS AND MARKET ANALYSIS ACTIVITIES

Following daily disclosure of the market clearing prices, bids submitted by the participants in the day-ahead market are compared with the prices of the previous day in order to detect reasons of price changes. Besides the day-ahead market bids of the market participants, transactions in the balancing power market are also analyzed..

Matches under the intraday market contracts are analyzed on participant basis, and the effect of the intraday market on the balancing power market is examined.

In addition to the daily analyses, reasons of long-term price changes, effects of the regulatory changes are investigated, and analyses are performed on the optimization algorithm.

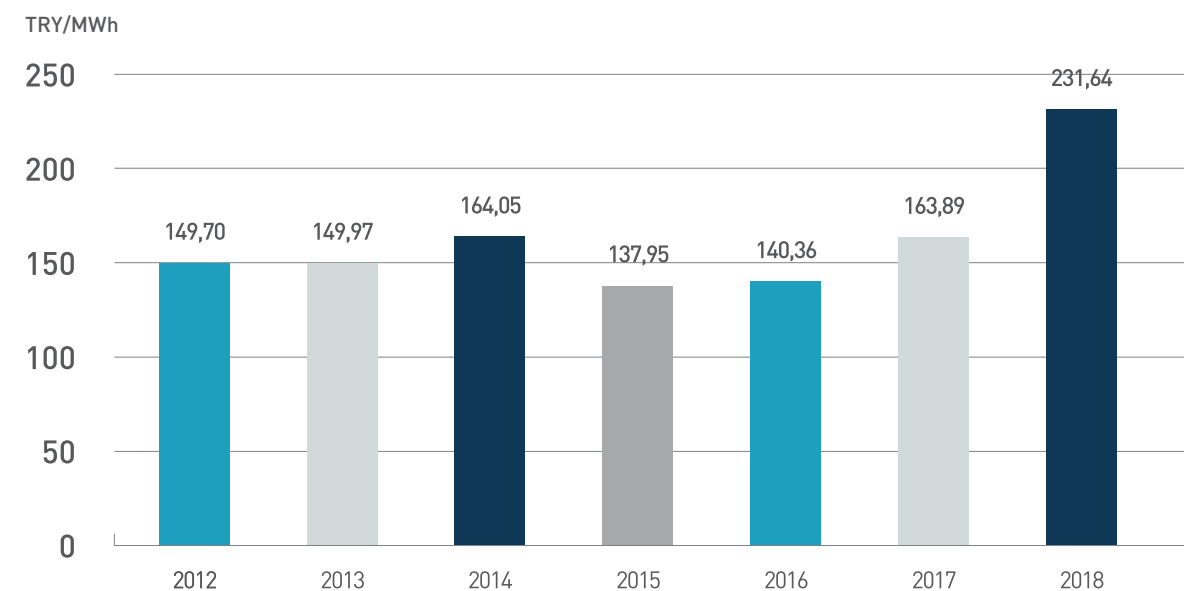
Data requested by the line Ministry, EMRA, and other regulatory authorities are submitted to relevant authorities in a timely manner.

## DAY-AHEAD MARKET

The day-ahead market (DAM) operated by EPIAŞ is the market used for electricity trading and balancing activities one day before the day of delivery of electricity. The purpose of DAM is to:

- Determine the reference price of electrical energy,
- Give market participants the opportunity to buy and sell energy for the next day, in addition to their bilateral contracts;
- Provide TEİAŞ, the system operator, a balanced system day ahead;
- Enable the system operator to manage constraints by creating bidding zones for large scale and continuous constraints.

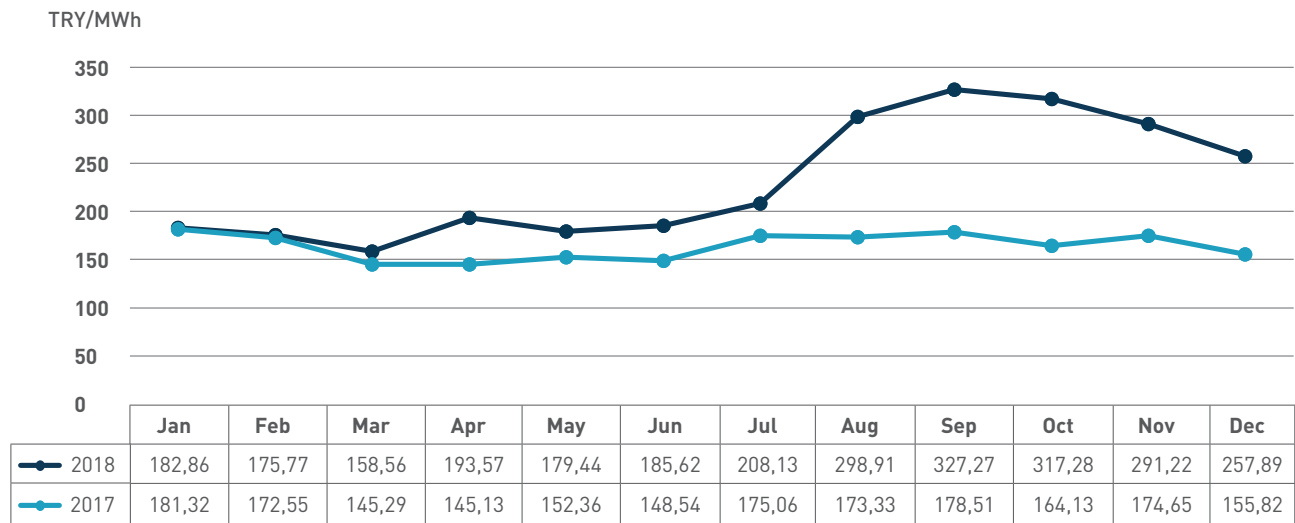
## ANNUAL AVERAGE MARKET CLEARING PRICE



As shown in the graphic above, the annual average MCP for the day-ahead market in 2018 increased by 41.34% compared to the previous year, rising up to TRY 231.64 TRY per Mwh. One of the important factors that contributed to that increase is the increasing foreign exchange rates.

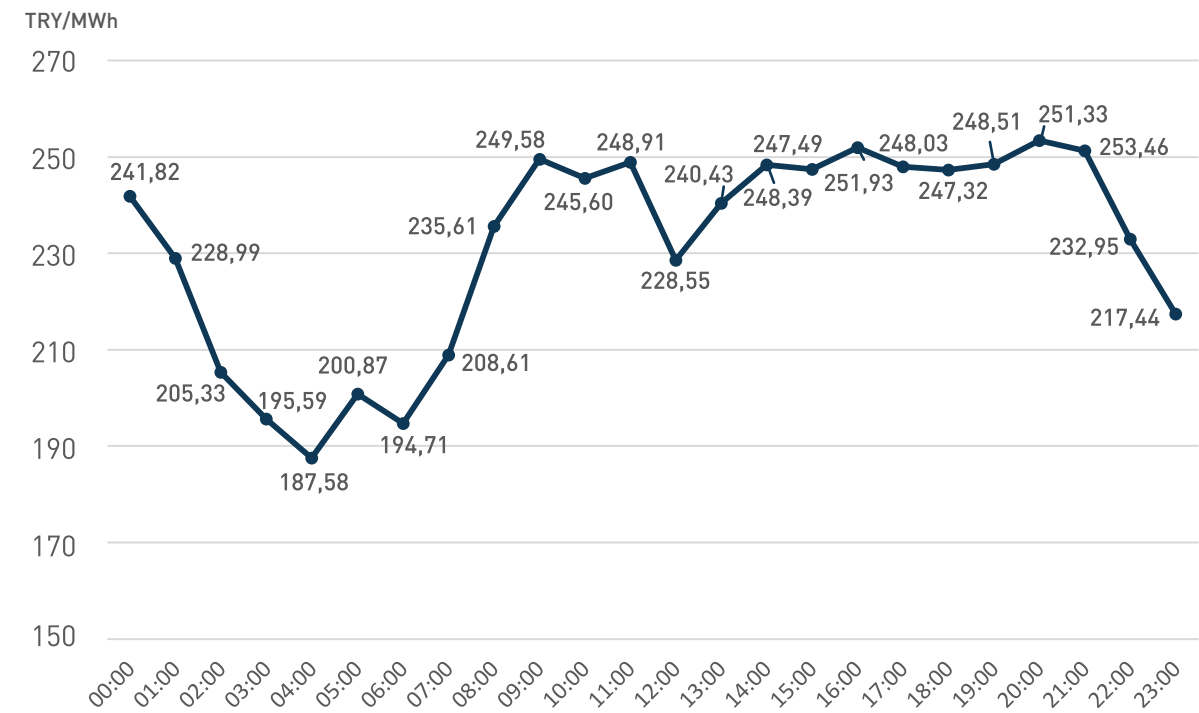


MONTHLY AVERAGE MARKET CLEARING PRICES IN 2017 & 2018



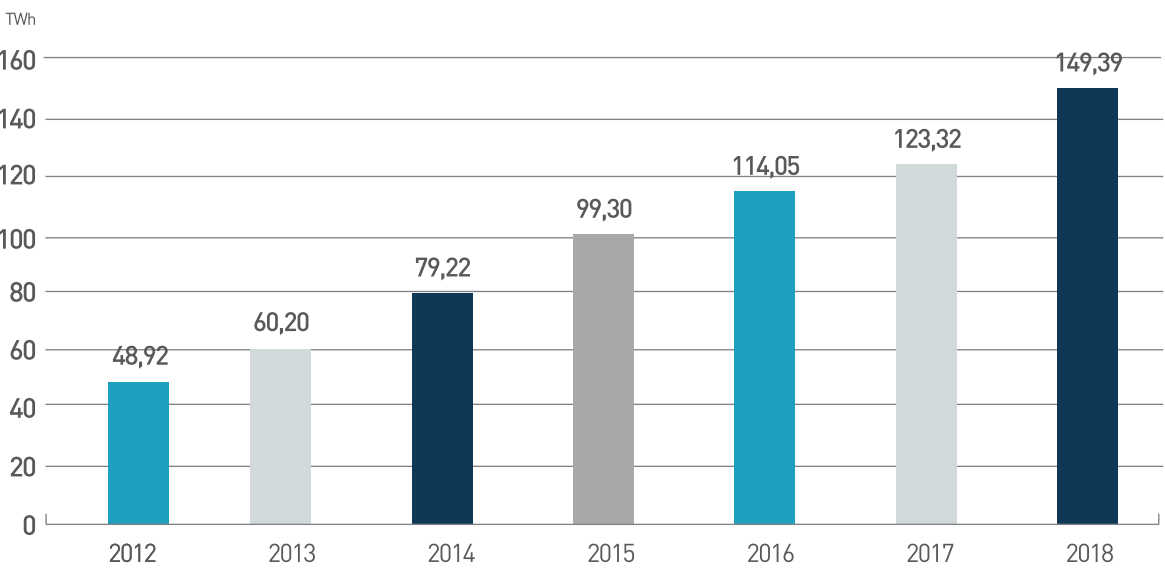
As shown in the graphic above, the highest MCP in 2018 was calculated as TRY 375,79 per MWh on Wednesday, September 5th, at 16.00 hrs, while the lowest MCP in 2018 was calculated as TRY 0/MWh on Sunday, March 18th, at 12.00 hrs.

HOURLY AVERAGE MARKET CLEARING PRICES IN 2018



As shown in the graphic above, hourly average MPCs show that the average MPC is lowest at 04.00 hrs with TRY 187,58 per MWh, and the average MPC is the highest at 20.00 hrs with TRY 253,66 MWh. Average day, night, and peak demand increased compared to previous year.

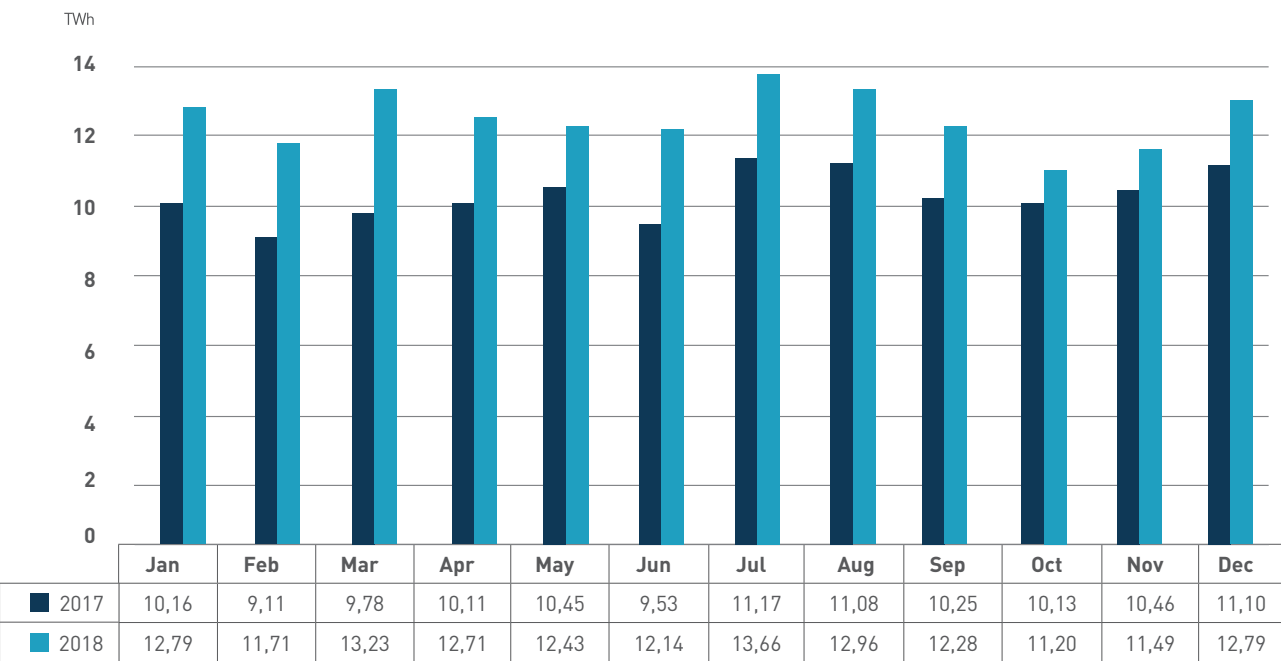
ANNUAL MARKET CLEARING QUANTITIES



As shown in the graphic above, day-ahead market matching quantities increased within each year. Annual market clearing quantity in the day-ahead market in 2018 increased by 21,14% compared to previous year, rising up to 149,39 TWh. In 2018, 50,1% of electricity consumption of Turkey was traded in the day-ahead market.

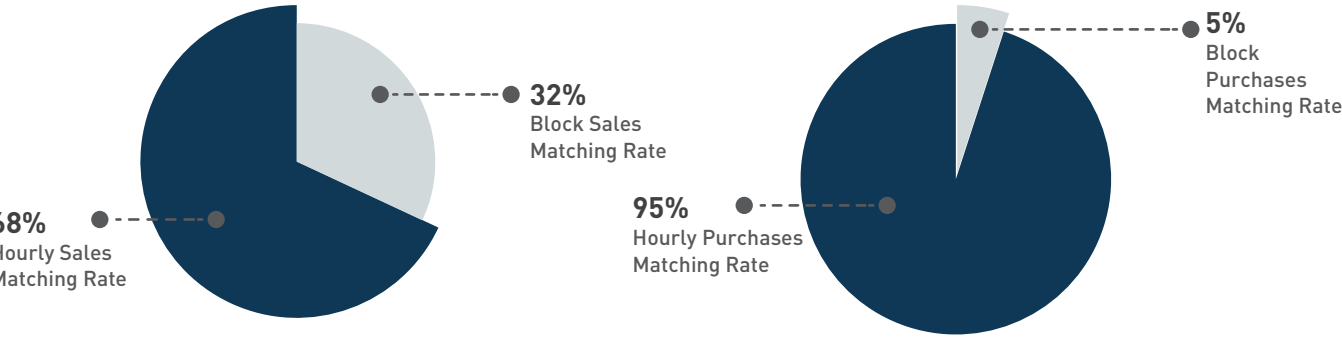
\*Matching quantity shows total of day-ahead market sales quantities.

MONTHLY MARKET CLEARING QUANTITIES IN 2017 & 2018



In 2018, the lowest matching quantity in 2018 was recorded on Monday, January 1st, at 05.00 hrs as 9.640 MWh while the highest matching quantity was recorded on Monday, August 6th, at 14.00 hrs as 25.215 MWh. In 2018, the day-ahead market matching quantity in 4945 hours was calculated to be 50% higher than the hourly consumption quantity of Turkey. On Sunday, June 17th, at 08.00 hrs, the day-ahead market matching quantity constituted 83% of hourly consumption quantity.

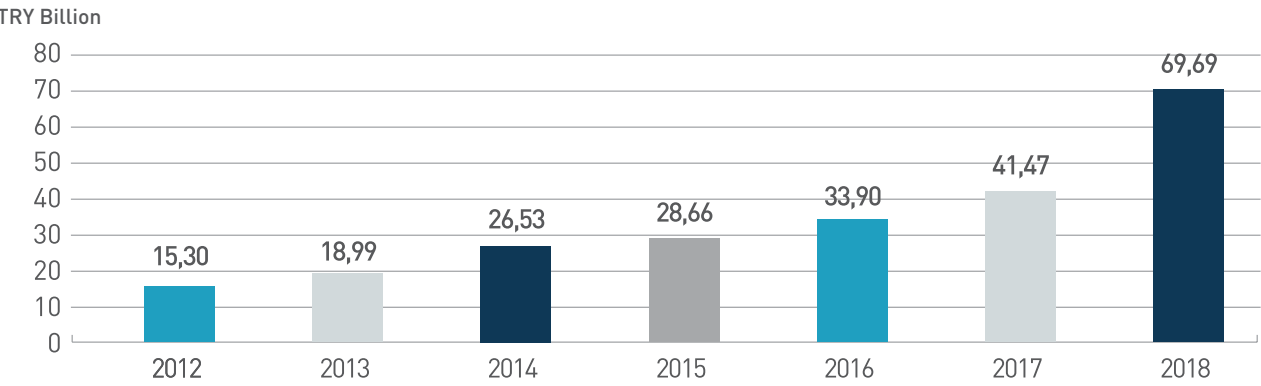
HOURLY – BLOCK BID MATCHING RATES IN 2018



Hourly – Block Sales Matching Quantities Rate in 2018

Hourly – Block Purchases Bid Quantities Rate in 2018

DAY-AHEAD MARKET ANNUAL TRADING VOLUME



As shown in the graphic above, the annual trading volume in the day-ahead market in 2018 increased by 68,05% compared to previous year, rising up to TRY 69,69 Billion. The trading volume consists of purchase and sales quantities.

NUMBER OF PARTICIPANTS SUBMITTED BIDS IN THE DAY-AHEAD MARKET

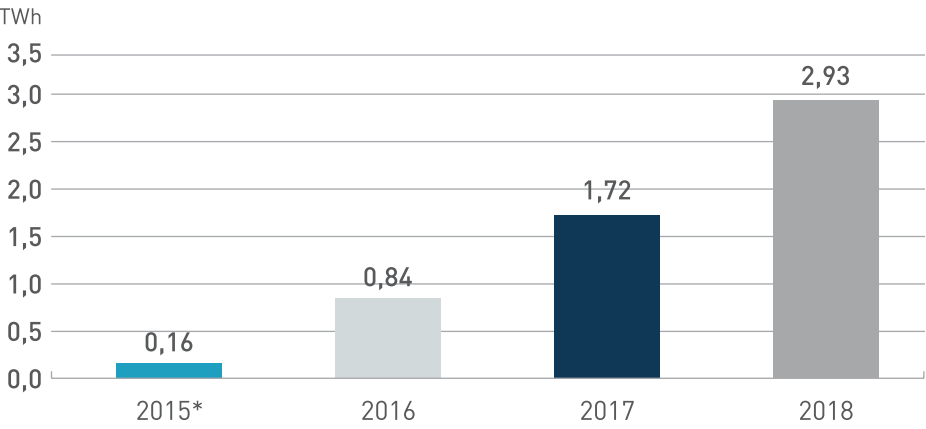
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
735	733	745	759	768	763	751	744	728	728	735	750

As shown in the table above, the number of participants that submitted bids in the day-ahead market in 2018 was, on average, 747 for each month.

INTRADAY MARKET

Intraday Market (IDM) is a market that is situated between the day-ahead market (DAM) and balancing power market (BPM), intended for balancing by reducing the probability of imbalance by creating additional purchase and sale opportunities for the participants. After closing of DAM, participants submitting bids day ahead have the chance to readjust their portfolios in IDM depending on their production/consumption position and general position of the system.

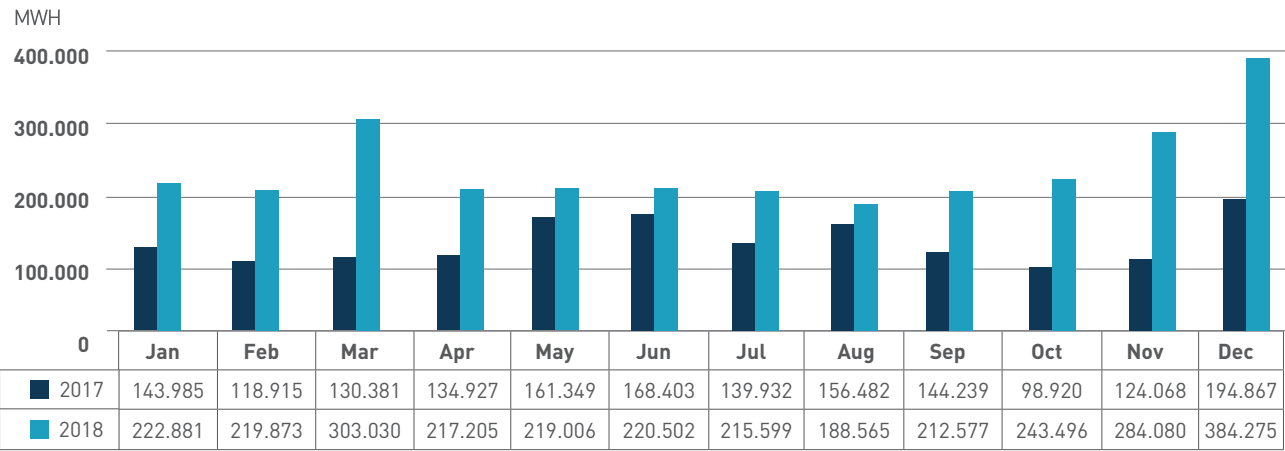
INTRADAY MARKET ANNUAL MATCHING QUANTITIES



\*The intraday market has been in service since 1 July 2015.

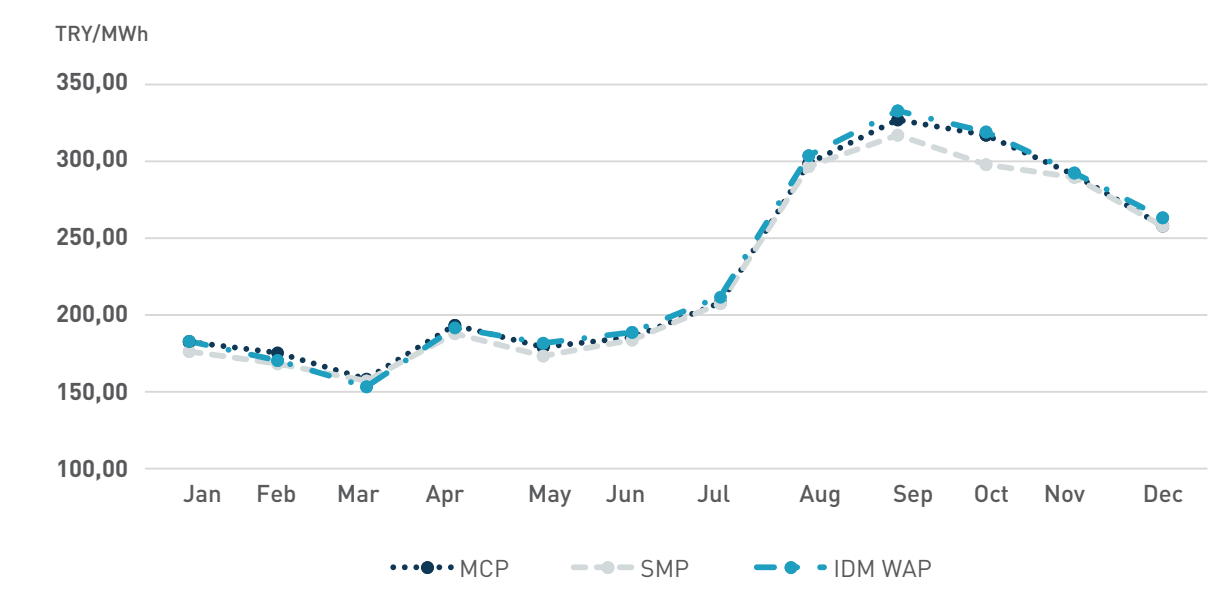
As shown in the graphic above, the matching quantities in the intraday market in 2018 increased by 70,35% compared to 2017, rising up to 2.93 TWh.

MONTHLY MATCHING QUANTITIES IN 2017 & 2018

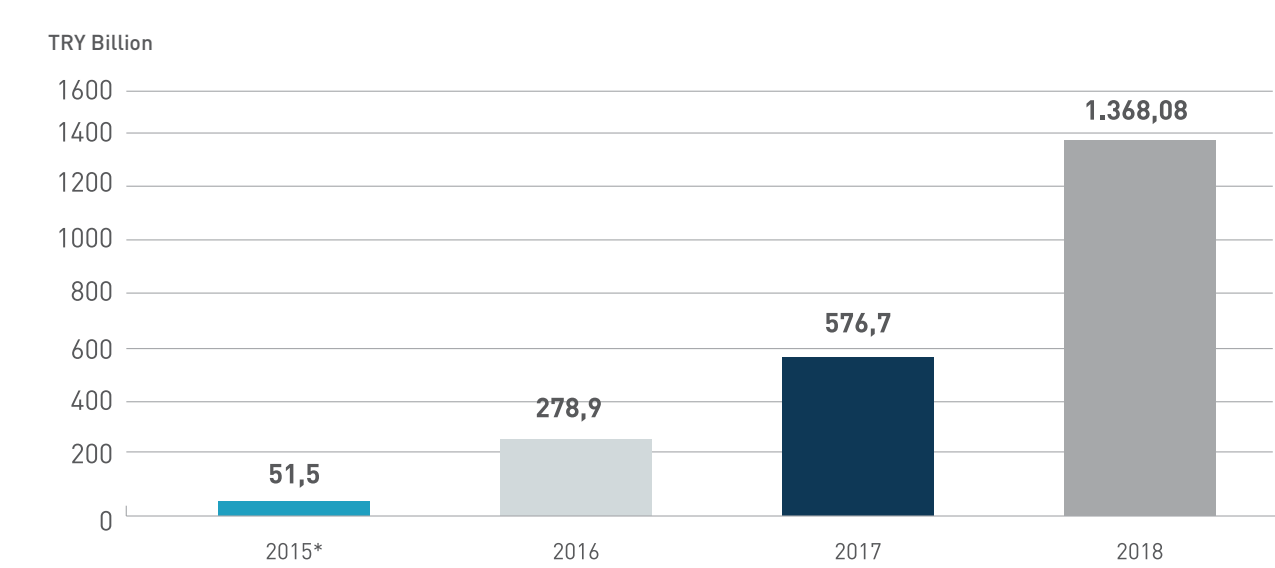


In 2018, the highest daily matching quantity was recorded on Thursday, February 15th as 58.901 MWh, and the highest hourly matching quantity was recorded on Thursday, February 15th, at 20.00 hrs, as 3.869 MWh.

MONTHLY INTRADAY MARKET WEIGHTED AVERAGE PRICE – MCP – SMP FIGURES



INTRADAY MARKET ANNUAL TRADING VOLUME



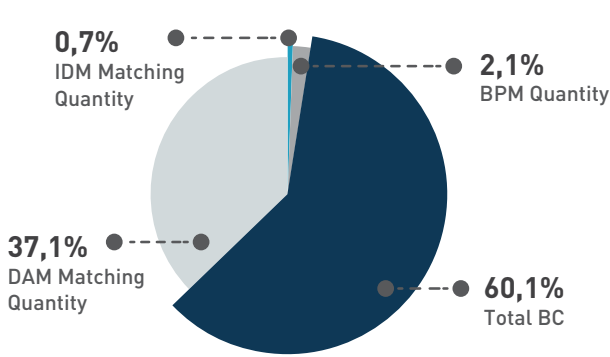
\* The intraday market came into operation on 1 July 2015.

NUMBER OF PARTICIPANTS SUBMITTING BIDS IN THE INTRADAY MARKET

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
277	308	333	322	347	348	326	333	326	372	362	404

As shown in the table above, the number of participants that submitted bids in the intraday market in 2018 was, on average, 338 for each month.

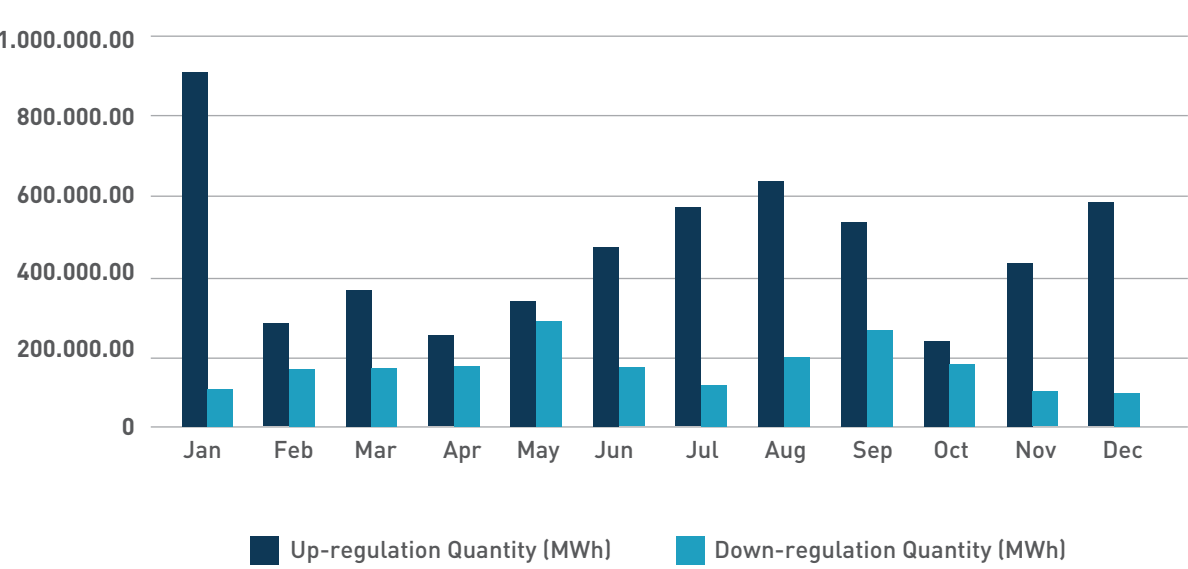
ANNUAL MARKET QUANTITY DISTRIBUTION



SETTLEMENT AND REGISTRATION PROCEDURES

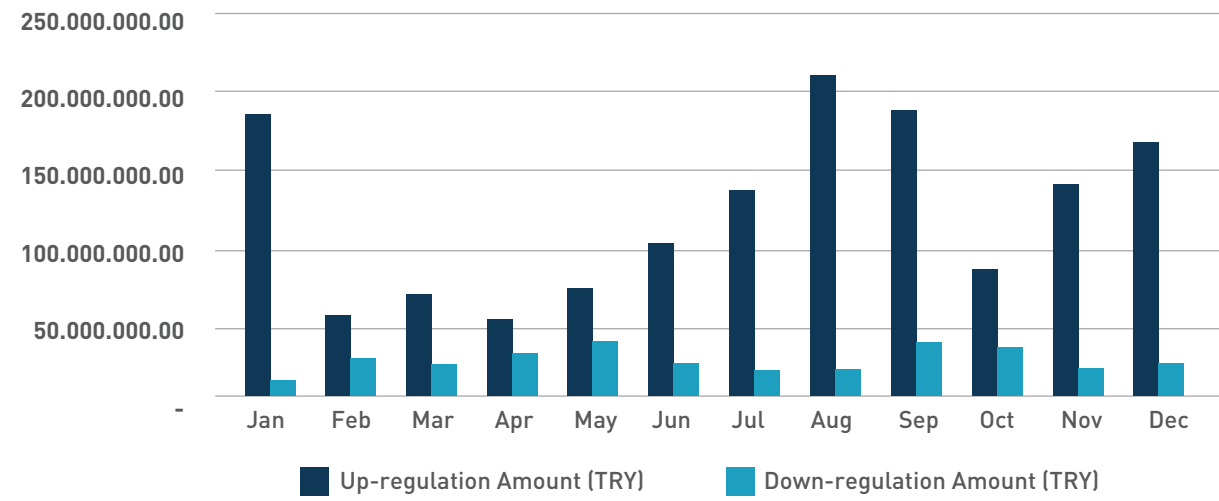
Settlement includes calculation of credits and debits arising from the day-ahead market, intraday market, balancing power market, RERSM, and energy imbalances.

BPM INSTRUCTION QUANTITIES IN 2018 (MWh)



The graphic above shows the quantities of finalized up-regulation and down-regulation instructions given in the balancing power market.

## BPM INSTRUCTION AMOUNTS IN 2018 (IN TRY)

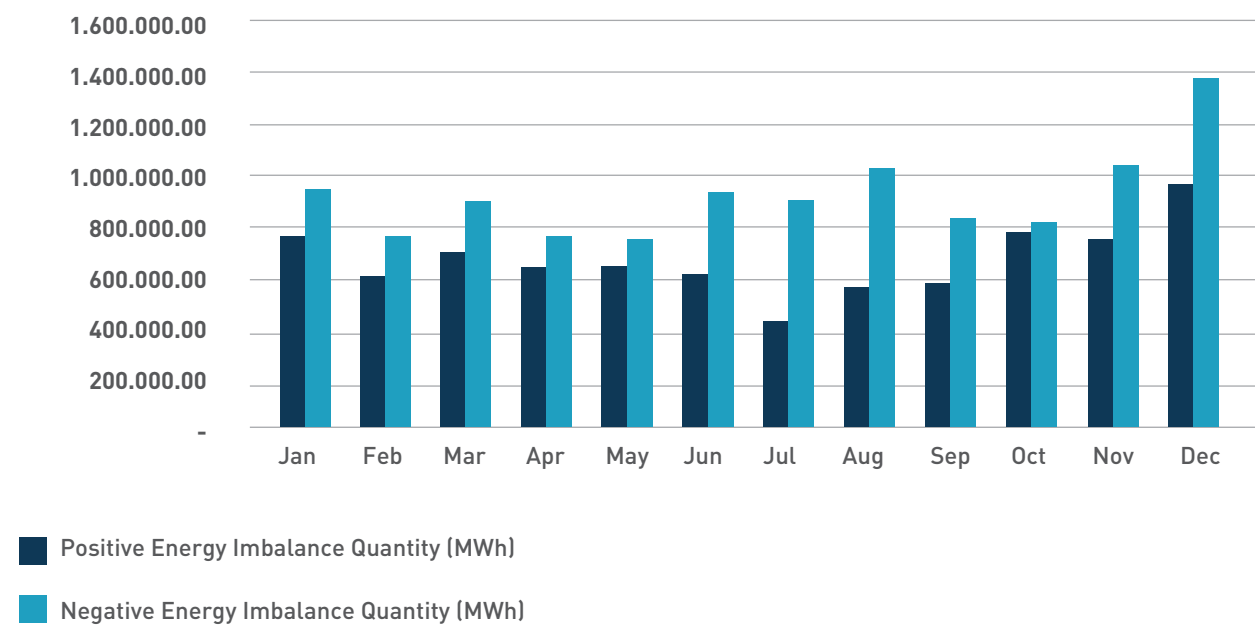


The financial table showing the monetary amounts of finalized up-regulation and down-regulation operations settled in the balancing power market is given above.

## ENERGY IMBALANCE IN 2018

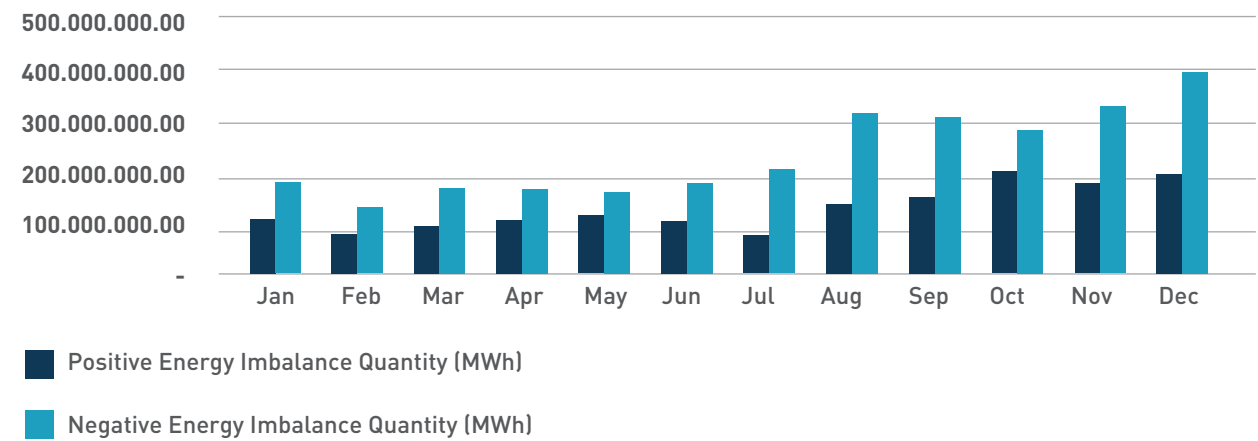
Monthly energy imbalance amounts of the market participants are also calculated and reflected to the market participants. The energy imbalance quantity and amount for 2018 is given below.

### ENERGY IMBALANCE QUANTITY IN 2018 (MWh)



As shown in the graphic above, in 2018, the highest imbalance was recorded in December while the lowest imbalance was recorded in February.

## ENERGY IMBALANCE AMOUNTS IN 2018 (IN TRY)

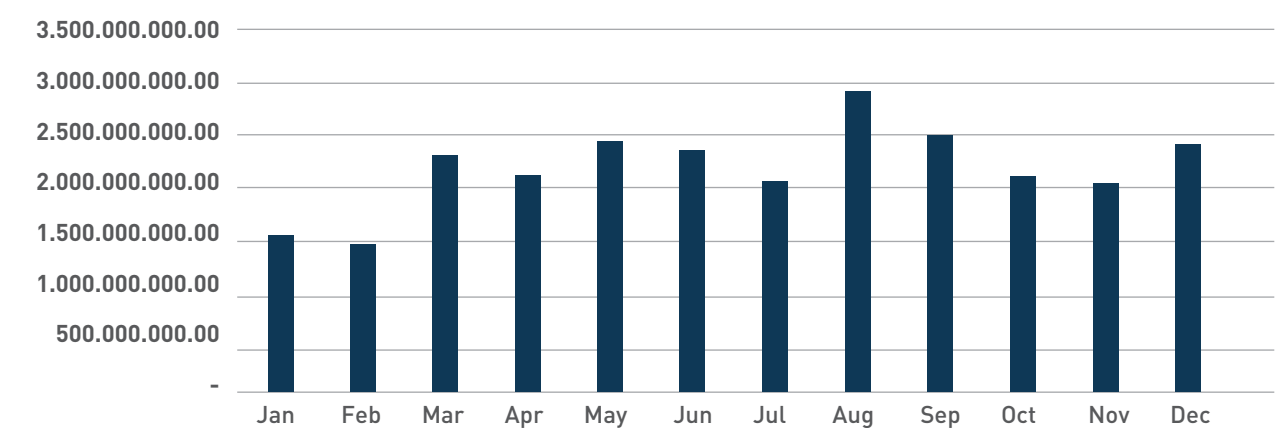


Monthly distribution of monetary volume of imbalances occurred in 2018 are shown in the graphic above. As can be seen from the graphic, the highest imbalance volume was recorded in December while the lowest imbalance volume was recorded in February.

## RERSM IN 2018

RERSM settlement is announced on a monthly basis under RERSM Credit and Debit Items.

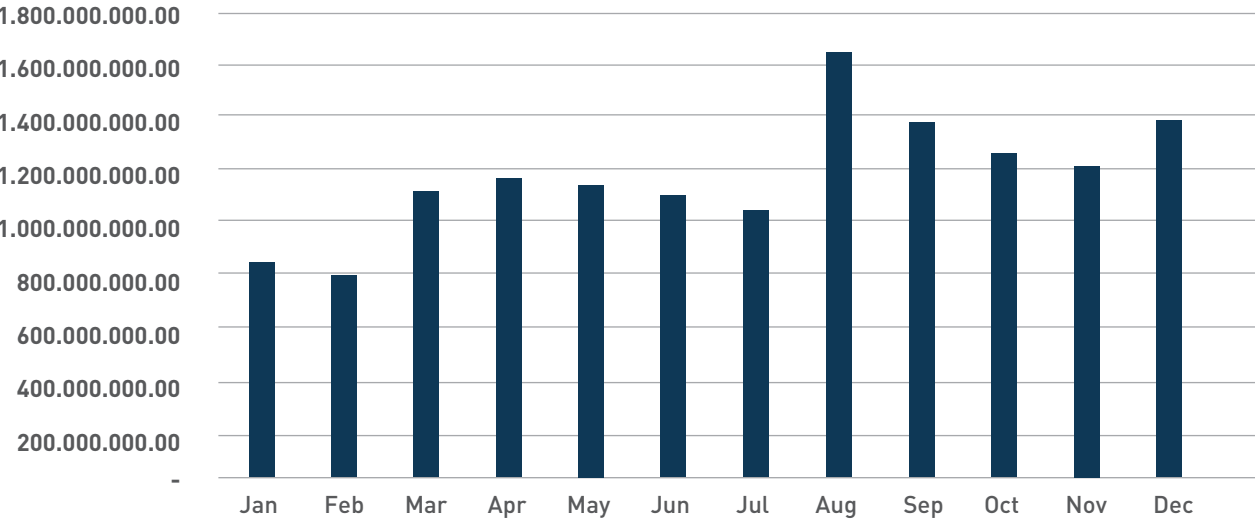
### RERTP AMOUNTS IN 2018 (IN TRY)



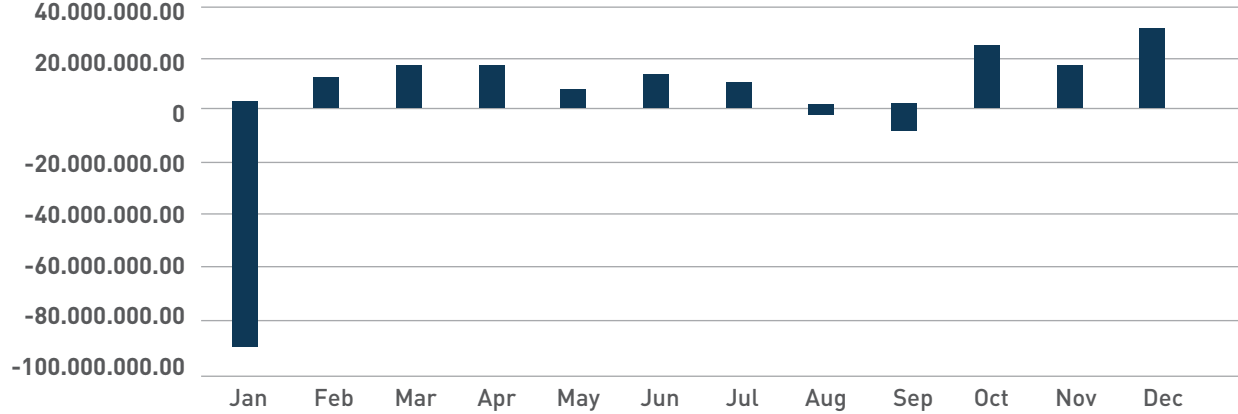
Changes in the total amounts paid to RERSM participants are shown in the graphic above by months. As can be seen from the graphic, the highest price was recorded in August while the lowest price was recorded in February.



RER INCOME IN 2018 (IN TRY)

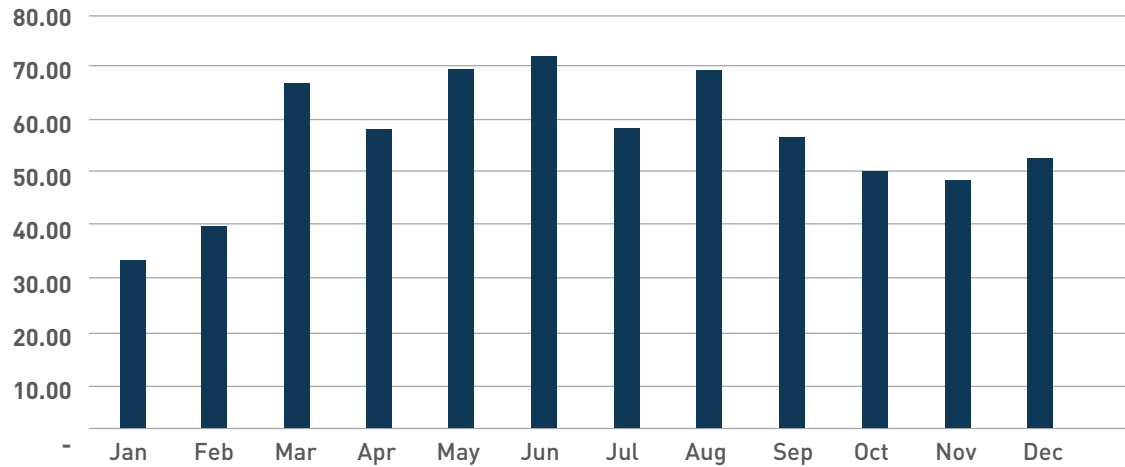


ZERO BALANCE ADJUSTMENT AMOUNTS IN 2018 (IN TRY)



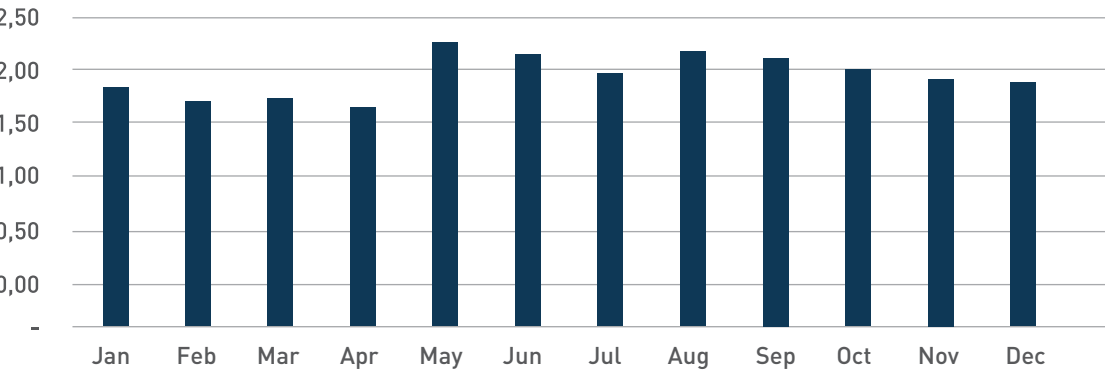
Changes in the Zero Balance Adjustment Item by months in 2018 are shown in the graphic above.

RERSM UNIT COST IN 2018  
RERSM UNIT COST (TRY/MWH)



Monthly average unit costs per MWh reflected on the market participants as a result of RERSM settlement are shown in the graphic above. The highest RER cost per MWh was recorded in June while the lowest cost was recorded in January.

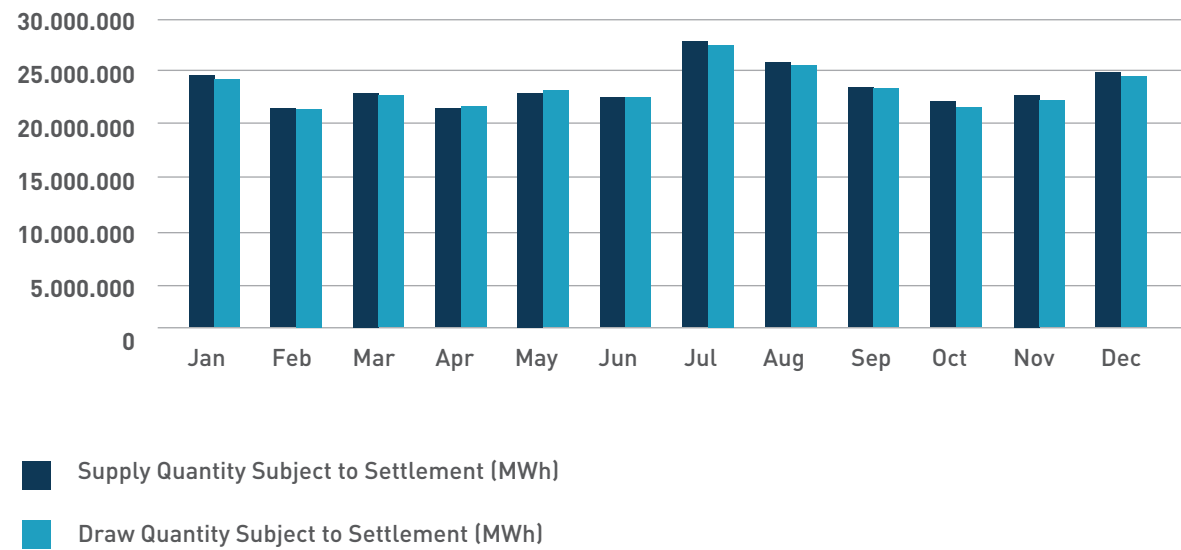
TRANSMISSION SYSTEM LOSS COEFFICIENTS IN 2018  
TSLC RATE [%]



Arithmetic averages of Transmission System Loss Coefficient (TSLC) in 2018 are shown in the table above.

## MONTHLY SUPPLY & DRAW QUANTITIES IN 2018

### SQSS – DQSS (MWh)



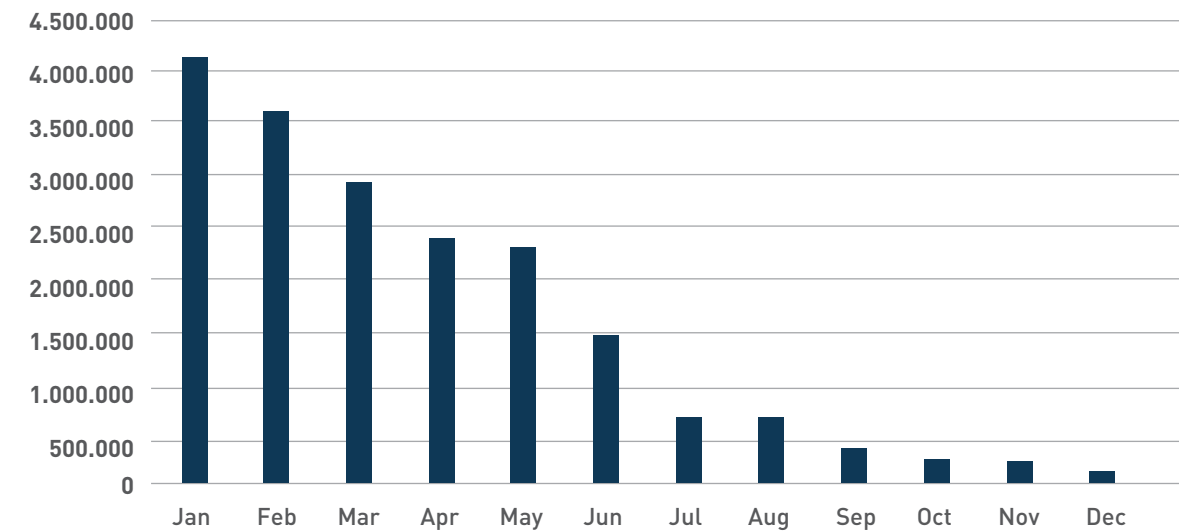
The table showing changes in the supply & draw quantities subject to settlement is given above.

## MONTHLY CHANGES OF ORGANIZATIONS, REGISTERED WITH EPIAŞ, IN 2018

PERIOD	DISTRIBUTION	DESIGNATED RETAIL	TRANSMISSION	ORGANIZED INDUSTRIAL ZONE PRODUCTION	SUPPLY	PRODUCTION	GRAND TOTAL
January	21	63	1	1	152	828	1.066
February	21	63	1	1	153	836	1.075
March	21	63	1	1	153	841	1.080
April	21	63	1	1	153	843	1.082
May	21	63	1	1	154	844	1.084
June	21	63	1	1	154	847	1.087
July	21	63	1	1	153	853	1.092
August	21	63	1	1	15	863	1.099
September	21	63	1	1	150	866	1.102
October	21	63	1	1	150	888	1.124
November	21	63	1	1	156	898	1.140
December	21	63	1	1	155	899	1.140

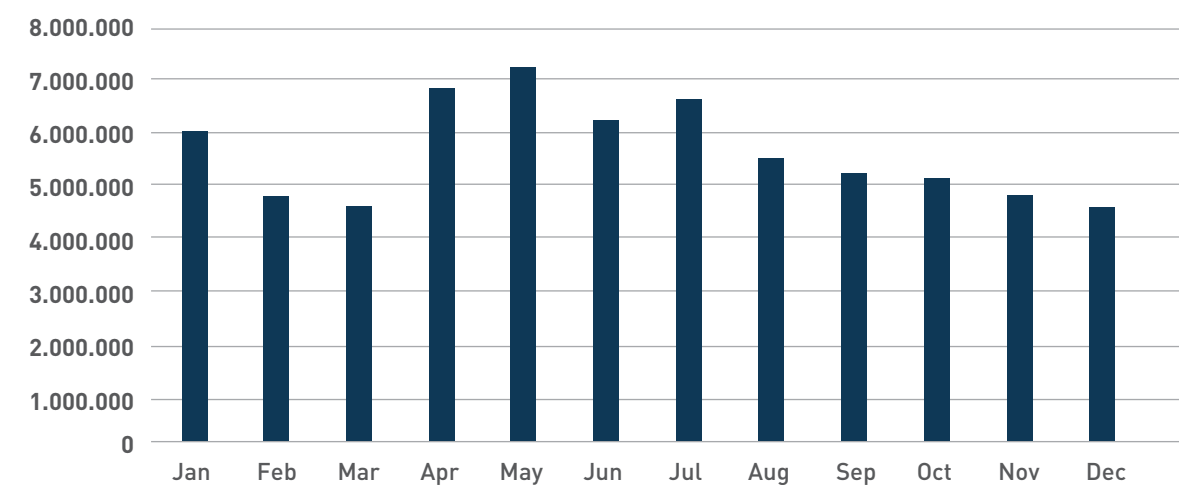
## NUMBER OF CONSUMERS EXERCISING THEIR ELIGIBLE CONSUMER RIGHT IN 2018

### NUMBER OF ECS



## CONSUMPTIONS BY THE CONSUMERS EXERCISING THEIR ELIGIBLE CONSUMER RIGHT

### EC TOTAL CONSUMPTION [MWH]





ELIGIBLE CONSUMER MOVES IN 2018

PERIOD	NEW EC	SUPPLIER CHANGE	DEPARTURE FROM PORTFOLIO
January	72.077	25.703	608.336
February	80.724	2.915	476.217
March	23.282	3.124	578.905
April	9.386	2.535	614.086
May	16.494	2.169	60.587
June	8.209	1.522	728.820
July	8.854	1.964	797.683
August	5.375	336	26.208
September	2.504	2.569	213.092
October	1.000	395	241.882
November	4.384	267	28.640
December	10.631	73	50.491
GRAND TOTAL	242.920	43.572	4.424.947



SPOT NATURAL GAS  
MARKET ACTIVITIES



EPİAŞ has, since its establishment, been carrying out its operations in line with the mission: to be an efficient, transparent, and reliable operator, and the vision: help Turkey become the regional energy trade hub. 2018 was a year of remarkable steps taken in the natural gas market in line with that vision. In particular, 2017 staged numerous developments including, among others, grant of an authorization to EPİAŞ for operating the OWNGM, publication of the Organized Wholesale Natural Gas Market (OWNGM), and publication of Market Operating Rules and Procedures (MORP). In the framework of such developments, steps taken along with the goal to start the market continued more intensively in 2018.

As there would be significant changes in the existing operations once the market is started, it became necessary to amend the legislation relating to the Transmission Company (BOTAS). Comprehensive studies performed in connection with the Rules for Transmission Network Operation Arrangements (NOA), and relevant changes were put into effect as from 8 March 2018. As the studies concerning legislative aspects were in progress, EPİAŞ also carried out studies with respect to the market-related software. The Continuous Trading Platform went live as from 1 April 2018 as anticipated.

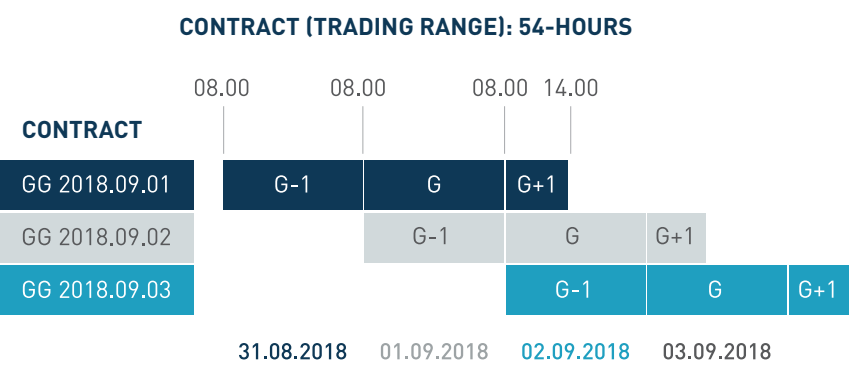
In the course of that process, all market participants had the chance to test the platform. In addition, a scenario-based simulation covering issues including seasonality and manipulability was also carried into effect with intensive participation of participants. As a result of trainings, simulations, and improvements spanning nearly 5 months, the Organized Wholesale Natural Gas Market, which can

be defined as a remarkable milestone in the energy trade of our country, was started in an opening ceremony with participation of the Minister of Energy and Natural Resources Fatih Dönmez, and made available to the sector as from 1 September 2018. Our market which has been carried into operation under the name Continuous Trading Platform (CTP) is the first organized market in the region.

The Continuous Trading Platform (CTP) is operated by EPİAŞ within the scope of natural gas market operations. A Daily Reference Price is determined using the weighted average of sale and purchase matching according to bids submitted by the market participants.

CTP operates in according to continuous trading approach. Transactions for the Gas Day G are performed within a 54-hour period starting at 08.00 hrs on G-1 and ending at 14.00 on G+1. Every day, transactions can be performed from 08.00 to 14.00 for the three gas days, and from 14.00 to 08.00 for the two gas days. The weighted average of total 48-hour transactions performed from 08.00 on day G-1 to 08.00 on day G-1 is used to determine the Daily Reference Price.

Dynamics of the market and agenda of the sector have changed upon introduction of the organized wholesale natural gas market. Question marks on minds disappeared, and new marked-based products have started to be talked about. In this scope, studies relating to products for the physical natural gas futures market have promptly started. Once the studies are completed, gas shippers will be able to trade on monthly, quarterly, semi-annual, and annual products on the platform to be created within EPİAŞ.



In addition to CTP operations intended to create a competitively, efficiently, reliably, and transparently organized natural gas market, EPİAŞ also continues the studies concerning improvement of the market.

CTP software was completed in 2018, and subjected to software enhancement and improvement based on deficiencies found and suggestions brought in the course of testing and simulation stage. Based on the sector feedbacks following market's going live, it is observed that the sector appreciated the CTP design and software.

OWNGM is a market operated on 24/7 basis. Following opening of the market on 1 September 2018, the functionality of Continuous Trading Platform has been monitored uninterruptedly through a shift system, and measures have been taken against any possible problems and failures, and the process has been smoothly managed without any problem. Questions, offers, and suggestions from the market participants have been taken into consideration diligently, and all requests have been satisfied in time. In line with such request, in order to prevent any possible material mistakes that may arise as a result of erroneous bid entries on CTP, improvements were made on administrator and user

screens, and the software was improved. Studies concerning improvement and enhancement of design and contents of CTP screens are underway.

The initial month of trades performed on OWNGM was over by the end of September, and initial month settlement was published in October according to deadline requirements of the applicable legislation. By the end of 2018, 3-month settlements were calculated, published settlement notices were made available to the participants for review, and then mutual invoicing process started. All these processes have been performed according to transparency and impartiality principles, and we received favorable feedbacks from our participants in terms of timeliness of trades, and accuracy of calculations.

Based on requests from the market participants, it became necessary to revise the MORP and NOA legislation. Relevant changes were made in a short period of time in coordination with the relevant authorities and institutions, submitted to EMRA for approval, approved by EMRA, and entered into force upon being published in the Official Journal.



ACTIVITIES RELATING TO PUBLICATION OF MARKET-RELATED DATA

In the scope of activities concerning data publication, the data regarding price formation and transactions performed are published on the transparency platform and user screens on the CTP with a view to ensuring liberality, transparency, and no discrimination among the parties.

On the CTP screens, relevant parameters, data, and details are displayed so that each shipper can see details of its bids, matches, advance payments, collaterals, settlements, and invoices, as well as perform its own calculation for and check

relevant calculations. On the transparency platform, on the other hand, general market data relating to trades on CTP, settlement data, and data relating to market-related operations of the Transmission Company are published.

In addition, in order to ensure communication with the market participants and prevent data asymmetry, CTP screens are actively used by posting “Announcements and Notices”.

REGISTERED ORGANIZATIONS BY LICENSE TYPES

43 organizations that operate under various licenses in the organized wholesale market completed their CTP registration for 2018, and 30 of those organizations performed trades on CTP. Distribution of registered organizations by the type of licenses held by them is as shown in the table below.

Transmission	1	organization
Export	1	organization
Wholesale	20	organization
Import	21	organization
Registered Organization	43	organization
Active Organization *	30	organization

\* Number of organizations that performed trades in the market.

BIDS AND MATCHES

In 2018, the active organizations submitted 8.361 bids in total [daily average: 68.5 bids]. Of such bids, 3.793 [45,4%] were for purchase and 4.568 [54,6%] were for sale.

45,6 of every 100 bids were matched, and 3.813 matches [daily average: 31,2 matches] took place by the end of the year. 10% of the matches were ‘partial matches’.

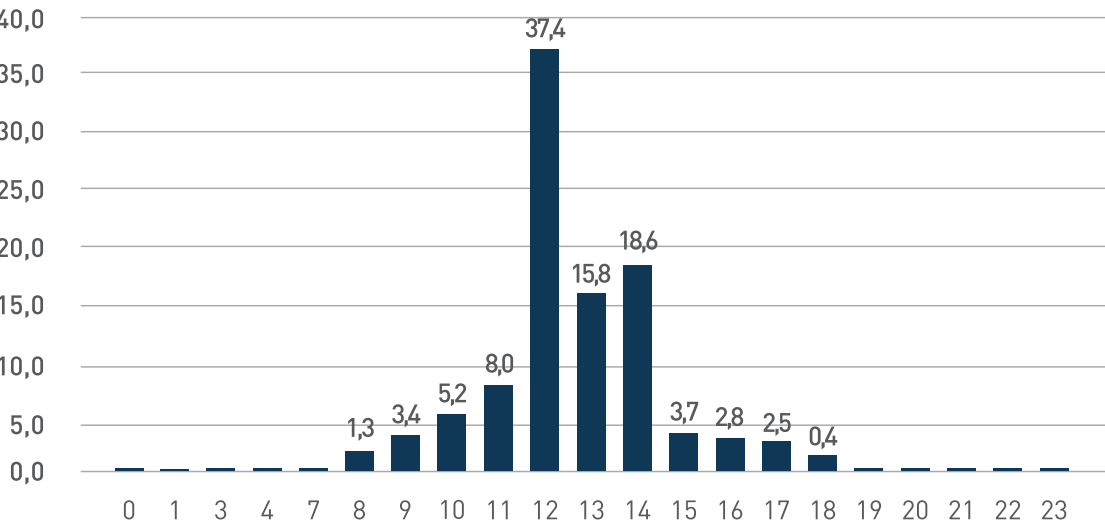
BID TYPE	SHARE	DAILY AVERAGE	TOTAL
Purchase	45,4%	31,1	3.793
Sale	54,6%	37,4	4.568
Total	100%	68,5	8.361

MATCHING STATUS	SHARE	DAILY AVERAGE	TOTAL
Partial	4,0%	2,7	334
Match	41,6%	28,5	3.479
No Match	54,4%	37,3	4.548
Total	100,0%	68,5	8.361

DISTRIBUTION OF HOURLY TRANSACTIONS

Hourly distribution of transactions (bids and matches) performed in the market is shown in the graphic below. 99,1% of all transactions performed between 08.00 and 18.00 hrs.

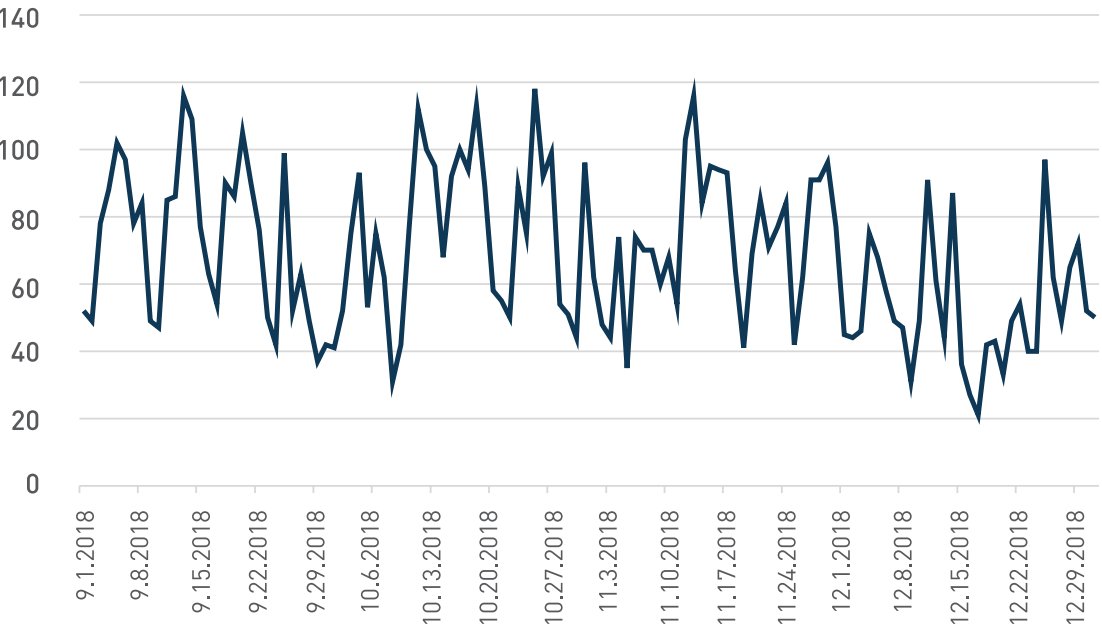
TRANSACTION SHARE (%)



DISTRIBUTION OF CONTRACT DISTRIBUTIONS

Daily distribution of transactions (bids and matches) performed in the market is shown in the graphic below.

NUMBER OF TRANSACTIONS (TRANSACTIONS)



DAILY REFERENCE PRICE CHANGES

As shown in the graphic below, in 2018, the highest DRP was recorded on September 3rd as TRY 1656,45 per 1000. Sm3 while the lowest DRP was recorded on November 4th as TRY 1303,33 per 1000.Sm3.

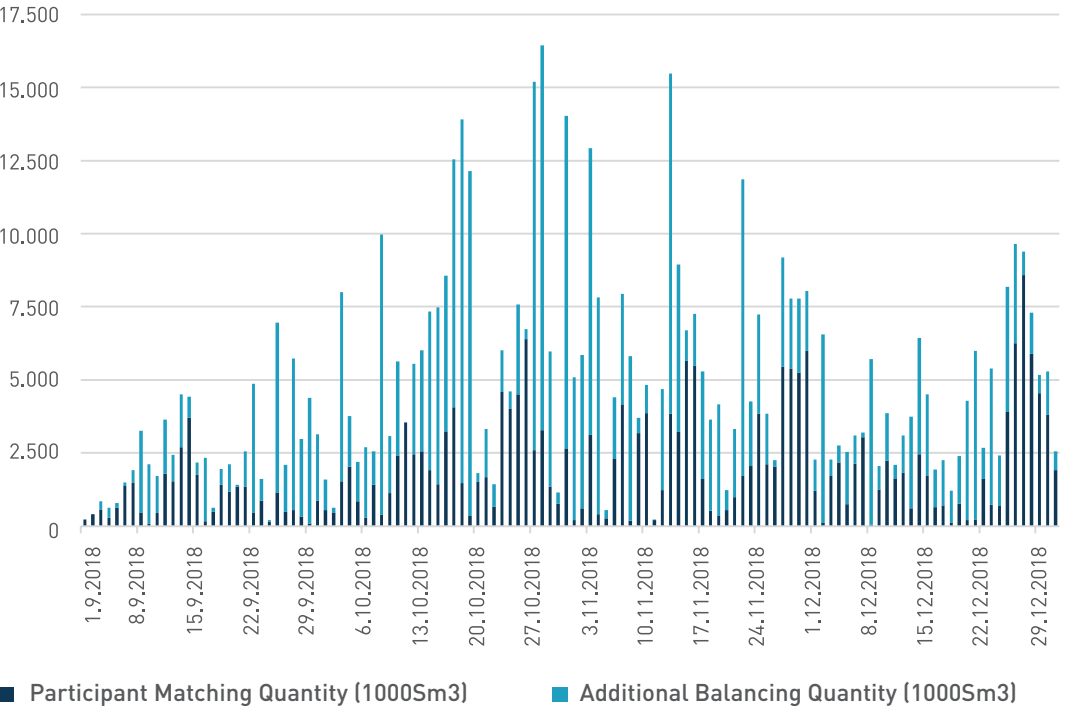
DRP CHANGES (TRY/1000.SM3)



DAILY MATCHING QUANTITY

60,8% [357,4 Million Sm3] of all Market Matching Quantities in 2018 [587,3 Million Sm3] resulted from Additional Balancing Transactions. The average daily Matching Quantity in the same period was 4,81 Sm3.

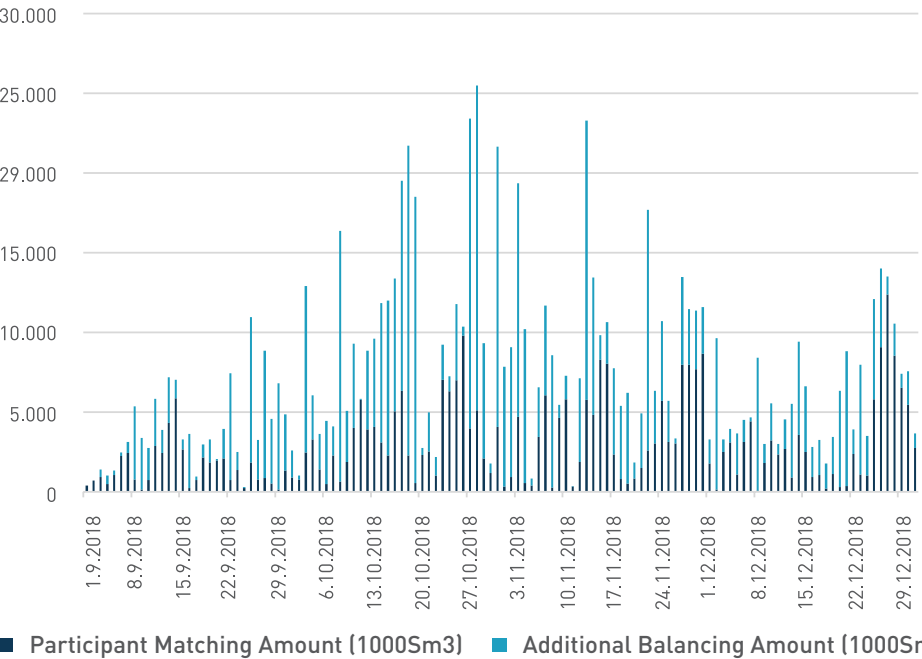
MATCHING QUANTITY (1000.SM3)



DAILY BALANCING AMOUNT

61,2% [TRY 544,5 Million] of all Market Matching Amounts in 2018 [TRY 890,1 Million] resulted from Additional Balancing Transactions. The average daily Matching Amount in the same period was TRY 7,29 Million.

MATCHING AMOUNT (TRY 1000)



# NATURAL GAS MARKET SETTLEMENT AND BALANCE ZEROING (BAST) DATA

Settlement of Market Operations and Imbalances was performed in four periods in 2018.

## SEPTEMBER SETTLEMENT

Invoices issued amounted to TRY 320.814.110,89 (including VAT). TRY 242.827,13 (including VAT) portion of that amount stands for EPIAŞ Operating Fee. The Balance Zeroing Amount (BAST) was TRY 1.145.485,60.

## OCTOBER SETTLEMENT

Invoices issued amounted to TRY 693.464.452,25 (including VAT). TRY 538.324,85 (including VAT) portion of that amount stands for EPIAŞ Operating Fee. The Balance Zeroing Amount (BAST) was TRY 433.045,17.

## NOVEMBER SETTLEMENT

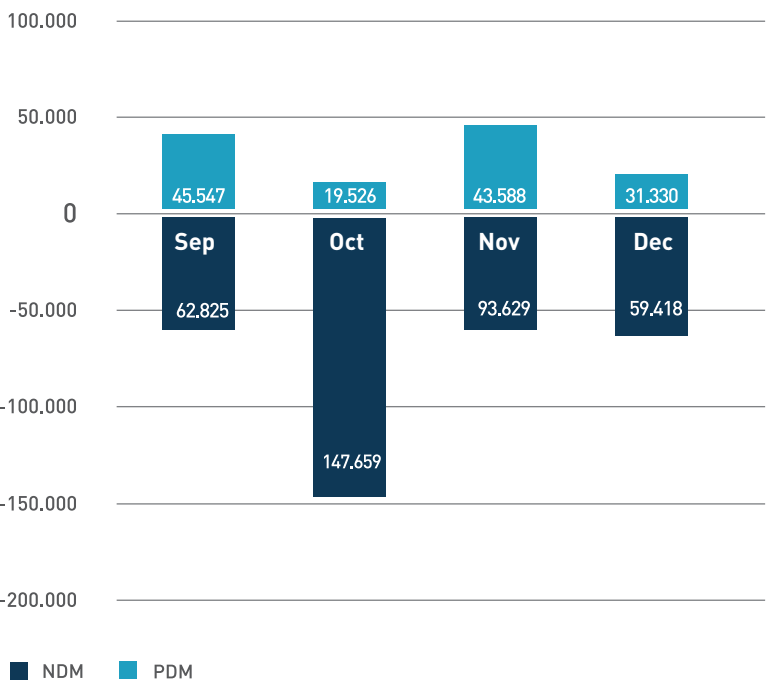
Invoices issued amounted to TRY 546.967.976,50 (including VAT). TRY 401.098,12 (including VAT) portion of that amount stands for EPIAŞ Operating Fee. The Balance Zeroing Amount (BAST) was TRY 652.984,33.

## DECEMBER SETTLEMENT

Invoices issued amounted to TRY 389.766.111,09 (including VAT). TRY 339.296,10 (including VAT) portion of that amount stands for EPIAŞ Operating Fee. The Balance Zeroing Amount (BAST) was TRY 299.110,77.

Imbalances in the natural gas market are settled by EPIAŞ. The graphic below shows the total negative imbalance quantities and positive imbalance quantities of all shippers in the applicable month. As can be understood from the graphic, the course of system was always negative by months, and the month with the highest negative imbalance quantity was October.

SHIPPER IMBALANCES (1000.SM3)



# STRATEGY DEVELOPMENT ACTIVITIES

Under Strategy Development studies, our company’s five-year strategic plan is regularly monitored and evaluated, and is updated on an annual basis. To this end, the 2016-2020 EPIAŞ strategic plan is updated to cover a five-year period, and accordingly it is revised as 2019-2023 strategic plan. In the scope of studies concerning preparation of the strategic plan, three internal stakeholders workshops and miscellaneous meetings were held with the top management, middle-level managers, and expert staff of our company, SWOT analyses were performed, and contributions from external stakeholders were ensured through surveys.

Our company’s mission, vision, corporate principles, goals and objectives were established in order to contribute to development of the energy sector by making long-term and macro-level plans for energy market operations, and ensure efficient distribution of resources based on strategic priorities.

As a result of 2019 – 2023 strategic plan studies, the 4 goals and 15 objectives listed below have been established, and the strategic plan was finalized and approved by our board of directors.

GOAL 1	Strengthen Sustainability and Predictability of Energy Markets
OBJECTIVE 1.1	Ensure continuous improvement of the Transparency Platform
OBJECTIVE 1.2	Improve participant satisfaction and regular communication channels
OBJECTIVE 1.3	Maintain system continuity and infrastructure service quality at high level
OBJECTIVE 1.4	Ensure functioning of the Market Surveillance System
GOAL 2	Develop New Products and Services in Energy Markets
OBJECTIVE 2.1	Establish Physical Delivery Electricity and Natural Gas Futures Markets
OBJECTIVE 2.2	Ensure participation of the demand-side in the Spot Electricity and Natural Gas Markets
OBJECTIVE 2.3	Prepare the road map for the Voluntary Green Certificate activities
OBJECTIVE 2.4	Update the existing Electricity Market Practices in line with new need using new technologies
GOAL 3	Increase Regional and Global Efficiency in Energy Markets
OBJECTIVE 3.1	Conduct regional energy market analyses, and carry out cooperation studies
OBJECTIVE 3.2	Participate in international events and organizations
GOAL 4	Strengthen the Institutional and Sector-specific Capacity
OBJECTIVE 4.1	Strengthen the Human Resources Management System
OBJECTIVE 4.2	Deploy Integrated Management Systems
OBJECTIVE 4.3	Improve employees’ satisfaction, competence, and sense of corporate belonging
OBJECTIVE 4.4	Increase reputation of the corporate brand
OBJECTIVE 4.5	Reduce the internal and external bureaucratic procedures to ensure faster and more effective decision-making

## MANAGEMENT SYSTEM ACTIVITIES

Activities relating to ISO 9001: 2015 Quality Management System, OHSAS 18001:2007 Occupational Health and Safety Management System, and ISO 10002:2014 Customer Satisfaction Management System were performed pursuant to provision of Sub-paragraph (h), Paragraph Three, Article 32 “Rights and obligations of the market operating license holder” of the Electricity Market Licensing Regulations which reads as follows: “The market operating license holder shall submit to the institution the certificates of conformity issued by a notified body accredited to the Turkish Accreditation Agency within twenty four months after grant of license.” Systems are kept up-to-date in accordance with the continuous development and improvement approach.

In the scope of activities relating to the ISO 9001 Quality Management System, ISO 10002 Customer Satisfaction Management System, and OHSAS 18001 Occupational Health and Safety Management System, internal audits

were conducted, improvement activities were performed, a management review meeting was held, an external audit was conducted as a result of which our company was certified to comply with the relevant standards on 1 June 2018. Accredited certificates have been submitted to EMRA, and published on EPIAŞ website.

Mid-year process performance evaluation studies were carried out in 2018, and a report was prepared as a result of such studies. Market-related processes and procedures were prepared and published upon opening of the Natural Gas Market. As a result of the integration studies carried out under the ISO 27001 Information Security Management System, relevant procedures relating to the Information Technologies Directorate were prepared, approved, and published.

Fourth of the transparency workshop which has been organized by EPIAŞ on an annual basis was held in Istanbul on 31.10.2018 with 125 participants. The workshop which was held with participation of representatives from EMRA, relevant public institutions and agencies, private sector, the consultant company, and sector associations was steamed live on our website thus enabling the relevant parties who could not participate to follow up the workshop. The topics discussed in the workshop -which was scheduled as a full-day even with three sessions- include “Setting up a Structure for the Failure & Maintenance Notices”, “Evaluation of Data Provided by the Private Sector”, “Transparency in the Natural Gas Market”, and “Evaluation of EPIAŞ and EMRA Data”. Topics discussed in the session relating to Setting up a Structure for the Failure & Maintenance Notices included studies performed on the matter by the European Union member countries, rules applicable to the failure and maintenance notices, setting up an inspection structure for the failure and maintenance notices, definition of market monitoring concepts, and designation of sanctions to be applied in case of manipulation and trade secrets, and identification of sanction mechanisms (legislation).

Results of the workshop, including activities performed during 2018 with respect to transparency, and data list update suggestions, were collected in the “2018 Transparency Report”, and submitted to EMRA.

## WORLD ENERGY COUNCIL TURKISH NATIONAL COMMITTEE COOPERATION ACTIVITIES



As a result of cooperation between our company and the World Energy Council (WEC) Turkish National Committee, of which EPIAŞ is a corporate member, it was decided WEC Activities would be conducted in Istanbul, and hosted by EPIAŞ. To this end, the first of WEB Workshop Istanbul Events, theme: “Energy Agenda in Turkey and the World”, was held by Deputy Minister of Energy and Natural Resources and WEB Chairman Alparслан Bayraktar. Workshops, which were open to all related parties, were held on 10 different topics relating to the energy-sector, including but not limited to future of energy, development of electricity and natural gas sectors, and electric vehicles, and total 430 participants participated in such workshops.

There were 50 participants in total in the electricity and natural gas markets trainings held in Ankara under EPIAŞ – WEB cooperation.

## ORGANIZATIONS

### TRANSPARENCY WORKSHOP





## INTERNATIONAL ACTIVITIES



### ALBANIA

On 10 December 2018, a meeting was held with representatives from the Albanian Transmission System (OST) in Istanbul. In the meeting, Turkey's energy sector, and activities, products, and services of EPIAŞ were explained, and future cooperation opportunities were considered. Representatives of both companies agreed on giving a legal status to the cooperation.

### GEORGIA

In the scope of studies intended to liberalize the energy market in Georgia, representatives from the Georgian Market Operator (ESCO) and Georgian National Energy and Water Supply Regulatory Commission (GNERC) visited our company from 18 to 19 October 2018 to get information about the liberalization process of the Turkish energy market and current structure and functioning of the market, as well as discuss possible cooperation issues between the two countries.

In the first day of the event, following the presentation made by the Georgian Market Operator ESCO on the Georgian Energy and Electricity Market, a number of subsequent presentations were made on the Turkish Energy and Electricity Market, day-ahead and intraday markets operated by EPIAŞ, the settlement procedures, the transparency

platform, and IT solutions developed by EPIAŞ for running the market. In the second day of the event, information was given about liberalization process of the electricity market in Turkey, duties and responsibilities of EMRA, and operations of TEİAŞ. The main topics which were discussed included cross-border electricity trading, capacity allocation, market integration, and the DAM and IDM software developed by EPIAŞ.

Following the event held in our company from 18 to 19 October 2018, representatives from the Georgian Ministry of Energy and Georgian Market Operator (ESCO) visited EPIAŞ on November 19.

### BULGARIA

Our representatives made a return visit to Independent Bulgarian Energy Exchange – IBEX) and Bulgarian Energy and Water Regulation Commission (EWRC) on 27 April 2018. In the meetings, EPIAŞ and IBEX agreed to sign a goodwill agreement, and studies regarding that agreement are still under progress.



## PAKISTANI MARKET OPERATOR (CPPA-G, CENTRAL POWER PURCHASING AUTHORITY)

Studies and activities which have been carried out for a long time under the existing agreement between the Pakistani Market Operator CPPA-G and EPIAŞ still continue. Under such studies, there has been exchange of opinions on different occasions, and training and organizational activities have been carried out.

Representatives from the Information Technologies and Strategy & Market Development units of the Pakistani Market Operator (CPPA-G) visited our company from 11 to 13 April 2018. In the meetings, we shared information about software and applications developed and used by EPIAŞ for the Organized Wholesale Spot Electricity Markets. During the visit, the mechanisms, policies, and strategies adopted in the fields of Information Technologies infrastructure, software development, R&D, and project development were also

discussed. EPIAŞ participated, as a regulator, in the electricity market professionals (EMP) certified training program which was held in Pakistan from 17 to 22 July 2018. Our Company's Strategy Development Director Mr. Avni Çebi and Head of Business Development Sub-Department Mr. Hasan Silahtaroglu participated in said training program as trainers. In the event in which many electricity market stakeholders participated, trainings were delivered on a number of topics, including structures of electricity markets in various countries, the electricity production technologies, build-operate-transfer models, and electricity legislation.

In two sessions in the program, representatives of our Company provided a general picture of the Turkish electricity market, and shared details about electricity market liberalization process and experiences in Turkey.

## EUROPEX WORKING GROUP ACTIVITIES

Europex is a union of European energy exchanges with 26 members. Europex aims to support the exchange-traded wholesale electricity, natural gas markets, and environmental markets according to a market-based approach, protect interests of such markets in order to ensure their development, focus on improvement of the European legislation concerning wholesale energy trading, and establish a negotiation platform at the European level. Its duties also include holding negotiations with respect to electricity, natural gas, and environmental markets with the European Union regulatory authorities (such as the European Commission, the European Parliament, the European

Council, ESMA, ACER) and other related institutions (such as ENTSO-E, ENTSO-G, EFET, AIB, Eurelectric). EUROPEX carries out operations with four working groups: "Electricity Markets", "Natural Gas Markets", "Environmental Markets", and "Financial Markets & Transparency". Our company participates in activities of such groups, and follows up developments in relevant markets closely. The Environmental Markets Working Group of EUROPEX has been chaired by Our Company's Legislation and Compliance Manager, Mrs. Derya Erbay in 2018-2019.

## MARKET SURVEILLANCE AND AUDIT ACTIVITIES

Market surveillance activities are being carried out to ensure that transactions performed in markets operated by EPIAŞ are reliable, transparent, efficient, and competitive, and that any extraordinary transactions, prices, and similar market trends are reported. Within this framework, the collateral system which secures credits of participants trading in the market is followed up on a daily basis, and performance of the collateral system is measured based on the designated performance criteria and reported to relevant units. During the operating period, solution suggestions were offered based on results obtained, and studies intended to improve and develop the collateral system were supported.

The monthly market report, which is shared with the concerned units of the company during the operating period, contains detailed general market data, an analysis of the collateral system, as well as detailed data relating to transactions performed through Bilateral Contracts, Day-Ahead Market (DAM), Intraday Market (IM), Balancing Power Market (BPM), and Futures & Options Market (VIOP). Natural gas data consisting of data and analyses relating to the natural gas market which was started on 1 September 2018 were also included in the Daily Market Report.

Under daily surveillance activities, a Daily Market Bulletin intended to explain dynamics that led to price change is also shared within the company after announcement of the MCP (Market Clearing Price). In addition, any instant extraordinary market conditions, including price and quantity movements, are reported to the top management. It is expected that the Daily and Monthly Market Reports which are being prepared, including analysis sheets prepared within the company, will lay the foundations for a sustainable market surveillance and reporting system complying with international standards which has been started to be established.

EPIAŞ has also taken part in the studies under market surveillance chapter of IPA (Instrument for Pre-accession Assistance), a project co-executed by our company and intended to ensure efficient transfer of sources to candidate and potential candidate countries by the European Union.

Under legislation studies, a draft was prepared for market surveillance activities, and studies intended to extend scope of that draft to cover other markets to be operated are under progress.

Company activities have been audited with risk-based approach based on international audit standards and best practices to provide independent and objective assurance to stakeholders by evaluating the effectiveness of risk management, control environment and governance practices. As a requirement of the risk-based audit approach, the areas that can be audited have been evaluated in line with the set of criteria and prominent processes have been included in the audit plan. Audit activities have been carried out within this scope, as well as the follow-up of the findings of the past audit activities also have been carried out.

Independent audit activities carried out in the Company have been supervised and coordinated in order to have proper conditions for effective and efficient audit activity. Internal audit activities and audit findings have been reported to Audit and Compliance Committee, which had been gathered four times during the year. The findings and suggestions have been shared with related departments in order to improve company's processes and activities.

# INFORMATION TECHNOLOGIES ACTIVITIES

## SOFTWARE DEVELOPMENT STUDIES

### NATURAL GAS CONTINUOUS TRADING PLATFORM (CTP)

The Turkish natural gas organized wholesale market's design and the market functions were established from scratch. The platform that features external integrations, an infrastructure that enables high accessibility, and a collateral, settlement, and continuous matching engine has been made available to the market participants in a very short period of time. It has come into effect as a pioneering project that led to significant innovations within EPIAŞ with its micro-service infrastructure.

### TEİAŞ – EPIAŞ INTEGRATION (TEİAŞ MARKET MANAGEMENT SYSTEM - TMMS)

Based on a project developed by EPIAŞ, the screens used by TEİAŞ NLDC (National Load Distribution System) on the EPIAŞ system have been incorporated into the TEİAŞ system. As the data produced by that system are used for EPIAŞ operations, and as TMMS needs the data available on EPIAŞ market systems, those two systems were integrated, thus enabling communication of data to TEİAŞ.

### SERVICE CENTRALIZATION

This platform is intended to be used as a central web service management tool. And as a pilot application, the Transparency Platform web services have started to be offered. Web services of Market Management Systems used by market participants have been moved on that platform, and are in testing process.

### NEW FEATURES OF THE DAY-AHEAD MARKET

Bid types: New bid types are planned to be included in addition to existing bid types.

Multi-zone: The system which allowed single-zone bids and pricing has been rearranged to support multiple zones based on zone-specific constraints.

### TRANSPARENCY PLATFORM EXTERNAL INSTITUTION INTEGRATION PROGRAM

Existing transparency platform data cover the data produced on EPIAŞ systems. At this point, in line with the objectives established in the workshop, data integration studies for the Petroleum Pipeline Corporation (BOTAS), Turkish Electricity Transmission Corporation (TEİAŞ), and State Hydraulic Works (DSİ) were completed under different projects for each of those individual institutions under 5 chapters as follows:

TEİAŞ Data Integration

BOTAS Data Integration

DSİ Data Integration

Production of Central Market Message (Maintenance, Failure, Market Messages)

Transparency Platform Image Renewal

### AMRS SYSTEM RENEWED

Infrastructure and web services of the Automatic Meter Reading System have been renewed.

### BALANCING & SETTLEMENT REGULATION UPDATES (SETTLEMENT & FSPPCP & RAI)

Within the framework of amendments to the BSR, developments have been made on the Finalized Daily Production Plan (FDPP), Retroactive Adjustment Item (RAI), and settlement modules.

### APPLICATION PERFORMANCE MONITORING

Performance problems detected on the applications or any alarms suspected of leading to a performance problem are solved and a continuous improvement cycle is ensured through regular monitoring using the monitoring tools designed as a platform where application performance metrics are followed.

### PARTICIPATION IN INTERNATIONAL CONFERENCES AND SEMINARS AS SPEAKER

In the course of realization of both the natural gas and DAM Multi-zone Project, platforms that are scientifically innovative and feature high-level R&D were created. In this scope, Technology & Innovation Grant Program Directorate (TIGPD)'s scientific R&D grants were approved for both projects. Articles were produced and submitted to the most prestigious international conferences. We participated in one of the most important software architecture conference of our country, and presented an article under the natural gas project.

Conferences we participated in under the Natural Gas Project:

12th National Software Engineering Symposium

QRS 2018 The 18th International Conference on Software Quality, Reliability, and Security, Lisbon, Portugal July 16-20, 2018

Articles relating to two different algorithms developed under the DAM Multi-zone Project were submitted to and approved by European Energy Market (EEM) 2018, one of Europe's long-established international conferences. Relevant articles:

A Generic Algorithm to Solve Day-Ahead Energy Market Clearing Problem under Network Constraints

An Adaptive Tabu Search Algorithm for Market Clearing Problem in Turkish Day-Ahead Market

In addition, our optimization team participated in a conference in Lodz, Poland in the last week of June 2018, and presented their articles in that conference.



### ISO 9001:2015

An Application Development Procedure was approved and has been put into practice for the Software Development Department in order to consolidate the quality standards, and ensure their widespread implementation within the organization.

### IMPROVEMENTS ON THE EXISTING DAY-AHEAD MARKET OPTIMIZATION ENGINE

Within the framework of amendments to the rules and procedures for the structure and evaluation of day-ahead market bids, which were put into force as from November 2018, a change has been made on calculation of the basic bid price of the block bids linked with each other on the day-ahead market optimization engine. In addition, pursuant to amendments to the rules and procedures for the structure and evaluation of day-ahead market bids, and the Electricity Market Balancing and Settlement Regulation, which have been offered as a final solution as a result of joint studies with EMRA and have been opened for discussions, the DAM optimization engine has been made ready for the change to be made on the calculation method of the matching prices of interlinked block bids. In addition, optimization engine

solving time performance improvements were performed both through improvements on the optimization model and the renewal of the CPLEX solver version. In 2018, the optimization motor had the capacity to perform average 124 supply block bids, 32 demand block bids, and 23 supply flexible bids, on average on a daily basis, with 409.000 MWh matching rate in just 2.8 minutes. It is aimed to improve solving times through software developments being carried within the framework of the optimization software and intended to be put into operation by 2019.

### IMPROVEMENTS ON THE DAY-AHEAD MARKET MULTI-ZONE AND NEW BID TYPES OPTIMIZATION ENGINE

With the domestic day-ahead market software which was put into operation as from 1 June 2016, a brand new optimization engine which can take into account profile-flexible / block bid structures and the network constraints was developed from scratch in order to meet needs of market participants and ensure more effective running of the system. With that engine which was developed, one of the most important aspects of Turkey's goal to integrate markets in neighboring countries in line with the goal to be the energy base of the region was achieved. In addition, the engine which was developed also meets what is required for the market

disintegration process which might be effected in order to ensure effective management of any domestic capacity constraints. The engine which was developed is designed and developed with such a capacity that enables the engine to evaluate the market clearing problems of Turkey with side payment and Europe without side payment. In addition, in order to perform impact analyses and stress tests for the engine which was developed, two different simulation tools were developed, and relevant analyses/tests were completed in this connection.



### COMPLIANCE WITH THE LAW ON PROTECTION OF PERSONAL DATA

Given the fact that the data are intensively in motion today, rules and regulations on protection of personal data which are defined under the GDPR (General Data Protection Regulation) in Europe and the Personal Data Protection legislation in Turkey are considered to be one of the most effective regulations on protection of personal data. In 2018, EPIAŞ implemented a Project for Compliance with the Law on Protection of Personal Data (LPPD) in order to ensure compliance with the LPPD and relevant legislation.

Studies carried out under the project included examination of processes, examination of applicable legislation and laws, data classification, preparation of personal data inventory, review of agreements entered into with stakeholders, identification of technologies to be used, etc. With that project, it is aimed to minimize the risks attributable to the legislation.

With the studies carried out under the project, it was aimed to ensure compliance with the LPPD, take measures with respect to any possible sanctions (fines and imprisonment), and improve our processes against any possible personal data leaks, thus preventing any loss of reputation.

### DATA LEAKAGE PREVENTION (DLP) PROJECT

Data, either on the notebooks, external hard drives, physical or virtual servers, or user PCs, are in transit more than ever before. Financial data, customer data, intellectual property rights or trade secrets can get lost or stolen anytime. It is necessary to ensure security of data against such increasing risks.

The rapidly changing legislation, compliance regulations and requirements, the continuous increase in the labor force in transit, the increase in occurrence of Advanced Persistent Threats (APTs) and data breach events are clear indications of the necessity to take measures to that effect.

In order to avoid any data leakage problems and a possible loss of company reputation, a DLP (Data Leakage Prevention) Project was implemented to ensure that the sensitive data can be detected, followed up, and secured without affecting efficiency and performance of the employees.

BUSINESS ANALYSIS STUDIES

The “Market Management System” (MMS) which was started to be developed by TEİAŞ in 2008 to operate the electricity markets and which is still used was decided to be redeveloped by EPIAŞ. To this end, current status analyses were performed for the Settlement Module, Eligible Consumer Module, Collateral Module, and Registration Module available on the existing MMS, as a result of functional and nonfunctional features of the system, including market demands which the system was capable of meeting, were identified.

Development studies for the EPIAŞ Market Management System (EMMS) Project started in order to renew the existing system in line with current software technologies to satisfy the market demands which the existing system was capable of meeting, as well as new market demands (such as Multi-zone Compatibility, Parametrically identifiable settlement periods) which will arise in the future. Under the EMMS Project, analysis studies started in order to identify capabilities of the new system that is compatible with the multi-zone concept, and that is capable of performing settlements at such periods to be set parametrically (settlement periods that may be under 1 hour). Studies relating to the Settlement Module, Eligible Consumer Module, Collateral and Registration Modules to be incorporated into the new system are about to be completed.

Under analysis studies for the Organized Wholesale Natural Gas Market (Continuous Trading Platform) Project, we also started analysis studies for the Collateral Module in addition to the Registration, Market, Settlement, and Advance operations which were completed in 2017. Under all those analysis processes, analysis processes for integration of systems of the Settlement and Custody Bank (TAKASBANK)

and BOTAŞ with applications such as EPIAŞ Transparency Platform and EPIAŞ Identity Management System (EIMS) were also completed. Accordingly, all analysis studies of the project are completed on an end-to-end basis.

Under second phase of domestic day-ahead market: “rules and procedures for the structure and evaluation of day-ahead market bids”, we carried out analysis studies as required to introduce new bid types into the day-ahead market, and to ensure that the day-ahead market is compatible with the multi-zone infrastructure. In addition, our studies intended to ensure integration of other applications (i.e. Transparency, BPMMS, EIMS, RAPOREPIAŞ, Business Intelligence) with the spot electricity market operated by our company are still under progress.

Analysis studies were performed in order to exclude any market abuse activities under the “Balancing and Settlement Regulation” and “Procedure on Non-covered Market Transactions”. Such studies were handled under 3 different groups as: control of day-ahead market bids and bilateral contract notices and identification of and sanctions for the Non-covered Market Transactions. This extensive study started with an impact analysis for all applications which were currently used by EPIAŞ, and the detailed requirements analysis process was completed by including external stakeholders like the Settlement and Custody Bank (Takasbank) into the process.

CORPORATE DATA WAREHOUSE PROJECT

EPIAŞ Corporate Data Warehouse and Business Intelligence Portal has been made available as of 20 June 2018. In the course of the project which lasted 6 months, data integration, datamart, and reporting layer developments were performed. All reports in the reporting layer were renewed upon deployment of the Data Warehouse which was developed as a three-layer warehouse (Staging, DWH Modeling, Datamart).

Following outcomes were ensured as a result of that project:

- Reporting system has been completely separated from the market application systems database.
- Transition into access based on data ownership by ensuring access to Business Intelligence Portal System through LDAP.
- Connecting from a common point to systems with different structures through data integration layer; developments; monitoring; and management of running times.
- A data warehouse model was designed, establishing a comprehensible, expandable, and performance-based structure.
- Extraction of reliable and single version of truth was ensured on a common structure through data quality filtering
- Datamarts were established, ensuring that the required business data are accessible in a collective and fast way.
- Ready data sets were established for data analysis and analytic studies.

NATURAL GAS DATA WAREHOUSE PROJECT

Under our Corporate Data Warehouse project, studies intended to ensure that the data from the natural gas market which started as from September 2018 were transferred to our Data Warehouse were completed. The project which started on July 2018 was made available to the business unit on 5 October 2018 in a 3-month period.

Upon commissioning of the project:

Extraction of reports on an operational system is prevented, and impacts of analytic operations on the system performance are prevented;

Dashboards required for monitoring of market transactions and production of reports which the business units could not extract on the application systems have been incorporated;

An interface was created to enable the employees to produce any desired dynamic-content reports on the created data model.



## CORPORATE ARCHITECTURE STUDIES

- Developments concerning the EXIST Service Management Platform were completed under EPIAŞ “Digital Transformation Project”.

- Request, Issue, Problem, Change, Demand, Project and Portfolio, Configuration Management modules have been put into operation under IT Management process. Software unit’s request and issue management processes have been put into operation on the platform. Under the project which started as an ITSM tool, integration of Software Development Life Cycle steps was completed. EPIAŞ workflows designed in printed form have been transformed into digital version.

- In 2018, more than 1000 issue records and more than 4600 request records were handled on the EXIST Service Management Platform.

- 26 of the forms requested by departments other than the Information Technologies Directorate (Support, Human Resources, Corporate Communication, Research and Development) were developed and put into effect through sources of the Corporate Architecture Department.

- Under the Contract Management Module on the EXIST Service Management Platform, total 116 Information Technologies contracts were digitalized.

- 11 Information Technologies procedures as required under the Quality Management System were prepared, submitted for approval, and then published.

- Information technologies procurement for the EPIAŞ mobile application.

- With participation of all EPIAŞ Directorates, Information Technologies Development Plan and Master Plan were prepared, and an Information Technologies budget was created.

- We prepared a Data Architecture Policy which will ensure preparation of business and technical data with a view to identify company data and data owners, rate criticality and confidentiality levels, and establish access authorization and constraint rules. In 2019, scope of the policy will be extended, and the policy will be updated to cover non-structural data, as well.

## IT INFRASTRUCTURE STUDIES

In 2018, under the “Business Continuity” project, all EPIAŞ market services have started to run through our main data center with full backup in the Disaster Recovery Center. In addition, the server infrastructure used for the new market applications / services in the main data center was renewed as a scalable solution in line with the increasing needs. Backup equipments covering all EPIAŞ applications were procured, and daily backup policies were updated.

We transformed our Data Center communication infrastructure according to a new VLAN structure, thus ensuring a controlled and reliable accessibility to the systems. We integrated a 802.1x identity management system, which provides network access control, and increased the number of monitoring tools for the wired and wireless network connections in order to control the users, ensure monitoring, and establish a solid and secure communication. The infrastructure for the interinstitutional KAMUNET system, which ensures communication through a secure virtual network with no internet connection, was deployed, and EPIAŞ has been included in that network.





INVESTMENTS AND SIGNIFICANT ACQUISITIONS

A greater part of the investments made within 2018 were comprised of building investments. Among the investment items, R&D investments increased compared to previous year.

The following table lists investments made by the Company in 2018 accounting period in comparison with the investments made in previous year.

INVESTMENTS	INVESTMENT AMOUNTS FOR 2017 (TRY)	INVESTMENT AMOUNTS FOR 2018 (TRY)	SHARE IN TOTAL INVESTMENTS IN 2018 (%)
Building Investments	0	135.068.651	83.85
R&D Investments	10.381.60	15.570.604	9.67
Ongoing Investments <ul style="list-style-type: none"><li>• Other investments</li></ul>	00	6.589.2876.589.287	4.09
Fixtures Investments <ul style="list-style-type: none"><li>• IT Investments</li><li>• Other Investments</li></ul>	3.921.2883.792.133129.155	2.801.3802.431.375370.005	1.74
License Investments <ul style="list-style-type: none"><li>• IT Investments</li><li>• Licenses</li></ul>	1.906.8371.898.3568.481	485.496464.03121.465	0.30
Software Investments <ul style="list-style-type: none"><li>• IT Investments</li><li>• Accounting Software and Software Licenses</li><li>• Other Software</li></ul>	1.492.5181.479.34813.1700	381.740143.34023.400215.00	0.24
Leasehold Improvements <ul style="list-style-type: none"><li>• IT Investments</li><li>• Other Investments</li></ul>	186.355183.2633.092	176.2160176.216	0.11
TOTAL	17.888.603	161.073.374	100,00



IN 2018:

Although building investments amounted to TRY 135.068.651 as of date of balance sheet, investments intended to make the building suitable for use continued by the end of 2018.

R&D Investments amounted to TRY 15.570.604 in total.

The ongoing investments, which consist of investments made for refurbishment of the new building, amounted to TRY 6.589.287.

Fixtures investments amounted to TRY 2.801.380 in total, of which TRY 2.431.375 was spent for IT investments, and the remaining TRY 370.005 was spent for other investments.

License investments amounted to TRY 485.496 in total, of which TRY 464.031 was spent for IT investments and remaining TRY 21.465 was spent for other licenses.

Software investments amounted to TRY 381.740, of which TRY 143.340 was spent for IT investments, TRY 23.400 was spent for accounting software and software licenses, and remaining TRY 215.000 was spent for other software.

Leasehold improvements amounted to TRY 176.216.



# ACCOUNTING AND FINANCE ACTIVITIES

Accounting system infrastructure required for performance of the accounting operations in an effective and efficient way was built in line with the strategic goals of EPIAŞ as per the provisions of the applicable regulations. Security and functionality of the system is continuously controlled and, if required, updated.

EPIAŞ obtained the market operating license on 01.09.2015. Since then it has been performing financial settlement of the operations in the markets as well as other financial procedures relating to such operations according to the Electricity Market Law No. 6446 and Electricity Market Balancing Settlement Regulation.

Daily advance collections and payments are made in connection with Intraday market and Day-Ahead market operations, and total advances collected and paid from 01.01.2018 to 31.12.2018 amounted to TRY 33.590.247.987,58.

In addition to the electricity market operating activities, EPIAŞ has also started to operate the natural gas market since 01.09.2018 after obtaining a natural gas operating license on 09.03.2017. Financial settlement of operations performed in that market and other financial procedures relating to such operations continue to be performed according to the Natural Gas Market Law No. 4646, the Organized Wholesale Natural Gas Market Regulation, and the Market Operating Rules and Procedures.

Daily advance collections and payments are made in connection with natural gas market operations, and total advances collected and paid from 01.01.2018 to 31.12.2018 amounted to TRY 737.761.705, 75.

Under market management operations, EPIAŞ also perform acceptance,maintenance,return and compensation of letters of guarantee submitted by the market participants to EPIAŞ. In this context:

- During 2018, 213 letters of guarantee for the electricity market with a total sum of TRY 559.889.741,52 were returned (no return realized in natural gas market) while total 355 letters of guarantee (TRY 1.288.828.802,70) were received, of which 317 (TRY 1.205.748.802,709) were for the electricity market and 38 (TRY 83.080.000) were for natural gas market.
- There were 696 letters of guarantee with a total sum of TRY 703.485.882,49 as of 31.12.2017 while total 838 (TRY 1.432.414.943,67) letters of guarantee were retained as of 31.12.2018, of which 800 (TRY 1.349.334.943,67) were for the electricity market and 38 (TRY 83.080.000) were for the natural gas market. This shows a 21% increase as per the number and 100% increase as per the sum of letters of guarantees.

## SUMMARY OF LETTERS OF GUARANTEE AS OF 31.12.2018 (ELECTRICITY MARKET)

Total Amount of Letters of Guarantee , Available (TRY)	1.349.334.943,67
Total Number of Letters of Guarantee , Available	800
Number of Participants whose Letters of Guarantee is being held by EPIAŞ	475

## SUMMARY OF LETTERS OF GUARANTEE AS OF 31.12.2018 (NATURAL GAS MARKET)

Total Amount of Letters of Guarantee , Available (TRY)	83.080.000,00
Total Number of Letters of Guarantee , Available	38
Number of Participants whose Letters of Guarantee is being held by EPIAŞ	28

## SUMMARY OF LETTERS OF GUARANTEE AS OF 31.12.2018 (ELECTRICITY & NATURAL GAS MARKET)

Total Amount of Letters of Guarantee , Available (TRY)	1.432.414.943,67
Total Number of Letters of Guarantee , Available	838



As per the contracts made by the the market participants with the financial institutions ( contract for assignment of receivables), assignment, control and payment procedures are performed with respect to assignment of receviabls with our company. In this context, there had been total 423 assignment agreements with a total sum of TRY 249.235.225.365,94 defined with the system of the Settlement and Custody Bank (Takasbank) system as of the end of 2017, while the number of such assignment increased up to 560 in number with sum of TRY 371.343.989.771,23 as of the end of 2018.

TABLE FOR ASSIGNMENT AGREEMENTS AS OF 31.12.2018 (ELECTRICITY MARKET)	
Number of Assignments subject to Daily Payment	500
Number of Assignments subject to Monthly Payment	60
Total Number of Assignments Defined	560
Total Amount of Assignment Agreements (TRY)	371.343.989.771,23

Improvement and development studies for the accounting infrastructure and system -which was established in 2015 in order to ensure problem-free performance of operations both the general accounting operations and the operations in the electricity and natural gas markets, avoid any sufferings by the market participants, ensure fast, effective and easy performance of such operations- continued in 2018 as was the case in previous years. In this context:

- The e-Invoice, e-Archive, e-Declaration, e-Book and e-Notice applications, which are among e-Transformation applications of the Ministry of Finance, are being used.
- With the integrated accounting program, BA-BS and current account settlement forms of companies are automatically sent to e-mail addresses of the market participants.
- Under the Fund Management Directive, company’s cash funds are managed under the principle of risk distribution and high-yield basis.
- “Collective Payment System” (CPS) continued to be used via the data processing infrastructure of the banks to make payments faster and more effectively.
- In order to ensure effective and efficient management of company funds, the EPIAŞ budget was prepared for 2018 and adhered diligently to budget discipline. Planning concerning budget for the subsequent year starts by August of every current year,and draft budget studies are completed by November . Budget realizations are reported to the General Manager monthly and to the Board of Directors quarterly (every 3-months).
- After the revenue cap for the market operating fees for 2019 was determined by EMRA, the budget for 2019 was prepared based on the budget realizations in 2018.



CORPORATE COMMUNICATION ACTIVITIES

In 2018, we continued the Corporate Communication Activities to promote our company at national and international level and ensure communication with the media, as well as reinforce our corporate image and prestige in accordance with our vision. To this end, we organized activities, events, and sponsorships for the target groups both in and out of the company.

In the scope of the corporate communication activities, we performed studies concerning routine content management of the corporate website and social media accounts during 2018. Accordingly, activities concerning EPIAŞ were posted on our corporate website [www.epias.com.tr](http://www.epias.com.tr), [www.epias.com.tr/en/](http://www.epias.com.tr/en/), as well as on EPIAŞ Twitter, Linked-in, YouTube, and Instagram accounts: @epiastr, @borsaenerjiEN. We also performed studies concerning relationship management and supervision.

News made available to us by the media monitoring services provider are compiled, and a daily news bulletin is prepared in designated form, and communicated within the company by e-mail on a daily basis. Furthermore, announcements and news reports are prepared for the events and communicated to the related parties. Total 1342 news were published about EPIAŞ by the local and national media from 01.01.2018 to 31.12.2018.

In October, our company organized the event named ‘WEC Istanbul Talks’ in cooperation with the World Energy Council (WEC) Turkish National Committee. The event was opened

with keynote speech of Deputy Minister of Energy and Natural Resources Mr. Alparslan Bayraktar on the “Energy Agenda in Turkey and the World”, and prominent names of the energy sector delivered speeches under various topics including “electric vehicles, the strategy of Turkish electricity and natural gas markets, etc.”

We organize “Energetic Talks” with a wide range of topics from education to technology, literature, art, and energy management sciences in order to refresh our minds in the intensive pace of life and business, have a more meaningful and rich perspective of life, and contribute to our corporate culture.

Processes concerning design and implementation of all items of the Corporate Identity Guide were performed. We actively used media and social media channels in order to enhance the efficient, transparent, and reliable energy exchange image.

Organizational preparations concerning events or sponsored by EPIAŞ are conducted by the Corporate Communication Sub-department. Corporate Communication Sub-department made preparations for and handled sponsorship and organization procedures of a number of events and organizations in 2018, including the 3rd General Assembly Meeting, Spot Markets Training, ISTRADE 2018, 5th Carbon Summit, 4th Transparency Workshop, 9th Turkish Energy Summit, 1st Turkish Energy and Mining Forum, 9th Energy Efficiency Forum and Exhibition.





## TRAINING AND RESEARCH ACTIVITIES

EPIAŞ conducts research studies to contribute to development of energy markets, including in particular the electricity and natural gas markets. These studies involve examination of the academic literature, including case studies from the developed and developing countries. Research reports are prepared with a view to contribute to creation of new products and markets, and shed light on the existing products and markets.

External trainings are organized to meet training needs of the market participants and sector stakeholders with respect to the activities of EPIAŞ. In this context, three 2-day Spot Markets Applied Trainings were organized for the market participants in April, September and December, and a 1-day training was organized for the new Natural Gas Market for the first time.

In the framework of studies for establishment of new organized wholesale energy markets in line with the market development, the company participated in the meetings organized by the Ministry of Environment and Urban Planning where compliance of the market-based carbon pricing mechanism -including in particular the emission trade system- with Turkey was discussed. In this context, we also started studies for establishing a voluntary green certificate market in Turkey, performed research activities for enhancing the corporate capacity, and participated in relevant workshops and meetings to that effect.

We subscribed sector-related periodicals for raising internal knowledge and awareness about the sector, and the included in the company inventories the reference books and academic articles which were requested to build an internal library.



## HUMAN RESOURCES ACTIVITIES

In order to recruit the human resources needed by our company in 2018, we identified the vacant positions and recruited 22 employees for such vacant positions.

With a view to ensure a modern organization that satisfies the emerging needs and is compatible with the global energy markets, to improve the operating efficiency, and to contribute to principles of separation of powers pursuant to the decision passed in the meeting of board of directors dated 2 March 2018, the Spot Natural Gas Market Department has been introduced as an additional subunit to the Market Operations Directorate, thus the directorate's organizational structure has been rearranged as 3 departments and 8 sub-departments under the EPIAŞ Organization Directive. Organizational structure of the Software Development Department, a subunit of the Information Technologies Directorate, has been rearranged so that the Department will consist of 4 sub-departments including Application Development Sub-department, Software Infrastructure Sub-department, Corporate Application Development Sub-department, and Optimization Sub-department.

The Software Testing Sub-department and Demand Management Sub-department, subunits of the R&D and Project Management Department, have been transformed into subunits of the Data Management and Business Analysis Department, accordingly said Department has been restructured to consist of 4 Sub-departments. The Human Resources Department, a subunit of the Finance and Support Services Directorate, has been reorganized as Human Resources Sub-department and Training Sub-department; and the Financial Affairs Department has been reorganized as Accounting Sub-department, Finance Sub-department, and Market Financial Affairs Sub-department.

The Performance Management Directive which had been prepared to measure individual performances of the employees was put into force pursuant to a decision passed in the meeting of board of directors dated 02 March 2018, enabling us to assess performance of our employees at goal and competency level during the performance assessment period for 2018.

With a view to clarify the in-company career opportunities offered to our employees and create a career plan for them, build up a system for key positions and back-ups for such positions, a Career Management Directive was put into force pursuant a decision passed in the meeting of board of directors dated 2 March 2018. Under the Career Management Directive, in 2018, we ensured assignment of our employees to relevant sections based on their previous business experiences. We identified the key positions in the company, created a list of back-up employees who will be assigned to such positions in the future, and performed personality inventory analyses for such back-up employees.

In order to increase labor efficiency, control and report all employee actions (entry & exit, leave, absence, times spent in and out of the company, etc.), and ensure business discipline in the company through the employee monitoring system, a business intelligence module was developed for the existing personnel attendance control system in 2018. This module enables fast and detailed analysis and reporting, with comparative graphics, of parameters including entry & exit, leave, absence, times spent in and out of the company, etc.

In connection with the recruiting process, we prepared an Employee Guide which contains basic information regarding our company's human resources policies and practices, and information regarding financial and social benefits offered to the employees prepared with a view to support orientation process of the employees, and ensure that they get information about the company in an easy and fast way.

An employee satisfaction survey was conducted in 2018 in order to measure satisfaction level of our employees, understand their opinions and ideas better, and shed light on aspects which our company needs to improve.

EPİAŞ participated in the 40th Istanbul Marathon to improve the communication between our employees, ensure social togetherness, and consolidate the sense of belonging.

The Circular on Working Hours, Overtime, Leave and Proxy Procedures was prepared to regulate working hours and leave rules to ensure business efficiency and business continuity, and maintain a disciplined business environment.

A Travel Management Directive was prepared for assignments of our company executives, employees, or third persons requiring domestic and/or international travels, including travel arrangements for and reimbursement of travel expenses incurred as a result of such assignments. Said Directive was put into force pursuant to a decision passed in the meeting of board of directors dated 07.12.2018.

In the framework of the training plan for 2018 which was prepared to identify, plan, and provide trainings needed to ensure development of personal and professional competencies of our employees, our company provided 55 trainings in total during 2018. Of such trainings, 7 were internal and 48 were external trainings.

## LEGISLATION AND COMPLIANCE ACTIVITIES

We took relevant steps regarding preparation of drafts required to be submitted to EMRA in the scope of market operating operations in line with market needs and demand relating to wholesale electricity and natural gas markets operated by our company in addition to steps taken to transmit our opinions to EMRA about drafts which has been submitted to public opinion and evaluated by EMRA. In addition, relevant studies were performed with respect to necessary changes and updates relating to procedures which were required to be put into effect by our company pursuant to provisions of applicable legislation.

Within this scope, we submitted to EMRA relevant change request drafts prepared by us as a result of legislation studies performed in coordination with the relevant units, taking into account market needs and demands, for the Electricity Market Balancing and Settlement Regulation, Regulation on Organizational Structure and Operating Rules of EPİAŞ, Collateral Rules and Procedures, and Rules and Procedures for the Structure and Evaluation of Day-ahead Market Bids regarding the organized wholesale electricity market, and for the organized natural gas market operating rules and procedures (MORP) with respect to the organized wholesale natural gas market.

Our company submitted official opinion and evaluation notices to EMRA with respect to change drafts published by EMRA on its website for public opinion in connection with contemplated changes on the Electricity Market Balancing and Settlement Regulation, Regulation on Electricity Market Operations Permitted to be Performed without License, Electricity Market Import and Export Regulation, Settlement Rules and Procedures for Imports and Exports in the Electricity Market, Regulation on Certification of and Providing Supports for Renewable Energy Resources, Collateral Rules and Procedures, Organized Wholesale Natural Gas Market Operating Rules and Procedures.

In addition, the collateral calculation procedure which is required to be prepared and submitted to the competent authority pursuant to Article 124 and Temporary Article 33 of the Electricity Market Balancing and Settlement Regulation was changed in line with application problems and current needs, and the final version of the procedure was submitted to the competent authority.

## LEGAL ACTIVITIES

Legal Consultancy is responsible for providing legal consultancy to the board of directors, general manager, and internal units of EPİAŞ, represent EPİAŞ against any judicial and administrative authorities, and answer any writs addressed to EPİAŞ by judicial authorities.

In 2018, the number of legal actions prosecuted by Legal Consultancy as attorney of EPİAŞ was 79, including legal actions assumed from TEİAŞ as per the applicable regulation. The number of debt enforcement proceedings which were initiated as a legal remedy to collect overdue receivables required to be collected in the name of the market participants pursuant to market operating activities of EPİAŞ and which were subject to recovery procedures was 23. Currently there are no significant or important legal actions or debt enforcement proceedings instituted against EPİAŞ which may adversely affect financial position and activities of EPİAŞ. Legal aspects of 59 contracts to which EPİAŞ was a party were examined by the Legal Consultancy in terms of legal aspects, and 38 legal opinions were drawn up on various matters for the internal units of EPİAŞ. Furthermore, more than 150 legal applications made by the judicial and administrative authorities and individuals were duly evaluated, and necessary steps were taken.

In 2018, the Legal Consultancy acted as secretary in the meetings of board of directors of EPİAŞ. Legal Consultancy handled the preparations for, and organization of, the 3rd Ordinary General Assembly of EPİAŞ held on 6 April 2018. Legal Consultancy also followed up procedures to publish and announce the resolutions passed by the General Assembly and the Board of Directors in the Turkish Trade Registry Gazette.

Legal Consultancy played an active role in the processes intended to ensure our company's compliance with the Law on Protection of Personal Data. Legal Consultancy also performed relevant procedures relating to amendment of the articles of association as approved by the general assembly convened for 2017.

Legal Consultancy followed up the new building purchase process of our company, prepared the sales agreement, and carried out land registry procedures. In 2018, no administrative or judicial sanctions were imposed against EPİAŞ and members of board of directors due to breach of provisions of applicable legislation.



## COMPANY'S R&D AND BUSINESS DEVELOPMENT ACTIVITIES

### DOMESTIC DAY-AHEAD MARKET SOFTWARE PHASE TWO STUDIES

As from 1 June 2016, market clearing prices has been calculated using the software and optimization infrastructure featuring modern technology and information developed by EPIAŞ using its own sources.

Studies were performed on the day-ahead market in the scope of market integration and disintegration; screens that would be affected and needed to be changed were identified; and all necessary business rules, including bid entry, display, result notices, other notices, and web services, were created. Software developments of the optimization algorithm under market integration and disintegration were also completed.

The day-ahead market software, which has a user-friendly interface designed and developed completely by means of domestic resources, is flexible and can be further developed. Second phase of the software will be put into operation in 2019 upon publication of Balancing and Settlement Regulation.

In addition, the rule relating to determination of the matching prices for interlinked block bids will be changed following publication of the legislation in 2019.

### DAY-AHEAD MARKET NON-COVERED MARKET TRANSACTIONS

Non-covered market operations are one of the most significant risks that led to a market clearing price that does not reflect the market conditions and that affect formation of day-ahead market prices.

In this scope, we carried out, with participation of sector representatives, studies to prepare a procedure relating to rules which are required to be observed when posting day-ahead market bids and bilateral contract notices, determination of non-covered market transactions, sanctions applicable in case of breaches, and processes that will be conducted by EPIAŞ.

### SETTING ORGANIZATION LIMITS

With a view to prevent any severe financial risks which the market participants may face in case of an erroneous bid entry, "Limit Setting Screens" featuring the option to set limits on user basis and to block bids when limits set are exceeded were developed for the day-ahead and intraday markets and made available to market participants in 2016. However, as the market participants set their bid limits significantly greater than the limits actually needed and ignore updates to reduce their risks, market participants may enter bids which are significantly greater than their portfolios, and that leads to the possibility of severe financial risks.

To ensure that the reference price is entered correctly and any erroneous bid entries are prevented, development studies intended to enable EPIAŞ to set buying and selling limits up to which the market participants can transact in the day-ahead and intraday markets were completed, and said development will be put into force in the first quarter of 2019.





### INTRADAY MARKET CHANGES

In line with feedbacks from the market participants, it is aimed to perform developments which are required to enable the market participants to use the market software in an efficient way.

The intraday market aims to enable management of imbalances of market participants to minimize the imbalances, and contribute to physical balancing by ensuring a more balanced system for the system operator.

With the introduction of Finalized Daily Production Plan (FDPP) as from 1 February 2018, it has become important for the market participants to carry out production according to FDPP values. Production estimates made shortly before the production date, in particular by the plants producing energy by means of renewable energy resources, will ensure more correct estimates; offering the market participants the opportunity to perform transactions shortly before the physical delivery time to ensure more correct FDPP entries. Given the demands from the market participants

### ENTSO-E STUDIES

In order to facilitate the cross-border energy trade, a coding scheme has been developed in coordination with the European Network of Transmission System Operator for Electricity (ENTSO-E) to ensure effective and reliable identification of relevant transmission system equipments (lines, transformers, and substations) and parties (metering points, market participants, eligible consumers, balance responsible parties, and their stakeholders, etc.).

The competent authority giving Energy Identification Number (EIC) to market participants was Turkish Electricity Transmission Corporation till the first quarter of 2016. Upon establishment of our company, that authority was assigned to EPIAŞ, and ENTSO-E has designated our company as the Local Issuing Office.

for reduction of transaction times, and as a result of studies in coordination with the system operator, the time for performing transactions in the intraday market which was 90 minutes before the physical delivery has been reduced to 60 minutes before the physical delivery as from 1 October 2018. IDM-FDPP balancing transactions, on the other hand, start 60 minutes before the physical delivery, and last 30 minutes.

As per requests, the “Pricing according to MCP” limit which was introduced as a user limit on the intraday market software was also included in the administrator limits as from 14 November 2018 with the intent to prevent erroneous bid entries. In addition, we also added an “Explanations” section for the bid entries to enable the participants to easily analyze the purpose of past buying and selling transactions in the intraday market.

Coding procedures for market participants, meters and transmission system are performed by our company. Our company is also in charge of providing data requested by “ENTSO-E Transparency Platform”. In the physical meetings held two times a year by ENTSO-E, solutions are offered for the problems emerged, required improvements are discussed, and semi-annual assessments are made. The second assessment meeting for 2018 which was held on 11 October 2018 in Istanbul was hosted by EPIAŞ. Representatives from ENTSO-E member institutions and agencies participated in the meeting.

### TRANSPARENCY PLATFORM

Studies relating to development of the transparency platform which was established in 2016 are in progress. The EMRA Board Decision relating to the data to be published on the transparency platform on 22 June 2018 was updated, and studies are performed in accordance with current board decisions. In this scope, data relating to the Petroleum Pipeline Corporation (BOTAŞ), Directorate General of State Hydraulic Works (DSİ), and the Directorate General of Energy Affairs (EİGM) were published on the transparency platform within 2018.

Total 46 data produced by BOTAŞ, DSİ, EİGM, and our company for the platform in 2018 are listed in the table below.

DATA CLASSIFICATION	NUMBER OF DATA IN 2017	NUMBER OF DATA IN 2018
Markets (EPIAŞ)	30	35
Production (EİGM, TEİAŞ)	16	19
Consumption (EİGM, TEİAŞ)	8	10
Transmission (TEİAŞ)	4	4
Natural Gas Transmission (BOTAŞ)	0	12
Natural Gas CTP (EPIAŞ)	0	16
Dams (DSİ)	0	8
Market Message System (TEİAŞ)	1	1
TOTAL	59	105

We started to publish consumption, transmission, capacity, stock, and trading data provided by BOTAŞ under Natural Gas Transmission heading; level of dams built on non-transboundary waters, volume, waterlines, and energy equivalence data provided by DSİ under Dams heading.

All stakeholders are able to communicate their platform-related suggestions and demands on a continuous basis by e-mail. In this scope, daily demands are considered and answered as soon as possible, and when necessary, relevant improvements and updates are performed.

In 2018, the transparency platform featuring eighty four web services and total one hundred and five report screens under nine menus provided data to 253.249 individual users from 106 countries with 2.2 page views.

The transparency platform, one of the major steps EPIAŞ has taken in the field of market transparency, continues to provide service with a view to publish all market-related data from a single center in a fast, reliable, continuous, and healthy manner.

## R&D AND PROJECT MANAGEMENT ACTIVITIES

EPIAŞ R&D Center, introduced as the 273th R&D Center of Turkey on 26.09.2016, has been entitled to continue to enjoy R&D incentives in the 2018-2019 activity period as a result of the activity period evaluation meeting held on 24.09.2018 in the Ministry of Science, Industry and Technology. Auditor academicians assigned by the line Ministry to audit operations of R&C Centers for the 2017-2018 activity period performed on-site audits for our R&D Center, received information about studied projects, and audited our all operations. Our R&D Center was audited to verify whether it fulfilled the assigned duties in the 2017-2018 activity period, and assigned new duties and responsibilities for the 2018-2019 activity period.

The Scientific and Technological Research Council of Turkey (TÜBİTAK) granted funds in the amount of TRY 2.080.366,98 under “DAM Multi-zone” and “Natural Gas Continuous Trading Platform” projects; and TRY 727.155,00 portion of such funds were paid to our company. The remaining amount of such funds is expected to be paid gradually throughout the projects depending on successful fulfillment of TÜBİTAK evaluation steps.

As a result of cooperation efforts of EPIAŞ R&D Center, our company has been elected, as from 2018, as the member of EUROGIA2020 energy cluster of EUREKA, an international cooperation network.

Among projects evaluated by the technical committee were applications from our Market Participants namely Dicle Elektrik, Gediz Elektrik, and Uludağ Elektrik. EPIAŞ

R&D Center provided guiding services to such companies, as well as ensured technology transfer.

Besides, regarding the projects of which our company is a stakeholder, the ENERGYSHARED project, of which Uludağ Elektrik is a stakeholder and the application for which was admitted by EUROGIA2020, was admitted by TÜBİTAK at local level. In addition, the EUROGIA application process for the GAME4SEEN project of which Gediz Elektrik is a stakeholder is still under progress. Our R&D Center shares its knowledge and experiences, which it gained as a member of the EUROGIA Cluster, with the market participants, and contributes to growth and development of the energy market ecosystem.

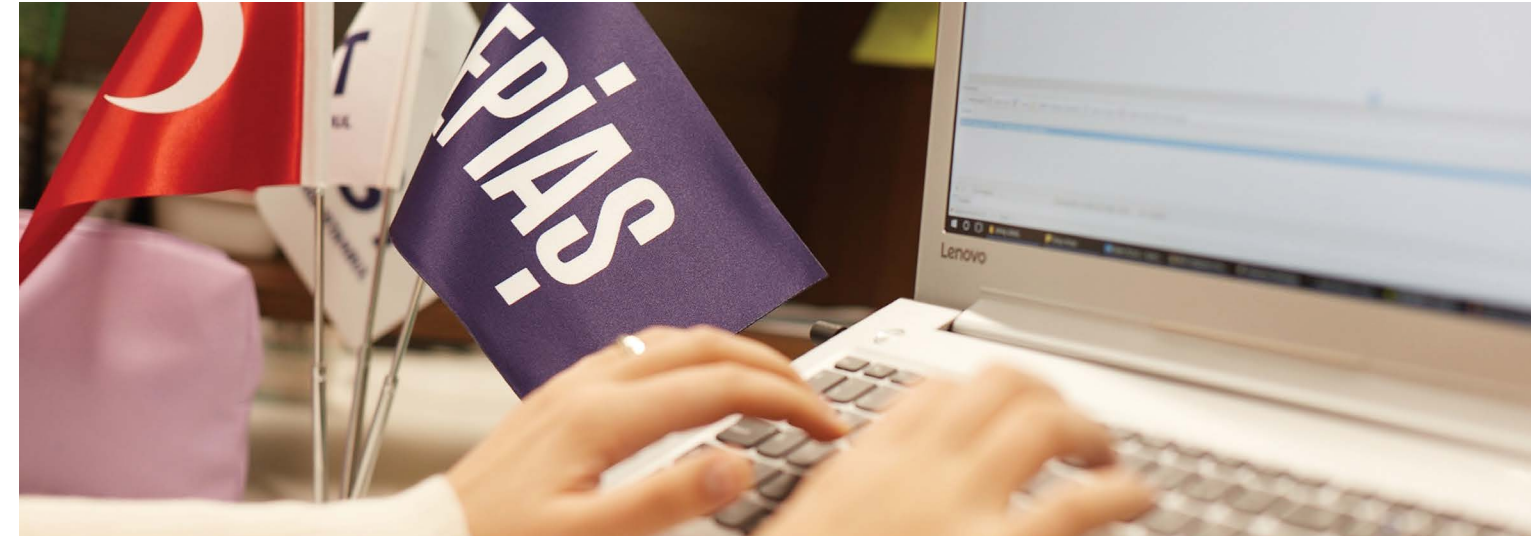
In addition to EPIAŞ R&D activities, we also performed energy-oriented innovation center activities to increase number of project that have a strategic importance in the energy sector, improve the in-company innovation, and expand the R&D studies in line with needs of market participants.

In the scope of such studies, we held meetings with relevant institutions and agencies, including sector stakeholders, public organizations and agencies, universities, and innovation centers, and determined the structure of the contemplated innovation center accordingly. Besides, we finalized the physical designs of the EPIAŞ Innovation Center, and identified needs of the prototype workshop. This center is planned to be put into operation together with the new campus.

## PATENT AND TRADEMARK ACTIVITIES

### DAM MULTI-ZONE PROJECT

- Patent innovation preliminary search application was filed for the invention named: “An Adaptive Tabu Search Algorithm for Market Clearing Problem in Turkish Day-Ahead Market”
- We filed a patent application with the Turkish Patent Institute for “An Adaptive Tabu Search Algorithm for Market Clearing Problem in Turkish Day-Ahead Market”



- For a patent application for an optimization module for the DAM Management System software, we preferred the ‘patent with request for examination’ option, and filed relevant applications to that effect.
- Our international application relating to aggregation and variable elimination procedure before the DAM system optimization process was published in the bulletin of relevant patent office.

### NATURAL GAS PROJECT

- A patent application was filed with the Turkish Patent Institute for the invention: “Towards a Testing Framework with Visual Feedback for Actor-based System”.

### INNOVATION CENTER

- Our company registered the domain name: enerjik.com.tr for the website of EPIAŞ Innovation Center.
- An application was filed for registration of the trademark: “ENERJİK”, and said trademark was registered.

## DAM MULTI-ZONE AND NEW BID TYPES PROJECT

Software development studies are in progress for developing the existing local DAM software in order to help remove the transmission line constraints and improve usability and comprehensibility of existing block and flexible bid types.

### API PORTAL PROJECT

The API Portal Project started on 01.01.2017 with a view to centralize the data communication between EPIAŞ and market participant companies.

The project was completed on 04.12.2018.



## EPIAŞ MOBILE APPLICATION

Epiaş Mobile Application was offered on 31 October 2018 for mobile devices with iOS and Android operating system. The mobile application provides access to EPIAŞ transparency platform data, instant electricity production and consumption data, market message system, plant maintenance and failure information, notices and bulletins, as well as up-to-date summary information. The application provides quick access to reports with the 'add to favorites' option, and sends push notifications when the market clearing price is announced, and when new notices and bulletins are issued.

## IPA ELECTRICITY AND NATURAL GAS MARKETS DEVELOPMENT PROJECT

IPA (Instrument for Pre-accession Assistance) is a financial assistance system established in 2007 with a view to ensure efficient transfer of sources to candidate and potential candidate countries by the European Union. First stage of IPA, named as IPA I, was implemented between 2007 and 2013. IPA is used in a wide range fields including energy, regional development, agricultural and rural development, cross-border cooperation, in order to ensure economic and social adaptation with the European Union. The IPA II project which will be implemented between 2013 and 2020 will cover our company as a beneficiary under energy sector supports.

Regarding the electricity and natural gas markets development project conducted in coordination with the Ministry of Energy and Natural Resources and the World Bank, a project kick-off meeting was held in Ankara on 18 September 2018 with participation of representatives of EMRA, EPIAŞ, TEİAŞ, and BOTAS, the project beneficiaries, including representatives of the contractor and consultant. The project started as a result of the meeting held on September 21st at EPIAŞ with participation of project consultants. The project involves a number of studies concerning evaluation of the current position of electricity and natural gas sectors and the organized markets, identification of fields required to be improved, conducting researches for new markets to be started, examination of the practice in European Union, as well as transparency, market surveillance, and eligible consumers.

Under the project, two technical visits were planned for the electricity market while one technical visit was planned for the natural gas market. The first technical visit planned for the electricity market was carried out in Italy with participation of representatives from the Ministry of Energy and Natural Resources, EMRA, and TEİAŞ, i.e. the project stakeholders. In Italy, visits were made to GME, the energy market operator, ARERA, the regulatory authority, TERN, the system operator, and other relevant institutions, and the market was examined during such visits. The project will last 15 months, and 11 reports will be prepared and submitted to the project beneficiaries under the project.



## PHYSICAL DELIVERY ELECTRICITY FUTURES MARKET

In current electricity market, the market participants perform spot electricity trades in the day-ahead market and intraday market operated by EPIAŞ while performing electricity future electricity trades in the Futures & Options Market (VIOP) operated by Borsa Istanbul (Istanbul Stock Exchange) through cash-settled base-load electricity futures contracts, cash settlement, and bilateral contracts in the over-the-counter market.

Terminations of bilateral contracts in the over-the-counter market in August damaged the trust between the market participants, and no transactions were performed in the over-the-counter market for more than one month. Market participants need an organized market that provides centralized counter-party services with which they can trade based on physical delivery electricity futures.

EPIAŞ started studies to establish a "Physical Delivery Electricity Futures Market (PDEFM)" within EPIAŞ which will enable the electricity market participants to protect from price risks and anticipate future price expectations, provide prices that will serve as an investment indication, and contribute, indirectly, to security of long-term supply.

In addition to researches and market design activities our company performed for the new market to be established, we perform studies with the stakeholders. It is aimed to establish the most efficient market model by means of co-studies to be carried out with the Ministry of Energy and Natural Resources, Energy Market Regulatory Authority, Capital Markets Board, Istanbul Stock Exchange (Borsa Istanbul), Settlement and Custody Bank (TAKASBANK), and market participants who are members of sector associations. Market business development activities were completed in 2018, and software development activities are expected to be completed in 2019.



# FINANCIAL POSITION

BALANCE SHEET (PREPARED ACCORDING TO TURKISH TAX PROCEDURE LAW)

Comparative balance sheets of EPIAŞ dated 31.12.2017 and 31.12.2018, including electricity market and natural gas market transactions, are given below

EPIAŞ SUMMARIZED COMPARATIVE BALANCE SHEET (IN TRY)		
ASSETS	31 DEC 2017	31 DEC 2018
1- CURRENT ASSETS	1.574.354.384	3.269.151.921
A- LIQUID ASSETS	124.364.391	104.004.502
1- Cash	0	0
2- Banks	124.364.391	104.004.502
a- Electricity Market Settlement and Custody Bank (Takasbank)	26.060.302	29.478.683
b- Natural Gas Market Settlement and Custody Bank (Takasbank)	0	0
c- Other Banks	98.304.089	74.525.819
B- SECURITIES		
C- TRADE RECEIVABLES	3.319.082	42.371.611
1- Trade Receivables from Electricity Market Activities	3.318.143	21.735.096
2- Trade Receivables from Natural Gas Market Activities	0	20.623.169
3- Other Trade Receivables	939	13.092
4- Deposits and Guarantees Given	0	24
D- OTHER RECEIVABLES	39.130	45.463
E- INVENTORIES	1.439.118.659	3.104.858.271
1- Advances given for orders relating to Electricity Market activities	1.439.118.303	2.922.341.141
2- Advances given for orders relating to Natural Gas Market activities	0	166.000.979
3- Other Advances Given	356	16.516.151
F- COST OF LONG-TERM CONSTRUCTION & REPAIR CONTRACTS	0	0
G- SHORT-TERM PREPAID EXPENSES AND INCOME ACCRUALS	7.187.454	9.439.376
H- OTHER CURRENT ASSETS	325.669	8.432.699
2- FIXED ASSETS	39.144.633	185.745.439
A- TRADE RECEIVABLES	25.960	0
B- OTHER RECEIVABLES	0	0
C- FINANCIAL ASSETS	0	0
D- TANGIBLE ASSETS	8.656.214	145.973.163
1- Buildings	0	135.068.651
2- Fixtures	17.056.823	19.858.202
3- Accumulated Depreciations (-)	8.400.608	15.542.978
4- Ongoing Investments		6.589.288
E- INTANGIBLE ASSETS	28.543.010	38.218.096
1- Rights	18.206.125	18.691.621
2- Research and Development Expenses	12.188.270	27.758.873
3- Leasehold Improvements	463.623	639.839
4- Other Intangible Non-current Assets	2.724.479	3.106.219
5- Accumulated Depreciations (-)	5.039.486	11.981.816
6- Advances Given	0	3.360
F- ASSETS SUBJECT TO AMORTIZATION	0	0
G- LONG-TERM PREPAID EXPENSES AND INCOME ACCRUALS	1.919.459	1.516.612
H- OTHER FIXED ASSETS	0	37.568
TOTAL ASSETS	1.613.499.017	3.454.897.360

EPIAŞ SUMMARIZED COMPARATIVE BALANCE SHEET (IN TRY)		
LIABILITIES	31 DEC 2017	31 DEC 2018
3- SHORT TERM LIABILITIES	1.487.925.707	3.224.888.324
A- FINANCIAL LIABILITIES	0	0
B- TRADE PAYABLES	38.543.531	98.650.967
1- Trade Payables to Electricity Market Activities	29.301.553	51.115.472
2- Trade Payables to Natural Gas Market Activities	0	20.623.169
3- Other Trade Payables	9.241.978	11.556.124
4- Notes Payables	0	15.356.202
C- OTHER PAYABLES	4.205.579	3.131.594
D- ADVANCES RECEIVED	1.439.121.830	3.088.345.667
1- Advances received for orders relating to electricity market activities	1.439.118.290	2.922.341.129
2- Advances received for orders relating to natural gas market activities	0	166.000.979
3- Other Advances Received	3.540	3.560
E- PROGRESS PAYMENTS FOR CONSTRUCTION & REPAIR CONTRACTS	0	0
F- TAXES AND OTHER DEBTS PAYABLES	3.586.209	4.430.866
G- PROVISIONS FOR DEBTS AND EXPENSES	0	0
H- SHORT-TERM DEFERRED INCOMES AND EXPENSE ACCRUALS	2.468.559	30.329.230
I- OTHER SHORT-TERM LIABILITIES	0	0
4- LONG-TERM LIABILITIES	0	61.424.805
A- FINANCIAL LIABILITIES	0	0
B- TRADE PAYABLES	0	61.424.805
C- OTHER LIABILITIES	0	0
D- ADVANCES RECEIVED	0	0
E- PROVISIONS FOR DEBTS AND EXPENSES	0	0
F-LONG-TERM DEFERRED INCOMES AND EXPENSE ACCRUALS	0	0
G-OTHER LONG-TERM LIABILITIES	0	0
5- SHAREHOLDERS EQUITY	125.573.310	168.584.230
A- PAID-IN CAPITAL	61.572.770	61.572.770
B- CAPITAL RESERVES	615.397	615.397
C- PROFIT RESERVES	23.689.520	59.416.675
D- RETAINED EARNINGS	0	0
E- ACCUMULATED LOSS(-)	15.606	15.606
F- CURRENT PROFIT (LOSS)	39.711.229	49.994.994
TOTAL LIABILITIES	1.613.499.017	3.454.897.360

As it can be seen from the balance sheet, company’s total assets amounted to TRY 1.613.499.017 as of 31.12.2017, while it increased up to TRY 3.454.897.360 as of 31.12.2018. The main reasons for this increase include:

- Increase in the trade volume due to increase in energy unit prices
- Increase in quantity of transaction volume
- Opening of the Natural Gas market.

**Regarding the Assets Side of the Balance Sheet:**

- Of TRY 104.004.502 under the ‘Liquid Assets’ account, TRY 38.866.304,27 portion represents the cash available in company’s bank accounts while TRY 35.659.514,73 portion represents the amount collected from the market participants, pursuant to applicable provision of the legislation due to Renewable Energy Resources Support Mechanism (RERSM), fine imposed on such market participants , blocked in order to be distributed to other market participants in the future . The remaining TRY 29.478.683 portion of it represents the amount available in the Settlement and Custody Bank (Takasbank), related to the market transactions.
- Of TRY 42.371.611 under the ‘Trade Receivables’ account, TRY 42.358.265 portion represents the balance of Electricity and Natural Gas markets transactions. Pursuant to Article 132 of Balancing and Settlement Regulation, when any advance and imbalance transactions in the market are invoiced, the invoicing shall be based on the applicable settlement period. However, when payments for transactions that are made at the end of the period coincide with weekend, such payments are made in the beginning of the next month and the date of collection is registered. As a result, the amount of receivables calculated in settlement is collected in the next month. TRY 13.092 portion under ‘Other Trade Receivables’ account resulted from the reflection invoices for the stamp duty arising from the purchase contracts.
- Of TRY 45.463 under the ‘Other Receivables’ account, TRY 32.375 portion resulted from subsistence allowance and TRY 13.088 portion resulted from Tax Office receivables.
- Of TRY 3.104.858.271 under the ‘Inventories’ account, TRY 3.088.342.120 portion represents advances given to market participants for orders in return for Intra -day market and Day-Ahead market transactions performed within December. Of TRY 16.516.151 that appears under the Other Advances Given, TRY 3.583 portion represents the advance given to Anadolu Sigorta while TRY 16.480.000 portion represents advance given to the contractor for building refurbishment and TRY 32.568 portion represents advances given for other operating expenses.
- Total TRY 9.439.376 under the ‘Short-term Prepaid Expenses and Income Accruals’ account, represents the market operating fee accrued for December 2018. As settlement for December 2018 was performed in January 2019, it is recognized as income accrual pursuant to the periodicity concept in accounting.
- Of TRY 8.432.699 under the ‘Other Current Assets’ account, TRY 8.427.659 portion represents the ‘deferred value added tax’ account while TRY 5.040 portion represents advances given to personnel.
- Of TRY 145.973.163, net balance, under the ‘Tangible Assets’, TRY 135.068.651 portion relates to purchase of building while TRY 6.589.288 portion relates to building refurbishment investment and TRY 19.858.202 portion relates to fixtures. The depreciation relating to such assets amounts to TRY 15.542.978.

•A significant portion of TRY 38.218.096 under the ‘Intangible Assets’ account relates to R&D expenses and rights. The depreciation amount allocated for the ‘Intangible Assets’ account is TRY 11.981.816.

• TRY 1.516.612 under the ‘Long-term Prepaid Expenses and Income Accruals’ consists of expense accruals including insurance, subscriptions, IT maintenance and repair, license renewal, etc.

• Of TRY 37.568 under the ‘Other Fixed Assets’ account, TRY 25.950 portion resulted from rent guarantee given to Istanbul Stock Exchange and TRY 11.618 portion resulted from other deposits and guarantees given.

**Regarding Liabilities & Equity Side of the Balance Sheet:**

- Of 98.650.967 under the ‘Trade Payables’ account, TRY 71.738.641 portion undue payables from Electricity and Natural Gas Market. TRY 11.556.124 portion under the ‘Other Trade Payables’ account represents undue debts used for company activities while TRY 7.206.151 portion represents undue debts to the contractor for building refurbishment. .
- TRY 15.356.202 under the ‘Notes Payables’ account represents the bills given for purchase of new building which will be paid in 2019.
- Of TRY 3.131.594 under the ‘Other Payables’ account, TRY 2.670.862 portion represents undue wages and expenses that will be paid to the personnel , while TRY 458.823 portion represents attorney’s fees and TRY 1.909 portion represents undue miscellaneous debts to personnel .
- Of TRY 3.088.345.668 under the ‘Advances Received’ account, TRY 3.088.342.108 portion represents the advances received from market participants for Electricity and Natural Gas market transactions in December. TRY 3.560 portion , the balance under the “Other Advances Received” account represents advances collected from market participants for the training programmes.
- TRY 4.430.866 under the ‘Taxes and Other Debts Payables’ resulted from corporate advance tax for 4th quarter, income tax for December 2018, stamp duty, value added tax, tax paid through withholding and insurance premium accruals.
- TRY 30.329.230 under the ‘Short-term Deferred Incomes and Expense Accruals’ account, TRY 30.219.928 portion represents the fine collected pursuant to Article 27 of Renewable Energy Resources Support Mechanism (RERSM) Regulation from market participants that were detected to benefit from the Renewable Energy Resources Support Mechanism (RERSM) in 2018 though they were not eligible for it and that would be paid to other market participants in January 2019. TRY 64.908 portion of it resulted from a market participant, who declared bankruptcy and as of the date of balance sheet, failed to issue an invoice that was supposed to. The remaining of TRY 44.394, on the other hand, resulted from expense accruals of invoices which will be received in the subsequent period.
- TRY 61.424.805 under the ‘Long Term Trade Payables’ account resulted from long-term bills given for purchase of building.
- As of the year-end of 2018, after provision for the corporate tax, the amount of shareholders equity amounted to TRY 168.584.230.



INCOME STATEMENT (PREPARED ACCORDING TO TURKISH TAX PROCEDURE LAW)

Comparative income statements of EPIAŞ for 2017 and 2018, including Electricity and Natural Gas market transactions, are given below.

EPIAŞ SUMMARIZED INCOME STATEMENT (IN TRY)		
	01.01 - 31.12.2017	01.01 - 31.12.2018
A- GROSS SALES	41.177.175.006	63.845.612.970
1- DOMESTIC SALES	41.175.215.794	63.842.503.286
a- Incomes from Electricity Market Operating Activities	41.093.191.140	62.390.574.823
b- Incomes from Natural Gas Market Operating Activities	0	1.322.763.557
c- Electricity Market Operating Fees	82.476.014	107.755.475
d- Natural Gas Market Operating Fees	0	1.350.630
e- Other Domestic Incomes	151.306	148.346
2- OTHER INCOMES	1.959.212	3.109.683
B- SALES ALLOWANCES (-)	8.455.890	19.889.967
a- Sales Returns	0	736.361
b- Other Electricity Allowances	8.455.890	19.153.606
c- Other Natural Gas Allowances	0	0
NET SALES	41.168.719.116	63.825.723.001
C-COST OF SALES (-)	41.099.263.405	63.731.579.523
a- Cost of Electricity Market Operating Activities	41.084.613.295	62.392.656.154
b- Cost of Natural Gas Market Operating Activities	0	1.322.027.728
c- Cost of Other Services	14.650.110	16.895.641
GROSS PROFIT OR LOSS	69.455.711	94.143.478
D- OPERATING EXPENSES (-)	33.137.386	47.582.398
OPERATING PROFIT / LOSS	36.318.325	46.561.080
E- ORDINARY INCOMES AND PROFITS FROM OTHER OPERATIONS	14.223.308	9.468.722
F- ORDINARY EXPENSES AND LOSSES FROM OTHER OPERATIONS	3.517.919	274.107
G- FINANCING EXPENSES	0	0
ORDINARY PROFIT OR LOSS	47.023.714	55.755.696
H- EXTRAORDINARY INCOMES AND PROFITS	65.554	153.358
I- EXTRAORDINARY EXPENSES AND LOSSES	938	4.488
CURRENT PROFIT OR LOSS	47.088.329	55.904.565
K- PROVISIONS FOR TAXES AND OTHER LEGAL LIABILITIES FOR CURRENT NET PROFIT	7.377.100	8.909.571
NET CURRENT PROFIT / LOSS	39.711.229	49.994.994

IN THE INCOME STATEMENT:

• Of the ‘Domestic Sales’ account, TRY 63.713.338.380 portion represents incomes arising from Electricity and Natural Gas operating activities, while TRY 109.106.105 portion represents the Electricity and Natural Gas operating fees and TRY 148.346 represents incomes from DAM training. Due to increase in the number of participants and the trading volume, domestic sales increased by 55% in 2018 compared to 2017.

• TRY 3.109.683 TL under the ‘Other Incomes’ account , consists of discounts on lunch vouchers, discount incentives as per the Laws No: 6111 and 5510 and collection of unpaid receivables.

• Of TRY 19.889.967 under the ‘Sales Allowances’ account, TRY 19.153.606 portion resulted from the unpaid receivable share (in order to prevent double income) and TRY 736.361 portion resulted from invoice returns and collection of unpaid receivables.

• Of TRY 63.731.579.523 under the ‘Cost of Sales’ account, TRY 63.714.683.883 portion represents expenses relating to Electricity and Natural Gas markets operating activities while TRY 16.895.641 portion represents personnel expenses not covered under general administrative expenses. The increase in cost of sales in 2018 compared to 2017 resulted from the increase in market trading volume.

• Of TRY 47.582.398 under the ‘Operating Expenses’ account, resulted from wages for the personnel, board of directors, and committees, maintenance and repair, contractor, outsourced benefits and services, depreciations, rentals, contribution fees, court fees, special communication tax, and other operating expenses covered under general administrative expenses. The increase in the operating expenses in 2018 compared to the previous year resulted from the increase in the personnel wages, depreciations, taxes, duties, and fees.

• Of TRY 9.468.722 under the ‘Ordinary Incomes and Profits from Other Operations’, TRY 9.275.290 portion represents interest income from deposit accounts. Decrease in interest incomes compared to previous year resulted from the significant decrease in the amount of funds in deposit accounts due to purchase of building. Of the remaining amount, TRY 118.433 portion represents exchange difference gains and TRY 74.999 portion represents other ordinary incomes and profits.

• TRY 153.358 under the ‘Extraordinary Incomes and Profits’ account resulted from lunch voucher discount incomes, stamp duty reflection and expenses reflected on the personnel.

• Our company gained profit in the amount of TRY 55.904.565 before tax and the net current profit amounted to TRY 46.994.994 after deduction of tax on current profit in the amount of TRY 8.909.571.

As a result, as it can be seen from our company’s balance sheet dated 31.12.2018, including Electricity and Natural Gas market transactions, the total assets amounted to TRY 3.454.897.360 while the total assets amounted to TRY 294.718.293,excluding amounts arising from the Electricity and Natural Gas market transactions and 57% of assets are financed through shareholders equity. In 2018, our company gained a profit in the amount of TRY 55.904.565 before tax. The net current profit amounted to TRY 46.994.994 after deduction of provision for taxes and other legal liabilities on current profit. Accordingly, the shareholders equity total increased up to TRY 168.584.230 by the end of the year.

Established in 2015 with a share capital amounting to TRY 61.572.770, EPIAŞ’ shareholder’s equity total increased to TRY 91.105.967 in 2016, TRY 125.573.310 in 2017 and TRY 168.584.230 in 2018 as a result of net profits gained from operations in 2016, 2017, and 2018. Regarding its current financial structure, EPIAŞ is not exposed to a possible loss of capital or insolvency.

## FINANCIAL POSITION

EPIAŞ Balance sheets and income statements for 2017 and 2018, including Electricity market and Natural Gas market transactions, are summarized below. (Prepared according to Turkish Tax Procedure Law).

### EPIAŞ Summarized Balance Sheets as at 31.12.2017 and 31.12.2018, including Market Transactions

SUMMARIZED BALANCE SHEET (TRY)	31.12.2017	31.12.2018	CHANGE (%)
Current Assets	1.574.354.384	3.269.151.921	108
Fixed Assets	39.144.633	185.745.439	375
Total Assets	1.613.499.017	3.454.897.360	114
Short-term Liabilities	1.487.925.708	3.224.888.325	117
Long-term Liabilities	0	61.424.805	0
Shareholders Equity	125.573.310	168.584.230	34
Total Liabilities & Equity	1.613.499.017	3.454.897.360	114

### EPIAŞ Summarized Income Statements for 2017 and 2018, including Market Transactions

SUMMARIZED INCOME STATEMENT (TRY)	01.01-31.12.2017	01.01-31.12.2018	CHANGE (%)
Net Sales	41.168.719.116	63.825.723.001	55
Gross Profit or Loss	69.455.711	94.143.479	36
Operating Profit	36.318.325	46.561.080	28
Ordinary Profit or Loss	47.023.714	55.755.695	19
Current Profit or Loss	47.088.329	55.904.565	19
Prov. for Taxç & Oth. Legal Liab. On Net Cur. Profit	7.377.100	8.909.571	21
Net Current Profit	39.711.229	46.994.994	18

EPIAŞ acts as purchasers against sellers and sellers against purchasers that trade in the electricity market. In this context, the financial statements also include amounts arising from electricity market transactions. Such transactions are equally recognized in assets and liabilities sections of the balance sheet, and debit and credit sections of the income statement.

In order to reflect the actual financial position of EPIAŞ, comparative summarized financial statements for 2017 & 2018 are given below. (Prepared according to Turkish Tax Procedure Law).

### EPIAŞ Summarized Balance Sheets as at 31.12.2017 and 31.12.2018, excluding Market

SUMMARIZED BALANCE SHEET (TRY)	31.12.2017	31.12.2018	CHANGE (%)
Current Assets	105.857.637	108.972.854	3
Fixed Assets	39.144.633	185.745.439	375
Total Assets	145.002.270	294.718.293	103
Short-term Liabilities	19.428.960	64.709.258	233
Long-term Liabilities	0	61.424.805	-
Shareholders Equity	125.573.310	168.584.230	34
Total Liabilities & Equity	145.002.270	297.718.293	103

### EPIAŞ Summarized Income Statements for 2017 and 2018, excluding Market Transactions

SUMMARIZED INCOME STATEMENT (TRY)	31.12.2017	31.12.2018	CHANGE (%)
Net Sales	83.983.867	110.686.979	32
Gross Profit or Loss	69.455.711	94.143.479	36
Operating Profit	36.318.325	46.561.080	28
Ordinary Profit or Loss	47.023.714	55.755.695	19
Current Profit or Loss	47.088.329	55.904.565	19
Prov. for Taxç & Oth. Legal Liab. On Net Cur. Profit	7.377.100	8.909.571	21
Net Current Profit	39.711.229	46.994.994	18

# FINANCIAL ANALYSIS RATIOS

Our comparative financial ratios calculated for 2017 & 2018, based on financial statements prepared by eliminating the amounts relating to market transactions, are given in the table below.

## Financial Analysis Ratios by Years

FINANCIAL STRUCTURE RATIOS	2017	2018	CHANGE (%)
Leverage Ratio (Short-term & Long-term Liabilities / Total Assets)	0,13	0,43	231
Shareholders Equity / Total Assets Ratio	0,87	0,57	-34
Shareholders Equity / Total Liabilities Ratio	6,46	1,34	-79
PROFITABILITY RATIOS	2017	2018	CHANGE (%)
Net Profit / Shareholders Equity Ratio (Return on Equity)	0,32	0,28	-12
Net Profit / Total Assets Ratio (Return on Assets)	0,27	0,16	-42
Operating Profit / Net Sales Revenue Ratio	0,43	0,42	-3
LIQUIDITY RATIOS	2017	2018	CHANGE (%)
Current Ratio (Total Current Assets / Short-term Liabilities)	5,45	1,68	-69
Acid Test Ratio	5,45	1,43	-74
Cash Ratio (Liquid Assets + Securities / Short-term Liabilities)	5,06	1,15	-77

# FINANCIAL STRUCTURE RATIOS

## Leverage Ratio (Short-term & Long Term Liabilities / Total Assets)

This ratio which indicates to what extent the assets are financed by liabilities is considered to be reasonable when it is below 0.5. If it is above 0.5, it signifies that the company is financed in a risky way. For EPIAŞ, this ratio was calculated as 0.13 for 2018, and 0,43 for 2018. The increase in 2018 resulted from increase in debts for the purchase of a building.

As a result, it is seen that the assets are partly financed by short-term liabilities and partly by long-term liabilities, and that this ratio is a reasonable level for the company.

## Shareholders Equity / Total Assets Ratio

This ratio which shows what percentage of the operating assets is financed by the owners of the company is preferred to be high. This ratio which was 0,87 for 2017 decreased to 0,57 in 2018 due to outflow of funds as a result of building purchase and is still at an acceptable level.

This ratio indicates that EPIAŞ has a strong capital and that the primary financing source for assets is still the shareholders equity.

## Shareholders Equity / Total Liabilities Ratio

This ratio which shows financial independency is desired to be above 1. Our company's operations are mainly financed by shareholders equity, and also partly by short-term and long-term liabilities. Our company's shareholders equity-to-total liabilities ratio in 2017 was 6,46 which decreased to 1,34 in 2018. Though there was a significant cash outflow due to building investment, company's shareholders equity still maintains its dominance in financing of assets.

# PROFITABILITY RATIOS

## Net Profit / Shareholders Equity Ratio

This ratio which shows the relationship between the company's shareholders equity and net profit was 0,32 in 2017 and 0,28 in 2018. It appears that EPIAŞ' return on equity is at a satisfactory level, and has a stable progress.

## Net Profit / Total Assets Ratio

This ratio shows the degree of efficiency of company assets in production of profit. The bigger the ratio ,found as a result of this calculation, the more successful -it is considered- the company assets are in production of profit. The return on assets ratio which was 0,27 in 2017 decreased to 0,16 in 2018. The decrease in the return on assets resulted from the fact that a significant amount of cash funds were directed to fixed assets due to purchase of building in 2018.

## Operating Profit / Net Sales Revenue Ratio

This ratio which shows to what extent an organization makes profit from its operations is in favour of the organization when it is high. The operating profit ratio is used to evaluate the profitability of the organization after deduction of operating expenses of the organization. This rate which was 0.43 for 2017 was found to be 0,42 for 2018 which shows no significant change in operating profitability.

# LIQUIDITY RATIOS

## Current Ratio (Current Assets /Short-term Liabilites)

Given the sector in which our company is operating in and given the fact that there is no manufacturing operation, a current ratio which is equal to or above 1,5 is considered to be an acceptable level. If this ratio is below 1,0 it is considered as insufficient net working capital. The current ratio which was 5,45 in 2017, was calculated as 1,68 in 2018 due to the fact the a significant part of the liquid assets were used as funds for fixed assets due to building purchase. The current position shows that the current assets stiil continue to finance the short-term liabilities easily.

## Acid Test Ratio

This ratio is calculated by deducting inventories from the current assets and dividing the resulting figure into short-term liabilities. This ratio is similar with the current ratio. However, it gives results which are more significant than the current ratio. Inventories are subtracted from the current assets due to the fact that it takes a long time to liquidate the assets in that account group. This enables to understand whether short-term liabilities can be completely and promptly paid by means of liquid current assets. This ratio is desired to be above 1,00. Though the acid test ratio in 2018 dropped significantly, same as the current ratio, due to fixed assets investment, it is still above 1,00. As the company has no material inventories as per the nature of its operations, the current and liquidity ratios are equal and very similar with each other.

## Cash Ratio (Liquid Assets + Securities / Short Term Liabilities )

This ratio shows the organization's ability to pay its short-term liabilities based on the assumption that the organization's inventories cannot be sold out, and its receivables cannot be collected. The cash ratio measures to what extent the present liquid assets can meet the short term-liabilities. Although it varies from one sector to another, it is generally accepted that the ratio should be above 0,2. Cash ratio of EPIAŞ was 5,06 in 2017 which was calculated as 1,15 in 2018. As explained above for other ratios, the most important factor that led to decrease in that ratio was the high-amount of building investment. However, in spite of significant cash outflow, company's liquid assets are still enough to finance the current short-term liabilities of the company.

## Uncollectible Account Rate

Our company has no risk concerning collection of receivables because collaterals are received and receivables which cannot be collected are collected from other market participants pursuant to the Energy Market Balancing and Settlement Regulation.

## Cash Conversion Cycle

Given the fact that advances received and advances given are reciprocal accounts due to nature of company's operations and that the company has no material inventories, the calculation of company receivable and inventory turnover rate and accordingly, the operating cycle will be insignificant. According to this, calculating the cash conversion cycle will also be insignificant.

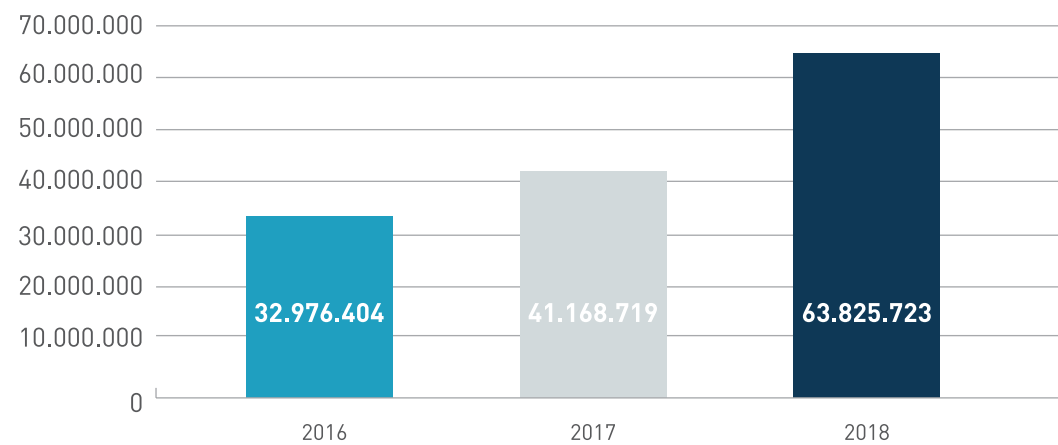




## MAIN FINANCIAL INDICATORS

### NET SALES TABLE BY YEARS

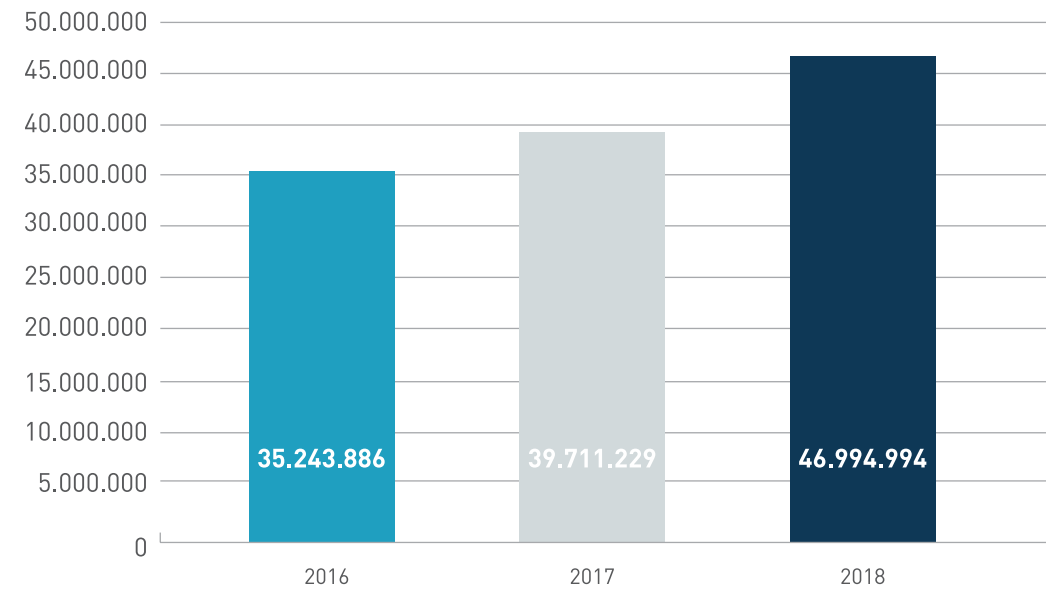
#### NET SALES (TRY THOUSAND)



Our company's net sales increased by years in parallel with the market volumes. Net sales increased by 24,84% in 2017 compared to previous year, and increased by 55% in 2018 compared to previous year.

### NET CURRENT PROFIT TABLE BY YEARS (TRY)

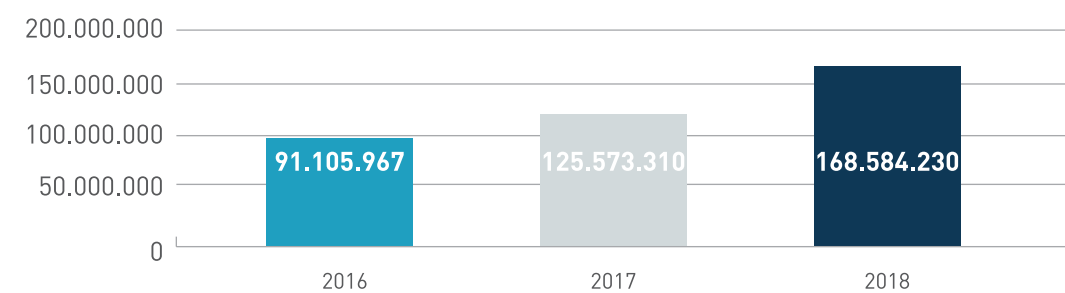
#### NET CURRENT PROFIT (TRY)



In 2017, company's net current profit increased by 12,67% compared to previous year. In 2018, company's net current profit increased by 18,34% compared to 2017.

### SHAREHOLDERS EQUITY TABLE BY YEARS

#### SHAREHOLDERS EQUITY (TRY)



In 2017, shareholders equity increased by 37,83% compared to previous year while increasing 34,25% in 2018 compared to previous year.

## TURKISH ENERGY EXCHANGE (EPİAŞ)

## FINANCIAL POSITION TABLE AS OF 31 DECEMBER 2018

(PREPARED ACCORDING TO TURKISH ACCOUNTING STANDARDS.) (CURRENCY: TURKISH LIRA (TRY)  
UNLESS OTHERWISE INDICATED)

ASSETS	31.12.2018	31.12.2017
<b>CURRENT ASSETS</b>		
<b>Cash and Cash Equivalents</b>	74.570.111	98.659.350
<b>Trade Receivables</b>	9.452.468	6.873.946
Trade Receivables Due from Related Parties	1.561.646	1.123.002
Trade Receivables Due from Third Parties	7.890.822	5.750.944
<b>Other Receivables</b>	45.717	-
Trade Receivables Due from Related Parties	-	-
Trade Receivables Due from Third Parties	45.717	-
<b>Prepaid Expenses</b>	41.191	1.520.469
<b>Assets Relating to Current Period Tax</b>	-	-
<b>Other Current Assets</b>	8.427.658	316.086
<b>CURRENT ASSETS TOTAL</b>	<b>92.537.145</b>	<b>107.408.982</b>
<b>FIXED ASSETS</b>		
<b>Other Receivables</b>	40.927	-
Trade Receivables Due from Related Parties	37.567	-
Trade Receivables Due from Third Parties	3.360	-
<b>Tangible Assets</b>	150.068.927	10.902.800
<b>Intangible Assets</b>	30.523.163	20.088.878
Other Intangible Assets	30.523.163	20.088.878
<b>Prepaid Expenses</b>	17.996.612	408.929
<b>Deferred Tax Assets</b>	-	1.832.410
<b>FIXED ASSETS TOTAL</b>	<b>198.629.629</b>	<b>33.258.967</b>
<b>TOTAL ASSETS</b>	<b>291.166.774</b>	<b>140.667.949</b>

## LIABILITIES

31.12.2018

31.12.2017

## SHORT-TERM LIABILITIES

<b>Trade Payables</b>	56.302.714	11.627.668
Trade Payables Due to Related Parties	5.027.233	560.012
Trade Receivables Due to Third Parties	51.275.481	11.067.656
<b>Payables pursuant to Benefits Provided to Employees</b>	3.471.246	5.266.035
<b>Other Payables</b>	481.846	102.752
Other Payables Due to Related Parties	40.805	40.805
Other Payables Due to Third Parties	441.041	61.947
<b>Tax Liability for Net Profit</b>	1.458.806	466.189
<b>Short-Term Provisions</b>	2.376.592	1.846.882
Short-Term Provisions for Benefits Provided to Employees	1.660.922	1.131.212
Other Short-Term Provisions	715.670	715.670
<b>Other Short-Term Liabilities</b>	2.173.58	1.966.314
<b>TOTAL SHORT-TERM LIABILITIES</b>	<b>66.264.790</b>	<b>21.275.840</b>

## LONG-TERM LIABILITIES

<b>Trade Payables</b>	39.948.524	-
Trade Payables Due to Related Parties	-	-
Trade Receivables Due to Third Parties	39.948.524	-
<b>Long-Term Provisions</b>	772.794	505.212
Long-Term Provisions for Benefits Provided to Employees	772.794	505.212
<b>Deferred Tax Liability</b>	3.259.815	-
<b>TOTAL LONG-TERM LIABILITIES</b>	<b>43.981.133</b>	<b>505.212</b>
<b>TOTAL LIABILITIES</b>	<b>110.245.923</b>	<b>21.781.052</b>

## SHAREHOLDERS EQUITY

<b>Shareholders Equity Owned by the Parent Company</b>	61.572.770	61.572.770
Paid-in Capital	615.397	615.397
Other Reserves	3.811.235	1.662.415
Restricted Reserves Set Aside from Profit	48.176.266	14.812.831
Profits (Losses) from Previous Years	66.745.183	40.223.484
Net Current Profit (Loss)		
<b>SHAREHOLDERS EQUITY TOTAL</b>	<b>180.920.851</b>	<b>118.886.897</b>
<b>SHAREHOLDERS EQUITY AND LIABILITIES TOTAL</b>	<b>291.166.774</b>	<b>140.667.949</b>

TURKISH ENERGY EXCHANGE (EPİAŞ)

PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME STATEMENT AS OF 31 DECEMBER 2018  
 (PREPARED ACCORDING TO TURKISH ACCOUNTING STANDARDS)

(CURRENCY: TURKISH LIRA (TRY) UNLESS OTHERWISE INDICATED)

	31.12.2018	31.12.2017
<b>Profit or loss part</b>		
Revenues	109.106.108	82.476.041
Cost of sales	(17.351.414)	(14.792.504)
<b>Gross profit</b>	91.754.694	67.683.537
General administrative expenses (-)	(34.775.930)	(23.592.673)
Research and development expenses (-)	(9.645.004)	(8.755.057)
Other incomes from primary operations	33.738.004	11.682.323
Other expenses from primary operations (-)	(324.784)	(276.065)
<b>Operating profit (loss)</b>	80.746.980	46.742.065
Incomes (expenses) from investments	-	74
<b>Operating profit (loss) before financing expenses</b>	80.746.980	46.742.139
Financing cost	-	825.702
<b>Pre-tax profit (Loss) from ongoing operations</b>	80.746.980	47.567.841
Tax expenses for ongoing operations	(14.001.797)	(7.344.357)
Current Tax expense	(8.909.572)	(7.377.100)
Deferred tax income (expense)	(5.092.225)	32.743
<b>Current profit (loss) for continuing operations</b>	66.745.183	40.223.484
<b>Current profit (loss) for discontinued operations</b>	-	-
<b>Net Current profit (loss)</b>	66.745.183	40.223.484
<b>Other comprehensive income</b>	-	-
<b>TOTAL COMPREHENSIVE INCOME ( EXPENSE)</b>	<b>66.745.183</b>	<b>40.223.484</b>

Our company keeps and reports accounting records according to the Turkish Commercial Code, the Implementing General Communiqué on Accounting System as published by the Ministry of Finance, and other tax regulations. Financial reports are generated pursuant to the Turkish Accounting Standards and the Turkish Financial Reporting Standards. Balance sheet profit is calculated differently in both statements due to the differences between valuation provisions of the Uniform Chart of Accounts (UCA) and Turkish Accounting Standards (TAS), particularly with respect to provisions set aside, depreciation procedures and calculation differences.

Our company’s net current profit amounts to TRY 66.745.183 as shown under the Profit/Loss Statement prepared as per TAS for the period from 01.01.2018 to 31.12.2018 while net current profit for 2018, calculated under the income statement prepared according to the Turkish Tax Procedure Law amounts to TRY 46.994.994. It is understood that the basic differences between the income statement prepared according to the TPL and Profit/Loss Statement prepared according to the TAS result from:

- Exclusion of market transactions from the Profit/Loss Table prepared according to TAS,
- Interest income resulting from the rediscounting of bills payable relating to the purchase of building,
- Provisions for permission leave expenses,
- Provisions for legal cases,
- Provisions for severance pay,
- Foreign exchange profit and loss,
- Depreciation expenses,
- Expensing of the research costs
- Valuation and calculation differences between two standards with respect to deferred taxes and other issues.

RISKS AND ASSESSMENT  
 OF MANAGEMENT

According to the second paragraph of the ninth article of the EPİAŞ Risk Management Policy Directive; a risk report which assesses the risk situation, points out dangers and shows remedies is prepared and submitted to the committee every two months. As stated in the EPİAŞ Risk Management Policy Directive, The Risk Management Department prepared six risk reports and submitted them to the Early Detection of Risk Committee in 2018 activity period. EPİAŞ Risk Report is prepared to cover the risks of all units of our company.

In addition to the risk assessments concerning the units, the Risk Report also includes periodical statistics relating to monitoring of operational and strategic risks, ongoing projects, business continuity studies, and operational cases carried out in the reporting period. In addition, studies relating to continuous improvement and development of the Risk Report are maintained.

In accordance with the provision of EPİAŞ Business Continuity Policy, “At least one (1) time a year emergency drill is carried out”, the critical processes of our company was tested with success at EPIAS Emergency Operations Center (ODOM) on 29.11.2018. Following the exercise, “2018 Emergency Drill Risk Report” was prepared and shared with top management.

Moreover, complying with ISO 9001 Quality Management System and ISO 27001 Information Security Management System Standards processes have been supported.



BENEFITS PROVIDED TO SENIOR EXECUTIVES

Wage, bonuses, and social benefits to be provided to Senior Executives, i.e. general manager, directors, and legal consultant are determined by the Board of Directors.

In 2018, a net amount of TRY 2.433.487,81 was paid to the members of board of directors, general manager, directors, and legal consultant of EPIAŞ as attendance fee, wage, bonus, allowance, and social benefits.

SOCIAL RESPONSIBILITY PROJECTS

EPIAŞ aims to develop social responsibility projects in line with Turkey’s vision to develop domestic and renewable energy resources. In this scope, a protocol was signed with the Ministry of National Education to contribute to raise qualified human resources in the field of energy in 2018.

Under the Protocol, Ministry of National Education continues its studies relating to the project intended to establish wind power test kits in the designated vocational high schools throughout Turkey. Processes relating to establishment of test kits in total five vocational high schools –four in Istanbul and one in Ankara– continued in 2018.

GRANTS

There were no grants, whether in kind or cash, in the 2018 accounting period.

DISTRIBUTION OF DIVIDENDS

No privilege applies with respect to distribution of dividends. Distribution of dividends for 2016 and subsequent years is performed according to provisions of Turkish Commercial Code, tax regulations, and Article 15 of company’s articles of Association which reads: “Of the net period profit (a) 5% will be allocated as legal reserve fund until it reaches up to one fifth of paid-in capital; (b) of the remaining sum, an amount equal to 5% (five percent) of the paid-in capital will be allocated as first dividend; (c) the profit remaining after foregoing allocations can be distributed fully or partially, or can be allocated as extraordinary reserve fund.”

In General Assembly Meeting of 2017 held on 06.04.2018, it was decided to distribute profit in the amount of TRY 4.711.229,13 pursuant to proposal of board of directors under decision No. 9 passed in the board meeting No. 2018/03 dated 02.03.2018. Based on that decision of the general assembly, the board of directors decided to distribute profits as from 30.05.2018 pursuant to the board decision No. 28 passed in the board meeting No. 2018/05 dated 15.05.2018. Profits distributed in 2018 are listed in the table below.

AMOUNT OF DIVIDENDS (TRY)

SHAREHOLDERS GROUP	SHARE RATE (%)	DIVIDEND AMOUNT (TRY)
Group A	30,00	1.413.368,82
Group B	30,00	1.413.368,82
Group C	40,00	1.884.491,76
Total	100,00	4.711.229,41



INDEPENDENT AUDITOR’S REPORT  
RELATING TO ANNUAL REPORT OF THE BOARD OF DIRECTORS



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#### CONVENIENCE TRANSLATION INTO ENGLISH OF INDEPENDENT AUDITOR'S REPORT ON THE BOARD OF DIRECTORS' ANNUAL REPORT ORIGINALLY ISSUED IN TURKISH

To the Shareholders of Enerji Piyasaları İşletme Anonim Şirketi

##### Opinion

We have audited the annual report of Enerji Piyasaları İşletme Anonim Şirketi (the "Company") and its subsidiaries (together will be referred as "the Group") for the period between 1 January 2018 and 31 December 2018, since we have audited the complete set financial statements for this period.

In our opinion, the financial information included in the annual report and the analysis of the Board of Directors by using the information included in the audited financial statements regarding the position of the Company are consistent, in all material respects, with the audited complete set of financial statements and information obtained during the audit and provides a fair presentation.

##### Basis for Opinion

We conducted our audit in accordance with Standards on Auditing which is a component of the Turkish Auditing Standards issued by the Public Oversight, Accounting and Auditing Standards Authority ("POA") ("Standards on Auditing issued by POA"). Our responsibilities under Standards on Auditing issued by POA are further described in the *Auditor's Responsibilities for the Annual Report* section of our report. We declare that we are independent of the Company in accordance with the Code of Ethics for Auditors issued by POA (POA's Code of Ethics) and the ethical requirements in the regulations issued by POA that are relevant to audit of financial statements, and we have fulfilled our other ethical responsibilities in accordance with the POA's Code of Ethics and regulations. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

##### Auditor's Opinion on Complete Set of Financial Statements

We have expressed an unqualified opinion on the complete set of financial statements of the Company for the period between 1 January 2018 and 31 December 2018 on 28 February 2019.

KPMG Bağımsız Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş., a Turkish corporation and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative, a Swiss entity.



##### Board of Directors' Responsibility for the Annual Report

In accordance with the Articles 514 and 516 of the Turkish Commercial Code numbered 6102 ("TCC"), the Company's management is responsible for the following regarding the annual report:

a) The Company's management prepares its annual report within the first three months following the date of statement of financial position and submits it to the general assembly.

b) The Company's management prepares its annual report in such a way that it reflects the operations of the year and the financial position of the Company accurately, completely, directly, true and fairly in all respects. In this report, the financial position is assessed in accordance with the Company's financial statements. The annual report shall also clearly indicates the details about the Company's development and risks that might be encountered. The assessment of the Board of Directors on these matters is included in the report.

c) The annual report also includes the matters below:

- Significant events occurred in the Company after the reporting period,

- The Company's research and development activities.

- Financial benefits such as wages, premiums and bonuses paid to board members and key management personnel, appropriations, travel, accommodation and representation expenses, benefits in cash and kind, insurance and similar guarantees.

When preparing the annual report, the Board of Directors also considers the secondary legislation arrangements issued by the Ministry of Trade and related institutions.

##### Auditor's Responsibility for the Audit of the Annual Report

Our objective is to express an opinion on whether the financial information included in the annual report in accordance with the TCC and analysis of the Board of Directors by using the information included in the audited financial statements regarding the position of the Company are consistent with the audited financial statements of the Company and the information obtained during the audit and give a true and fair view and form a report that includes this opinion.

We conducted our audit in accordance with Standards on Auditing issued by POA. Standards on Auditing issued by POA require compliance with ethical requirements and planning of audit to obtain reasonable assurance on whether the financial information included in the annual report and analysis of the Board of Directors by using the information included in the audited financial statements regarding the position of the Company are consistent with the financial statements and the information obtained during the audit and provides a fair presentation.

KPMG Bağımsız Denetim ve Serbest Muhasebeci Mali Müşavirlik Anonim Şirketi  
A member firm of KPMG International Cooperative

  
Ruşen Fikret Selamet, SMMM  
Partner  
28 February 2019  
İstanbul, Türkiye

[illegible]This image shows a full page of blank, lined paper. It features approximately 28 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.



This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire width, typical of notebook or school paper. There are no margins, text, or other markings present.

# EPIAŞ

## TURKISH ENERGY EXCHANGE

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