

REPUBLIC OF TURKEY  
MINISTRY OF ENERGY  
AND NATURAL RESOURCES



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# Abbreviations

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<b>Ar-Ge</b>	: Research-Development	<b>MIGEM</b>	: General Directorate of Mining Affairs
<b>BIK</b>	: Affiliated and Related Institutions Department	<b>MTA</b>	: General Directorate of Mineral Research and Exploration
<b>BO</b>	: Build Operate	<b>MVA</b>	: Megavolt Ampere
<b>BOREN</b>	: National Boron Research Institute Department	<b>MW</b>	: Megawatt
<b>BOTAS</b>	: Petroleum Pipeline Corporation	<b>NEPUD</b>	: Nuclear Energy Project Implementation Department
<b>BOT</b>	: Build Operate Transfer	<b>NGS</b>	: Nuclear Power Plant
<b>CAGR</b>	: Compound Annual Growth Rate	<b>PG</b>	: Performance Indicator
<b>DIAB</b>	: General Directorate of Foreign Relations and EU Affairs	<b>PIGM</b>	: General Directorate of Petroleum Affairs
<b>EIGM</b>	: General Directorate of Energy Affairs	<b>SWOT</b>	: Strengths, Weaknesses, Opportunities and Threats
<b>Sm<sup>3</sup></b>	: Standard cubic meter	<b>TAEK</b>	: Turkish Atomic Energy Authority
<b>ENTSO-E</b>	: European Network of Transmission System Operators for Electricity	<b>TEDAS</b>	: Turkish Electricity Distribution Corporation
<b>EPDK</b>	: Energy Market Regulatory Authority	<b>TEIAS</b>	: Turkish Electricity Transmission Corporation
<b>ESIS</b>	: The Ministry of Energy and Natural Resources Strategic Management and Statistics System	<b>TEMSAN</b>	: General Directorate of Turkish Electromechanical Industry
<b>ETI MADEN</b>	: ETI Maden General Directorate	<b>TETAS</b>	: Turkish Electricity Trade and Contracting Corporation
<b>EUAS</b>	: Electricity Generation Company	<b>TKI</b>	: General Directorate of Turkish Coal Enterprises
<b>EVD</b>	: Energy Efficiency Consultancy Companies	<b>TOE</b>	: Tons of Oil Equivalent
<b>GSYH</b>	: Gross Domestic Product	<b>TOOR</b>	: Transfer of Operating Rights
<b>GWh</b>	: Gigawatt hour	<b>TPAO</b>	: Turkish Petroleum Corporation
<b>IEA</b>	: International Energy Agency	<b>TPBH</b>	: Transit Petroleum Pipelines Department
<b>KIT</b>	: State Owned Enterprises	<b>TTK</b>	: General Directorate of Turkish Hard Coal Authority
<b>kV</b>	: Kilovolt	<b>TWh</b>	: Terawatt hour
<b>kWh</b>	: Kilowatt hour	<b>VAP</b>	: Efficiency Enhancing Project
<b>LED</b>	: Light Emitting Diode	<b>YEGM</b>	: General Directorate of Renewable Energy
<b>LNG</b>	: Liquefied Petroleum Gas		
<b>MENR</b>	: The Ministry of Energy and Natural Resources		

# PRESENTATION OF THE MINISTER

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*“For energy and natural resources of growing, dynamic and new Turkey...”*

**Taner Yıldız**

*Minister*



Energy sector has been experiencing a period in which all rules are being re-written again. Major energy importing countries have become exporters, whereas major energy exporting countries have become the center of demand's growth. Economic growth, energy demand and their environmental impact have become vital issues more than ever and energy efficiency, as well as environmental harmony comprise the major topics of today's agenda even for the countries holding the richest natural resources.

As of early 2014, our country which is the sixteenth largest economy of the world and the sixth of Europe respectively, is an active member of G- 20 in which the strongest economies of the world are duly represented. In a period in which various national economies are getting narrowed due to global financial crisis, Turkish economy, following the economic deceleration in 2008 and recession in 2009, grew at 9.2% and 8.5% in 2010 and 2011 respectively, and the country achieved an average growth rate of 5% during 2003-2013.

Energy industry has played a vital role in the establishment

of this economic growth we possess today. Annual average growth rate of 4% in primary energy consumption between 2003-2013 indicates that energy consumption has grown along with the economy. Within the period where the balances are changing and the energy sector is extremely dynamic, the energy strategy to be determined by Turkey, of which energy demand has been continuing to increase, is a very critical issue to have long term effects.

Since the energy and natural resources sectors are multi-lateral, dynamic and flexible by the nature of their markets, Strategic Plan to be developed for these sectors should be in such a structure reflecting opinions of various parties, while considering current dynamics and reviewing the issues from different perspectives. From this point of view, we have included our stakeholders actively into the Strategic Planning Period and paid maximum attention to the sector's requirements. We believe that this approach shall affect our stakeholders positively to appropriate our plan as well.

The competitive market structure regarded as a critical

factor for energy supply security, as being attempted to be established by the liberalization, and having changed the appearance of the energy sector in an accelerated manner within the last decades are the crucial focal points of Turkey's energy policy. In this regard, the energy sector being competitive, transparent and protecting consumers as well as considering environmental sustainability has been our priority, and we believe that this priority will continue in the future.

Considering the natural resources, as pointed out in the previous Strategic Plan, utilizing rich natural resources of Turkey to the greatest extent in line with sustainability principles will remain medium and long term priority. In this sense, forming effective and applicable policies for a sustainable mining, assuring occupational health and security issues in compliance with environment is a prerequisite for proper management of natural resources in a manner that the natural resources will contribute to economic growth and welfare of the country.

As a consequence, we have focused on eight themes in

the Strategic Plan. These themes reflect correlation and synergy between energy and natural resources sectors; establish a balance by avoiding one of them to get ahead of other and attach deserved importance to both of them. Alongside of these eight themes, we have contemplated the title of economic, social and environmental sustainability as a framework for all other topics.

I hereby express my sincere thanks to Undersecretary and Deputy Undersecretaries, whose contributions despite their intensive agenda are considerably critical for the success of the Strategic Plan, to our General Directors, Managers, all our stakeholders operating in energy and natural resources sector who contributed during the preparation stage of the Plan and to all our colleagues in Ministry, both for their valuable contributions and for their embracing the plan as being its future implementers.

With these feelings and thoughts, I hope Ministry's Strategic Plan for 2015-2019 shall be beneficial to the sectors, all our stakeholders and eventually to our country.

# Presentation of the Undersecretary

*“A novel approach, a participatory strategy...”*

**Metin KILCI**

*Undersecretary*



Turkey has become the primary country among OECD countries in which the energy demand has increased the most within last 10 years. Alike, our country has become the second largest economy, after China, in the world, having the second biggest demand increase in electricity and natural gas since 2002. Projections made by Ministry reveal that this trend shall continue in medium and long terms as well.

Within a market environment developing and changing so rapidly at both national and international levels, determination of future oriented vision and strategies for the country consequently for the Ministry is utmost important.

In a study conducted on public institutions, managers define strategic planning as a successful “Innovation tool in management” for the public sector. In our country, “Strategic planning” has been adopted as a fundamental tool in regard to enabling public institutions to introduce planned

services and to develop policies, to implement the stipulated policies in the basis of concrete work programs and budgets and to monitor and evaluate the implementations effectively. Strategic planning; shall introduce efficiency to public financial management and on the other hand shall provide support for the development and strengthening of institutional culture and identity.

In the preparation stage of Strategic Plan 2015-2019, unlike existing Strategic Plan and other Strategic Plans prepared by public sector within the framework of Law no. 5018, we concentrated to enable the strategic plan not to be considered as a legal obligatory document and to include it into “Strategy Documents” which provides the institutions to be the actors having a voice in the market, as well as in world literature.

Within this framework, based on source diversification for uninterrupted, sustainable, environmentally friendly, high

quality, reliable and cost effective energy supply to the final consumer and for energy procurement; strategic plan studies have been carried out to deploy indigenous and renewable energy sources at maximum level, to support reduction of energy intensity, to use nuclear energy in electricity generation, to minimize waste and environmental impacts of the energy, to reach a competitive energy system strengthening the country's strategic position in international energy trade. Besides, issues of bringing national mining to better points and providing the efficient utilization of mine resources, thus introducing it into economy have had their important places within this plan.

I truly believe that a multi-faceted Plan has been generated together with its adoption by our stakeholders in a manner where all our stakeholders actively participate to implementation process by observing requirements of the industry in maximum extent, adopting the principles such as being transparent, reliable, environmentally conscious,

participatory, innovative and pioneering in this regard.

I would like to extend my gratitude to all our stakeholders having contributions in this Plan. As in Preparatory process, I hereby wish to underline that the contributions of academic world, other Ministries and non-governmental organizations acting in our sector are also necessary in particular points in the implementation of this Strategic Plan.

I hope that; Ministry of Energy and Natural Resources' Strategic Plan 2015-2019, which was developed in the result of intensive studies lasted around a year and which carries the feature of being the reference document in the field of energy and natural resources in our country for the next 5 years period, would be beneficial for our country.

# Presentation of Strategy Development Presidency

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*“An innovative, participatory and sustainable strategic plan...”*

Ministry’s 2015-2019 Strategic Plan has been designed as a strategic road map, considering the developments in the field of energy and natural resources in the world, defining the sources owned by our country and its specific needs, determining the targets for meeting these needs in maximum level, and in such a structure which is;

- Participatory,
- Innovative,
- Multifaceted,
- Based on-reliable and accurate data-statistically validated,
- Accessible however-challenging objectives,
- Establishing synergy and balance between energy and natural resources that are two main fields of responsibility of the Ministry,
- Prioritizing environmental awareness,
- including the strategies-meeting the demand of energy and raw material of the economy of our growing country,
- Considering global trends, current conjuncture and prospective expectations,
- In compliance with other comprehensive policy documents constituting macro policy and strategies of our country.

In this regard, current situation analysis has been conducted to obtain proper and multifaceted information from different stakeholders having diversified perspectives and has been used as an input of the strategy. Besides, recent developments in the world and in our region have been analyzed in the field of energy and natural resources and have been reflected into our strategies. For compiling different thoughts, some practices such as meetings, workshops, focal group studies and questionnaires have been held at every stage of preparation studies with a broad participation and an analysis, so design process based on consensus has been experienced.

The analyses in 2015-2019 Strategic Plan Preparatory Studies in which multidimensional data collection structure was designed and applied, therein, were based on the data sources as follows:

## **Stakeholder, Product and Service Analysis**

Stakeholders of the Ministry have been analysed in accordance with their effects and significance towards the Ministry as well as their relationships with the Ministry and have been incorporated into preparatory studies of the Strategic Plan. The products and services offered by the departments of the Ministry have been analysed for being used as inputs in situation analysis. As a result of these analyses:

As our Internal Stakeholders;

- Central Units of the Ministry
- Affiliated, Associated and Related Institutions.

As our External Stakeholders;

- Relevant Public Institutions and Organizations,
- Academic Institutions
- All Non-Governmental Organizations in the field of Energy and Natural Resources,
- Economic and Social Non-Governmental Organizations,
- International Organizations,

were determined respectively and all stakeholders were provided to attend the preparation process with maximum level .

## **Meetings and Focus Groups Studies**

Within the scope of analyses, meetings and focus groups studies have been carried out and in this regard, the Minister, the Deputy Minister, the Undersecretary, the Deputies Undersecretary, Central Departments and General Directors of Affiliated, Associated and Related Institutions, Deputy General Directors and relevant Head of Departments and several experts have congregated for this purpose.

## **Questionnaires**

Questionnaires have been conducted for obtaining opinions and expectations relating to the issues and strategies required to attain strategies in question by stakeholders and reaching a large participation group and then results of the questionnaire have been analysed and have been used as one of fundamental inputs of Strategic Plan. Questionnaires have been conducted to 7 different groups as

- Personnel of the Ministry
- Central Units of the Ministry



- Affiliated, Associated and Related Institutions of the Ministry
- Non-Governmental Organizations relating to Energy and Natural Resources
- Other Economic and Social Non-Governmental Organizations
- Public Institutions that are External Stakeholders of the Ministry
- Academicians of Academic Departments and Universities relating to Energy and Natural Resources.

These questionnaires with average 20 questions each having open and closed ended questions together have been implemented as Internet-based medium and their results have been analysed. Questionnaires which had been replied by over 1100 real and legal entities were separately examined, classified and consolidated, so as to form a meaningful integral.

### Workshops

SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) Workshops with three full day sessions have been conducted and the results have been used as an input through all studies.

- On February 11, 2014, the workshop has been held with a participatory groups of 45 persons comprised of Central Units of the Ministry, Top Directors of Affiliated, Associated and Related Institutions to receive opinion of Strategic Planning Board providing input to the Strategic Plan with the participation of the Minister.
- On February 12, 2014, the workshop was held where SWOT analysis were carried out with Strategic Planning Team (SPE) and internal stakeholders on draft themes in which opinions were received regarding objectives related to Strategic Plan.
- On February 13, 2014, the workshop has been carried out in which the opinions in regard to objectives of the Strategic Plan have been obtained and SWOT analysis has been conducted on the basis of draft themes and with a comprehensive participation with external stakeholders comprised of representatives of Non-Governmental Organizations representing all enterprises carrying on operation in energy and mining, relevant academicians and representatives and relevant public institutions.

In addition, a participatory approach has been adopted during designation stage of the strategies and a wide range of meetings have been held where top management actively participates. In order to provide the embracement of strategic theme, goal and objectives designed in these meetings by the top management a separate workshop for a period of two days held with participation of the Minister, the Deputy Minister, the Undersecretary and Deputy Undersecretaries, Central Units of the Ministry, Top Directors of Affiliated, Associated and Related Institutions and opinions of all participating units were received.

### Literature Research over Public Data at Local and Global Scale

Required literature research has been conducted in terms of theoretical infrastructure of the study and exemplary im-

plementations in other countries from which lesson can be drawn in positive and negative sense for the Ministry and global trends constituting input for the analysis have been examined. These studies have contributed to global perspective evaluation of strong and weak aspects of the Ministry and it has enabled opportunities and threats to be reviewed in both domestic and internal platforms.

### Examination of Top Policy Documents

Top policy documents in which the Strategic Plan should be in conformity with in absolute terms have been perused and evaluated within the framework of the considerations likely to affect the Ministry. Within this scope;

- 62<sup>nd</sup> Government Program and Annual Program,
- Medium Term Program (2014-2016),
- Medium Term Financial Plan (2014-2016),
- 10<sup>th</sup> Development Plan,
- The Decisions of Science and Technology Higher Board,
- Energy Efficiency Strategy Document,
- Electricity Sector Reform and Privatization Strategy Document ,
- Electricity Market and Supply Security Strategy Document

have been examined.

As a result of all the studies set out above, our plan has involved eight themes in total which are Energy Supply Security, Energy Efficiency And Energy Saving, Good Governance And Stakeholder Interaction, Regional And International Effectiveness, Technology, R&D and Innovation, Improvement of Investment Environment, Raw Material Supply Security, Efficient And Effective Use of Raw Material. These themes have been formed elaborately as a frame where synergy and interactions of energy and natural resources sectors have been reflected, establishing unbiased significance to the sectors - Alongside these eight themes, economic, social and environmental sustainability has been designed as a framework for all other themes;

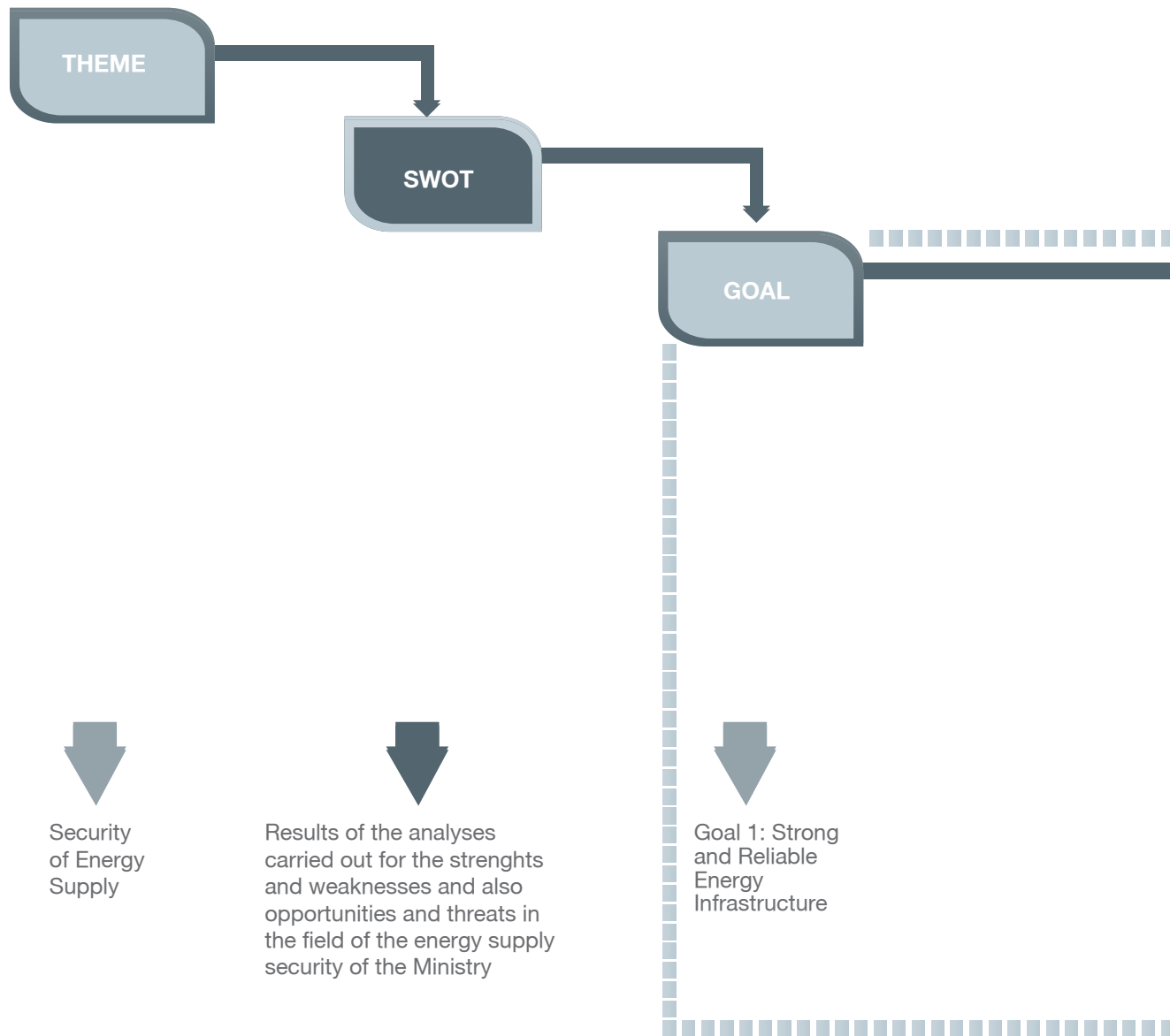
### The Strategic Plan has been structured as follows:

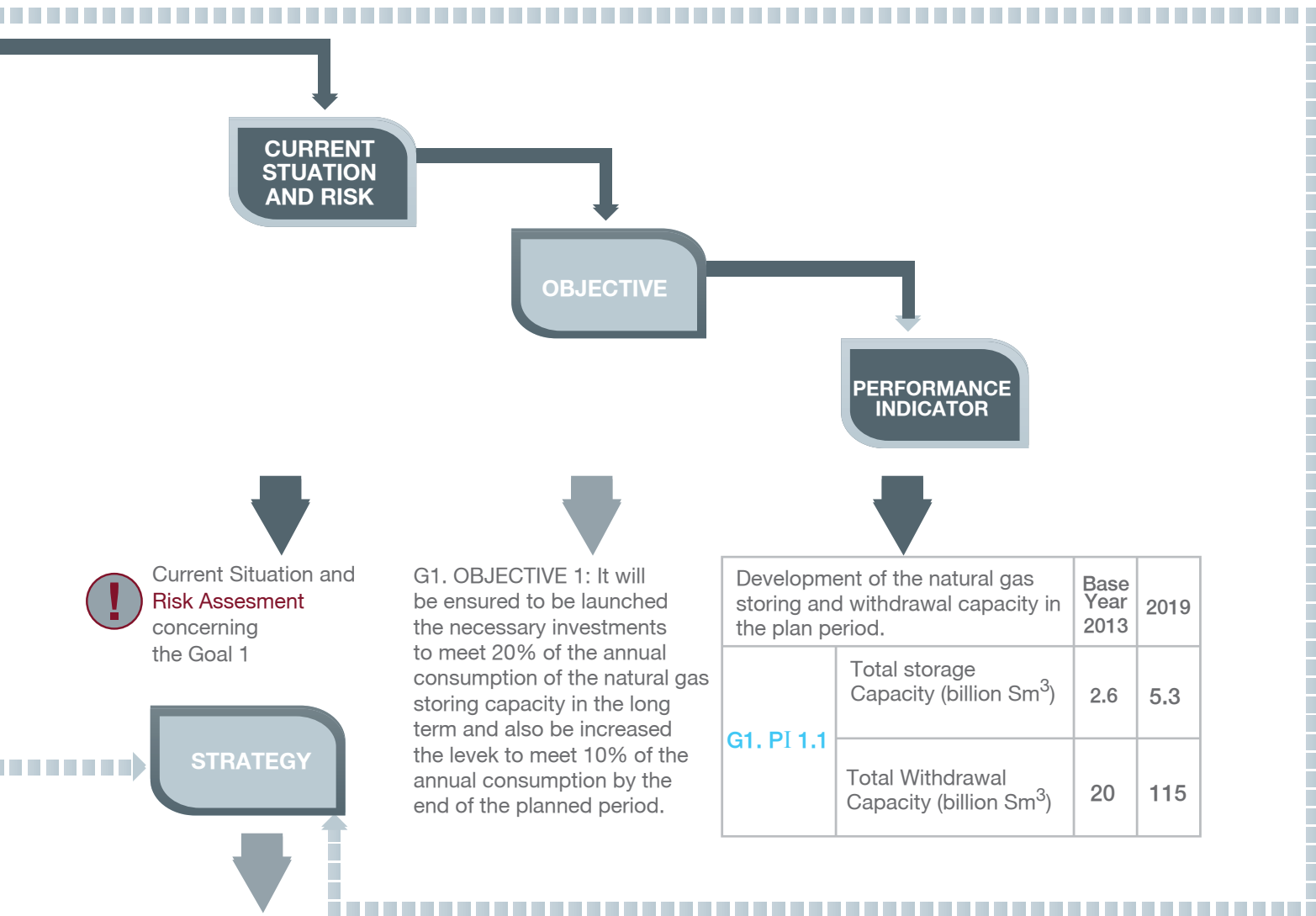
- Name of the theme for each theme, justification for theme, a brief assessment relating to prioritized risks and current situation, SWOT analysis findings (the results of SWOT analysis have been interpreted and transferred herein by considering the fact that strong and weak sides have mostly the same roots and opportunities and threats are in complementary nature instead of listing strong and weak sides, opportunities and threats separately).
- Goals within the scope of the theme,
- Objectives in regard to attaining this goal under each goal and performance indicators for each objective,
- Relevant strategies to be applied for attaining the said goal for each objective.

This structuring is as follows as explained in the example provided below:

# How Should the Strategic Plan Be Read?

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**!** Current Situation and Risk Assesment concerning the Goal 1

G1. OBJECTIVE 1: It will be ensured to be launched the necessary investments to meet 20% of the annual consumption of the natural gas storing capacity in the long term and also be increased the levek to meet 10% of the annual consumption by the end of the planned period.

Development of the natural gas storing and withdrawal capacity in the plan period.		Base Year 2013	2019
G1. PI 1.1	Total storage Capacity (billion Sm <sup>3</sup> )	2.6	5.3
	Total Withdrawal Capacity (billion Sm <sup>3</sup> )	20	115

**STRATEGY**

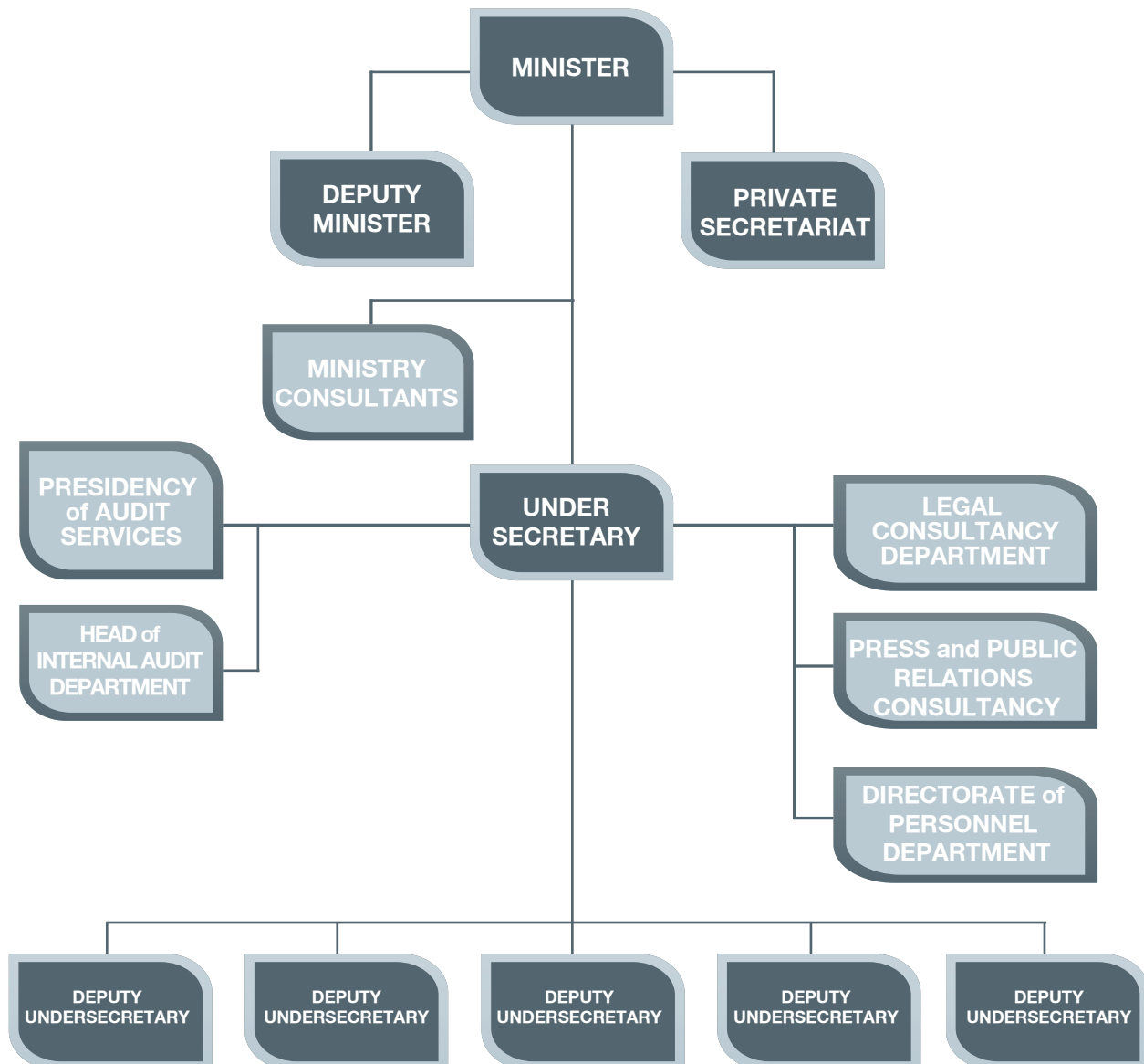
It will be ensured to be increased the backward production capacities in the current natural gas storage facilities.

# 1. Situation Analysis

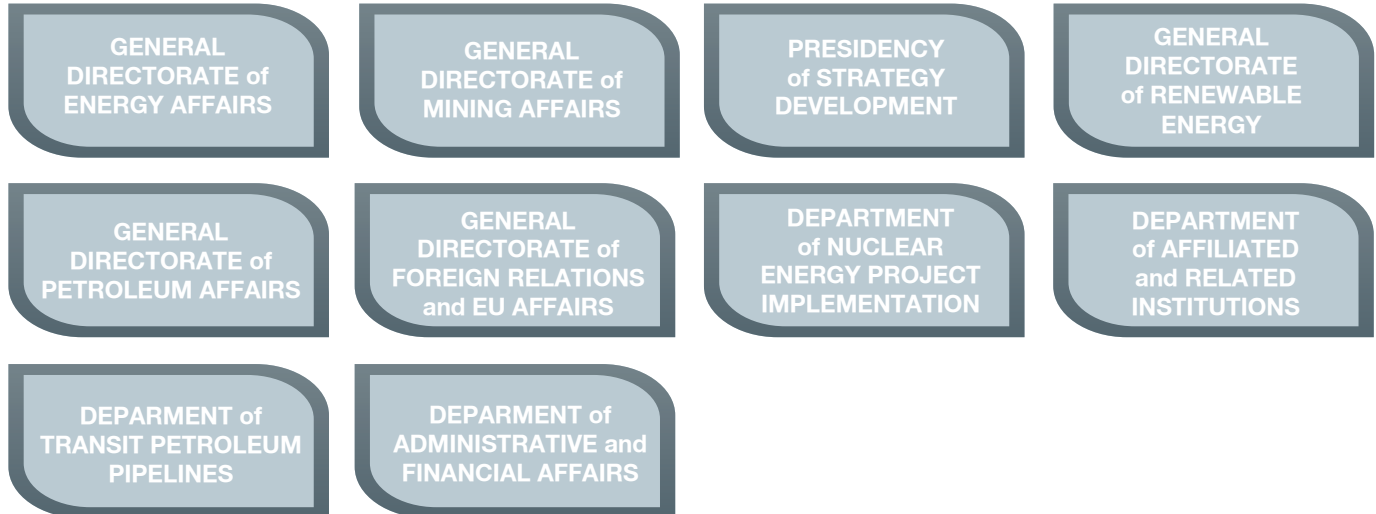
## History of the Ministry and its Organization

The Ministry of Energy and Natural Resources was established upon the approval of the Presidency dated 25.12.1963 and no. 4-400 based on the power vested by the Law no. 4951. Organizational Law of the Ministry was regulated by

the Statutory Decree dated 13.02.1983 and was finalized by the Law no. 3154 issued on 01.03.1985 and the Statutory Decree dated 02.11.2011 and no. 662 stipulating some amendments in this Law. Accordingly, the Ministry has 8 main service departments, 5 consultancy and audit departments and 3 ancillary service departments. Organizational chart of the Ministry as of June, 2014 in which the Strategic Plan was prepared is as follows:



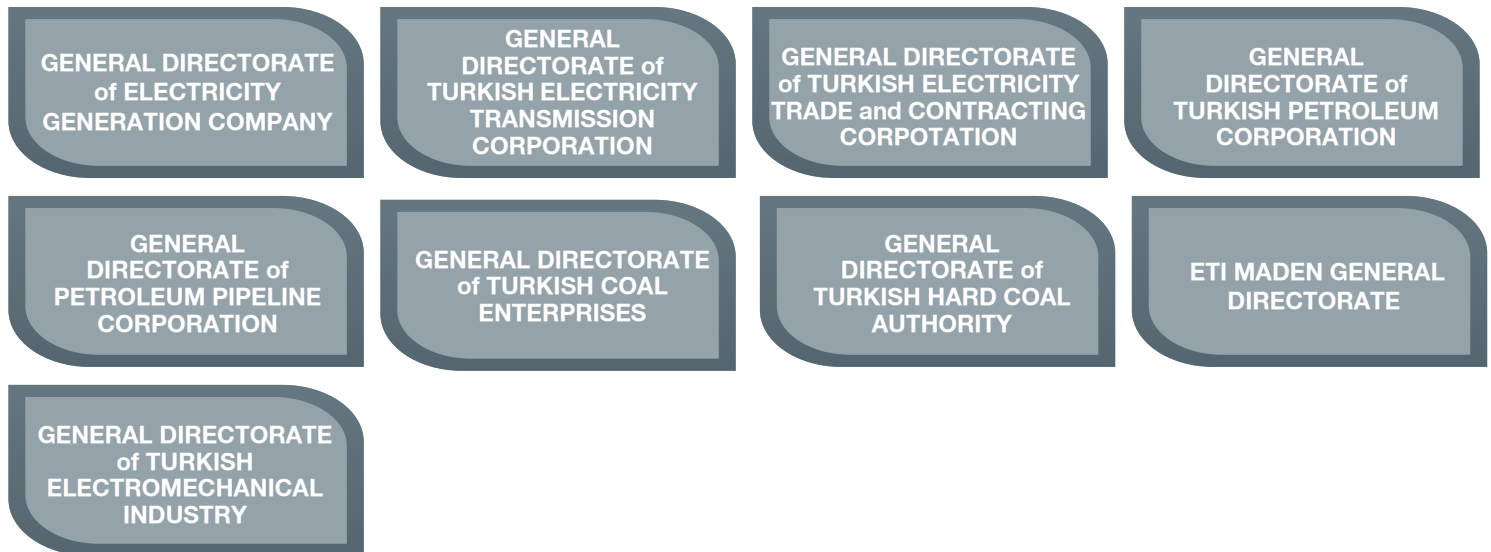
## CENTRAL UNITS



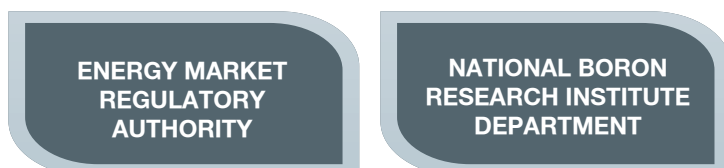
## AFFILIATED INSTITUTIONS



## RELATED INSTITUTIONS



## ASSOCIATED INSTITUTIONS



General Directorate of Turkish Electricity Distribution Corporation (TEDAS) with its 21 privatized Electricity Distribution Regions under its responsibility and included within the scope and program of privatization with the Decision of High Board of Privatization dated 02.04.2004 and no. 2004/22 are not included within Affiliated, Associated and Related Institutions in its organizational chart and has been designated as responsible body for some objectives set out in the Strategic Plan since its field of operation is directly associated with the Ministry.

## Establishment Purpose, Authority, Roles and Responsibilities of the Ministry

Establishment purpose of the Ministry in accordance with the Law on Organization and Roles of the Ministry of Energy and Natural Resources no. 3154 is help determine improvement and strengthening of objectives and policies, defence of the country, security and welfare and national economy in reference with energy and natural resource and to enable energy and natural resources to be investigated, developed, generated and consumed in duly manner. Roles of the Ministry have been defined in the foregoing Law as follows:

- Determining short and long term requirement of the country to energy and natural resources, helping determine required policies for their supplies, conducting their planning,
- Helping determine general policy principles for the purpose of exploration, operation, development, improvement, evaluation, control and maintenance of energy and natural resources in compliance with the benefit, technical requirements and economic development of the country, conducting required programs, preparing and causing to prepare plans and projects,
- Granting the rights of exploration, installation, setting up, operation and utilization in regard evaluation of these resources, performing transfer, assignment and rescission procedures of these rights, if necessary, establishing mortgage, expropriation and other restricting rights and recording and maintaining the registries of the same,
- Providing and inspecting coordination of assessment studies of general policies of survey, establishment, operation and maintenance services of generation, transmission and distribution plants of energy and natural resources in compliance with public needs, Security and benefit,
- Designating generation, transmission, distribution and consumption prices policies of the products together with underground and superstructure energy and natural resources and determining their prices, if needed,
- Examining and approving operating and investment programs of Affiliated and Related Institutions of the Ministry and monitoring and evaluating their activities based on annual programs,
- Inspecting, scrutinizing and examining all studies and procedures of Affiliated and Related Institutions of the Ministry

and giving all kinds of required commands and supporting the same,

- Involving with the studies in respect with determination of the policies and strategies intended for enhancing energy efficiency and evaluation of renewable energy resources and performing the studies in regard with determination of these policies and strategies,
- For the purpose of fulfilling the roles revealed hereinabove, gathering and evaluating required information and performing preparatory studies relating to determination and development of long-term policies.

## Global Overview to Energy and Natural Resources Industry

A national strategy to be determined in the industry of natural resources continuing with changed contour but with relative higher stability with energy industry that is an extremely dynamic sector whose balances, requirements and sides in global scale rapidly vary is of utmost importance for taking into consideration current developments in the world and in our region. Development experienced in energy market, access to new resources in parallel with technological advancements, generation and consumption values varying in the country and increasing environmental concerns continue to mould global energy industry. When our energy dependency is taken into account in the field of energy and natural resources, the risks posed by varying markets under the effect of global and regional trends are crucial for Turkey. When it is viewed from this perspective, operation and strategies of the Ministry are being affected from several external factors. These factors can be summarized as:

- Global and regional geopolitical and geostrategic developments,
- Developments in energy and natural resources markets
- State-of-the-art technologies
- New energy resources
- Diverse environmental susceptibilities
- Changing route of trade
- Global and domestic macro-economic developments
- Preferences and values changing in generation and consumption approaches.

By considering the foregoing, what leading trends are in global energy industry within the scope of the 2015-2019 Strategic Plan Preparatory Studies, how these trends exhibit variation and in what way they will affect our country have been elaborated. The said investigations are outlined below: Rise in oil prices, low fluctuations in recent period and development of new exploration and generation technologies have caused an investment environment which will enable performing generation with unconventional generation methods from rock petroleum and rock gas reserves that are harder to access.

While vast majority of global gas generation is used for do-

mestic consumption, a ratio in the amount of 31% is subject to international trade. Although global natural gas trade has not been within a change in recent times, advancements in demand and supply sides boost especially new LNG terminal investments. A myriad of LNG terminal investments have been carried out in global platform in parallel with expected natural gas export impetus of the USA and for the purpose of meeting increasing natural gas demand depending on trend of natural gas use undergone in Japan after Fukushima and in emerging Asia economies. New fields discovered in Africa also increases LNG operations in the region.

Liberalization and spot market formations undergone in natural gas markets impose a pressure in regard to changing the methodologies implemented in determination of prices of natural gas in past periods.

In addition to these developments undergone in global arena, new resources such as Northern Iraq oils, Eastern Mediterranean gas reserves, developments such as Azerbaijan pipeline operations, removal of Iran embargo and Ukrainian crisis are of utmost importance in terms of petroleum and natural gas operations.

Renewable energy investments have continued to increase in recent times; electrical generation based on renewable energy at the end of 2012 in the world has reached 4.888 TW. Renewable energy technologies play a vital role in not only electricity generation in the world but also in meeting heating demand. At the end of 2011, except conventional bio-mass, contribution of renewable energy for meeting of heat demand reached up to 8,8%. In particular, Germany, Spain and England, leading countries in European Union in the field of renewable energy have been implementing their renewable energy targets rapidly in line with their strong policies and supporting action plans. Specifically, Germany and Spain have aimed to develop their domestic equipment industry in solar energy technologies and applied policies involving serious incentives in this respect. The said policies have provided installed power to reach serious levels in a short time. However, in line with the burden on the public finance brought by the incentives and the decline in equipment costs due to advanced technology, it is seen that these countries should review their incentive policies today.

Coal, particularly in the recent period, by the impact of clean coal technologies, has reached a different position and become to be more alluring phenomenon. According to the data of International Energy Agency (IEA), it is has been shown that the share of coal in worldwide electricity generation has been 37.4% in 1990. This share rose to 40.3% by 2012 and maintained its first place among all sources and it is projected that it has maintained its rank in all resources until 2035. Developments experienced in the trade volumes of coal markets provide opportunity for expansion of physical and financial coal trade and allow reaching further liberal and liquidity market structure. Increase of liquidity and trade volume has provided the formation of financial derivative products. In the coal prices which developed under the effect of petroleum prices until 2011, particularly due to coal supply that USA has contributed to international coal trade in the recent period, a decline has occurred independently from petroleum prices. The decrease of exports in Russia and South Africa towards Europe and the low performance shown by these two countries in their total trade volume, not in short term, shall cause their positions to regress in European Coal Market in long term.

Increasing electric power demand makes nuclear energy to be the most important source base load power plants. Large scaled nuclear disaster resulted by the earthquake in Fukushima region in Japan March 11th, 2011 caused the confidence of governments, relevant institutions and individuals on nuclear energy to be shaken throughout the world and resulted in organization of various anti-nuclear protests in various countries and pushed the countries to review their nuclear power programs. However, many countries, for providing their Security of Energy Supply, begin to make new nuclear investments based on current technology by increasing their security measures.

Energy efficiency, which is considered as the cheapest and the most clean energy source for supply is an area which is getting higher and becoming more attractive every passing day throughout the world, particularly European Union member countries. Based on IEA data, it is stated that the investments made in 2011 all around the world in the field of energy efficiency by public sector, major private enterprises and multilateral financial institutions have reached up to 300 billion dollar. Besides, taking into consideration the investment made by small enterprises, it is evaluated that energy efficiency investments are much more than their anticipated value. Investments towards energy efficiency are expected to continue increasingly in the middle term.

In energy and natural resources sectors, technologies particularly the implementations such as carbon capture and storage technologies, fuel batteries, struggle against climate change and global carbon markets, nuclear fusion energy technologies and demand side management have significant game changing potential. It is inevitable that our national energy and natural resources policies should be evaluated in such a manner not to fall behind the global developments and to comply with these improvements.

Mines, naturally must be extracted where they are located. Mining processes need a sensitive and integral structure in which all parties participate in terms of economic, social and environmental aspects. On the other hand, raw materials constitutes the backbone of the industry which plays a leading role in enhancement of social welfare and provision of employment.

From a global point of view, despite energy mineral raw materials have been discussed by various agreements, a serious policy on out of energy minerals classified as metallic minerals, construction (structure) minerals and industrial minerals could not be established until 2000's. However, as a result of increasing concerns in terms of supply Security, particularly in EU and the USA, developed countries began to form their out of energy policies. The policies formed within this framework are generally classified into three main groups; raw material supply both inside the country and abroad, replacement products and source efficiency and conversion, whereas innovation has been defined as an issue intersecting with all these policies.

In this respect, although it seems contradictory in conceptual aspect, forming an effective mineral policy for a sustainable mining in compliance with environmental aspects and providing occupational health and Security conditions are a priority for the management of our natural resources so as to provide contribution to our national welfare and social development.



## 2. Implementation Results of Strategic Plan 2010-2014

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In the Strategic Plan 2010-2014, the Ministry have set 11 strategic goals and 32 strategic objectives under 5 strategic themes and created performance indicators regarding these goals and objectives and performed monitoring and evaluation activities in every six- month periods.

For proactive monitoring, reporting of stages recorded in implementation process and evaluation of probable deviations from strategic targets, thus taking necessary measures in time are of utmost importance. Within this scope, data regarding indicators included in 2010-2014 Strategic Plan have been obtained from the Departments of the Ministry and developments recorded for each objective have been duly evaluated.

As a result of performance evaluation made for the plan period, the objectives considered as successful -partially successful and unsuccessful- have arisen. In "Monitoring and Evaluation Reports" prepared within this scope and submit-

ted to top management of the Ministry in specific periods, the reasons of deviations from objectives of which performances have been found partially successful or unsuccessful and evaluations made on suggestions for necessary have been included in detail.

Under the consideration of these findings included in the report, generally due to some reasons such as; problems sourced from the applicable legislation, delays occurred within the permit process, infrastructural deficiencies, restrictions on authority and coincidences, slow progress in some markets needed to be restructured, it has been decided that some objectives could not be accomplished at desired level but an improvement may be provided due to some measures to be taken in following periods. For this reason, most of the objectives considered as unsuccessful or partially successful included in the prioritized policy and strategies of the Ministry have taken its place in this plan again.



### 3. Mission, Vision, Basic Values and Principles

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## Mission

*Providing the highest contribution to national welfare by utilizing energy and natural resources in the most efficient and environmentally-conscious manner*

## Vision

*A reliable future in energy and natural resources*

# Basic Values and Principles

- ***Transparency***

To accomplish the activities as accessible by relevant parties and offering them to the public within the scope of the legislation

- ***Reliability***

To execute the activities in accordance with the purpose of a reliable and prestigious institution in national and international platforms

- ***Environmentally-consciousness and Respect to Life***

To execute the activities within the framework of environmental sustainability and respect to life principles

- ***Participation***

To take into consideration of the stakeholders'

opinions, suggestions and expectations as far as possible within our policy making processes

- ***Innovativeness and leadership***

To support R&D studies and to lead the use of domestic and new technologies

- ***Efficiency***

To use public sources, allocated to the Ministry, in line with the objective of providing the productivity and efficiency

- ***Consistency and Predictability***

To execute our activities in stable manner under the protection of national benefits in the light of medium and long term reliable projections and in line with global improvements.

## 4. Strategic Plan 2015-2019

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Strategic Plan 2015-2019, in particular for developing Ministry's institutional and executive capacity, has been structured on themes meeting daily requirements of the sector and forward expectations in the field of energy and natural resources requiring policy development. Selection of the themes has been achieved on the basis of participatory studies such as questionnaires workshop, focal group meeting made performed by internal and external stakeholders and current situation and trend analyses at local, regional and global scale. Strategic Plan 2015-2019 of the Ministry consists of 8 themes, 16 goals and 62 objectives in total, and involves the following outline;

In the field of **Energy and Natural Resources;**

- Good governance and stakeholder interaction,
- Regional and international effectiveness,
- Technology, R&D and innovation,
- Improvement of investment environment,

while following common development requirements are emphasized,

In the field of **Energy;**

- Supply Security,
- Energy efficiency and saving

In the field of **Natural Resources;**

- Efficient and effective raw material use,
  - Raw material supply security,
- come to the fore.

Sustainability considered as an inevitable concept for the process of introducing energy and natural resources into economy and their consumption has not been designed as a separate theme but designed as a frame to include all themes. The Strategic Plan has been aimed to be implemented under the consideration of environmental, economic and sustainability principles in terms of its all goals, objectives and strategies.

# S U S T A I N

## ENERGY

**Security of Energy Supply**

**Goal 1: Strong and Reliable Energy Infrastructure**

**Goal 2: Optimum Resource Diversity**

**Goal 3: Effective Demand Management**

**Energy Efficiency and Energy Saving**

**Goal 4: Turkey; Making Use of Its Energy in the Most Efficient Way**

**Goal 5: Improved Capacity for Energy Efficiency and Saving**

**Good Governance and Stakeholder Interaction**

**Goal 6: The Ministry with a Strong Corporate Capacity**

**Goal 7: The Ministry Using Information Technologies Effectively**

**Goal 8: A Well-Coordinated Ministry**

# ABILITY

Regional and International Effectiveness

Technology, R&D and Innovation

Improvement of the Investment Environment

Raw Material Supply Security

Efficient and Effective Use of Raw Material

## NATURAL RESOURCES

Goal 9: Turkey Integrated with Regional Energy Markets

Goal 10: A Powerful Actor in the International Arena

Goal 11: Indigenous Technology in Energy and Natural Resources

Goal 12: A Result-Oriented R&D Approach

Goal 13: Competitive and Transparent Markets

Goal 14: Improved Investment Processes

Goal 15: Security of Non-Energy Raw Material Supply

Goal 16: Efficient and Effective Use of Non-Energy Natural Raw Materials



With its generation, import, transmission,  
storage and distribution infrastructure

# TRUST IS NOT A MATTER OF COINCIDENCE IN NEW TURKEY



# THEME

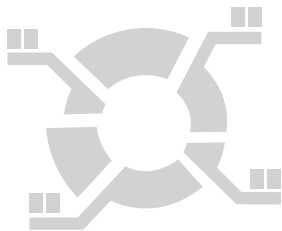
# 1

## Security of Energy Supply

### Why Security of Energy Supply?

Main components of security of supply are considered to be the provision of generation and imports, transmission, storage and distribution infrastructure and management of demand. Although security of supply invokes getting focused on provision of supply, it is not possible to provide the security of supply in structures in which demand and the in-

frastructure bringing together the supply and demand physically are not taken into consideration. Supply, demand and all components between them as transmission function are considered to be complementary issues and these factors are required to be handled all together for enabling proactive management of security of supply.



### Results of SWOT Analysis

- The structure of electricity generation dependent on natural gas bears important risk, therefore it is necessary that the share of natural gas in electricity generation should be decreased and countries for imports should be diversified.
- It is necessary that investments on transmission and distribution infrastructure should continue and should be completed on time for the purpose of supporting the sectoral growth in electricity and natural gas.
- Natural gas storage capacity is not adequate currently and is required to be increased.
- We have substantial potential in terms of both electricity and heat generation in renewable energy sources such as solar, wind, hydro-electric, geo-thermal, bio-mass, wave and tidal. However, in order to accomplish utilization of this potential fully, financial opportunities should be improved, legislation should be updated and transmission infrastructure should be strengthened; furthermore investor awareness should also be increased.
- Turkey, due to its position, is suitable for being an energy transition centre (hub); however relevant infrastructure, market formation and regional effectiveness should be provided.
- A considerable import dependency exists in oil and natural gas. Although we have some institutions involved in oil and natural gas exploration studies, these activities should be intensified, initiatives for shale gas exploration and generation should be taken, strong domestic companies should increase their foreign contacts and initiatives and foreign sources should be introduced into domestic utilization.
- There exists an important demand management potential in industrial sector for lowering the peak demand in electricity, but legislation and market structure should be developed for enabling an active demand management implementation.



# GOAL

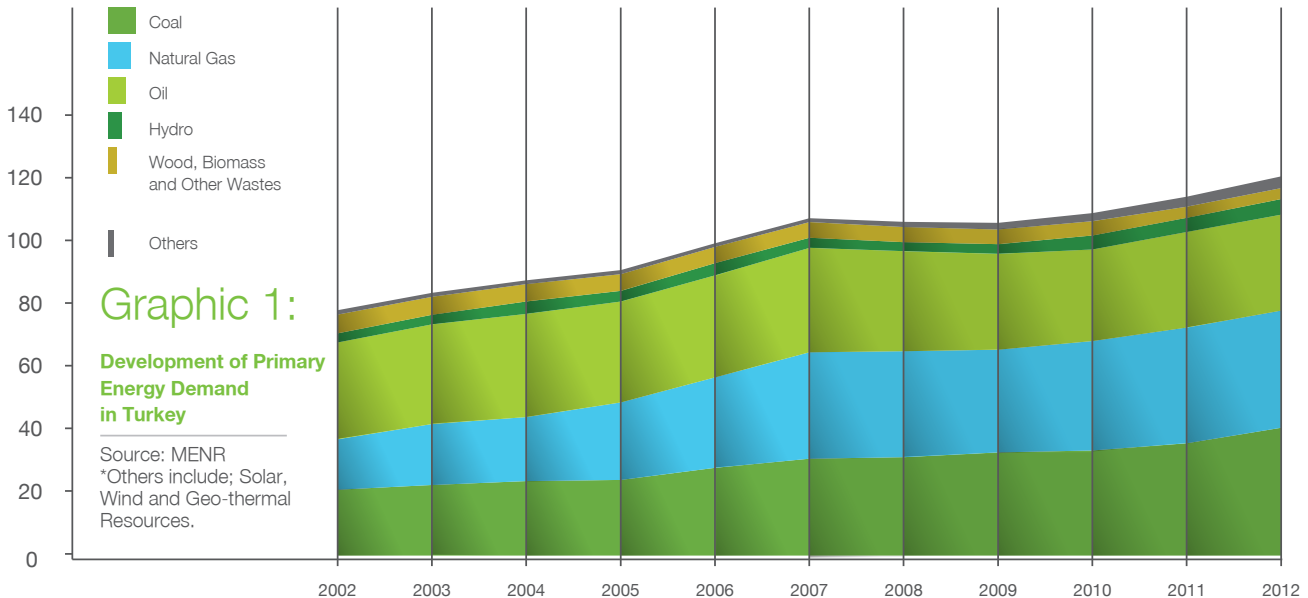
# 1

## Strong and Reliable Energy Infrastructure

Security of supply is handled as three components which are respectively supply, demand and infrastructure which provide opportunity to bring demand and supply together, and any lack of these components means that security of supply is not able to be managed efficiently. From this point of view, bringing energy infrastructure into a strong and reliable

stage so as to include electricity transmission and distribution, natural gas transmission and distribution and storage shall enable to access energy in desired place and time and shall provide utility for reaching security of supply and desired competition level in energy markets.

Million TOE

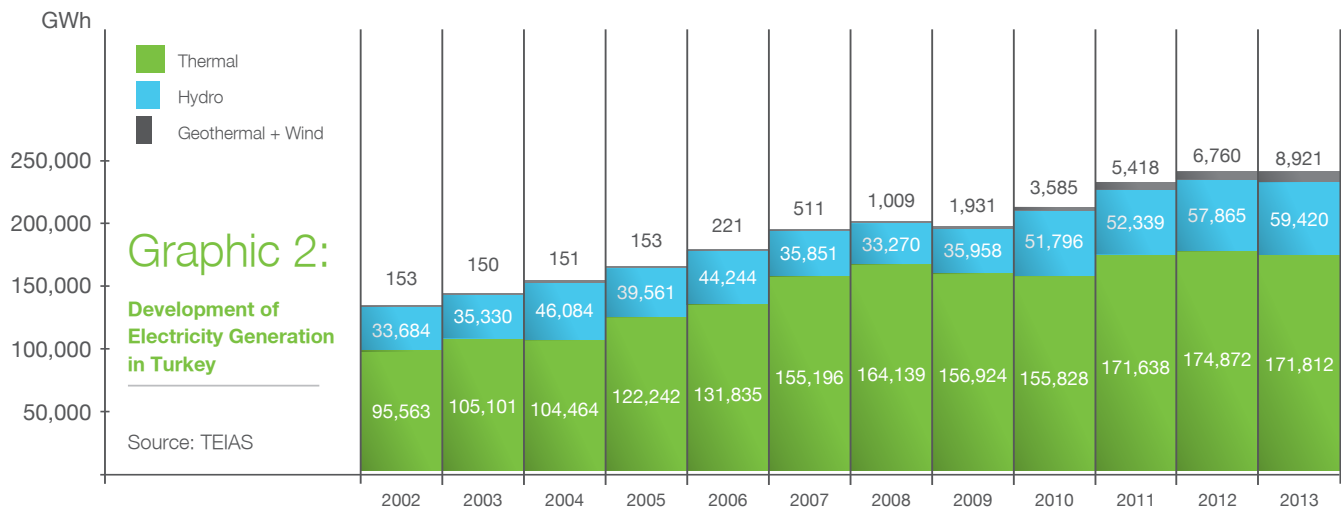


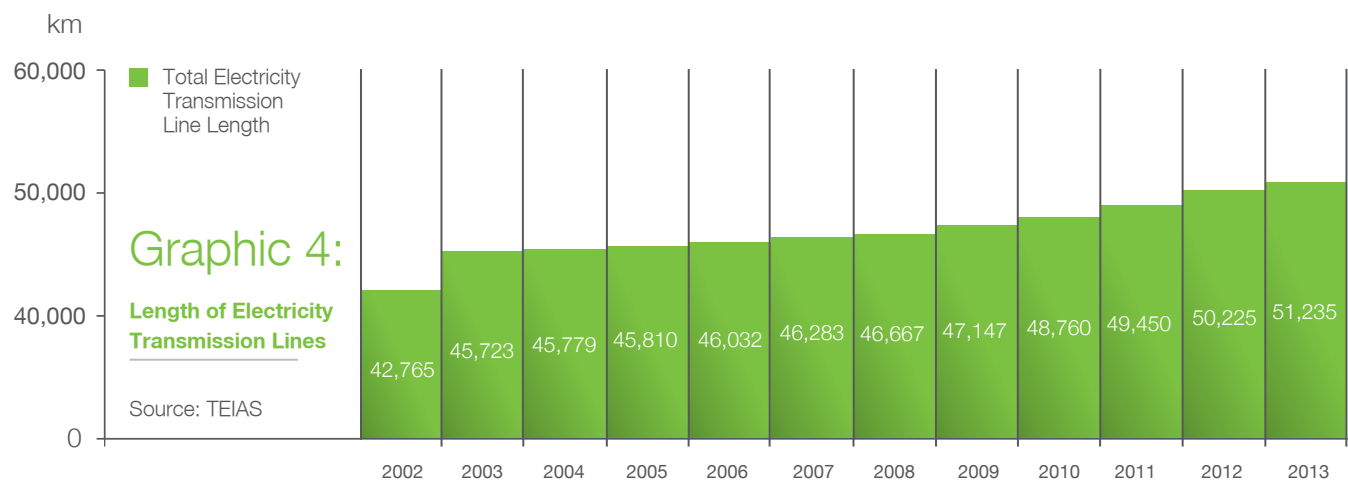
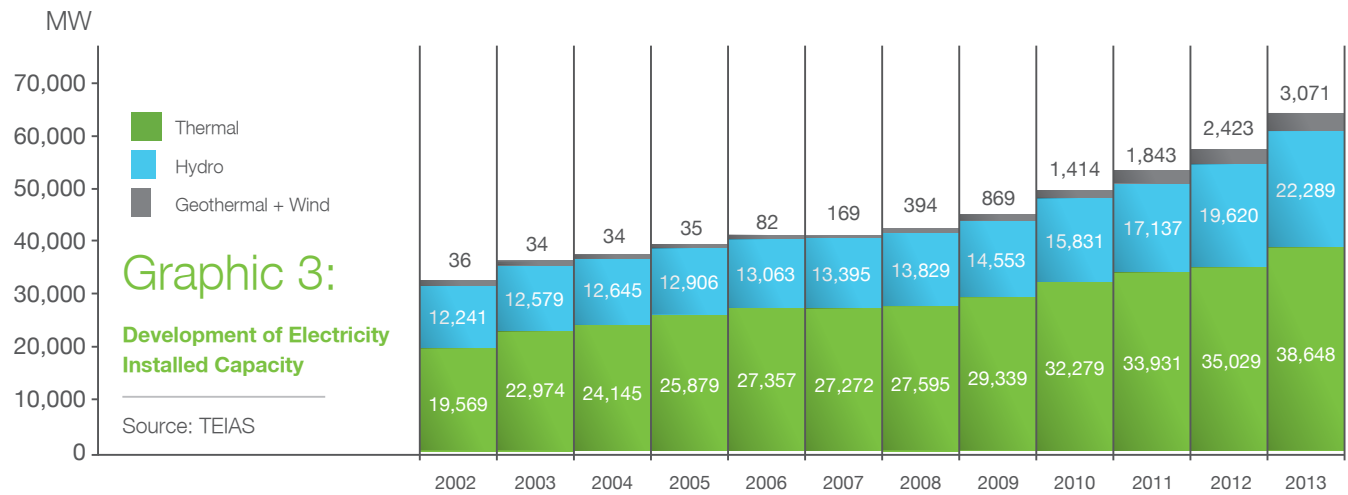


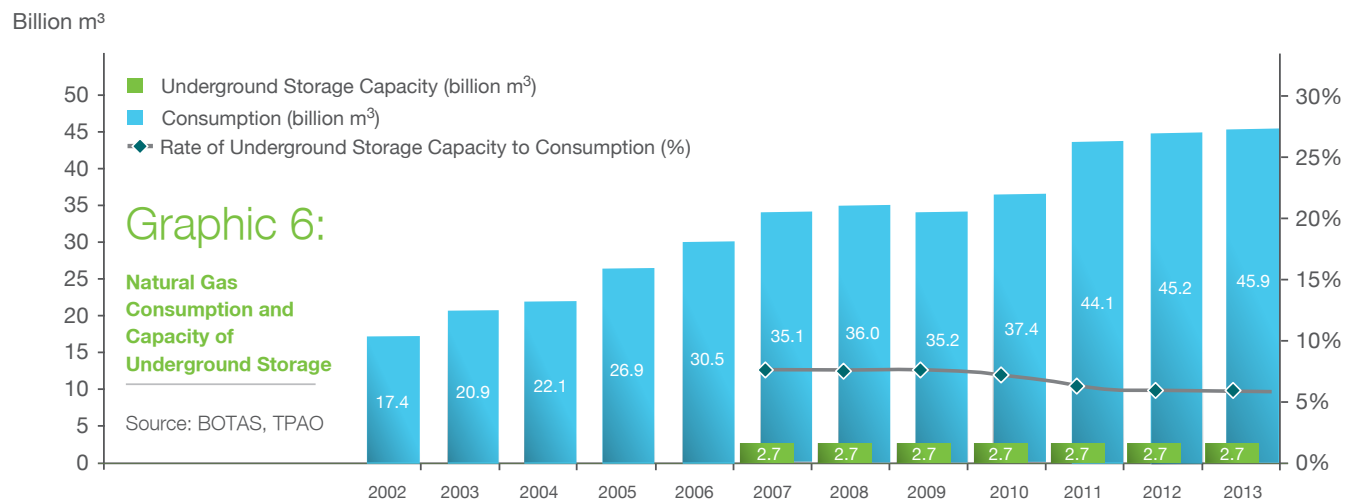
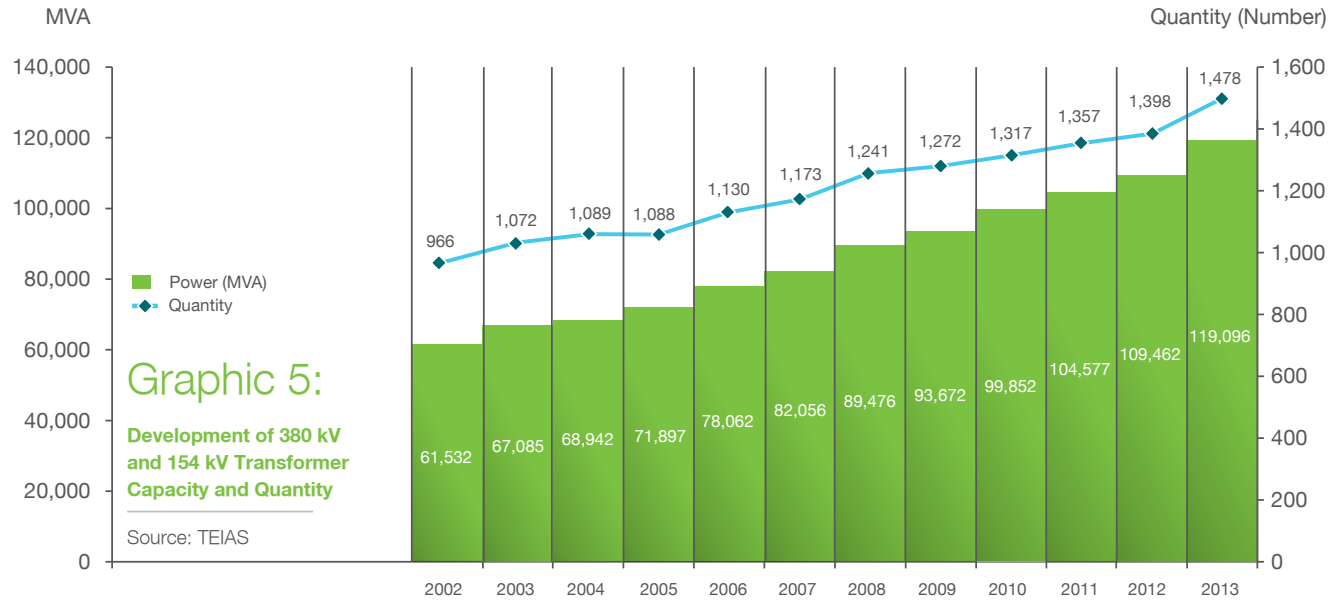
When the situation is examined in terms of natural gas, benefiting from cheap natural gas resources efficiently, under the consideration of seasonal fluctuations such as increase of consumption due to decreasing temperatures in winter, and failures arising out of the import country for enabling to meet the natural gas demand without being interrupted, it is aimed that natural gas storage capacity should be brought to such a level where 10% of annual consumption could be satisfied and transmission line restrictions should be removed. In addition, it is of high importance to launch and follow up the investments which would provide the storage capacity to be brought to such a capacity where 20% of the annu-

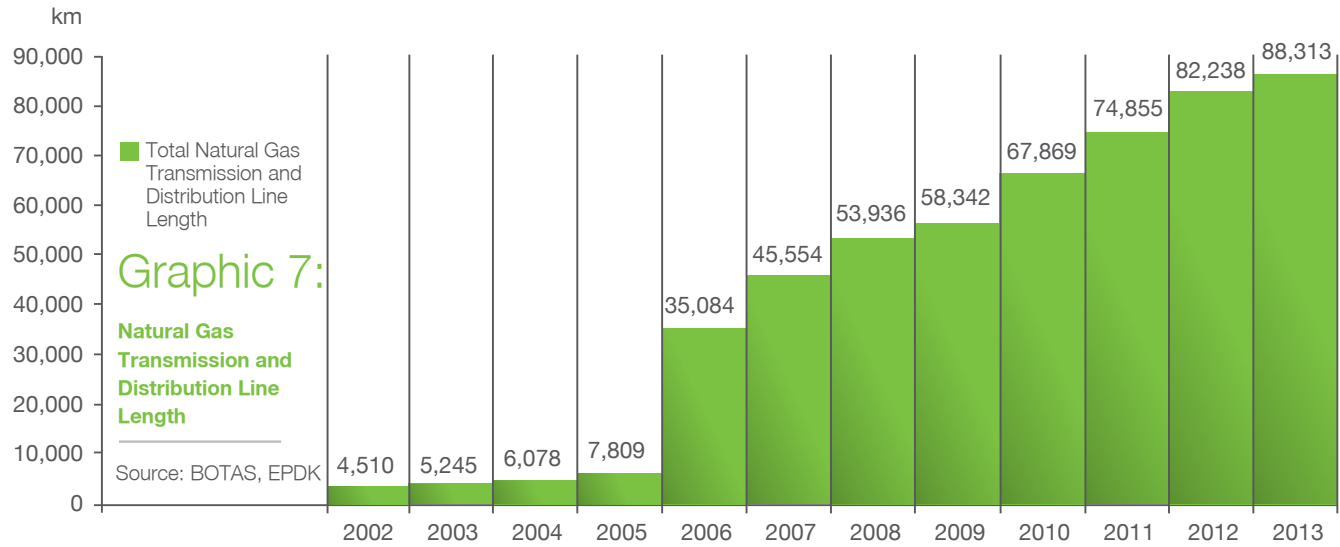
al consumption could be met. For this purpose, necessary investments are to be supported and relevant reports and programs are to be prepared.

When the situation is examined in terms of electricity market, planning the transmission lines in line with generation development plans in the long term and under the consideration of supply- demand balance in the short and medium term shall provide that electricity shall be available to be used where and when requested; furthermore important contribution shall be provided for avoiding problems which may arise due to restrictions in the market.









**Graphic 7:**  
Natural Gas Transmission and Distribution Line Length



**Figure 1:**

**The Provinces Supplied with Natural Gas**

Source: BOTAS

- Provinces where the Gas Supply was provided in 2002 and before (9 Provinces)
- Provinces where the Gas Supply was provided between 2002 and 2013 (64 Provinces)
- Provinces where ongoing construction works are available (5 provinces)
- Provinces where ongoing engineering studies are available (3 provinces)

Particularly, when direct relation between natural gas and electricity markets is taken into consideration, strengthening of natural gas and electricity infrastructures within the scope

of plans and in coordination shall provide contribution to security of supply.

Natural gas storage plant investments are not only in the monopoly of public sector but should be also accomplished by private sector. Storage investments need time to be implemented due to higher financing requirement and technical difficulties. Financing problems and technical requirements are the most influential risks to obstruct the timely commis-

sioning of these investments. These risks should be managed by making the investment environment to comply with tariff, legislation and incentives, etc. for the private sector, and by advancing these investments in compliance with the plan for public investments.



## G1. OBJECTIVE

1

To ensure natural gas storage capacity to be able to meet 20% of the annual consumption in the long term, necessary investments shall be initiated and shall be brought up to a level so as to be capable of meeting at least 10% of the annual consumption until the end of the plan period.

Coordinator: EIGM

Responsible Bodies: PIGM, BOTAS, TPAO, EPDK

### Performance Indicators:

Natural gas storage and withdrawal capacity		Base Year 2013	2019
G1.PI.1.1	Total Storage Capacity (billion Sm <sup>3</sup> )	2.6	5.3
	Total Withdrawal Capacity (million Sm <sup>3</sup> /day)	20	115

Tuz Gölü natural gas storage and withdrawal capacity		Base Year 2013	2017	2019
G1.PI.1.2	Tuz Gölü Storage Capacity (billion Sm <sup>3</sup> )	-	0.5	1
	Tuz Gölü Withdrawal Capacity (million Sm <sup>3</sup> /day)	-	20	40

## G1. OBJECTIVE

2

Electricity and natural gas transmission system shall be constructed and operated according to (n-1) criteria, disabling of a critical part of the system, in line with short and medium term supply-demand balance and long term generation development plan.

Coordinator: EIGM

Responsible Bodies: TPAO, BOTAS, TEIAS, EPDK

### Performance Indicators:

G1.PI.2.1	Completion of (n-1) emergency plans for electricity and natural gas transmission systems	31.12.2016
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G1.PI.2.2	Maintenance of non-interruption arising from transmission system in electricity and natural gas transmission systems
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## Strategies

- Completion of existing projects and planning of new projects shall be provided in order to reach natural gas storage volume required to be at a level of 10% of the consumption in accordance with Natural Gas Market Law no. 4646.
- Increase of withdrawal capacities of existing natural gas storage plants shall be provided.
- Regulations assisting the private sector to make investments regarding the storage and LNG terminals shall be determined by a participatory procedure and put into practice.
- The suitability of the fields, where natural gas and petroleum production is available, for natural gas storage after the reserves are exhausted shall be evaluated jointly with license owner companies.
- Preparation of infrastructure plans regarding regional supply and demand development for the regions which may face up transmission restriction shall be provided by TEIAS and BOTAS.
- Considering annual demand projections in electricity and natural gas, implementation of existing electricity and natural gas transmission investments shall be provided with taking into consideration technological advances such as smart grid, storage in electricity and investments regarding storage and LNG terminal in natural gas.
- Preparation of infrastructure plan by TEIAS and BOTAS regarding regional supply and demand development and completion of investments planned according to (n-1) criteria in the electricity transmission system shall be provided primarily for the regions facing transmission restriction.
- Completion of international interconnection facilities in compliance with ENTSO- E criteria and establishment of necessary infrastructure in order to give opportunity to international electricity trade shall be provided.
- Preparation and publishing of “Natural Gas Transmission Capacity Projection Report” including peak demand, required natural gas storage capacities, monthly and annual demand projections shall be provided annually.





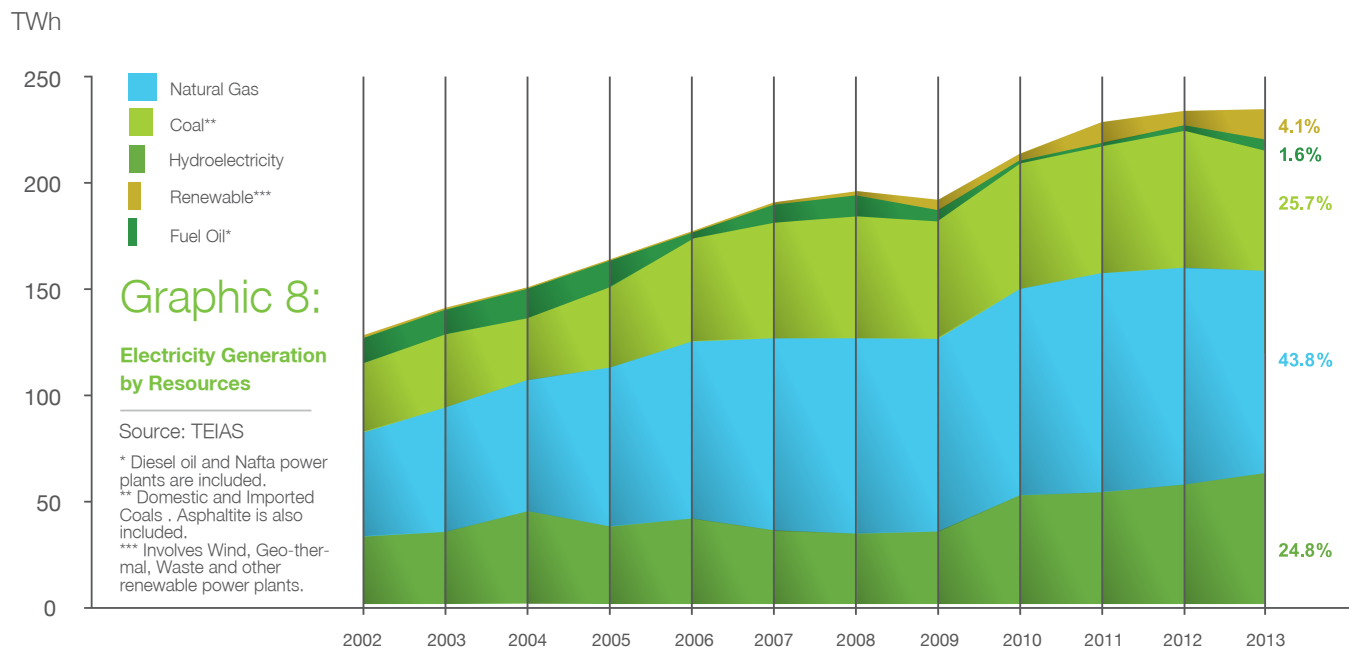
# GOAL

# 2

## Optimum Resource Diversity

Diversification of primary energy resources and utilization of the country's resources rationally are the key components for both of sustainability and low cost energy supply. Resource diversity involves the diversity both in resource type and in the import country. Within this context, reducing the risks arising from import dependency and bringing forward the indigenous energy resources are of utmost significance in terms of national economy.

Provision of resource diversity in electricity generation is a prominent factor for effective utilization of resources and decrease of import dependency. Due to the fact that natural gas is an import resource causing high foreign trade deficit as well as procurement risk, it is aimed that the share of the natural gas in electricity generation should be reduced to 38% by the end of the plan period.

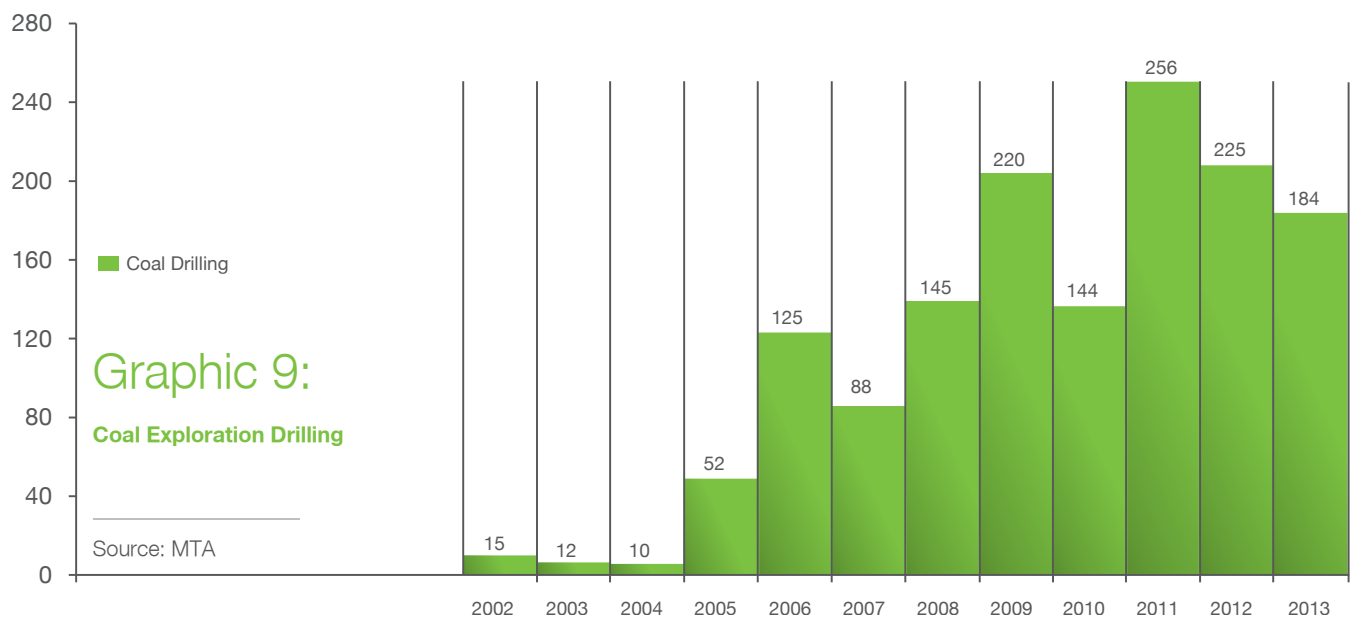




On the other hand, the most effective utilization of domestic coal resources has been specified as one of the basic objectives and it has been further aimed that by the future investments, the electricity generation from domestic coals should

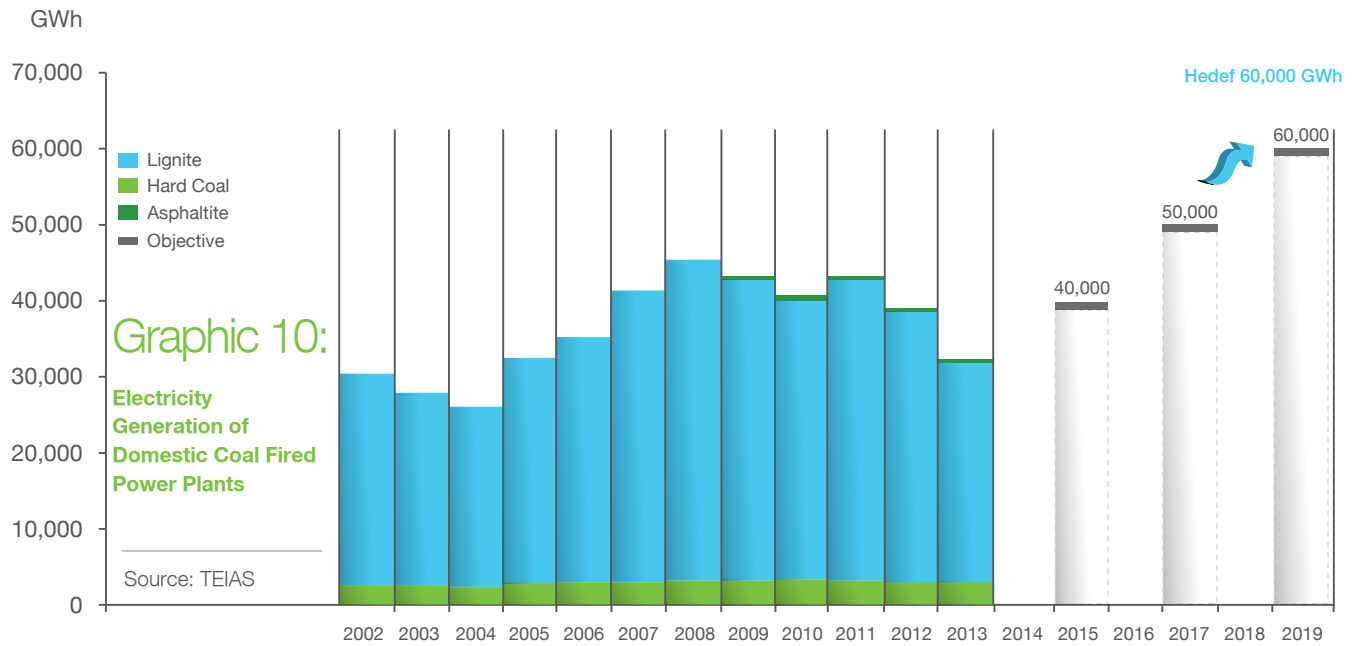
reach a level of 60 billion kWh/year by the end of the plan period. For accomplishing this objective, these investments are to be accelerated and new resources shall be explored.

Thousand Meters



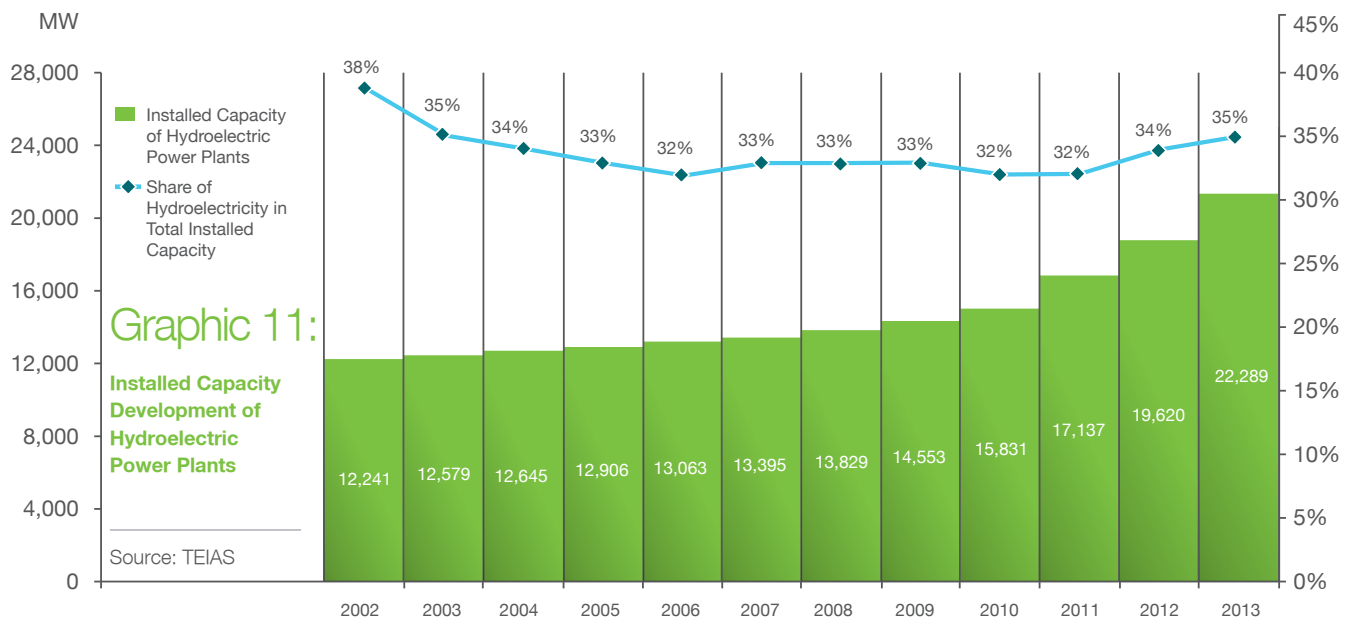
Graphic 9:  
Coal Exploration Drilling

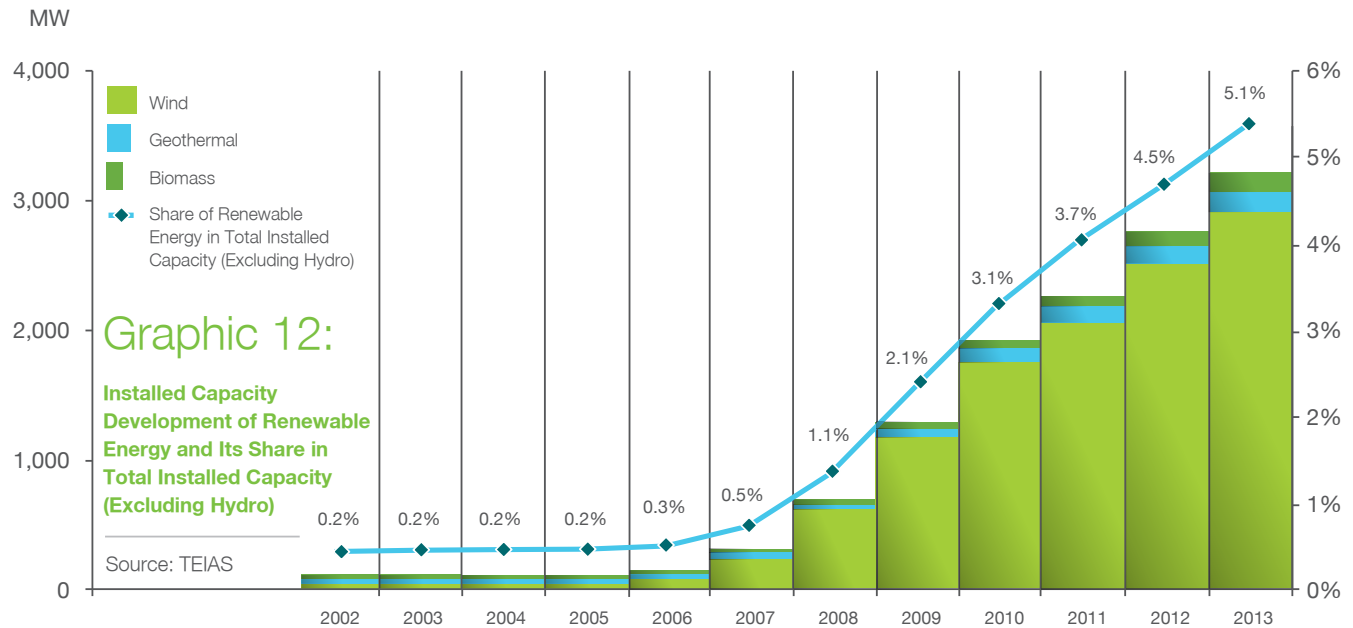
Source: MTA



Utilization of domestic renewable energy resources such as hydro, wind, solar, geo-thermal, bio-mass, wave and tide and introduction of them into the economy are strategically striking for providing the resource diversity. For this reason,

increasing the share of renewable energy in electricity generation as well as utilization of renewables as a heat source is aimed within the scope of the Strategic Plan.

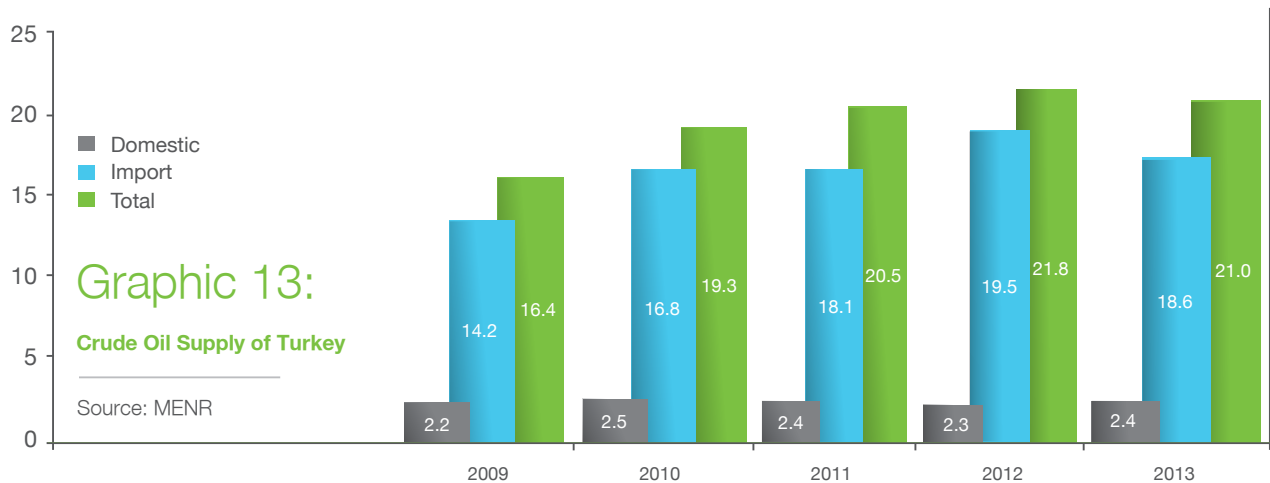




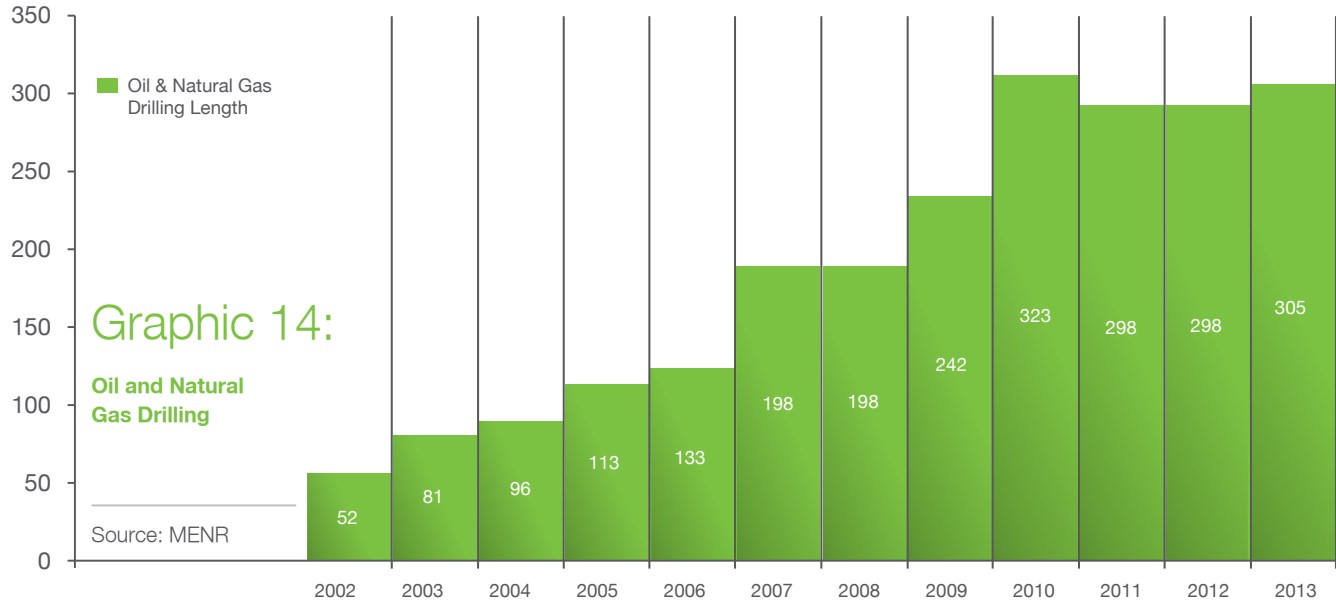
Exploration of new domestic oil and natural gas resources shall contribute to resource diversity and display reducing impact on import dependency. Within this framework, the increase of domestic oil and natural gas resources explorati-

on activities and performing exploration and generation with non-conventional methods taking into consideration their environmental impacts are among the objectives determined in line with this goal.

Million Tons



Thousand Meters



As 98,5% of the natural gas used in the country is procured from foreign sources, the natural gas is the primary source in which diversity requirement is witnessed. Providing a balance which shall create a diversification of source country with

new contracts is very important from strategic point of view in terms of managing the risks and overcoming the temporary problems to occur.



Overcoming the obstructions regarding utilization of domestic resources, particularly coal, shall be available by the joint attempts of private sector and public sector. Necessary regulations which would facilitate investments should be implemented and the investors should act consciously for

enabling renewable energy's deployment into production in a higher level and for increasing domestic natural gas and oil exploration. Diversification of source country in natural gas and oil imports requires both a substantial infrastructure need and an active energy diplomacy.

## G2. OBJECTIVE

1

Electricity generation from domestic coal shall be increased to 60 billion kWh annually by the end of the plan period.

Coordinator: EIGM

Responsible Bodies: MTA, EUAS, TEIAS, TKI, TTK, EPDK

### Performance Indicator:

G2.PI.1.1	Electricity generated from domestic coal (billion kWh)	Base Year 2013	2015	2017	2019
		32.9	40	50	60

# G2. OBJECTIVE

## 2

Transformation of existing domestic coal resources into electricity generation investments and exploration of new resources shall be provided.

Coordinator: EIGM

Responsible Bodies: MIGEM, MTA, EUAS, TKI, TTK

### Performance Indicators:

		2015	2016	2017	2018	2019
G2.PI.2.1	Situation of completion of pre-investment processes related to introducing Afyonkarahisar-Dinar and Eskişehir-Alpu reserves into economy by 50% within the planning period	Transfer of the field to relevant expertise institution in exchange for discovery right and the costs thereof	Execution of Pre-Survey and Studies			Opening the fields to investments
			Additional exploration drillings			
			Hydro-geologic survey			
			Geo-technical survey			
			The study for determination of recoverable reserve			

		2015	2016	2017	2018	2019
G2.PI.2.2	The situation of Opening Karapınar Ayrancı Coal Field to investments	Additional exploration drillings				Opening the fields to investments
		Geological-geophysical survey				
		Hydro-geologic detailed survey				
		Geotechnical survey				
		Conceptive mine design+preparation of preliminary project+tendering				
		Scientific excavation studies in mound and necropolis areas				

G2.PI.2.3	Opening Tekirdağ-Çerkezköy/İstanbul-Çatalca Coal Field to investment	31.12.2019
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## G2. OBJECTIVE

3

The share of renewable energy resources in primary energy supply and electricity generation shall be increased.

Coordinator: YEGM

Responsible Bodies: YEGM, MTA, TEIAS, EPDK

### Performance Indicators :

Planned installed power values based on renewable energy sources (MW):		Base Year 2013	2015	2017	2019
G2.PI.3.1	Hydraulic	22,289	25,000	27,700	32,000
G2.PI.3.2	Wind	2,759	5,600	9,500	10,000
G2.PI.3.3	Geothermal	311	360	420	700
G2.PI.3.4	Solar	-	300	1,800	3,000
G2.PI.3.5	Biomass	237	380	540	700

G2.PI.3.6	Share of renewable energy resources within commercial heat generation by the end of the period (%)	Base Year 2013	2019
		2	3

## G2. OBJECTIVE

4

Nuclear energy shall be included into electricity generation portfolio.

Coordinator: NEPUD

Responsible Bodies: NEPUD, EIGM, TAEK, EUAS, TEIAS, EPDK

### Performance Indicators:

G2.PI.4.1	Completion of electricity transmission lines for Akkuyu NGS	31.12.2018	
G2.PI.4.2	Start-up of Akkuyu NGS for electricity generation (test generation)	31.12.2019	
G2.PI.4.3	Start-up of construction for Sinop NGS	31.12.2019	
G2.PI.4.4	Determination of the field for third NGS in line with technical, economic and environmental criteria, initiation of pre-feasibility and investment preparations, completion of studies for the determination of investors		31.12.2019
G2.PI.4.5	Determination of domestic uranium and thorium resources and the domestic nuclear industry policy based on these sources and preparation of road map		31.12.2019

## G2. OBJECTIVE

5

Coverage ratio of domestic and imported crude oil production against consumption shall be increased to 13.6%.

Coordinator: PIGM

Responsible Bodies: TPA

### Performance Indicator:

G2.PI.5.1	Coverage ratio of domestic and foreign crude oil generation against consumption	Base Year 2013	2015	2016	2017	2018	2019
		12.8%	13.2%	13.6%	13.4%	13.1%	13.6%

## G2. OBJECTIVE

6

Hydrocarbon potential which may be obtained through unconventional methods shall be determined. (Shale gas, shale oil etc.)

Coordinator: PIGM

Responsible Bodies: TPAO, TKI, TTK

### Performance Indicator:

G2.PI.6.1	Completion of studies revealing that the unconventional resources such as shale gas, shale oil and methane hydrate etc. are able to be produced and revealing their potential thereof	31.12.2015
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## G2. OBJECTIVE

7

Diversification of import countries and routes shall be provided by adding new source countries and routes into natural gas import portfolio.

Coordinator: DIAB

Responsible Bodies: TPBH, EIGM, BOTAS

### Performance Indicators:

G2.PI.7.1	Conducting necessary studies for procuring natural gas by private sector from Iraq, Qatar, Algeria, Turkmenistan, Eastern Mediterranean, Africa and other potential countries along with the plan period	G2.PI.7.3	Decreasing the dependency on one single country for imports of natural gas to 50% until the end of plan period
G2.PI.7.2	Adding at least two countries to the countries supplying pipe gas or LNG form natural gas either in spot or long term basis until the end of the plan period	G2.PI.7.4	Development of various alternatives such as; operation of spot pipe gas , TAP pipe line in reverse flow basis, usage of LNG facilities of other countries, if necessary

## G2. OBJECTIVE

8

Domestic oil and natural gas exploration and production activities shall be increased until the end of the plan period.

Coordinator: PIGM

Responsible Bodies: TPAO

### Performance Indicators:

Increasing domestic oil, natural gas exploration and production activities till the end of the plan period		Base Year 2009-2013	2015-2019
G2.PI.8.1	Number of exploration and production wells to be drilled until the end of the plan period (increase in the number of opened wells according to the previous plan period)	905	1,086 wells (20% increase)
G2.PI.8.2	Number of geologic wells to be drilled until the end of the plan period	1 geologic-purpose well	5 geologic-purpose wells
G2.PI.8.3	Number of deep sea wells to be drilled until the end of the plan period	-	In case of exploration; 12; Not exploration ; 3 deep sea wells

## G2. OBJECTIVE

9

The share of natural gas in electricity generation within total generation shall be reduced to 38% until the end of the plan period.

Coordinator: EIGM

Responsible Bodies: EIGM, EPDK

### Performance Indicator:

G2.PI.9.1	Share of natural gas in electricity generation (%)	Base Year 2013	2015	2017	2019
		43.8	45	42	38

## G2. OBJECTIVE

10

Necessary feasibility studies regarding the expansion of LPG and dumped LNG use in the regions, where natural gas cannot be supplied, shall be completed. Strategy and road map studies shall be accomplished if deemed feasible.

Coordinator: PIGM

Responsible Bodies: PIGM, EPDK

### Performance Indicators:

G2.PI.10.2	Completion of strategy studies	30.06.2016
G2.PI.10.1	Completion of feasibility studies	31.12.2015
G2.PI.10.3	Completion of road map	31.12.2016



# G2. OBJECTIVE

11

*Domestic uranium and thorium resources shall be explored and developed so as to be used as fuel in nuclear power plants.*

Coordinator: NEPUD

Responsible Bodies: MIGEM, MTA, ETI MADEN

## Performance Indicator:

G2.PI.11.1	Until the end of the plan period, completion of reserve determination studies of uranium and thorium resources and preparation of production feasibility studies	31.12.2019
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## Strategies

- The investments in the coal fields which have been awarded to private sector by royalty aiming electricity generation shall be completed and commissioned.
- Rehabilitation and modernization projects boosting generation in existing coal-fired electricity generation power plants under the responsibility of public and private sector shall be accomplished.
- The developments regarding projects for electricity generation from domestic coal carried out by the private sector shall be monitored.
- Domestic hard coal production shall be increased.
- All coal fields of which the licenses are owned by the public shall be opened to investment based on appropriate models (lignite fields having large scale reserves with inter-governmental agreement or public-private partnership etc.).
- Number of technical staff shall be increased and existing infrastructure shall be improved for MTA in order to explore new coal fields and to bring existing fields ready for investment.
- Necessary studies shall be executed for a hard coal exploration project for domestic hard coal which is similar to lignite exploration project and exploration activities shall be initiated.
- Exploration studies regarding geothermal fields suitable for electricity generation, heating and for other purposes shall be focused.
- As regards promotion of renewable energy; Renewable Energy Support Mechanism (YEKDEM) shall be maintained.
- Appropriate incentive mechanism shall be designed for exploration in geothermal and shall be implemented together with other measures thereof.
- Permission and approval processes shall be rehabilitated and facilitated for expansion on-site generation.
- Necessary infrastructure shall be provided to be strengthened for enabling the integration of renewable energy sources which make interrupted generation (wind and solar) into the network.

- Hybrid system whereby feeding water is subjected to pre-heating process with solar energy in thermal power plants in appropriate locations shall be enhanced.
- Monitoring and follow up system for the projects based on renewable energy sources shall be established.
- The studies regarding the determination of wave energy potential in the country shall be carried out.
- Studies regarding determination, grading, protection and utilization of renewable energy source areas (YEKA) appropriate for electricity generation in public and treasury lands shall be supported.
- Support shall be provided to develop pilot projects aiming the efficient utilization of renewable energy sources and pilot projects based on hybrid systems.
- Necessary measures shall be taken for developing finance opportunities and incentives so that renewable energy investments (licensed and planned ones) could be implemented.
- Hydro-electric Power Plant implementation with pumped storage shall be initiated and extended.
- Measures shall be taken to increase the use of renewable energy for heating and cooling purposes.
- Installed capacity of solar power plants to be constructed in "Karapınar Energy Industrial Zone" shall be determined as MW.
- Necessary follow up procedures shall be conducted for compliance with calendars specified for NGS projects and necessary measures shall be taken in this respect.
- Licensing implementations to be made in relation with nuclear security and safety for NGS projects shall be handled with primary concern.
- Relevant transmission lines of Aksuyu NGS shall be progressed in compliance with the plans and in synchronized manner with the commissioning of the power plant.
- Legal and regulatory infrastructure which shall be necessary for issues such as licensing, inspection of NGSs and relevant mandates shall be formed and applied according to the norm and standards determined by International Atom Energy Agency.
- A discount shall be applied to the rates of guarantees to be received for work and investment program in the areas in which the oil finding could not be found or unconventional methods shall be applied therein.
- Sustainability of production shall be provided by the methods such as implementation of secondary production methods in oil and natural gas and exploration of new fields.
- Studies shall be performed to determine the potential of shale gas and shale oil.
- Studies for obtaining gas by unconventional methods shall be continued, and legal regulations shall be made for the feeding of natural gas network by providing incentives to oil and natural gas production for the gas produced and upon the approval of the transmission operator of all kinds of gases which are produced by unconventional methods and which have similar properties with the natural gas.
- The studies shall be carried out to determine the alternative import countries and deliberations shall be initiated.
- Oil and gas exploration studies shall be promoted.
- For the parts of country where no exploration activities have been conducted so far, under the consideration of environmental and economic sustainability, approaches for exploration studies shall be developed.
- Deep sea explorations for oil and natural gas shall be increased within national fields.
- Regulations regarding licensing process for electricity generation from natural gas shall be prepared in line with energy policy and strategies.
- Feasibility, strategy and road map studies for the utilization of LPG in terms of domestic and industrial utilization and its utilization as primary and/or spare fuel in electricity generation in the places where LPG is not available shall be performed in coordination with other Ministries, if required.
- In places where pipe lines are not available, within the scope of environmental factors and policies for development of the industry, effective role shall be undertaken for promoting LNG usage and for the determination of price policies accordingly.
- Reserve determination studies for uranium and thorium shall be completed and feasibility studies for production shall be completed.



# GOAL

# 3

## Effective Demand Management

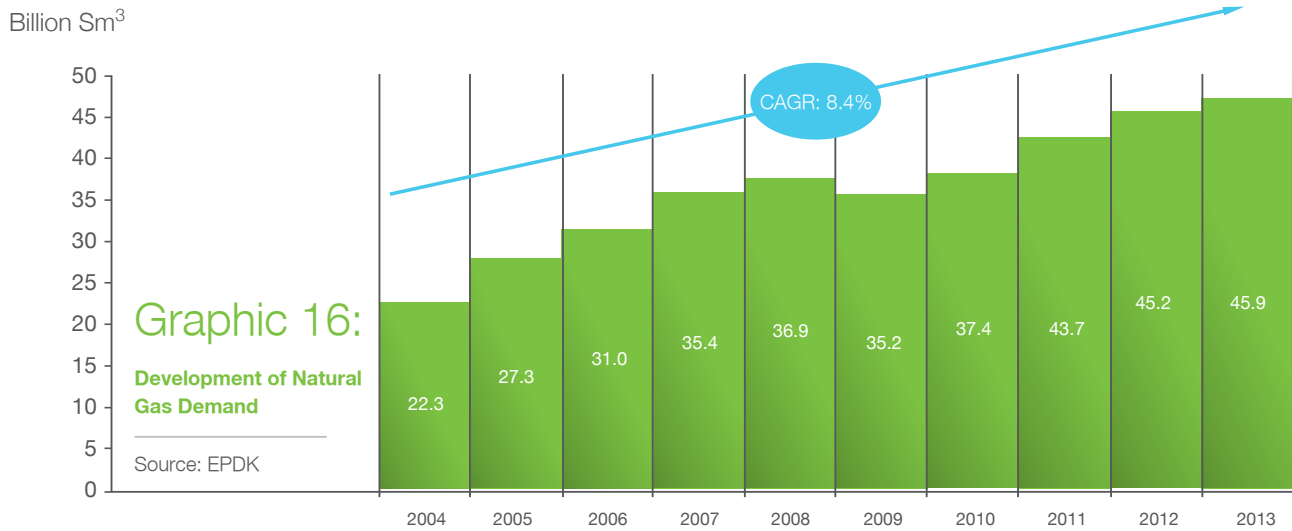
Demand management is an important component of security of supply. Regulations prepared only in the supply side in the energy market are not adequate for efficiency and sustainability of the market. Active participation of the demand side into the market shall reduce the imbalances, which may be occurred due to demand and/or supply, to minimum and shall provide opportunity that supply and demand may meet

at an optimal level. Making demand management mechanisms usable commercially shall be an influential tool for the management of the peak demand. Therefore, in case when the supply may be inadequate to meet the demand which cannot be managed, a flexible process shall be provided in the system and price fluctuations shall be managed in easier way.



\* CAGR: Compound Annual Growth Rate is a calculation used for determination of annual growth rate of the annual data occurred in a specific period.

$$CAGR = (Data\ on\ the\ end\ of\ the\ period / data\ in\ the\ beginning\ of\ the\ period)^{1 / (Number\ of\ years\ within\ the\ scope\ of\ the\ period)} - 1$$



To accomplish this goal, demand management was aimed to be initiated by the end of 2018 in the natural gas market. On the other hand, participation of the demand in the electric market has been aimed to be implemented by the end of 2015. Thus, as of 2016, it has been aimed that the ratio of peak demand to average demand in the electricity market should be reduced each year.

Participation of the demand side, besides the preparation of relevant regulatory frame, shall be possible by development of the demand side in terms of awareness. Keeping informed the demand side in this respect and raising awareness of the advantages introduced by the participation is considered to facilitate to attain this purpose.

## G3. OBJECTIVE

1

*As of 2016, market based demand side participation mechanism shall be implemented in order to reduce the rate of peak demand to average demand in electricity market.*

Coordinator: EIGM

Responsible Bodies: TEIAS, EPDK

### Performance Indicator:

G3.PI.1.1	Implementation of market based demand side participation mechanism in the electricity sector	31.12.2015
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## G3. OBJECTIVE

2

*Implementation of demand side management mechanisms for natural gas shall be provided.*

Coordinator: EIGM

Responsible Bodies: BOTAS, EPDK

### Performance Indicator:

G3.PI.2.1	Initiating the demand side management in natural gas market	31.12.2018
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## Strategies

- Demand side participation focused pilot projects shall be implemented for industrial consumers and residences, the relevant results shall be evaluated, cost- benefit analyses and impact analyses shall be conducted in this respect and implementation road map shall be prepared.
- Coordination shall be provided with relevant institutions in order to remove peak demand and loss and illegal electricity consumption problems arising from electricity use in agricultural irrigation.
- Demand management shall be enabled in residences; installing “Smart metering-household consumption control structure” by the pilot projects, household consumption shall be monitored; besides efficiency and saving, consumption in peak demand shall also be reduced.
- The necessary steps shall be taken for transition to liberal market in the natural gas and the price shall be formed within a supply-demand balance.
- Tools such as interrupted and/ or graded tariffs intended for demand side management of natural gas shall be developed.







With efficiency in transportation, housing  
and industry

# SAVING IN NEW TURKEY



# THEME

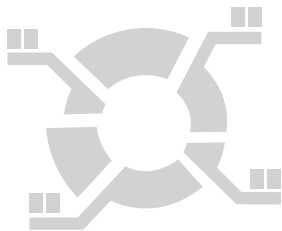
# 2

## Energy Efficiency and Energy Saving

### Why Energy Efficiency and Energy Saving?

Efficiency and saving individually considered as a supply source has been evaluated as a crucial component of security of supply with its current position; however it has been considered as a separate theme due to the scope and importance of the issue. This theme generally means performing steps in some issues such as legislation, incentives, informing, awareness campaigns, implementation of new

technologies and similar issues for the evaluation of energy efficiency potential in areas such as; industry, transportation, residents and street lighting. Cooperation with relevant institutions and design of effective governance structure and energy efficiency sectors are also within the scope of the theme.



### Results of SWOT Analysis

- Turkey has a considerable high energy efficiency potential which could not have been utilized satisfactorily yet, necessary financial and technical support should be increased for the utilization of this potential.
- Awareness campaigns are conducted for energy efficiency and energy saving. However, the Ministry is required to increase these campaigns and model implementations and should undertake more active role in this respect.
- Measures reducing the energy intensity should be implemented as a whole and should be implemented upon the coordination of relevant Ministries and non-governmental organizations. As regards efficiency,

there exists studies for increasing the awareness, but these studies should be expanded within the country.

- Although legislation and incentives are available in the field of efficiency, the aimed impact could not be reached fully yet. The effectiveness of studies performed in the field of energy efficiency is required to be increased so as to involve incentive design based on impact assessment and Energy Efficiency Consultancy Companies (EVD).
- The low average available capacity of public power plants stands out as a problem in terms of portfolio, for this reason it is necessary to complete the rehabilitation and modernization studies in these plants.

# GOAL

# 4

## Turkey; Making Use of Its Energy in the Most Efficient Way.

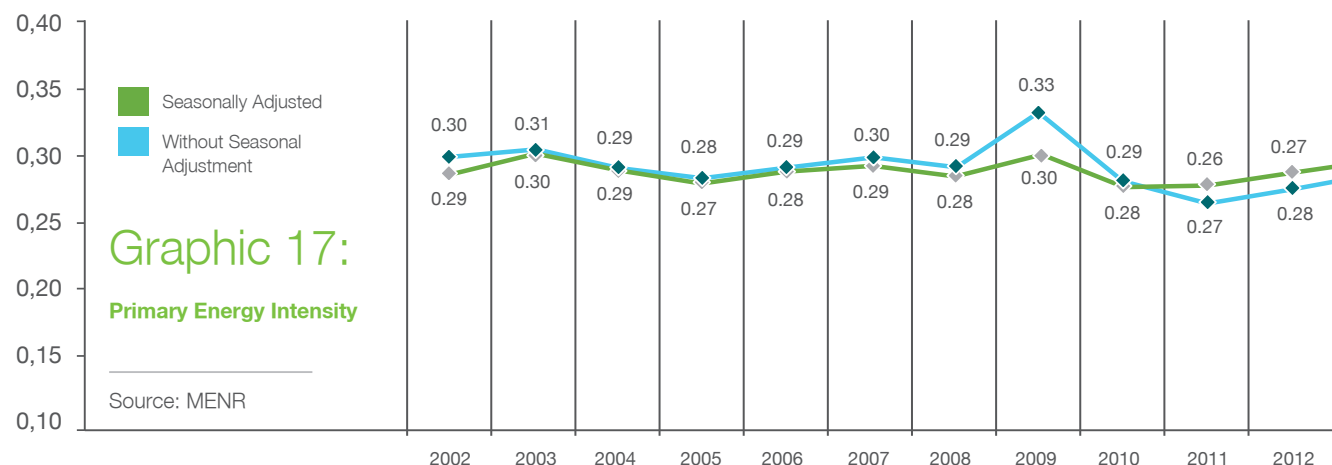
Management of supply, demand and infrastructure dimensions of the security of supply in an entirely optimum level is possible by the implementation of energy saving and efficiency. For instance; no matter how the supply side gets strong, in case of losses and inefficiencies in the transmission and distribution system, it means that some part of supply is being wasted. For this reason, energy efficiency and saving become individually a source of supply.

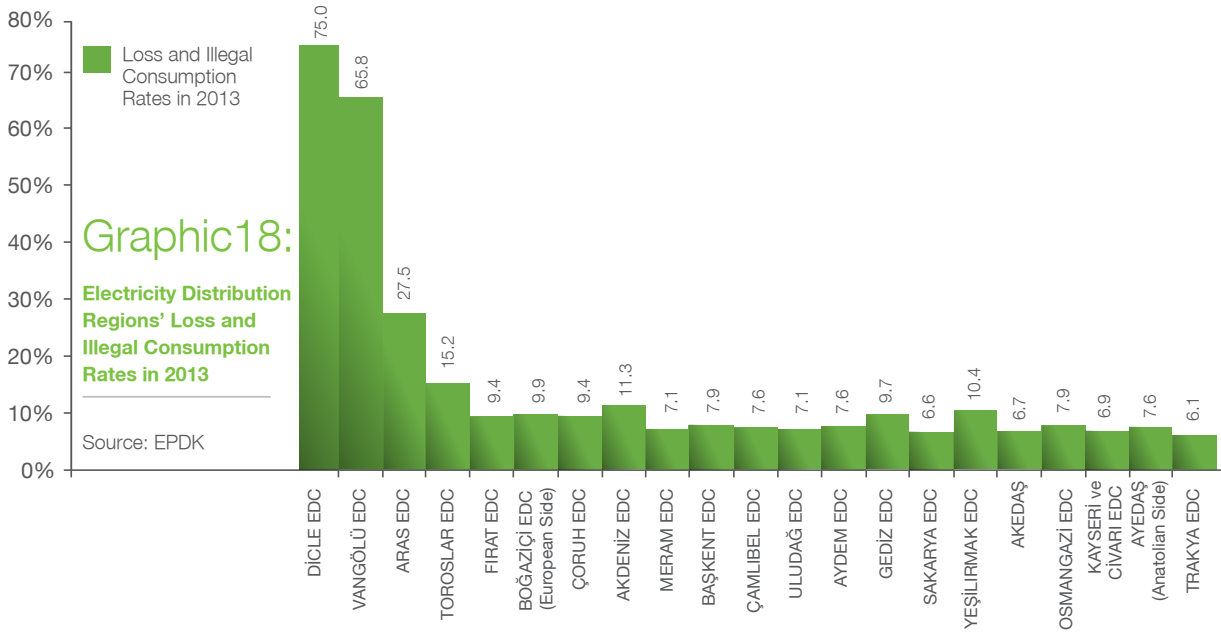
Within the scope of 2015-2019 Strategic Plan, based on 2013 data, at least an increase of 20% in energy efficiency is aimed in buildings of the Ministry and its Affiliated, Associated and Related Institutions. On the other hand, it is also

aimed that maintenance, repairment, modernization and rehabilitation studies required in public power plants should be completed and contribution should be provided to energy efficiency and saving.

It is expected that costs shall be lowered and the effectiveness shall increase economically and import dependency shall also decline strategically as a result of reducing loss of transmission by supporting on site generation, lowering loss and illegal consumption rates to desired levels in distribution regions; and efficient utilization of sources by saving from street lighting.

TOE/\$1000 GDP





\* EDC: Electricity Distribution Company

Energy intensity as an important indicator of energy efficiency is directly related to the sectors comprising the national industrial structure. Some sectors such as iron-steel industry and cement industry need more energy to produce GDP. However, considering the size of these sectors in the national industry, it shall be seen that efficiency increase to be

provided and savings are inadequate. Besides, the attempts for efficiency and saving may be beneficial in case different sectors and different institutions may cooperate with one another and the study by complementing each other. Lack of coordination and cooperation may prevent the achievement of desired results.



## G4. OBJECTIVE

1

In compliance with privatization plan, maintenance, repairment, rehabilitation and modernization studies necessary in public power plants shall be completed until the end of 2019.

Coordinator: EIGM  
Responsible Body: EUAS

### Performance Indicator:

G4.PI.1.1	Number of completed maintenance, repairment, rehabilitation and modernization projects	2016	2017	2018	2019
		9	7	2	7



## G4. OBJECTIVE

2

As regard electricity consumption of the country for street lighting, by the end of 2013, existing lighting armatures shall be replaced by efficient ones to provide at least a saving rate of 40% in existing lighting armatures until the end of the plan period.

Coordinator: EIGM

Responsible Bodies: EIGM, YEGM, EPDK, TEDAS, Electricity Distribution Companies

### Performance Indicator:

G4.PI.2.1	Electricity consumption of existing lighting armatures by the end of plan period * (kWh)	Base Year 2013	2019
		3,751,401,000	2,251,000,000

\* Involves existing street lighting systems, new street lighting investments to be made in the future are not included.

## G4. OBJECTIVE

3

Loss and illegal consumption rate in electricity distribution shall be reduced to 10% until the end of the plan period.

Coordinator: EIGM

Responsible Bodies: EPDK, TEDAS

### Performance Indicator:

G4.PI.3.1	Loss and illegal consumption rate in electricity distribution (arithmetical average for Turkey) (%)	Base Year 2013	2015	2016	2017	2018	2019
		15.38	14	13	12	11	10

## G4. OBJECTIVE

4

Existing regional heating systems shall be expanded.

Coordinator: YEGM

Responsible Bodies: MTA, EUAS

### Performance Indicators:

G4.PI.4.1	Issue of legislation on regional heating	31.12.2016
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Increase in regional heating implementations		2019
G4.PI.4.2	Increase in total number of power plants applying regional heating until the end of plan period (except for geothermal)	2
G4.PI.4.3	Increase in the number of regional-heating systems based on geothermal energy	2

## G4. OBJECTIVE

5

On-site generation shall be expanded and at least 1,000 MW of total consumption is aimed to be met by on-site generation until the end of 2019.

Coordinator: YEGM

Responsible Bodies: YEGM, EPDK, TEDAS, Electricity Distribution Companies

### Performance Indicator:

G4.PI.5.1	On-site generation (cumulative) (MW)	2015	2016	2017	2018	2019
		200	400	600	800	1,000

## G4 OBJECTIVE

6

The energy efficiency in central and district buildings of the Ministry and its Affiliated, Associated and Related Institutions shall be increased at least 20% based on 2013 data. Energy Identity Cards for these buildings shall be received and cooperation shall be provided with at least two public institutions for this process.

Coordinator: YEGM

Responsible Bodies: All Central Units and Affiliated and Associated Institutions

### Performance Indicators:

G4.PI.6.1	Annual energy consumption decrease per m2 in central and district buildings of the Ministry and its Affiliated, Associated and Related Institutions (%)	2015	2016	2017	2018	2019
		6	4	4	3	3

G4.PI.6.2	Receiving energy identity cards for central and district buildings of the Ministry and its Affiliated, Associated and Related Institutions	31.12.2017
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G4.PI.6.3	Number of public institutions in which coordination has been provided for receiving energy identity cards	At least 2
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## G4. OBJECTIVE

7

Improvement shall be supported in primary energy intensity for the enterprises and entities of related institutions of Ministry based on 2013 data.

Coordinator: YEGM

Responsible Bodies: TTK, TKI, TPAO, ETI MADEN, TEMSAN, EUAS (for coal production)

### Performance Indicator:

G4.PI.7.1	Rate of decrease in primary energy intensity the enterprises and entities of related institutions of Ministry (consumption/unit output* in terms of TOE) (%)	2015	2016	2017	2018	2019
		6	4	4	3	3

(\*) Output shall be determined upon negotiations with YEGM according to field of activity of Related Institutions.



## Strategies

- Energy inventory shall be formed in central and district buildings of the Ministry and its Affiliated, Associated and Related Institutions and 2013 reference values shall be determined.
- Ministry and its Affiliated, associated and related organizations shall bring solid, liquid, fuel, gas, electricity and water consumption to optimum level and shall become a model of implementation organizations.
- Energy Identity Cards shall be received for in central and district buildings of the Ministry and its Affiliated, Associated and Related Institutions and an obligation shall be introduced requiring that energy identity card class shall be minimum "C" for purchase and leasing procedures.
- Energy efficiency surveys shall be implemented in all work places under the responsibility of the Ministry and which are liable for energy management and efficiency increasing projects shall be prepared according to minimum efficiency criteria to be specified. Within this framework, buildings shall be rehabilitated so that their fossil fuel consumptions and/or carbon dioxide emissions shall be lowered and ISO 50001 Energy Management Standard certificate shall be provided to be received.
- In State Owned Companies affiliated to Ministry, measures enabling the decrease of the share of energy input within total production costs shall be provided to be implemented.
- In compliance with privatization plan, rehabilitation studies on the public generation power plants shall be provided to be completed (Maintenance Management System, Power Plant Performance Monitoring System etc.)
- Generation capacity of public power plants shall be provided to be used efficiently and availability and capacity usage factors shall be provided to be increased. .
- Implementations initiated by Ministry for providing saving in street lighting shall be continued. With the regulations to be made within the scope of lighting audit, saving shall be tried to be enabled by lighting with appropriate power.
- Studies shall be initiated for gradual expansion of remote



metering systems and smart network implementations.

- An active monitoring and support shall be provided for measures taken by electricity distribution companies aiming to decrease loss and illegal consumption of electricity.
- Quality and efficient materials shall be provided to be used in order to reduce technical losses in electricity distribution.
- By conducting feasibility studies regarding district heating in all thermal power plants and by encouraging the implementation for appropriate power plants, measures regarding utilization of waste heat in space heating, industrial facilities or agricultural activities shall be provided to be taken.
- Generation systems which are based on renewable energy sources and cogeneration and micro cogeneration systems and central and district heating and cooling systems shall be supported, legislation shall be prepared for heat market.

- Small scaled coal reserves which shall not be used for electricity generation shall be provided to be used for purpose of heat generation.
- District heating based on geothermal energy shall be developed.
- For enabling the expansion of decentralized electricity generation which are based on renewable energy sources and cogeneration and micro cogeneration systems and so on; related legislation shall be reviewed so as to facilitate on-site generation, permission and other administrative processes, furthermore infrastructure of the network shall be strengthened in this manner.
- For enabling the implementation of irrigation systems based on solar and wind energy, coordination shall be provided with stakeholders (The Ministry of Food, Agriculture and Livestock, Electricity Distribution Companies, Irrigation Cooperatives etc.) in order to recover the problems regarding peak load and loss and illegal consumption arising from agricultural irrigation.

# GOAL

5

## Improved Capacity for Energy Efficiency and Saving

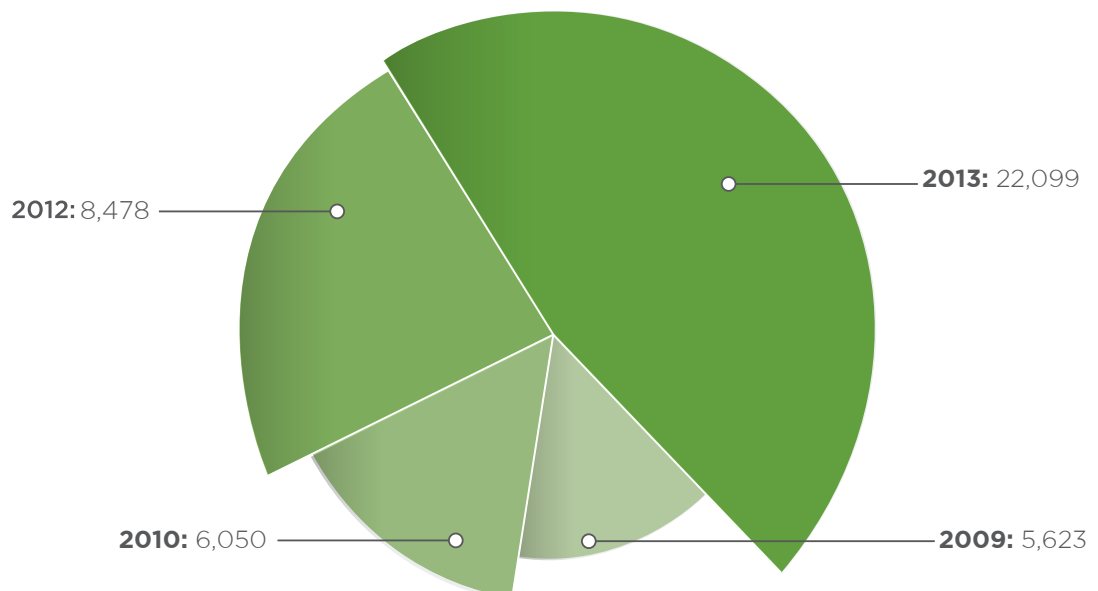
One of the basic factors enhancing improvement of energy efficiency is to support the capacity which would monitor and back up this process and to form a sector in a healthier manner which may provide service on this route. For increasing energy efficiency and saving, accurate policies should be established and efficiencies in the implementation should be monitored; furthermore, sector is to be arranged so as to involve the companies and institutions which would provide and inspect efficiency services as well as providing training

thereof. Besides, public increased awareness is a top priority for accomplishment of this objective. Therefore, energy efficiency projects should be increased by the regulatory framework and decision support systems which would support the achievement of this project, awareness should be raised in the public and the coordination between the institutions should be increased and a collective energy efficiency action should be initiated and sustained.

Graphic 19:

Energy Saving (TOE) by Efficiency Enhancing Projects (VAP)

Source: MENR



\* Efficiency Enhancing Project applications were not received in 2011.

*For achieving this objective, appropriate incentive and monitoring mechanisms should be available; incentives results should be monitored based on impact analysis results and*

*incentive policies should be revised in this way. Defining new mechanisms and tools, design, establishment and support of well-functioning energy efficiency sector are critical.*



## G5. OBJECTIVE

1

*Policy making and monitoring capacity of the Ministry regarding efficiency and conservation shall be developed.*

Coordinator: YEGM

Responsible Body: YEGM

### Performance Indicators:

G5.PI.1.1	Completion of feasibility studies in relation with decision support system for policy and legislation impact assessment and policy making	31.12.2015
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G5.PI.1.2	Implementation of decision support system for policy and legislation impact assessment and policy making	01.01.2017
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## G5. OBJECTIVE

2

*A regulatory framework relating to energy efficiency shall be developed and effectiveness of the incentives shall be increased.*

Coordinator: YEGM

Responsible Body: YEGM

### Performance Indicator:

G5.PI.2.1	Completion of energy efficiency road map	31.12.2016
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## G5. OBJECTIVE

3

*A well operating energy efficiency sector shall be established.*

Coordinator: YEGM

Responsible Body: YEGM

### Performance Indicators:

G5.PI.3.1	Completion of legislation studies, impact analysis and scenario studies regarding the sector	31.12.2016
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G5.PI.3.2	Determination of steps after completing impact analysis of legislation and scenario studies	31.12.2017
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## G5. OBJECTIVE

4

*Public awareness shall be raised on energy efficiency and saving.*

Coordinator: YEGM

Responsible Body: Press and Public Relations Consultancy

### Performance Indicators:

G5.PI.4.1	Completion of public awareness questionnaire	30.06.2015	G5.PI.4.3	Completion of the steps included in Efficiency Transmission Plan	31.12.2019
G5.PI.4.2	Completion of efficiency communication plan	31.12.2015	G5.PI.4.4	Repetition of Public Awareness Questionnaire at the end of the period and evaluation of conclusion reports	31.12.2019

## G5. OBJECTIVE

5

*Joint work step and interaction plans with the institutions shall be established for energy efficiency and saving.*

Coordinator: YEGM

Responsible Body: YEGM

### Performance Indicator:

G5.PI.5.1	Number of institutions in cooperation (cumulative)	2015	2016	2017	2018	2019
		2	4	6	8	10



## Strategies

- Decision support system regarding policy and legislation impact assessment for policy making shall be established and this system shall be operated during the plan period by being rehabilitated, relevant data base, statistic and inventory studies shall be completed.
- During the plan period, along with sectoral saving potentials, applicable measures in energy efficiency shall be determined and energy efficiency work step plan shall be performed.
- The methodology in which the impact of the energy efficiency would be included into demand forecasts shall be completed. Data base, information forms, software and hardware infrastructure relevant with Energy Efficiency Portal shall be updated and renewed so as to be in a more user-friendly structure.
- Stakeholders' opinions shall be received and an impact analysis on existing incentives shall be performed, alternatives related to new incentives shall be determined in a participatory manner, and a monitoring system shall be established for those which comply with the evaluations.
- Impact analysis of energy efficiency implementations shall be made and stakeholders' participation shall be provided, thus the incentive within the market shall be provided upon white certificate and carbon market similar structures. .
- For the purpose of establishing an energy efficiency sector with higher efficacy, particularly the EVDs, missions, roles, activities and efficiencies of the parties in the sector shall be provided to be analysed, design in the sector shall be enabled to be reviewed, and the sector shall be provided to be restructured so as to be effective.
- Efficiency of existing finance models shall be evaluated together with finance corporations, finance models of efficiency projects shall be revised in line with today' s necessities, new models shall be formed, finance model suggestion study shall be completed and shall be submitted to Economic Coordination Board.
- Based on "Efficiency Communication Plan" to be prepared; for raising society's awareness on efficiency, necessary campaigns and actions shall be designed and applied. Within this context, studies such as adding the subjects of energy and energy efficiency into the primary school and secondary school curriculum shall be conducted.
- Stakeholders and institutions which shall be cooperated on efficiency in industrial, residential and transportation sectors shall be determined and cooperation areas shall be defined, and joint work step and interaction plans shall be established jointly with relevant parties within the scope of the above mentioned communication plan.
- Number of universities and/or professional organizations and number of energy efficiency companies to be audited on site shall be determined.
- Number of plants having electricity generation license with an installed capacity of 100 MW and over to be monitored over the portal shall be determined for energy efficiency and saving.
- Twenty six plants having electricity generation license with an installed capacity of 100 MW and over to be audited on site shall be determined.

With its rational management,  
competency and capacity.

# A PARTICIPATIVE **APPROACH** IN NEW TURKEY





# THEME

# 3

## Good Governance and Stakeholder Interaction

### Why Good Governance and Stakeholder Interaction?

A good governance means alongside with a corporate structure involving the Ministry and its Affiliated, Associated and Related Institutions, under an environment including sector investors and employees, non-governmental organizations, other public institutions and similar external stakeholders; acquisition of a participatory, proactive and rational management and the maximum capacity and competence to support this management. A good governance in terms of the departments of the Ministry involves the establishment of a structure which would provide the increase corporate capacities and efficiency of the departments and their internal operations and which would provide the maximum efficiency of the actions involving our affiliated and associated orga-

nizations. Increase of the corporate capacity of the central units includes the issues of administrative competence and leadership, coordination between the institutions, human resources competence and competence of information technology tools in use (databases, decision support and management information systems, analysis tools and models etc.). With the policy and legislation preparation processes, it is considered that enabling stakeholders' participation at a higher rate and adoption of more participatory management concept is an approach which would increase sectoral policy development efficacy of the Ministry and this is one of the main subjects emphasized in our Strategic Plan.



## Results of SWOT Analysis

- The Ministry initiates to apply Energy and Natural Resources Expertise carrier system by making an important step in human resources issue. There are various competent personnel with satisfactory experience within the scope of Ministry and its Affiliated, Associated and Related Institutions. At the same time, measures for enabling the motivation of competent personnel should be increased and should be kept working in the institution are required to be taken, current knowledge level of personnel should be increased by training programs complying with the existing purpose in general and personnel with different competence should be provided to be recruited into Ministry so as to meet rapidly changing needs of energy and natural resources sectors.
- By the implementation of "Strategic Management and Statistic System" (ESIS), the Ministry has acquired a strong management information system and decision support system infrastructure. For enabling the Ministry to benefit from ESIS in a maximum level, integration of all Affiliated, Associated and Related Institutions is necessary.
- Non-governmental organizations, universities and similar external stakeholders' contribution to preparation of policy development and legislation is provided, however, this contribution should be more extensive and effective, and furthermore stakeholder participation should be increased in each stage.
- The public is required to be informed clearly about activities of the Ministry.
- Location of central units of the Ministry in different places may weaken the communication and coordination among the units from time to time.



# GOAL

# 6

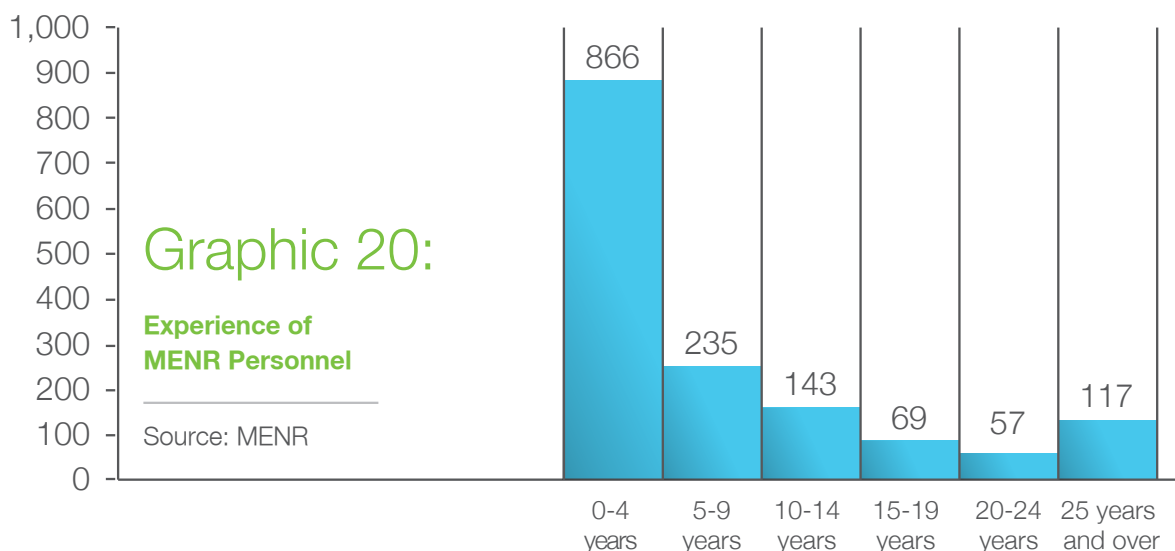
## The Ministry with a Strong Corporate Capacity

Ministry's corporate capacity should be at maximum level so that objectives and targets specified within the context of the Strategic Plan could be reached, needs could be specified in this direction, strategies could be determined, work steps which are required could be decided. For this reason, corporate analysis and institutional culture based structuring and improvement in this regard are important.

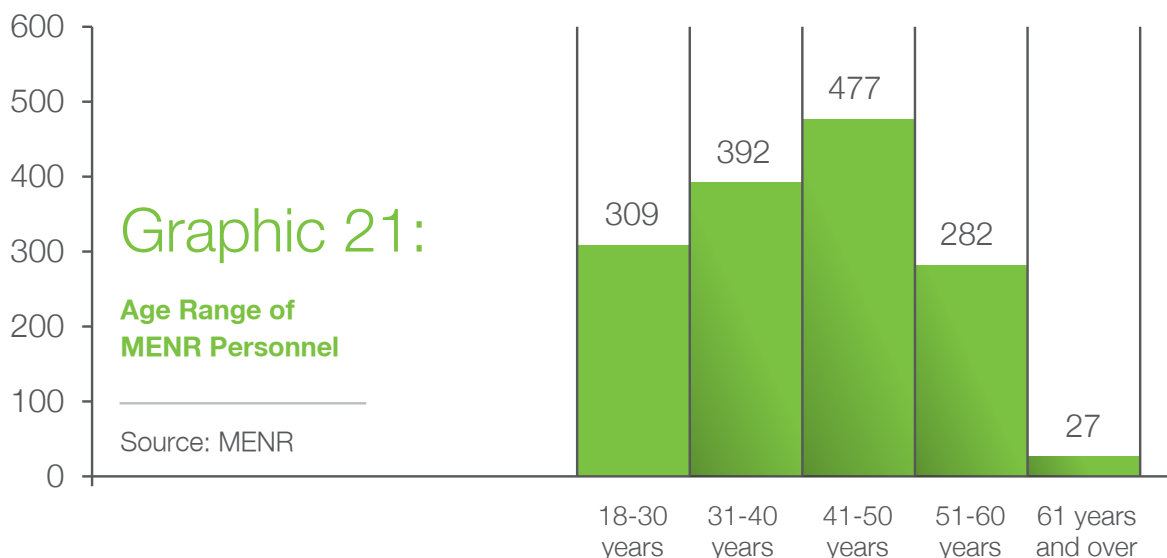
For evaluating the human resources at the highest level, a

corporate structure involving "Human Resources Transformation Plan" is planned to be implemented until the end of 2016. Within this scope, the personnel capacity of the Ministry is aimed to be enhanced to highest level. These objectives are not limited only with central units of the Ministry. Corporate restructuring projects shall be supported in the Affiliated, Associated and Related Institutions in which they need to do.

Number of Employee



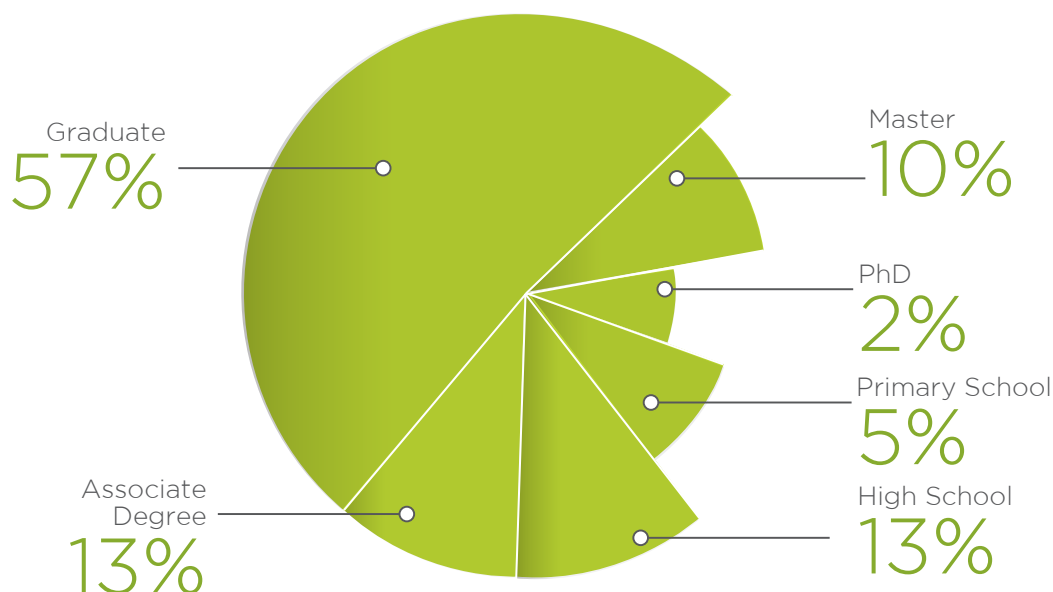
Number of Employee



## Graphic 22:

### Educational Background of MENR Personnel

Source: MENR



Considering the importance of the knowledge in the field of energy and natural resources, thanks to Communication Strategy aimed to be formed until the end of 2015, a transparent and corporate strategy shall be followed with the stakeholders regarding Ministry' s policies and activities and public consultation mechanisms shall be implemented.

As regards the nuclear energy which is one of major strategic projects of our country, in particular the nuclear security, completion of relevant law and regulations, corporate infrastructure as well as plan and programs on the subject are evaluated under the title of corporate capacity development.

*Public structuring reaching to a corporate governance structuring equivalents to private sector involves some challenges and difficulties arising from bureaucracy and legislation. To design a transformation program in compliance with legal restrictions towards public institutions is of utmost importance from this point of view. The success of corporate transfor-*

*mations primarily depends on the appropriation of employees in the organization. Adoption of an active transformation procedure approach in the Ministry for the achievement of this objective may be achievable by making the personnel aware of the necessity of this transformation at each level and training of the personnel in each stage in the same way.*



## G6. OBJECTIVE

1

A corporate restructuring involving Human Resources Transformation Program shall be achieved until the end of 2016.

Coordinator: Personnel Department

Responsible Body: Personnel Department

### Performance Indicator:

G6.PI.1.1	Implementation of Human Resources Transformation Program	31.12.2016
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## G6. OBJECTIVE

2

The capacity of personnel shall be improved.

Coordinator: Personnel Department

Responsible Body: Personnel Department

### Performance Indicators:

G6.PI.2.1	Rate of attendance of personnel into the in-house trainings Ministry until the end of the period (%)	100	G6.PI.2.3	Number of personnel assigned abroad for training purpose until the end of the period	30
G6.PI.2.2	Rate of satisfaction on in-house trainings provided (%)	80			

## G6. OBJECTIVE

3

Feasibility studies for restructuring shall be performed for Affiliated, Associated and Related Institutions in which they need to do.

Coordinator: BIK Department

Responsible Bodies: SGB, EIGM, MIGEM, BIK Department, the Institutions to be restructured

### Performance Indicators:

G6.PI.3.1	Completion of studies for the determination of the institutions which shall be subject to restructuring	31.12.2015	G6.PI.3.2	Completion of current situation analysis, feasibility and road map studies for the institutions subject to restructuring	31.12.2017
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## G6. OBJECTIVE

4

Necessary legislation and corporate infrastructure studies shall be completed in relation with the nuclear energy and necessary plan and programs shall be established.

Coordinator: NEPUD

Responsible Bodies: NEPUD, EIGM, Law Consultancy, TAEK, EUAS, EPDK

### Performance Indicators:

G6.PI.4.1	Completion of nuclear energy legislation and other regulations	31.12.2015
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G6.PI.4.2	Completion of plans	31.12.2016
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## G6. OBJECTIVE

5

Communication and Publicity Strategies on Ministry's policies and activities shall be established until the end of 2015.

Coordinator: Press and Public Relations Consultancy

Responsible Bodies: All Central Units and Affiliated, Associated, and Related Institutions

### Performance Indicators:

G6.PI.5.1	Completion of Communication Strategy Document	31.12.2015
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G6.PI.5.2	Completion of Publicity Strategy Document	31.12.2015
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## Strategies

- Human Resources Transformation Plan shall be implemented and labour force/norm staff shall be planned.
- Upon the execution of corporate analysis and institution culture studies, existing corporate structure shall be examined and improvement projects shall be developed in necessary areas.
- Carrier system shall be expanded and appropriate employees in the existing personnel shall be appointed as expert, their knowledge and experience shall be provided to be utilized and institutional memory shall be maintained.
- In-house and international training curriculums shall be designed and personnel based training plans shall be implemented.
- Personnel shall be assigned abroad for post-graduate education.
- Access to printed and electronic references shall be ex-

panded in a continuous manner.

- Personnel, who are not benefited sufficiently, employed in central units of the Ministry and Affiliated, Associated and Related Institutions shall be provided to work more effective and active.
- Feasibility studies for restructuring shall be performed for institutions in which they need to do and road maps shall be prepared.
- Legislation, institutional framework, plan and programs based on nuclear energy regarding construction, operation and decommissioning of nuclear power plants in a safe and reliable manner shall be completed.
- Internal and external perception analyses for the Ministry shall be conducted.
- Internal and external communication strategy and detailed plans for Ministry shall be prepared.
- Ministry Publicity Strategy Document shall be prepared.

# GOAL



## The Ministry Using Information Technologies Effectively

In the present era in which information technologies facilitate life every time and everywhere, utilization of these technologies at maximum level by the Ministry shall be beneficial both for increasing the efficiency and in terms of effective governance.

Besides the development of physical and security infrastructure in the field of information technologies, provision of nec-

essary human resource comes to the forefront as a priority objective. Furthermore, provision of the integration of all data in order to provide effective data usage and to monitor advances in energy and natural resources sectors continuously is one of the objectives established for the achievement of the purpose. Within this context, all data are aimed to be brought together in ESIS until 2016.



*Information Technologies projects take time and their cost is considerably high. For the determination and implementation of the most appropriate information technologies for the needs of the Ministry within the scope of current rapidly changing technological environment, an information*

*management concept within a dynamic frame which rapidly adapted is a necessary process. Achievement of this goal together with its all components depends on the continuity of this approach.*

## G7. OBJECTIVE



*Physical, security and human resources infrastructure in the field of information technologies of the Ministry shall be developed.*

Coordinator: SGB

Responsible Body: SGB

### Performance Indicators:

		Base Year 2013	2015	2016	2017	2018	2019
<b>G7.PI.1.1</b>	Number of personnel trained in information technologies and security	4	12	14	16	16	20
<b>G7.PI.1.2</b>	Rate of number of information technologies inventory of which relevant information has been transferred into electronic environment (%)	10	80	90	95	99	99
<b>G7.PI.1.3</b>	Rate of Ministry's information system of which renewal system has been completed (%)	20	80	80	90	90	95

<b>G7.PI.1.4</b>	Obtaining and establishment of work and efficiency management system	31.12.2016
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<b>G7.PI.1.5</b>	Commissioning and expansion of in-house instant messaging , audio and video conference system	31.12.2016
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# G7. OBJECTIVE

2

Integration of all data into ESIS shall be completed until the end of 2016.

Coordinator: EIGM

Responsible Bodies: EIGM, SGB, Affiliated, Associated and Related Institutions

## Performance Indicators:

G7.PI.2.1	Completion of integration into ESIS for all institutions except for EPDK	31.12.2015
G7.PI.2.2	Completion of integration into ESIS for EPDK	31.12.2016

G7.PI.2.3	Number of Affiliated, Associated and Related Institutions which may exchange data with the Ministry within ESISa	Base Year 2014	2019
		2	13

# G7. OBJECTIVE

3

All mining operations shall be performed in electronic environment within the scope of e-Devlet project.

Coordinator: MIGEM

Responsible Body: MIGEM

## Performance Indicator :



## Strategies

G7.PI.3.1	Commencing of carrying out all mining operations in electronic environment within the scope of e-Devlet project	31.12.2016
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- Work steps including establishment of on-line work and efficiency management systems based on a central structure shall be fulfilled in order to increase competence and scales of Ministry's data processing technologies implementation and service.
- For enabling information sharing with all institutions included in ESIS's domain, necessary communication shall be established and necessary support shall be provided to institutions for integration.
- Information technologies inventory shall be transferred into electronic environment.
- Integration of existing Management Information System shall be provided with the implementations developed within the scope of existing and new e-Devlet projects.
- Services provided to license owners within the scope of e-Devlet projects shall be transferred into internet environment. The system increasing the satisfaction of license owners, enabling time saving, being managed, recorded and stored easily shall be installed within the scope of e-Devlet project and shall be made functional.
- Electronic Document and Archive Management System shall be put into operation in the Ministry and work sus-

tainability and the process shall be improved within correspondence and archiving process.

- Electronic signature, electronic document, paperless correspondence, achieving implementations shall be carried out; integration process shall be completed among central units and Affiliated, Associated and Related Institutions. A central unit shall be established to manage the policies of Information Technologies Governance of the Ministry.
- Data Affiliated, Associated and Related Institutions shall be provided to be circulated faster and in standard format.
- ISO/IEC 27001 certificate shall be received by applying information security and risk management processes in Information Technologies.
- Electronic human resources management processes shall be improved and its efficiency shall be increased in this respect.
- Secure and efficient printing technologies shall be used.
- Disaster Rescue Centre shall be put into use for critical work implementations.

# GOAL

8

## A Well-Coordinated Ministry

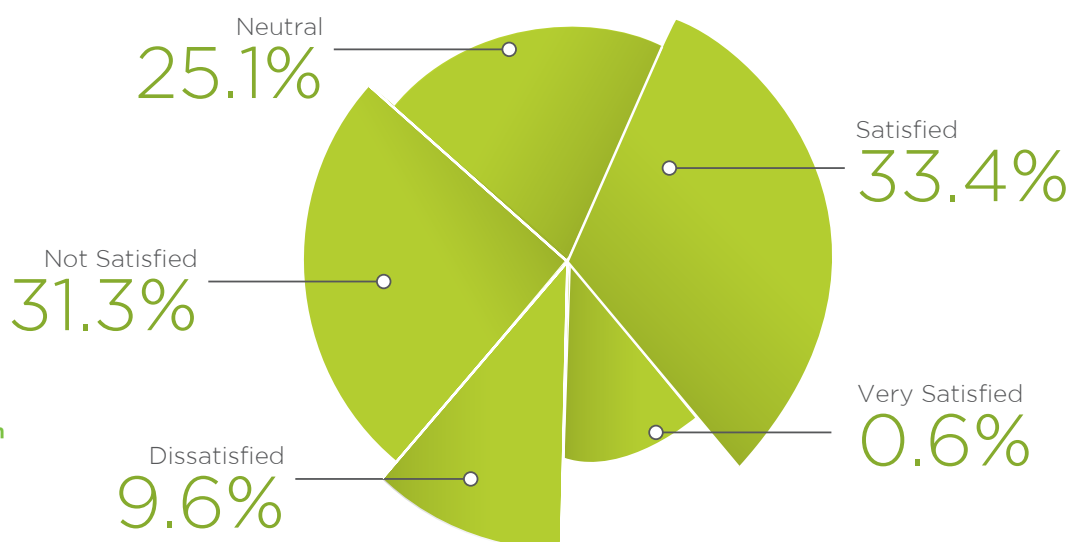
Considering influence area of the Ministry and its role undertaken for energy policies of the country, providing an effective coordination between central units of the Ministry and

Affiliated, Associated and Related Institutions is essential for the implementation of energy policies.

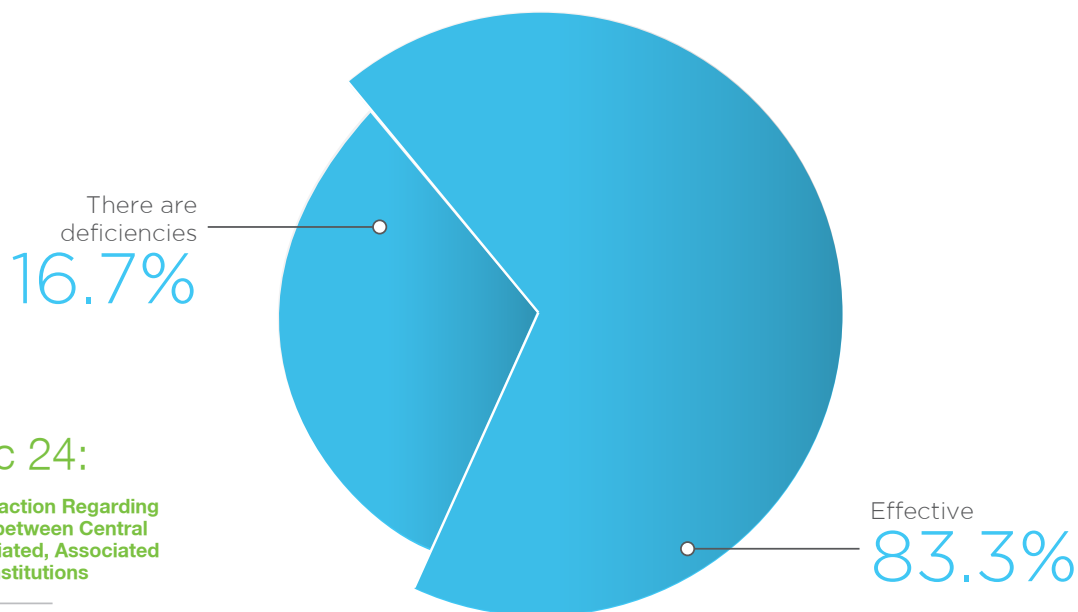
Graphic 23:

Satisfaction Level of MENR Personnel for the Coordination (Information Exchange) within the Ministry

Source: MENR







### Graphic 24:

**Level of Satisfaction Regarding Coordination between Central Units and Affiliated, Associated and Related Institutions**

Source: MENR

For being a Ministry with higher coordination power, a communication plan which is not only towards Affiliated, Associated and Related Institutions but also the external stakeholders has been aimed to be implemented. Besides, bringing

central units of the Ministry together and improving their working conditions have been also taken within the scope of specific objectives and efficient communication channels are desired to be kept open.

*Preparation of relevant communication plans in applicable way, sharing with other stakeholders in a healthy way and its*

*appropriation by all stakeholders including personnel of the Ministry are essential for the achievement of the goal.*



## G8. OBJECTIVE

1

*A coordination plan which would enhance the cooperation and communication between central units of the Ministry and its Affiliated, Associated and Related Institutions shall be implemented.*

Coordinator: SGB

Responsible Bodies: SGB, BIK Department, All Central Units, Affiliated, Associated and Related Institutions

### Performance Indicators:

<b>G8.PI.1.1</b>	Completion of internal coordination plan	30.06.2015
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<b>G8.PI.1.2</b>	Implementation of work steps included within internal communication plan in compliance with the plan	31.12.2019
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<b>G8.PI.1.3</b>	Number of coordination meetings accomplished annually	2015	2016	2017	2018	2019
		4	4	4	4	4

# G8. OBJECTIVE

2

*Procedures and principles of a consultation mechanism between stakeholders of the Ministry and its Affiliated, Associated and Related Institutions shall be determined and applied.*

Coordinator: EIGM, MIGEM

Responsible Bodies: All Central Units and Affiliated, Associated and Related Institutions

## Performance Indicators:

<b>G8.PI.2.1</b>	Preparing and publishing the principles and procedures of consultation mechanisms between the stakeholders in energy and natural resources sector	30.06.2015
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<b>G8.PI.2.2</b>	Number of headlines in which opinions are gathered in compliance with public consultation process	<i>No numerical objective is available and it is for follow up purpose</i>
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## Strategies

- Internal Coordination Plan for the Ministry shall be prepared.
- Senior Executives of central units of the Ministry and its Affiliated, Associated and Related Institutions shall be met and all parties shall be informed the other parties on their updated activities and to make information exchange. Issues discussed in the meetings shall be shared

with all departments of the Ministry through electronic environment.

- Procedures and principles of a consultation mechanism between stakeholders of the Ministry and its Affiliated, Associated and Related Institutions shall be determined and implemented in the basis of best implementation principles in EU mechanisms and public consultancy areas in OECD countries.





With its investments in the field of energy and natural resources to the most distant geographies

# POWERFUL NEW TURKEY



# THEME

# 4

## Regional and International Effectiveness

### Why Regional and International Effectiveness?

Turkey's position between the significant production and consumption hubs in terms of its geopolitical position brings a lot of opportunities and risks that are required to be managed effectively. The Regional and International Effectiveness Theme is intended for the execution of energy and natural resources activities of the country upon on successful coordination and proactive point of view. This theme involves

the issues such as making investments either in the region or in far geography in the field of energy and natural resources and resource diversification which would provide contribution to import activities and security of supply, besides both natural resources and electricity export activities, effective diplomacy approach, climate change and execution of negotiations in international projects.



### Results of SWOT Analysis

- Geopolitical position of Turkey due to its proximity to rich countries in terms of energy and natural resources and being a complementary link between major production and consumption areas particularly in natural gas and oil provides important opportunities. On the other hand, enabling the country to utilize fully from these opportunities, an active energy diplomacy should be carried out and necessary infrastructure studies should be completed.
- It is necessary that the Ministry should constitute the culture of energy and natural resources diplomacy and establish its own infrastructure. Energy diplomacy is required to be implemented by skilled personnel acquiring foreign language skills. Foreign representation agencies in the field of energy and natural resources are required to be established in foreign countries and effectiveness of

the Ministry should be enhanced in international organizations.

- Based on the initiatives of strong and experienced national companies acting in the field of energy and mining; national companies are required to be developed which may act and take initiative in international arena.

# GOAL

# 9

## Turkey integrated with Regional Energy Markets

Considering geopolitical position of Turkey and its relations with regional energy markets due to its transitional position, functioning of the country's energy markets integrated with other foreign market shall bring the country to an active actor of these markets.

By making ENTSO-E connection permanent, Turkey's integration with European electricity markets shall provide additional opportunities in international electricity trading. Thus, a contribution shall be provided for the creation of more trans-

parent and liquid markets and for obtaining electricity from cost-advantageous markets.

From natural gas and oil aspects, planned pipeline projects are aimed to be implemented. Accordingly, Turkey shall get closer step by step to its objective for being an energy corridor due to its geopolitical position. Ceyhan's becoming an integrated energy centre has been determined as an objective which would bring dynamism to the region and support the effective functioning of the markets.



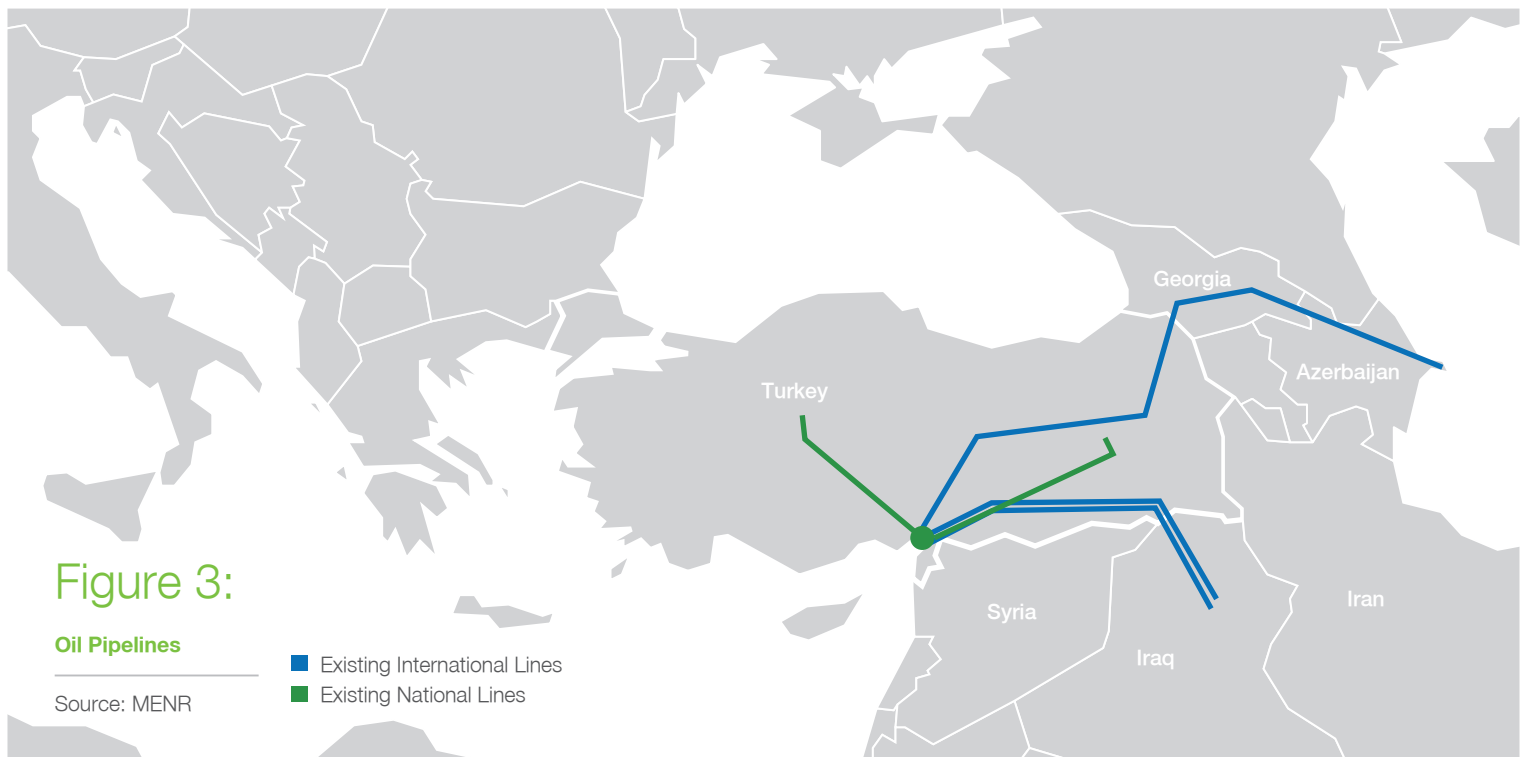
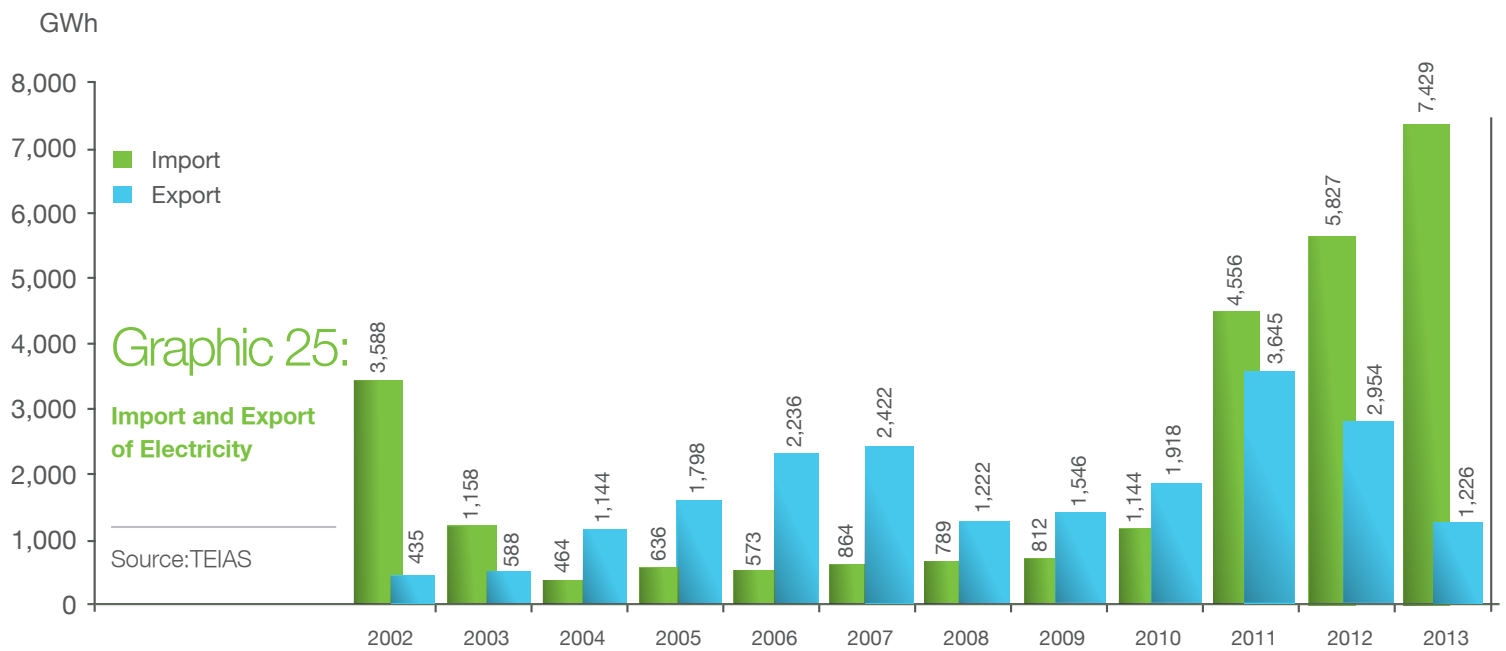
Figure 2:

Existing and Planned Interconnection Lines

Source: TEIAS

- Current 400 kV lines
- 400 kV lines under construction
- Current 220 kV lines
- Current 154 kV lines







Liberalization process which has been experienced particularly within recent 15 years contributed to the capacity of

Turkey for taking active role in surrounding markets and for showing effectiveness for the functioning of regional economies.



*Transit projects and regional integration studies face up various difficulties in finance and administrative aspects due to their multinational feature. In case these areas are not able to*

*be managed in harmonization, delays may occur for reaching the specified objectives within this goal.*

## G9. OBJECTIVE

1

*Transition system shall have a permanent connection with ENTSO-E.*

Coordinator: DIAB

Responsible Bodies: TEIAS, EPDK

### Performance Indicator:

G9.PI.1.1	Providing permanent connection with ENTSO-E	31.12.2015
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# G9. OBJECTIVE

## 2

International interconnection capacity shall be increased by two (2) fold until the end of 2019  
 Coordinator: DIAB  
 Responsible Body: TEIAS

### Performance Indicators:

Import- Export (NTC) Capacities		2013		2015		2017		2019	
		Import (MW)	Export (MW)	Import (MW)	Export (MW)	Import (MW)	Export (MW)	Import (MW)	Export (MW)
G9.PI.2.1	ENTSO-E	550	400	650	500	650	500	1,800	500
G9.PI.2.2	Georgia	15	0	700	700	1,050	1,050	1,400	1,400
G9.PI.2.3	Iran	400	0	450	0	600	600	1,200	600
G9.PI.2.4	Iraq	0	200	0	200	0	400	500	700
G9.PI.2.5	Syria	0	500	0	500	0	500	600	600
G9.PI.2.5	Total (MW)	965	1,100	1,800	1,900	2,300	3,050	5,500	3,800

Interconnection line capacities among the countries		2013		2015		2017		2019	
		Voltage (kV)	Capacity (MVA)	Voltage (kV)	Capacity (MVA)	Voltage (kV)	Capacity (MVA)	Voltage (kV)	Capacity (MVA)
G9.PI.2.7	West Line	400	4,015	Additional line shall not be installed.		Additional line shall not be installed.		400	3,020
G9.PI.2.8	Georgia Line	400	1,510	Additional line shall not be installed.		Additional line shall not be installed.		400	1,510
		220	287						
G9.PI.2.9	Iran Line	400	1,510	Additional line shall not be installed.		New line shall be constructed to replace the existing line		400	1,510
		154	204						
G9.PI.2.10	Iraq Line	154	300	Additional line shall not be installed.		400	1510	Additional line shall not be installed.	
G9.PI.2.11	Syria Line	400	1,005	Additional line shall not be installed.		Additional line shall not be installed.		Additional line shall not be installed.	
<b>Total</b>			<b>8,831</b>		<b>8,831</b>		<b>10,341</b>		<b>16,381</b>

## G9. OBJECTIVE

3

*In line with the developments in neighbouring countries, participation shall be provided to the regional electricity markets to be established through coupling and duties shall be undertaken in the organizations regarding the functioning of regional markets.*

Coordinator: DIAB

Responsible Bodies: EIGM, TEIAS, EPIAS, EPDK

### Performance Indicator:

G9.PI.3.1	Performing studies for enabling TEIAS's membership, along with ENTSO- E Membership, to 8th of Electricity Region which is aimed to be established in Southeast Europe under the supervision of Energy Community in which our country takes place as observer member	31.12.2015
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## G9. OBJECTIVE

4

*By implementing new transit pipeline projects, the role of Turkey to be an energy corridor in the field of natural gas shall be strengthened.*

Coordinator: TPBH

Responsible Bodies: DIAB, PIGM, BOTAS, TPAO

### Performance Indicators:

G9.PI.4.1	Initiating construction of at least three international projects until the end of plan period	31.12.2019	G9.PI.4.2	Completion of at least one international project until the end of the plan period	31.12.2019
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## G9. OBJECTIVE

5

*Taking into consideration Turkey's studies for making Istanbul a finance centre, an energy center having power for price formation shall be established in Black Sea and Mediterranean, in which Ceyhan and Aliağa delivery products are processed.*

Coordinator: DIAB

Responsible Bodies: DIAB, EIGM, PIGM, TPBH, BOTAS, EPDK

### Performance Indicators:

G9.PI.5.1	Completion of the road map for the establishment of the energy center	31.12.2017	G9.PI.5.2	Determination of investor profiles to take place in the region by expropriation, and completion of relevant infrastructure and encouraging the investors to start up their investments therein	31.12.2019
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## Strategies

- International interconnection studies shall be completed in accordance with ENTSO-E criteria and necessary infrastructure thereof shall be established under the consideration of legal processes so as to provide opportunity to international electricity trading.
- Necessary investments shall be completed for West Line, Georgia Line, Iran Line, Iraq Line, Syria Line (shall be evaluated in the future despite it is suspended now) for the purpose of increasing international interconnection capacity.
- Feasibility and road map studies regarding market coupling of the surrounding countries shall be conducted.
- Guiding shall be provided to the surrounding countries for the market formation and experiences regarding market operation shall be shared.
- Transit project progresses shall be monitored and supportive restructuring shall be implemented if necessary.
- A detailed road map within program management concept, shall be prepared for “Ceyhan Integrated Energy Center Project”.

# GOAL

# 10

## A Powerful Actor in International Arena

For capturing new opportunities and synergies in the field of energy and natural resources in international arena, cooperation and regional activities are regarded as considerably important.

It is envisaged that; to create new resources, new partner-

ships for exploration of oil, natural gas, coal and non-energy raw materials should be established and an active growth policy through acquisitions should be followed up. Utilization of cooperation opportunities for the accomplishment of these explorations not only within the country but also abroad appear to be at the forefront of this active policy.

**Table 1: 2013 Hydrocarbon Production (Oil Equivalent)**

Region /Country and Project Name	Type	Barrel / Day
Batman-Adiyaman-Thrace	Oil	33,758
Batman-Adiyaman-Thrace	Natural gas	4,957
<b>Total Domestic</b>		<b>38,716</b>
<b>Overseas Hydrocarbon Production in 2013 (Oil Equivalent )</b>		
Region /Country and Project Name	Type	Barrel / Day
Azerbaijan-ACG Project	Oil	15,829
Azerbaijan Shah Deniz Project	Condensate	3,635
Azerbaijan	Natural gas	11,053
Kazakhstan-KTM	Oil	2,589
<b>Total Overseas</b>		<b>33,106</b>

Source: TPAO

For the accomplishment of this goal, public companies to be involved in international activities should be subject to some restructuring so as to be attuned to the competition environment they would enter and be successful. Besides, by undertaking active missions in international organisations and taking place in the decision making mechanisms of these organizations shall support the effectiveness of the country in international area. This approach shall affect the capacity development positively not

only in short term but also in long term by adding its international experience to the human resource capacity which is desired to be developed.

With Representation Office of Energy and Natural Resources to be implemented in foreign countries, relevant developments shall be monitored closely and communication channels shall be kept open at the highest level so that the national effectiveness shall be augmented abroad.



Having desired results for the procurement of international fields basically depends on the global developments which would affect the sector. In addition, it should be emphasized that multi-lateral and coordinated studies are necessary. With a manage-

ment having a higher coordination power, following up global developments closely and acting proactively, relevant risks shall be minimized.



## G10. OBJECTIVE

1

By making partnerships with the companies having foreign investments for exploration and international experience in license area thereof, new sources shall be created in international area for energy raw materials such as; oil, natural gas, coal and radioactive mineral and other raw materials.

Coordinator: DIAB

Responsible Bodies: PIGM, MTA, TPAO, BOTAS, ETI MADEN, TKI, TTK

### Performance Indicators:

G10.PI.1.1	Number of overseas coal fields acquired by partnership / purchase until the end of the plan period (pcs.)	5
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G10.PI.1.3	Number of overseas radioactive mineral and other raw material fields acquired by partnership / purchase until the end of the plan period (pcs.)	5
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G10.PI.1.2	Number of overseas oil and natural gas fields acquired by partnership / purchase until the end of the plan period (pcs.)	3
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## G10. OBJECTIVE

2

Effectiveness of Turkey in international institutions acting in energy and natural resources sector shall be enhanced.

Coordinator: DIAB

Responsible Bodies: All Central Units and Affiliated and Related Institutions

### Performance Indicators :

G10.PI.2.1	Until the end of planning period, number of persons who shall be assigned for at least 1 year period in the energy and mining organizations and relevant international organizations (IEA, IRENA etc.) in which Turkey has memberships.	10
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G10.PI.2.2	Number of persons who shall be assigned at decision making mechanisms of the energy and mining organizations and relevant international organizations in which Turkey has memberships.	1
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# G10. OBJECTIVE

3

*Representation Offices of Energy and Natural Resources shall be established abroad.*

Coordinator: DIAB

Responsible Bodies: DIAB, Personnel Department, Law Consultancy

## Performance Indicators:

G10.PI.3.1	The countries in which Representation of Energy and Natural Resources shall be appointed as of 2015	USA Russia Azerbaijan Iraq France	G10.PI.3.2	Number of Representation of Energy and Natural Resources appointed until the end of the plan period	20
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## Strategies

- Through restructuring Affiliated and Associated Institutions to perform international activities and widening their overseas activities, new resources shall be created in international area for energy raw materials such as oil, natural gas, coal radioactive mineral and other raw materials.
- Ministry and its Affiliated and Related Institutions' overseas investment, representation, effectiveness and training activities shall be increased.
- A road map shall be created by deciding International organizations to be participated actively and the personnel to be assigned into these organizations shall also be determined.
- Job definition and organizational structure shall be determined for the Representation Office of Energy and Natural Resources and relevant legislation infrastructure shall be completed.
- Public-private sector cooperation model, which would give opportunity for joint overseas investments by public and private sector shall be established.







With adding value to its energy and natural resources with its own technology, industry and R&D

# NEW TURKEY HAS INCENTIVES



# THEME

# 5

## Technology, R&D and Innovation

### Why Technology, R&D and Innovation?

A significant dimension of self-adequacy of a country in energy and natural resources is the availability of the domestic technology. There are various R&D, innovation and development studies and incentives thereof are available in Turkey. However, the studies should be directed to areas with higher value added, industrialization and commercialization should be at the forefront, and incentive and monitoring structures should be designed in this direction.

This theme is intended in energy and natural resources areas as follows:

- The development of technology,
- Transfer of global innovations and modern technologies to Turkey in the best way,
- Development of domestic process and equipment capacity,
- Creation and expansion of R&D environment enabling the rapid commercialization of innovation



### Results of SWOT Analysis

- For the best utilization of R&D sources, an “Energy and Natural Resources R&D Strategy” and the areas which would be supported primarily should be determined.
- As existing R&D studies are only at theoretical level but could not be put into practice commercially, measures for their commercialization are necessary.
- There is no control and monitoring unit following R&D projects in the Ministry.
- Cooperation among public, university and industry is not satisfactory.
- Information acquired by the parties which generate information and technology are not gathered in a central unit, thus repetitions may occur in studies from time to time.

# GOAL

# 11

## Indigenous Technology in Energy and Natural Resources

As the energy and natural resources sector is a capital intensive sector, the indigenization of used material, equipment and the services shall bring along various contributions economically and in addition to energy sector, it will also support for the growth of the generation sector. This indigenization movement which shall expand beginning from energy sector has the potential of bringing along business opportunities in various branches of economy and will be beneficial for knowledge accumulation in line with national R&D and innovation policy.

The most important step within the scope of this goal is that for enabling indigenization, an inventory and necessity

analysis should be made for relevant equipment, materials and services and a road map should be prepared, furthermore measures encouraging the domestic contribution rate should be taken.

Technology indigenization studies are long term projects, therefore the actual results of the steps made in the planning period shall be received not in the plan period but after the period, in the long term, within this scope it should be taken into consideration that the important point here is to place an indigenization and technology development culture and its infrastructure.

## G11. OBJECTIVE

### 1

*Inventory and necessity analysis shall be made for the equipment to be subjected to indigenization and a road map thereof shall be specified.*

Coordinator: YEGM

Responsible Bodies: All Central Units and Affiliated, Associated and Related Institutions

### Performance Indicators:

G11.PI.1.1	Completion of road map	31.12.2015
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G11.PI.1.2	Preparing an indigenous equipment inventory	31.12.2016
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# G11. OBJECTIVE

2

Taking the manufacture sector in Turkey into consideration, rates of domestic contribution shall be increased.

Coordinator: YEGM

Responsible Bodies: YEGM, NEPUD, PIGM, TPAO, EUAS, TEMSAN, TEIAS, BOTAS, TKI, TTK

## Performance Indicators:

G11.PI.2.1	Rate of domestic contribution in manufacturing by the end of the period * (average%)	30
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G11.PI.2.2	Rate of domestic contribution in renewable power plants by the end of the period. (as manufacture rate (%))	45
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\* Calculation methodology shall be specified between Responsible Bodies and the coordinator.



## Strategies

- R&D and indigenization road map of energy and natural resources sectors shall be completed.
- Rate of domestic contribution in manufacturing shall be increased by implementing action plans thereof.
- In purchases through international agreements, “offset” liability shall be provided considering domestic industry capacity
- Ministry’s policy on rate of domestic contribution in manufacturing used shall be specified.
- Development plan shall be prepared for enabling manufacture in compliance with international code and standards for domestic contribution.
- Inventory and necessity analyses shall be made for accessories and complementary parts with higher value added in the equipment which are subject to indigenization, manufacture opportunities in indigenization shall be researched and road map shall be specified for encouraging the domestic manufacture.

\* Offset application means the operations in which a specific amount of commodities are obliged to be sold while one country is making purchase from another country within the scope of world trade in order to balance its. foreign trade deficit.

# GOAL

# 12

## A Result-Oriented R&D

Making R&D activities to convert into practice which would bring fruitful results, not remaining in theoretical level only, is one of the goals aimed within the scope of this Strategic Plan. Because, R&D activities; besides its outputs and its benefits, also undertake duties which increase the social welfare due to its macro-economic impacts brought along.

In line with this goal, it is hereby aimed that; number of R&D projects which are strategically important in energy and nat-

ural resources should be increased, along with private sector cooperation, furthermore mechanisms which would promote private-public sector cooperation should be established. In addition, by establishing a national Energy and Natural Resources Institute and achieving public-university coordination under this frame, R&D studies should also be monitored. The focus point of this goal hereby is based on R&D actions should not remain only at research and development level but also it should be commercialized and implemented.

*It is not possible to expect that all R&D activities can be commercialized and implemented. The crucial point herein is that R&D environment should be settled, which embraces industrialization as an important principle, expanding this culture*

*and increasing commercialization opportunities, despite having higher number of projects, in short/medium term which can be commercialized and can create value added in the sector.*

## G12. OBJECTIVE

### 1

*Number of R&D projects in energy and natural resources sector, having strategic importance, should be increased by the end of plan period.*

Coordinator: YEGM, MIGEM

Responsible Bodies: All Central Units and Affiliated, Associated and Related Institutions

### Performance Indicators:

G12.PI.1.1	Preparation of a "Critical Technology Plan" which would orient R&D projects with the attendance of universities, research institutions and industry sector, along with MENR R&D Strategy Document	31.12.2016
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G12.PI.1.2	Number of R&D projects implemented by public sector in energy and natural resources sector until the end of the plan period	No numerical target exists herein, for follow up-purpose only
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G12.PI.1.3	Number of R&D projects implemented by public-private sector cooperation in energy and natural resources sector until the end of the plan period	No numerical target exists herein, for follow up-purpose only
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G12.PI.1.4	Number of specific design and/or product available for manufacturing until the end of the plan period	No numerical target exists herein, for follow up-purpose only
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## G12. OBJECTIVE 2

Energy and Natural Resources Institute and R&D Coordination Department, within the scope of the Institute, shall be established.

Coordinator: SGB

Responsible Bodies: All Central Units and Affiliated, Associated and Related Institutions

### Performance Indicator:

G12.PI.2.1	Completion of studies regarding the establishment of the Institute	31.12.2017
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## Strategies

- MENR R&D Strategy Document shall be prepared, direction of R&D studies shall be determined.
- Technology centres supported under leadership of public- university-industry cooperation shall be established.
- Legislation for supporting the implementation of R&D outcomes shall be prepared until late 2016.
- Organizational design shall be prepared for the institute and legislation shall be prepared.
- Within the scope of Energy and Natural Resources Institute, research and capacity developing activities for occupational safety in mining shall be implemented.
- "Critical Technology Plan" which would orient R&D projects in the field of energy by the attendance of universities, research institutes and industry sector shall be prepared, and implementations within the scope of this plan shall be monitored along with the plan period.
- National technology inventory shall be formed and updated annually until late 2016
- Corporate R&D legislation shall be developed in compliance with the applicable legal framework and shall be arranged so as to permit pilot R&D projects.
- State of the art technologies shall be provided to be used in the field of renewable energy.
- Upon the existence of appropriate laboratory working environment; work efficiency shall be enabled, furthermore reliability and accuracy value in the devices used in Hydrogen Technologies Laboratory shall be fully provided.

Growing in stability and fulfilling its investments duly and without delay by its private sector

# HUGE POTENTIAL IN NEW TURKEY



# THEME

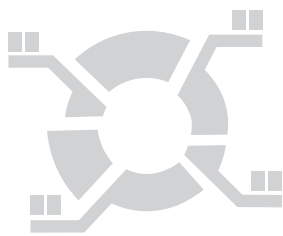
# 6

## Improvement of Investment Environment

### Why Improvement of Investment Environment?

Energy and natural resources sectors grow by private sector investments. Provision of an environment, in which private sector investments could be realized faster and easier, removing the structural obstructions against investments and finally for enabling the security of supply in the field of energy and natural resources, is a critical factor. This theme aims to

establish necessary investment environment where energy and natural resources investments could be achieved easily and rapidly under competitive conditions according to sustainability principles, so that our national growth and development requirement could be met.



### Results of SWOT Analysis

- Liberalization process which has accelerated recently in electricity market seems to be the most important step for the sector. The share and impact of the public is required to be decreased in the market in line with liberalization process. Increase of liberalization level in wholesale and retail market affect the market in positive direction and increase the competition, thus liberalization is considered to continue.
- Natural gas market is required to be operable.
- Developments for establishment of EPIAS are considered positive by the

investors, however; it is also considered that these attempts should be made effective increasingly and competitive and flexible markets should be implemented within the scope of EPIAS.

- Ministry's higher power of coordination and its revealing a problem solving approach for investments in energy and natural resources are entirely considered positive, however it is also observed that; an active superior body which would solve the problems obstructing the investment and which would coordinate other Ministries in this respect, is also required.



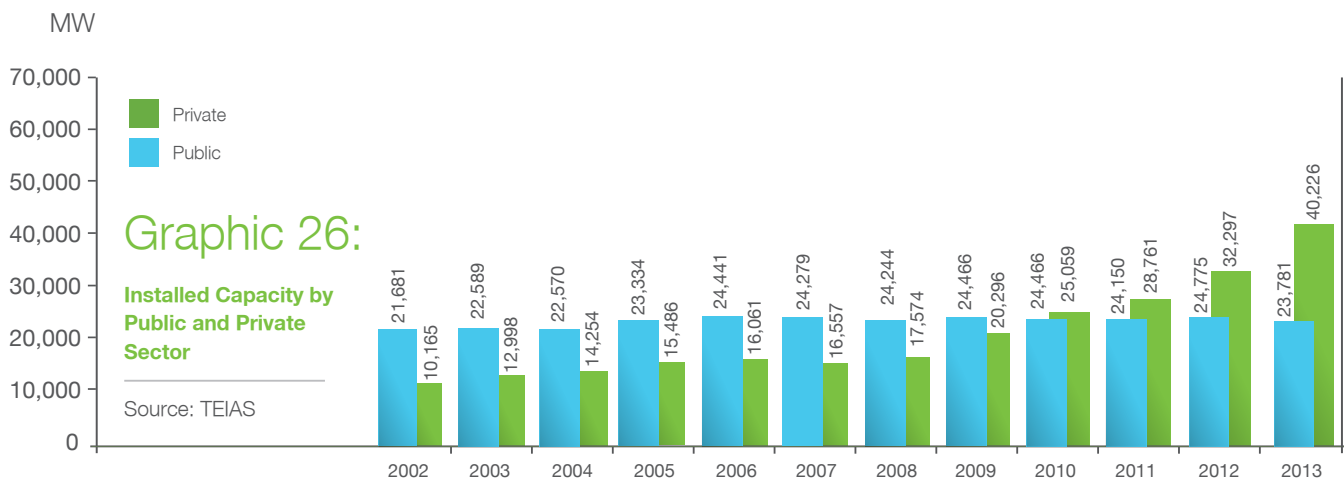
# GOAL

# 13

## Competitive and Transparent Markets

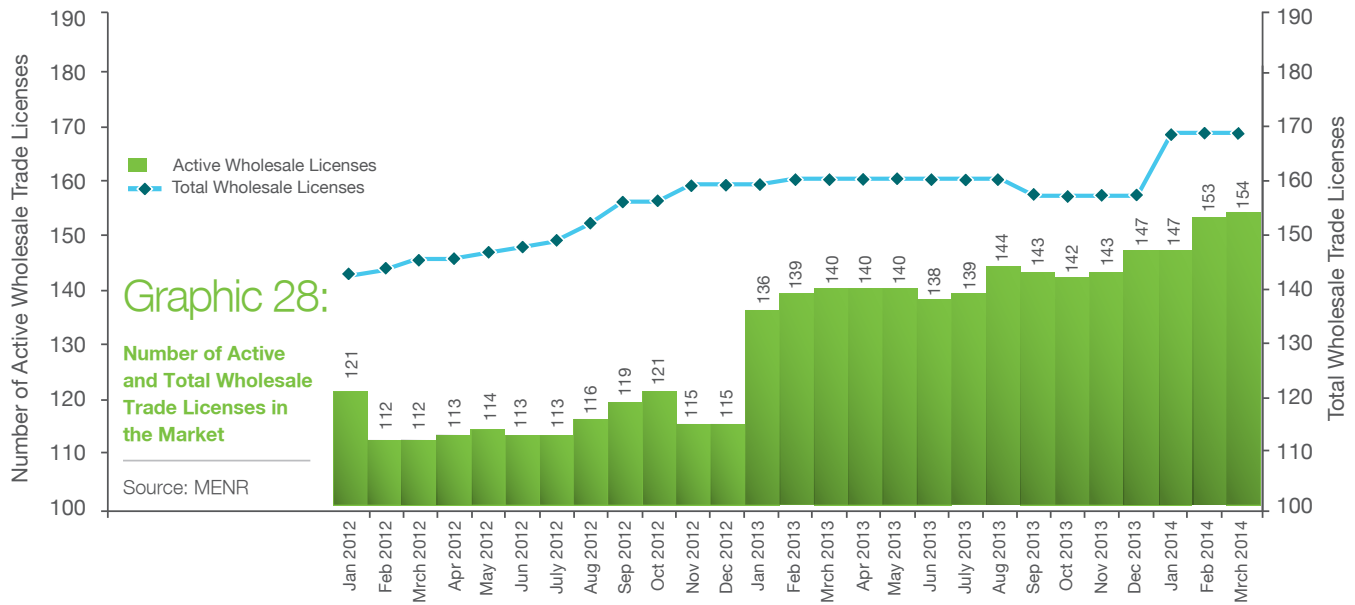
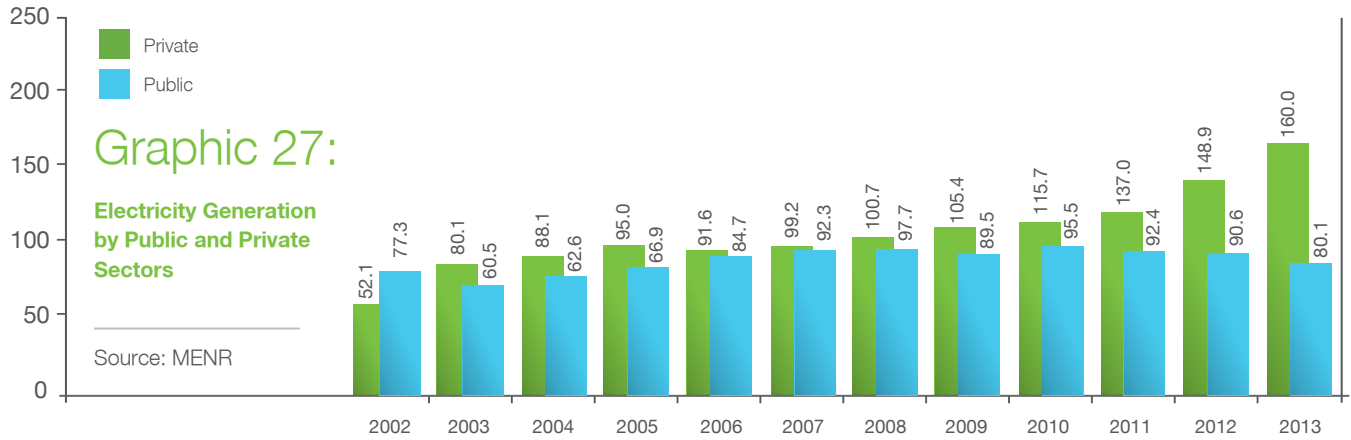
Operation of the markets in a competitive and transparent environment is one of the most influential criteria from perspective of investors. Because in the non-transparent markets occurrence of an environment of confidence, which the investors expect, runs a risk. On the other hand, in such environments where appropriate competitive conditions are

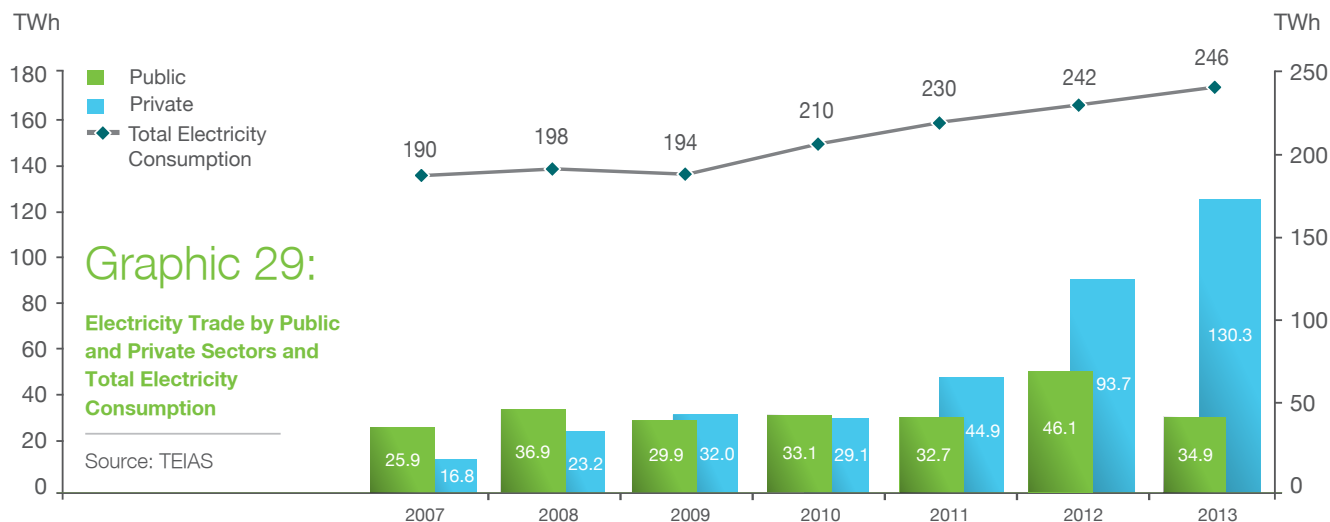
not fulfilled and where failures of markets are not able to be recovered, it is a fact that positive impacts of the competition environment which are attempted to be formed by liberalization are getting disappeared. Within this context, establishment of competitive and transparent markets is a goal within the scope of the Strategic Plan.





TWh





Upon the realization of privatization within specified plans, the share of public in the market is aimed to be decreased whereas predictability for the investors is desired to be increased.

In addition to this, it is also planned that; within the plan period national tariff system should be expired and regional tariff mechanism should be implemented by relieving problems of loss and illegal consumption.



*Delays in the implementation of regulations for the market and failures in expected improvements as regards the problem of*

*loss and illegal consumption may create challenges against the achievement of the relevant goal.*

## G13. OBJECTIVE

1

*Electricity generation privatization process shall be followed to see whether it is applied according to specified plan.*

Coordinator: EIGM

Responsible Bodies: EUAS, Privatization Administration

### Performance Indicators:

<b>G13.PI.1.1</b>	Completion of privatization of thermal power plants	31.12.2016
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<b>G13.PI.1.2</b>	The rate to be reduced in the share of public within electricity generation by the end of the plan period (%)	<b>Base Year 2013</b>	<b>2019</b>
		33.36 (BO, BOT, TOOR are excluded)	20

## G13. OBJECTIVE

2

*Preliminary studies shall be accomplished for the implementation of regional electricity tariffs instead of national tariff system until the end of the plan period.*

Coordinator: EIGM

Responsible Body: EPDK

### Performance Indicator:

<b>G13.PI.2.1</b>	Completion of preparatory studies for regional tariff mechanism	31.12.2019
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# G13. OBJECTIVE

3

Upon the establishment of EPIAS, energy markets shall be made more transparent, reliable and monitorable.

Coordinator: EIGM

Realization Bodies: TEIAS, EPIAS, BOTAS, EPDK

## Performance Indicators:

G13.PI.3.1	Making the Intra-Day Market functional in electricity market	30.06.2015
G13.PI.3.2	Making the Market Monitoring System functional	01.01.2016
G13.PI.3.3	Issue of Transparency Code	01.01.2016

G13.PI.3.4	Implementation of information platform which enables data sharing	01.07.2016
G13.PI.3.5	Completion of infrastructure studies for functionality of Balancing and Day-Ahead Markets within the scope of EPIAS in natural gas market	31.12.2016

# G13. OBJECTIVE

4

Content and calendar related to data sharing of Ministry and its Affiliated, Associated and Related Institutions shall be determined, and reports and data thereof shall be published accordingly.

Coordinator: EIGM

Responsible Bodies: All Central Units and Affiliated, Associated and Related Institutions



## Strategies

## Performance Indicator:

G13.PI.4.1	Determination of content and calendar related to data sharing and execution of the first institution sharing	30.06.2015
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- Plan related to privatization shall be prepared and shared with public, and predictability from investors' point of view shall be enabled.
- Some of EUAS' generation capacity shall be privatized through long term contracts gradually by years in an increasing manner.
- Regional tariff mechanism, with its details, shall be discussed in a participatory manner and the road map for its implementation shall be developed.
- As set forth in the legislation, market systems within TEIAS shall be transferred into EPIAS in a reliable manner and shall be made functional therein.
- Legislation and infrastructure studies regarding data sharing, market transparency and market surveillance system shall be carried out.
- In order to make electricity market function better, re-

searches regarding additional markets which might be established shall be carried out, necessary studies to develop legislation shall be conducted in this respect.

- Completion of BOTAS's restructuring shall be provided within the period specified in the related law.
- By the end of the plan period, transition to cost-based pricing structure shall be completed in the natural gas market.
- Regulations shall be made for bringing the natural gas market to function better.
- Implementation of Balancing and Day-Ahead Markets in natural gas market shall be provided.
- Completion of the preparations for the establishment of oil and carbon markets within EPIAS in collaboration with relevant Ministries.

# GOAL

# 14

## Improved Investment Processes

Besides the supports provided to investments based on a transparent and predictable market structure, administrative properties of processes of supporting investors is an accelerating factor for investors. Particularly, the capability of foreign investors; who are considering to make their initial investments in our country, of comprehending the market procedures and rules easily as well as prediction of risks sourced from the applicable legislation shall bring along the cooperation.

It is aimed that; besides relevant processes and governance infrastructure should be established, alternative finance models to promote investments should be developed, thus the investment environment required by the investors should be enabled. Within this framework, it is considered that the restructuring providing high level cooperation between the institutions will be essential.



*Difficulties may be faced in completion of necessary legislations for improvement of investment processes and*

*coordination and in the functionality of the related organization within the plan period.*

## G14. OBJECTIVE

### 1

*Governance and process structure which facilitate energy and natural resources investments shall be implemented.*

Coordinator: EIGM, MIGEM

Responsible Bodies: All Central Units and Affiliated, Associated and Related Institutions

### Performance Indicators:

<b>G14.PI.1.1</b>	Completion of legislation for the establishment of Energy and Natural Resources Investment Coordination Board and Project Follow Up and Coordination Department	31.12.2015
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<b>G14.PI.1.2</b>	Establishment of Energy and Natural Resources Investment Coordination Board	31.12.2015
<b>G14.PI.1.3</b>	Establishment of Project Follow Up and Coordination Department	30.06.2016

# G14. OBJECTIVE 2

Alternative finance models shall be developed in order to promote the investments in energy and natural resources sectors.

Coordinator: EIGM, MIGEM

Responsible Bodies: EIGM, MIGEM, PIGM, DIAB, MTA, TKI, TTK, EUAS, TPAO, EPDK

## Performance Indicator:

G14.PI.2.1	Completion of promotion impact analyses and establishment of finance models	31.12.2019
------------	---	------------



## Strategies

- “Energy and Natural Resources Investment Coordination Board” consisting of the representatives from relevant Ministries, at Deputy Undersecretary level and higher level representatives from relevant institutions, under the presidency of Energy and Natural Resources Ministry, shall be established. The mission of this Board is to evaluate the structural obstructions in energy and natural resources investments and develop policy and actions to resolve these problems and to provide cooperation between the institutions.
- Upon the establishment of Project Follow Up and Coordination Department within the body of the Ministry, except nuclear and transit pipeline projects, large and medium scaled strategic projects carried out by public and private sector shall be provided to be followed up by a separate department within this structure. Project Follow Up and Coordination Department shall work in cooperation with Energy and Natural Resources Investment Coordination Board.
- Incentives based on impact analysis made by econometric models shall be designed, incentive processes shall be monitored, measured and revised according to the results thereof.
- Specialized Industrial Zones related to energy generation and power plant equipment manufacture shall be opened for use of investors.
- Thermal power plant investments in the fields belonging to public and other major projects shall be introduced into economy through public-private partnership model, without damaging market mechanism.
- Bilateral agreements market shall be supported for widening long term contracts and long term off-take agreements under free market conditions.
- Measures shall be taken for enabling the institutionalization of investors which are beyond a specific scale in terms of portfolio magnitude.
- Regulations aiming the promoting of natural gas storage and LNG terminal investments shall be made.
- Permit and approval periods for energy and mining investments shall be shortened (making job definitions, re-evaluation of processes, making amendments to legislation), and unnecessary stages and document requirements shall be determined and recovered.



Sustainable and reliable procurement of the required raw materials from indigenous and overseas resources

# NEW TURKEY HAS OPPORTUNITIES





# THEME

# 7

## Raw Material Supply Security

### Why Raw Material Supply Security?

Secure procurement of non-energy raw materials means the source security of various industrial areas in which these raw materials are used as input through the process. Lack of these raw materials may hinder production processes and lead to economic losses. Turkey does not possess all re-

quired raw materials and some of raw materials are imported. This theme is for enabling the sustainability of raw material supply security as well as rational and proactive strategies and actions.



### Results of SWOT Analysis

- For enabling the security of raw material supply, it is important to increase the exploration activities. In this manner, related mechanisms are required to be designed.
- It is seen that; measures are required to be designed to alleviate conflicts in environmental issues, public and investors should be made aware and informed on the subject and implementations which minimize environmental impacts specific for some mining investments should be developed and expanded.
- Occupational health and safety should be increased in mines and also cooperation with other public institutions, nongovernmental organizations and private sector companies should be developed.
- Licenses should be avoided to be kept by the investors in idle manner for a long time. Inspection mechanisms thereof are required to be implemented.
- International action is required for the sources which are not available in Turkey or which have higher production costs. Turkish companies involved in exploration and operation abroad actively should be supported.
- There exists a deficiency of competent corporate capacity in the field of mining. Business steps should be established for development of corporate capacity.
- Critical raw materials should be determined and reserve determinations for relevant reserves should be completed.
- There exists a lack of proper and common database relating to exploration activities.

# GOAL

# 15

## Security of Non-Energy Raw Material Supply

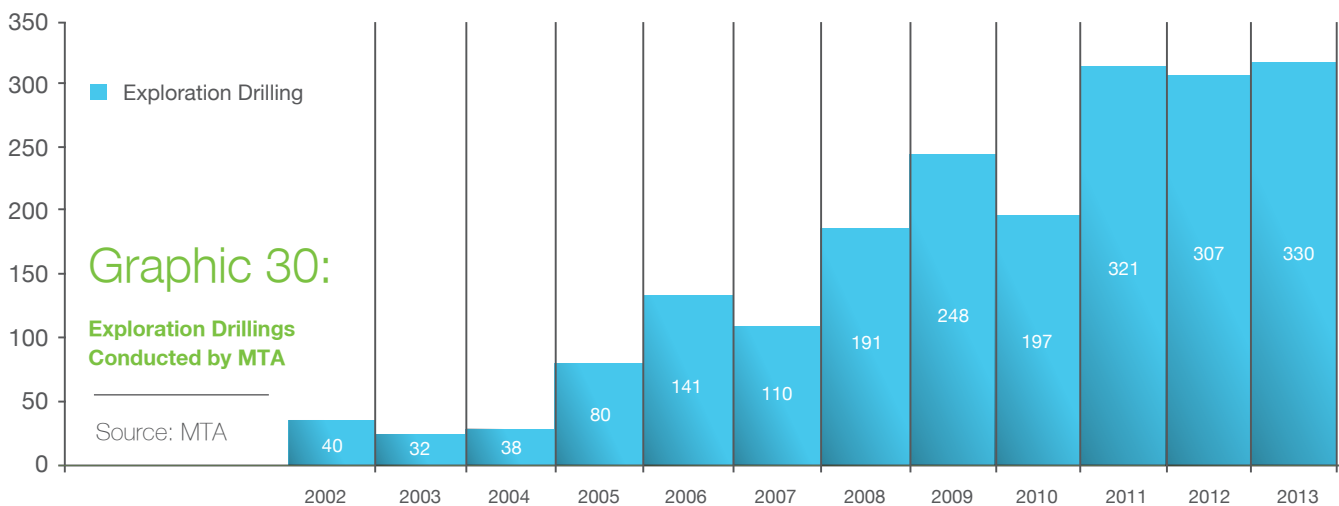
Exploration activities shall be increased both in the country and overseas, furthermore security of supply of these raw materials shall be assured accordingly. Besides, a separate strategy study for critical and strategic raw materials for the country shall be conducted.

To be aware of the raw material mine potential owned by the country and to follow up the relevant developments; establishment of an integrated data bank related to these sources

is substantially important. These studies shall be carried out along with corporate capacity enhancement and restructuring studies.

Domestic companies' performing mining activities overseas is one of the strategies that would contribute to the security of procurement of non-energy raw materials. However, these strategies have been discussed in the goals under the theme of "Regional and International Effectiveness".

Thousand Meters



*Security of supply of non-energy raw material is an issue in which various stakeholders have participated and which should be executed in coordination. Here, a structure is needed; where public institutions should arrange investment environments in the best manner, private sector capacity*

*should increase and their investments should be made consciously, public institutions have gathered their experiences and have been acting as powerful companies in the international arena, and in which all these actions have been progressing in a harmonized structure.*



# G15. OBJECTIVE

1

Explorations in regard to non-energy natural resources should be increased.

Coordinator: MIGEM

Responsible Bodies: MTA, ETI MADEN

## Performance Indicators:

Increase of natural resources exploration activities		2015	2016	2017	2018	2019
G15.PI.1.1	Exploration drilling performed by public for non-energy natural resources (meter)	150,000	150,000	170,000	190,000	200,000
G15.PI.1.2	Annual increase in investment for explorations until the end of the plan period (%)	5	5	5	5	5

# G15. OBJECTIVE

2

Integrated data bank infrastructure should be established for non-energy natural resources..

Coordinator: MIGEM

Responsible Bodies: MIGEM, MTA, ETI MADEN

## Performance Indicators:

G15.PI.2.1	Establishment of drilling core data bank	31.12.2016	G15.PI.2.2	Establishment of reserve data bank	31.12.2016
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# G15. OBJECTIVE

3

National Raw Material Strategy Document involving critical raw materials shall be prepared.

Coordinator: MIGEM

Responsible Bodies: MIGEM, MTA, ETI MADEN, BOREN

## Performance Indicator:

G15.PI.3.1	Completion of National Raw Material Strategy Document involving critical raw materials and road map	31.12.2015
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# G15. OBJECTIVE

4

Infrastructure studies for enabling the exploration and reporting of Turkey's mining resources in accordance with international standards shall be completed.

Coordinator: MIGEM

Responsible Bodies: MIGEM, MTA

## Performance Indicators:

G15.PI.4.1	Completion of international reserve reporting system	31.12.2018
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G15.PI.4.2	Completion of international exploration standards	31.12.2018
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G15.PI.4.3	Establishment of National Reserve Reliability System integrated to data bank for producing reliable reserve information	31.12.2019
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## Strategies

- Measures for increasing exploration drillings in private sector shall be taken.
- Permit processes regarding exploration and operational shall be revised in a facilitating manner.
- Investments regarding natural resources shall be facilitated through the measures under the Improvement of Investment Environment Theme.
- As specified under the theme of Regional and International Effectiveness, necessary business steps shall be taken to enable public companies to conduct exploration activities for non-energy raw materials abroad.
- For the purpose of establishing an extensive data inventory by the participation of other stakeholders and establishing a data bank in which all geological findings (including drilling core data bank) are included; studies for developing legal and physical infrastructures shall be carried out ( as a physical and electronic data base).
- Necessary legal infrastructure shall be prepared to transfer the samples of all drillings performed by public and private sector to the data bank.
- Studies for establishment of a National Reserve Security System integrated with data bank shall be initiated for the purpose of producing reliable reserve data.
- For enabling the exploration and utilization of critical raw materials, critical raw materials shall be determined primarily.
- National Raw Material Strategy Document involving critical raw materials and a road map shall be prepared and revised in late 2018.
- Infrastructure studies shall be conducted for establishment of Reserve and Resource Security System and for enabling exploration according to international standards.
- Within the body of Ministry, a unit; which shall be able to produce policy on non-energy natural resources and which shall monitor the implementation of these policies and provide the coordination thereof, shall be established.
- Project inspection structure in mines shall be reviewed and necessary legislation shall be formed to enable the project inspection in most rational and result oriented manner.
- Cooperation with other Ministries shall be developed for the control and coordination of industry based on mining, and for monitoring its progress.
- The Presidency of Project Follow Up and Coordination, of which detailed information is given in the theme named; Improvement of Investment Environment, shall work in direct contact with other Ministries for resolving the problems arising from implementations due to applicable legislation (Mine Law and other mining laws which other Ministries are related to) for investment.
- A system; user friendly, recordable and storable, shall be established in which the services provided to license owners within e-Devlet project could be transferred into internet environment.
- Project evaluation criteria shall be determined obviously and competence shall be required at exploration license evaluation stage.

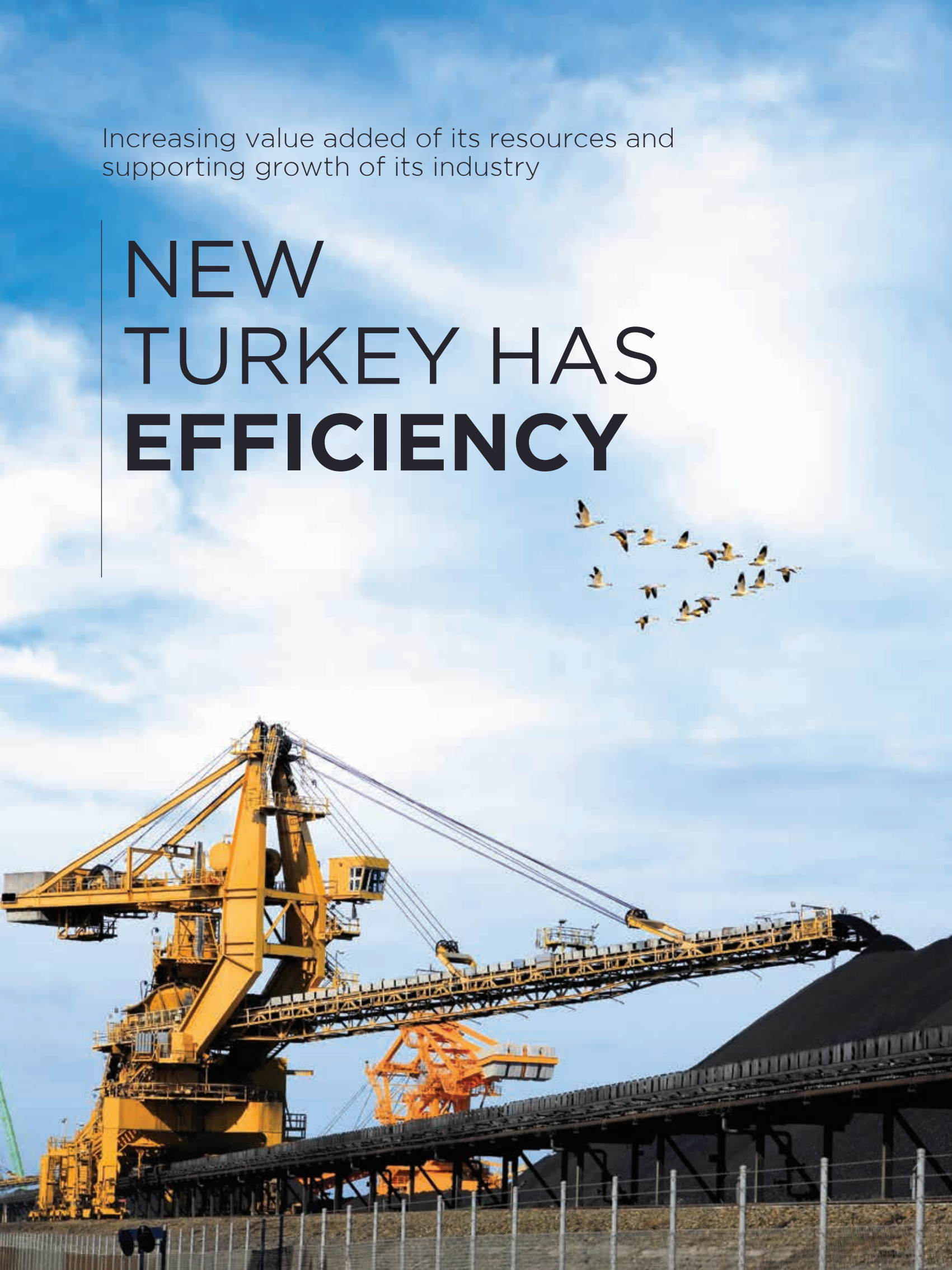






Increasing value added of its resources and supporting growth of its industry

# NEW TURKEY HAS EFFICIENCY





# THEME

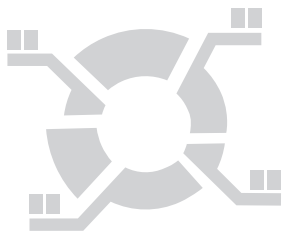
# 8

## Efficient and Effective Use of Raw Material

### Why Efficient and Effective Use of Raw Material?

The country's non-energy raw materials are limited, for this reason they should be used in effective and efficient manner for enabling sustainable growth of the industry and increasing of the national income. Rather, exporting mines as ore,

they should be exported as end products with higher value added, thus such mechanisms should be used wider and limited raw materials should be utilized in maximum by making relevant business steps thereof.



## Results of SWOT Analysis

- High input costs and technological deficiencies cause ore exports to be executed with a lower value added. The sector should be informed in regard to prevent raw material export, this approach should be supported and implemented by relevant incentives. It is necessary to increase end-product exports and decrease ore exports.
- There exists a potential for recovery which has not been utilized yet and policies should be developed to promote intensive recycling.
- The capacity of the companies acting in the sector should be developed and number of companies with international standards acting in mining sector should be increased.

# GOAL

# 16

## Efficient and Effective Use of Non-Energy Natural Raw Materials

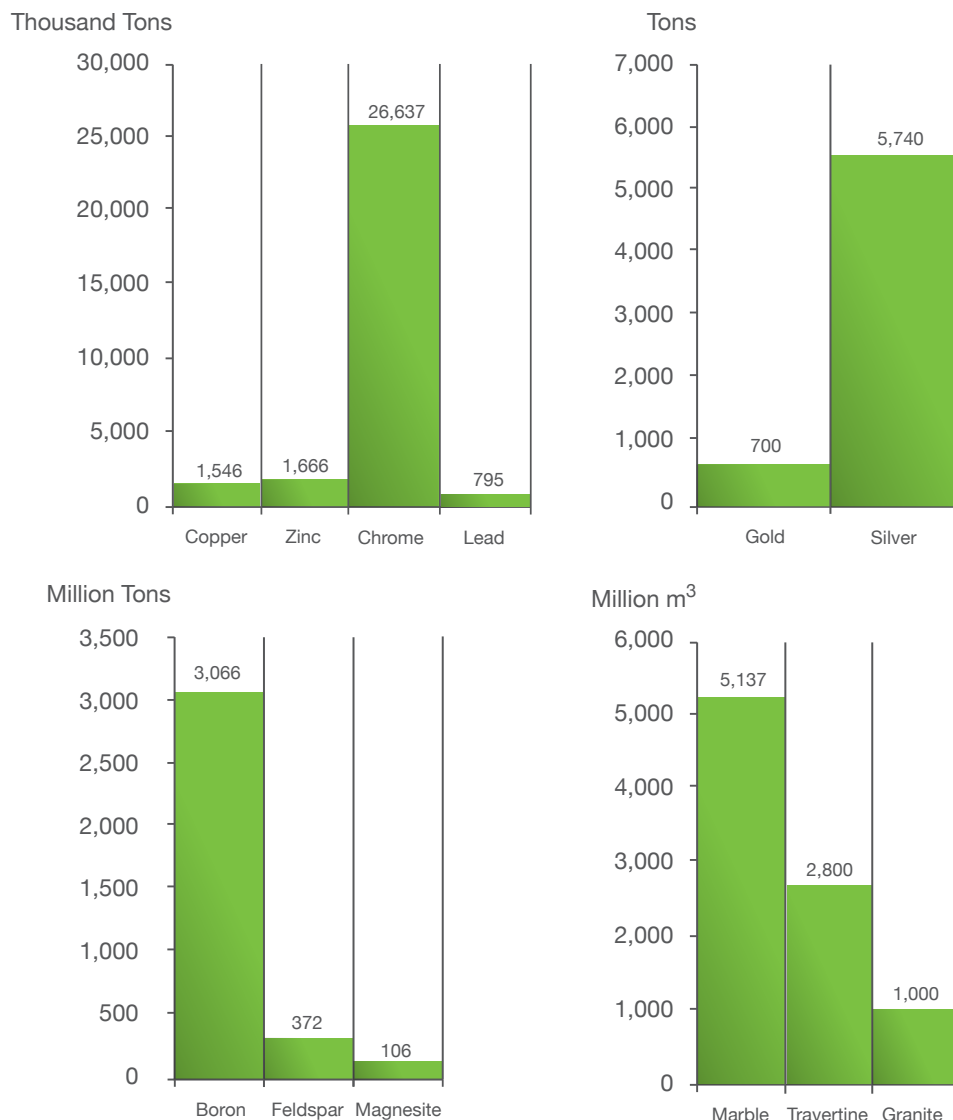
Mechanisms encouraging the production and exports of end product within the scope of non-energy natural raw materials should be implemented. It is aimed that processed ore exports should be increased, in addition to this, imported

and domestic concentrates and secondary product transformations should be evaluated and valuable minerals included therein should be obtained.

### Graphic 31:

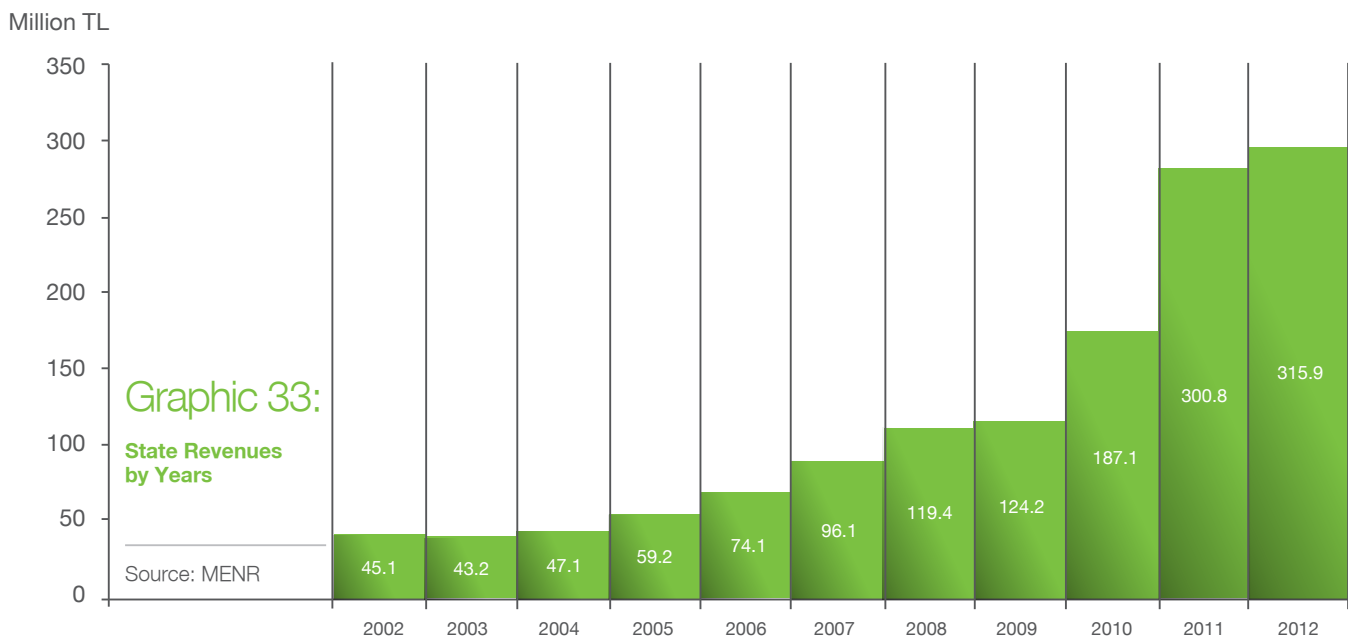
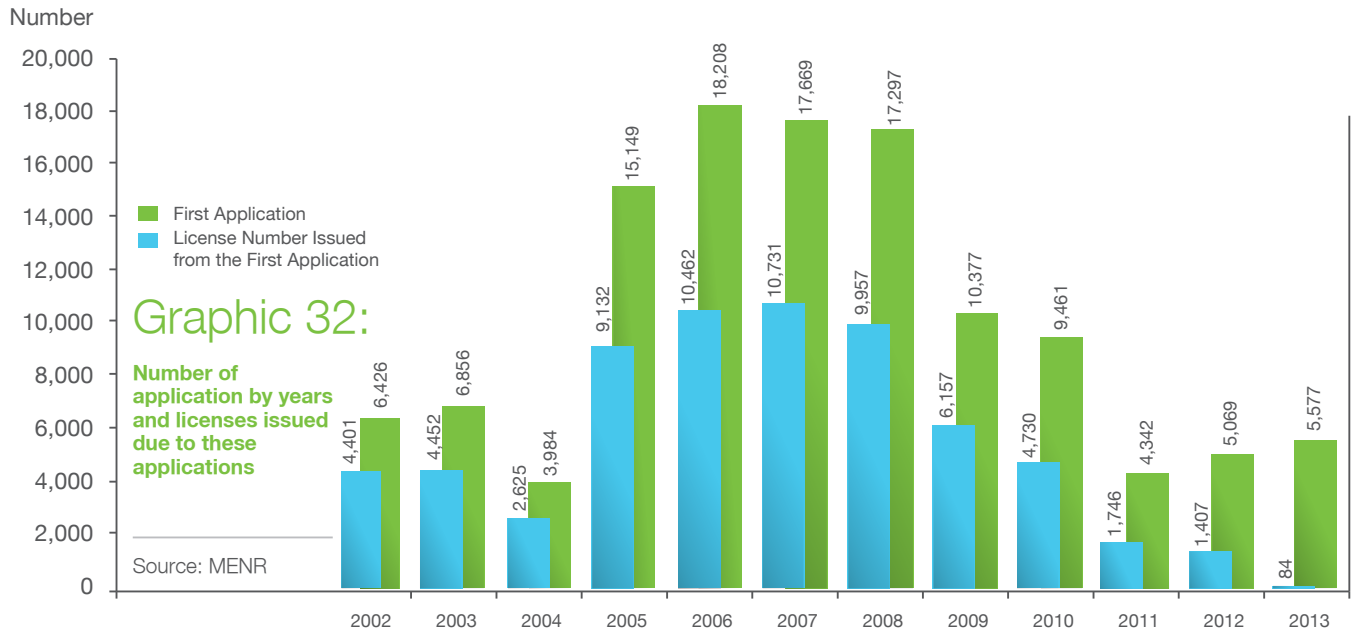
Some ore and natural stone reserves by the end of 2013

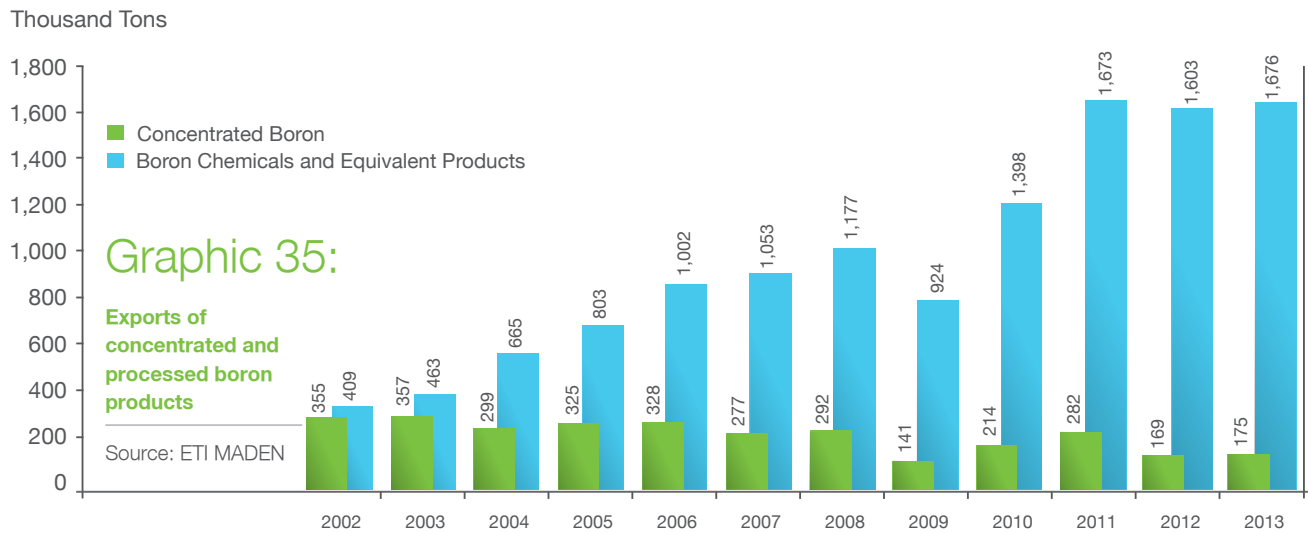
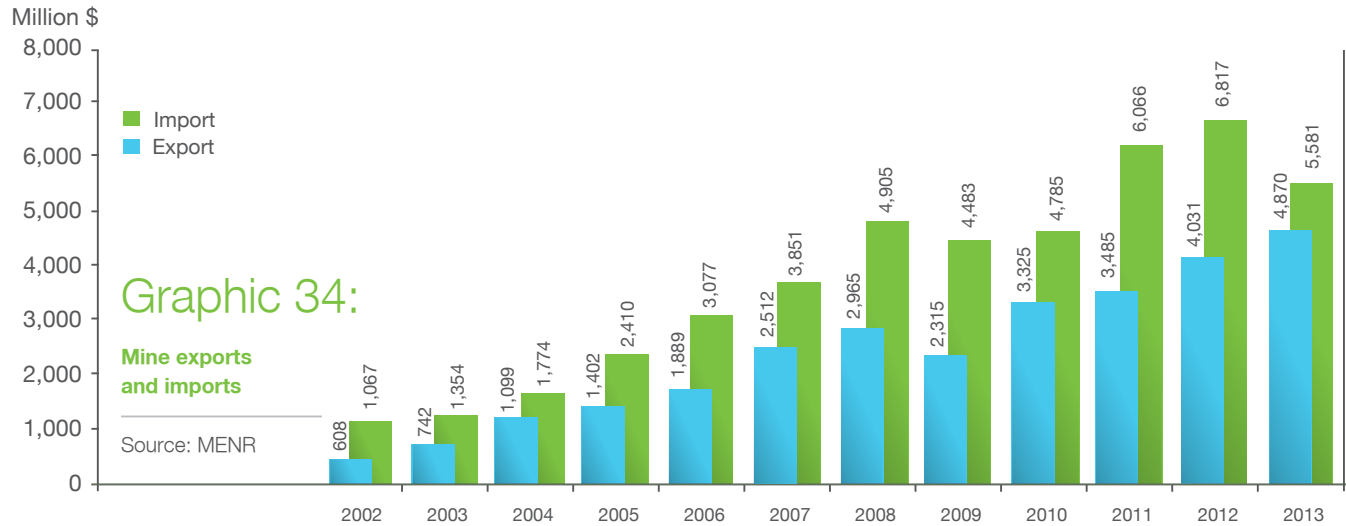
Source: MTA



Amendments were made in Mining Act No. 3213 for the purpose of development of the mining sector. Based on these amendments, improvements has been provided in the sector, significant increases have occurred in the share of the sector in total national exports and national income. Within

the scope of these regulations, for enabling the efficient use of sources in mining activities; new criteria have been defined, thus actual investors have been introduced necessary facilities.





For enabling the working security of mines by the coordination with relevant institutions, monitoring and inspection activities should be intensified.



*In line with this purpose, capacity development of private sector and raising awareness in their investments towards end products are of critical factors.*

## G16. OBJECTIVE

1

*Production of processed products and their exports shall be increased.*

Coordinator: MIGEM

Responsible Bodies: MIGEM, ETI MADEN

### Performance Indicators:

G16.PI.1.1	Design and implementation of measures which would increase the rate of processed ore exports to total natural non-energy resource exports in cooperation with Ministry of Science, Industry and Technology.	31.12.2016
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G16.PI.1.2	Rate of concentrated boron within total boron products until the end of plan period	Base Year 2013	2019
		5%	3%

## G16. OBJECTIVE

2

*Measures shall be designed and implemented for enabling to obtain valuable minerals from import and domestic concentrates and by recycling from secondary (waste items) products*

Coordinator: MIGEM

Responsible Bodies: MIGEM, ETI MADEN

### Performance Indicator:

G16.PI.2.1	Design and implementation of measures, in cooperation with other Ministries, for enabling to increase the quantity of valuable minerals obtained from concentrated products	31.12.2017
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## G16. OBJECTIVE

3

*An operation and inspection structure enabling efficient, effective and secure mining activities in international standards shall be formed.*

Coordinator: MIGEM

Responsible Bodies: MIGEM, ETI MADEN, TKI, TTK, EUAS

### Performance Indicator:

G16.PI.3.1	Implementation of operation and inspection structure; enabling efficient, effective and secure mining activities in international standards	31.12.2016
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## Strategies

- By-product and end product inventory shall be prepared and sector shall be regulated in line with the production of these items.
- In relation to the production of by-products and end-products, utilization of advanced technology shall be promoted and expanded so as to increase cost-efficiency and value added.
- As regards the production of by-products and end-products, feasibility studies shall be conducted particularly for incentives which would decrease energy input cost.
- Interactions on environment shall be determined in common mind workshops together with stakeholders and implementations minimizing the environmental impacts shall be designed.
- For obtaining valuable minerals in concentrates, relevant sector and public sector representatives shall be met and common mind workshops shall be organized and road map shall be issued.
- For the purpose of issuing the inventory of all mineral processing plants and products of them and also monitoring and inspecting them; legal arrangements and necessary infrastructure shall be formed.
- For aiming to obtain valuable minerals, through advanced enrichment process, from concentrated products either produced or imported; necessary researches and feasibility studies shall be conducted for enabling the establishment of an integrated mineral processing plant by public or private sector or by public-private partnership.
- Necessary regulations shall be made for the implementation of market mechanisms for the utilization of concentrated products involving valuable minerals.
- Road map for utilization of wastes shall be formed.
- Mining investments should be initiated as based on feasibility studies, conscious technology selection should be provided, companies with strong financial capacity should be oriented toward investments, unplanned mining should be avoided and competitive market formations should be supported.
- Operating and inspecting structure shall be formed for effective, efficient, safe and mining compatible with international standard.
- Technology and efficient equipment utilization should be promoted for increasing the efficiency. Furthermore, necessary studies for raising awareness thereof shall be conducted.
- As different sub-sectors and raw materials require different technologies and processes, appropriate approaches considering the requirements of these sectors shall be developed in order to increase efficiency of sub-sectors.
- Guidance services shall be supplied for efficient mining.
- Competition structure in the market shall be followed. In addition to this, anti-competitive actions shall be determined and avoided.
- Safety of operating mines shall be provided by required coordination with Ministry of Labor and Social Security.







# 5. Monitoring and Assessment

---

Performance indicators in Strategic Plan are categorized into two major groups by their characteristics.

**I. Quantitative Performance Indicators:** These performance indicators involve numerical objective.

For example “Electricity generation from domestic coal shall be increased to 60 billion kWh annually by the end of the plan period.”

**II. Qualitative Performance Indicators:** These performance indicators involve control points within a specific time frame for the completion of specific target studies.

For example: “A corporate restructuring involving Human Resources Transformation Program shall be achieved until the end of 2016.”

To monitor quantitative performance indicators; reference year, necessary calculation procedure, data suppliers and methodology related to frequency of data for calculation have been prepared in detailed. Monitoring process for quantitative indicators shall be basically accomplished based on data sets transferred over ESIS. Degree of realization on value target planned for interim periods and developments in general shall be evaluated by the meetings to be held periodically by Coordinator and Responsible Bodies. Meeting period varies according to the content of the indicator and has been specified comprehensively in monitoring methodology.

Qualitative performance indicators, by its nature, call for a control list to monitor approaching to and reaching the objective. Monitoring shall be executed by evaluating whether the objectives will be fulfilled or not, and examining the reasons in case of failure. No numerical data is required herein. Developments, here, shall be evaluated by the meetings to be held periodically by Coordinator and Responsible Bodies.

The details regarding monitoring is to vary depending on the position of Responsible Bodies and the details are shown in Figure 1.

## Role of PSD in Performance Monitoring Process

PSD shall perform the following duties for all performance indicators:

- **By the end of February, 2015**, to record all goal, objective, and performance indicators into ESIS’ s Strategic Planning module, to provide its approval by the high level management (Directorate of PSD and the related Deputy Undersecretary, Undersecretary and the Minister hierarchically),
- To guide the Coordinator for monitoring,

- **Starting from September, 2015**, to control whether the developments regarding all performance indicators will be recorded into ESIS Strategic Management Module and to evaluate the developments by the end of every March and September of each year,

Within this context;

- In case of inconsistency among Responsible Bodies and Coordinator, to organize a meeting on performance development among them and to take a copy of the meeting minutes and examine it.
- In case of coherence between Responsible Body and Coordinator to receive the performance progress form and to examine it.
- In case where PSD is in charge of both Responsible Body and Coordinator, to evaluate the performance progress together with the related Deputy Undersecretary and to report the results by performance progress form.

- **Starting from May, 2016**, to form **Annual Monitoring Report** for all performance indicators through monitoring the developments via ESIS and examine the meeting minutes between the Coordinator and Responsible Bodies and share it with the high level management.

## Role of Coordinators within the Performance Monitoring Process

Units in charge of coordination in the Strategic Plan shall fulfil all the duties given below for all performance indicators regarding the objectives under their responsibilities of coordination:

- **By the end of February, 2015**, to select data forms over ESIS on the basis for the calculation of all quantitative performance indicators within the scope of the objectives under their responsibilities of coordination,
- **Starting from September, 2015**, to examine developments regarding all performance indicators within the scope of objectives under their responsibilities of coordination, through ESIS Strategic Management Module by the end of **March and September for each year**, to evaluate mutually the developments, causal relationship, failures, problems etc. and to plan the work steps on the areas of reconciliation over common issues through meetings among Responsible Bodies and to prepare the meeting minutes related to this evaluation and to transmit it to PSD.

## Role of Responsible Bodies within the Performance Monitoring Process

The bodies in charge of implementation in the Strategic Plan shall fulfil all the following duties for all performance indicators regarding the objectives under their responsibilities:

- Starting from September, 2015, to inform the develop-

ments related to all performance indicators for the objectives under their responsibilities to the Coordinator by the end of **March and September for each year**, and to evaluate mutually the developments, causal relationships, failures, problems etc. together with the Coordinator if necessary, to plan the work steps on the areas of reconciliation over common issues and after preparing the meeting minutes together with the Coordination Unit to transmit it to PSD.

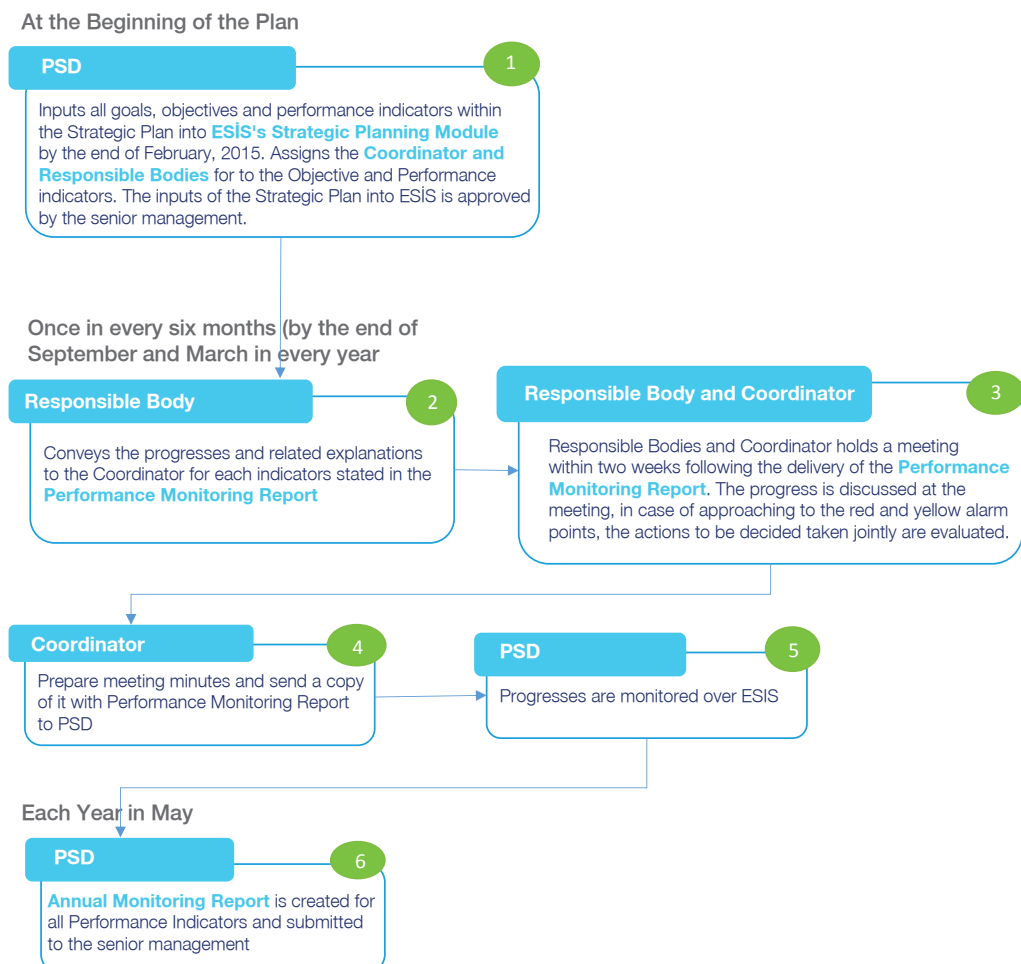


Figure 5:  
Performance Monitoring Process

## 6. Costing

During cost determination process, the entire Ministry's budget (forecast budget) has been distributed accordingly with the goal it is related with. In this distribution, the budgets

regarding projects and overhead expenses have been taken into consideration. Annual costs in the basis of goal are specified below:

GOAL	ANNUAL COSTS (TL)					
	2015	2016	2017	2018	2019	Total
Goal 1 : Strong and Reliable Energy Infrastructure	6,940,265	7,518,815	7,802,844	8,192,987	8,602,636	39,057,547
Goal 2 : Optimum Resource Diversity	35,380,472	38,055,896	39,337,194	41,046,431	43,013,179	196,833,172
Goal 3 : Effective Demand Management	7,782,408	7,696,903	7,802,844	8,192,987	8,602,636	40,077,778
Goal 4 : Turkey; Making Use of Its Energy in the Most Efficient Way	24,659,306	26,539,346	27,731,157	28,675,453	30,109,226	137,714,487
Goal 5 : Improved Capacity for Energy Efficiency and Saving	20,822,366	21,725,423	22,654,333	20,482,466	21,506,590	107,191,179
Goal 6 : The Ministry with a Strong Corporate Capacity	19,176,893	15,387,306	16,067,254	16,771,072	17,205,272	84,607,797
Goal 7 : The Ministry Using Information Technologies Effectively	17,927,812	12,414,664	11,704,267	12,289,480	12,903,954	67,240,176
Goal 8 : A Well-Coordinated Ministry	6,852,730	7,431,280	7,802,844	8,192,987	8,602,636	38,882,477
Goal 9 : Turkey Integrated with Regional Energy Markets	19,133,107	20,579,483	21,508,393	20,482,466	21,506,590	103,210,039
Goal 10 : A Powerful Actor in International Arena	10,544,560	11,364,248	11,704,267	12,289,480	12,903,954	58,806,508
Goal 11 : Indigenous Technology in Energy and Natural Resources	6,852,730	7,431,280	7,802,844	8,192,987	8,602,636	38,882,477
Goal 12 : A Result-Oriented R&D	6,968,260	7,546,810	7,840,151	8,230,293	8,639,942	39,225,456
Goal 13 : Competitive and Transparent Markets	13,862,419	15,019,519	15,605,689	16,385,973	17,205,272	78,078,872
Goal 14 : Improved Investment Processes	6,911,397	7,471,896	7,802,844	8,192,987	8,602,636	38,981,760
Goal 15 : Security of Non-Energy Raw Material Supply	17,766,800	17,755,570	15,694,704	16,385,973	17,205,272	84,808,318
Goal 16 : Efficient and Effective Use of Non-Energy Natural Raw Materials	13,758,313	14,915,414	15,658,542	16,385,973	17,205,272	77,923,514
<b>GENERAL TOTAL</b>	<b>235,339,839</b>	<b>238,853,853</b>	<b>244,520,172</b>	<b>250,389,993</b>	<b>262,417,701</b>	<b>1,231,521,557</b>



# Annex 1: Strategic Planning Board and Team List

## Strategic Planning Board

NAME SURNAME	TITLE
Metin KILCI	Undersecretary
Dr. Selahattin ÇİMEN	Deputy Undersecretary
Doğınbey AKGÜL	General Director of the Presidency of Strategy Development
Dr. Zafer DEMİRCAN	General Director of Energy Affairs
M. Hamdi YILDIRIM	General Director Mining Affairs
Yusuf YAZAR	General Director of Renewable Energy
Selami İNCEDALCI	General Director of Petroleum Affairs
Murat KARAPINAR	Acting General Director of Foreign Relations and EU
Ali AĞAÇDAN	1st Legal Counsellor
A. Kerem ESKİGÜN	Acting Counsellor or of Press and Public Relations
Sait ÖZDİL	Head of Administrative and Financial Affairs Department
Satılmış KARAKAYA	Head of Personnel Department
Nurhayat CANTEKİN	Head of Affiliated and Related Institutions Department
Dr. R. Aykul MURATOĞLU	Head of Transit Petroleum Pipeline Department
Necati YAMAÇ	Head of Nuclear Energy Project Implementation Department
Süleyman DUMAN	Head of Internal Audit Department
M. Hacı EMİNOĞLU	Head of Inspection Services

The continuation of the Strategic Planning Team List is in the next page. ▶

## Strategic Planning Team

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The continuation of the Strategic Planning Team List is in the next page. ▶

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Mehmet TUNCEL	Energy Expert
Mustafa GÖZEN	Head of Group
Bilge SERDAR	Energy Expert

"Positions in Strategic Plan Preparing Period are taken into account, subsequent changes are not reflected."

# Annex 2: Chart of Theme-Goal-Objective Roles and Responsibilities

## Theme 1: Security of Energy Supply

Goal 1: Strong and Reliable Energy Infrastructure		
Objective	Coordinator	Responsible Bodies
<p><b>G1. OBJECTIVE 1:</b> To ensure natural gas storage capacity to be able to meet 20% of the annual consumption in the long term, necessary investments shall be initiated and shall be brought up to a level so as to be capable of meeting at least 10% of the annual consumption until the end of the plan period.</p>	EIGM	PIGM BOTAS TPAO EPDK
<p><b>G 1. OBJECTIVE 2:</b> Electricity and natural gas transmission system shall be constructed and operated according to (n-1) criteria, disabling of a critical part of the system, in line with short and medium term supply-demand balance and long term generation development plan.</p>	EIGM	TPAO BOTAS TEIAS EPDK
Goal 2: Optimum Resource Diversity		
Objective	Coordinator	Responsible Bodies
<p><b>G 2. OBJECTIVE 1:</b> Electricity generation from domestic coal shall be increased to 60 billion kWh annually by the end of the plan period.</p>	EIGM	MTA EUAS TEIAS TKI TTK EPDK
<p><b>G 2. OBJECTIVE 2:</b> Transformation of existing domestic coal resources into electricity generation investments and exploration of new resources shall be provided.</p>	EIGM	MIGEM MTA EUAS TKI TTK
<p><b>G 2. OBJECTIVE 3:</b> The share of renewable energy resources in primary energy supply and electricity generation shall be increased.</p>	YEGM	YEGM MTA TEIAS EPDK



## Goal 2: Optimum Resource Diversity

Objective	Coordinator	Responsible Bodies
<p><b>G 2. OBJECTIVE 4:</b> Nuclear energy shall be included into electricity generation portfolio.</p>	NEPUD	NEPUD EIGM TAEK EUAS TEIAS EPDK
<p><b>G 2. OBJECTIVE 5:</b> Coverage ratio of domestic and imported crude oil production against consumption shall be increased to 13.6%.</p>	PIGM	TPAO
<p><b>G 2. OBJECTIVE 6:</b> Hydrocarbon potential which may be obtained through unconventional methods shall be determined. (Shale gas, shale oil etc.)</p>	PIGM	TPAO TKI TTK
<p><b>G 2. OBJECTIVE 7:</b> Diversification of import countries and routes shall be provided by adding new source countries and routes into natural gas import portfolio.</p>	DIAB	TPBH EIGM BOTAS
<p><b>G 2. OBJECTIVE 8:</b> Domestic oil and natural gas exploration and production activities shall be increased until the end of the plan period.</p>	PIGM	TPAO
<p><b>G 2. OBJECTIVE 9:</b> The share of natural gas in electricity generation within total generation shall be reduced to 38% until the end of the plan period.</p>	EIGM	EIGM EPDK
<p><b>G 2. OBJECTIVE 10:</b> Necessary feasibility studies regarding the expansion of LPG and dumped LNG use in the regions, where natural gas cannot be supplied, shall be completed. Strategy and road map studies shall be accomplished if deemed feasible.</p>	PIGM	PIGM EPDK
<p><b>G 2. OBJECTIVE 11:</b> Domestic uranium and thorium resources shall be explored and developed so as to be used as fuel in nuclear power plants.</p>	NEPUD	MIGEM MTA ETI MADEN

### Goal 3: Effective Demand Management

Objective	Coordinator	Responsible Bodies
<b>G 3. OBJECTIVE 1:</b> As of 2016, market based demand side participation mechanism shall be implemented in order to reduce the rate of peak demand to average demand in electricity market.	EIGM	TEIAS EPDK
<b>G 3. OBJECTIVE 2:</b> Implementation of demand side management mechanisms for natural gas shall be provided.	EIGM	BOTAS EPDK

## Theme 2: Energy Efficiency and Energy Saving

### Goal 4: Turkey; Making Use of Its Energy in the Most Efficient Way

Objective	Coordinator	Responsible Bodies
<b>G 4. OBJECTIVE 1:</b> In compliance with privatization plan, maintenance, repairment, rehabilitation and modernization studies necessary in public power plants shall be completed until the end of 2019.	EIGM	EUAS
<b>G 4. OBJECTIVE 2:</b> As regard electricity consumption of the country for street lighting, by the end of 2013, existing lighting armatures shall be replaced by efficient ones to provide at least a saving rate of 40% in existing lighting armatures until the end of the plan period.	EIGM	EIGM YEGM EPDK TEDAS Electricity Distribution Companies
<b>G 4. OBJECTIVE 3:</b> Loss and illegal consumption rate in electricity distribution shall be reduced to 10% until the end of the plan period.	EIGM	EPDK TEDAS
<b>G 4. OBJECTIVE 4:</b> Existing regional heating systems shall be expanded.	YEGM	MTA EUAS
<b>G 4. OBJECTIVE 5:</b> On-site generation shall be expanded and at least 1,000 MW of total consumption is aimed to be met by on-site generation until the end of 2019.	YEGM	YEGM EPDK TEDAS Electricity Distribution Companies

#### Goal 4: Turkey; Making Use of Its Energy in the Most Efficient Way

Objective	Coordinator	Responsible Bodies
<p><b>G 4. OBJECTIVE 6:</b> The energy efficiency in central and district buildings of the Ministry and its Affiliated, Associated and Related Institutions shall be increased at least 20% based on 2013 data. Energy Identity Cards for these buildings shall be received and cooperation shall be provided with at least two public institutions for this process.</p>	YEGM	All Central Units and Affiliated, Associated and Related Institutions
<p><b>G 4. OBJECTIVE 7:</b> Improvement shall be supported in primary energy intensity for the enterprises and entities of related institutions of Ministry based on 2013 data.</p>	YEGM	TTK TKI TPAO ETI MADEN TEMSAN EUAS (for coal production)

#### Goal 5: Improved Capacity for Energy Efficiency and Saving

Objective	Coordinator	Responsible Bodies
<p><b>G 5. OBJECTIVE 1:</b> Policy making and monitoring capacity of the Ministry regarding efficiency and conservation shall be developed.</p>	YEGM	YEGM
<p><b>G 5. OBJECTIVE 2:</b> A regulatory framework relating to energy efficiency shall be developed and effectiveness of the incentives shall be increased.</p>	YEGM	YEGM
<p><b>G 5. OBJECTIVE 3:</b> A well operating energy efficiency sector shall be established.</p>	YEGM	YEGM
<p><b>G 5. OBJECTIVE 4:</b> Public awareness shall be raised on energy efficiency and saving.</p>	YEGM	Press and Public Relationship Consultancy
<p><b>G 5. OBJECTIVE 5:</b> Joint work step and interaction plans with the institutions shall be established for energy efficiency and saving.</p>	YEGM	YEGM

## Theme 3: Good Governance and Stakeholder Interaction

Goal 6: The Ministry with a Strong Corporate Capacity		
Objective	Coordinator	Responsible Bodies
<b>G 6. OBJECTIVE 1:</b> A corporate restructuring involving Human Resources Transformation Program shall be achieved until the end of 2016.	Personnel Department	Personnel Department
<b>G 6. OBJECTIVE 2:</b> The capacity of personnel shall be improved.	Personnel Department	Personnel Department
<b>G 6. OBJECTIVE 3:</b> Feasibility studies for restructuring shall be performed for Affiliated, Associated and Related Institutions in which they need to do.	BIK Department	SGB EIGM MIGEM BIK Department Institution to be restructured
<b>G 6. OBJECTIVE 4:</b> Necessary legislation and corporate infrastructure studies shall be completed in relation with the nuclear energy and necessary plan and programs shall be established.	NEPUD	NEPUD EIGM Law Consultancy TAEK EUAS EPDK
<b>G 6. OBJECTIVE 5:</b> Communication and Publicity Strategies on Ministry's policies and activities shall be established until the end of 2015.	Press and Public Relationship Consultancy	All Central Units and Affiliated, Associated and Related Institutions
Goal 7: The Ministry Using Information Technologies Effectively		
Objective	Coordinator	Responsible Bodies
<b>G 7. OBJECTIVE 1:</b> Physical, security and human resources infrastructure in the field of information technologies of the Ministry shall be developed.	SGB	SGB
<b>G 7. OBJECTIVE 2:</b> Integration of all data into ESIS shall be completed until the end of 2016.	EIGM	EIGM SGB All Central Units and Affiliated, Associated and Related Institutions
<b>G 7. OBJECTIVE 3:</b> All mining operations shall be performed in electronic environment within the scope of e-Devlet project.	MIGEM	MIGEM

## Goal 8: A Well-Coordinated Ministry

Objective	Coordinator	Responsible Bodies
<p><b>G 8. OBJECTIVE 1:</b> A coordination plan which would enhance the co-operation and communication between central units of the Ministry and its Affiliated, Associated and Related Institutions shall be implemented.</p>	SGB	SGB BIK All Central Units and Affiliated, Associated and Related Institutions
<p><b>G 8. OBJECTIVE 2:</b> Procedures and principles of a consultation mechanism between stakeholders of the Ministry and its Affiliated, Associated and Related Institutions shall be determined and applied.</p>	EIGM MIGEM	All Central Units and Affiliated, Associated and Related Institutions

## Theme 4: Regional and International Effectiveness

### Goal 9: Turkey Integrated with Regional Energy Markets

Objective	Coordinator	Responsible Bodies
<p><b>G 9. OBJECTIVE 1:</b> Transition system shall have a permanent connection with ENTSO-E.</p>	DIAB	TEIAS EPDK
<p><b>G 9. OBJECTIVE 2:</b> International interconnection capacity shall be increased by two (2) fold until the end of 2019.</p>	DIAB	TEIAS
<p><b>G 9. OBJECTIVE 3:</b> In line with the developments in neighbouring countries, participation shall be provided to the regional electricity markets to be established through coupling and duties shall be undertaken in the organizations regarding the functioning of regional markets.</p>	DIAB	EIGM TEIAS EPIAS EPDK
<p><b>G 9. OBJECTIVE 4:</b> By implementing new transit pipeline projects, the role of Turkey to be an energy corridor in the field of natural gas shall be strengthened.</p>	TPBH	DIAB PIGM BOTAS TPAO
<p><b>G 9. OBJECTIVE 5:</b> Taking into consideration Turkey's studies for making Istanbul a finance centre, an energy center having power for price formation shall be established in Black Sea and Mediterranean, in which Ceyhan and Aliağa delivery products are processed.</p>	DIAB	DIAB EIGM PIGM TPBH BOTAS EPDK



### Goal 10: A Powerful Actor in International Arena

Objective	Coordinator	Responsible Bodies
<p><b>G 10. OBJECTIVE 1:</b> By making partnerships with the companies having foreign investments for exploration and international experience in license area thereof, new sources shall be created in international area for energy raw materials such as; oil, natural gas, coal and radioactive mineral and other raw materials.</p>	DIAB	PIGM MTA TPAO BOTAŞ ETI MADEN TKI TTK
<p><b>G 10. OBJECTIVE 2:</b> Effectiveness of Turkey in international institutions acting in energy and natural resources sector shall be enhanced.</p>	DIAB	All Central Units and Affiliated, Associated and Related Institutions
<p><b>G 10. OBJECTIVE 3:</b> Representation Offices of Energy and Natural Resources shall be established abroad</p>	DIAB	DIAB Personnel Department Law Consultancy

## Theme 5: Technology, R&D and Innovation

### Goal 11: Indigenous Technology in Energy and Natural Resources

Objective	Coordinator	Responsible Bodies
<p><b>G 11. OBJECTIVE 1:</b> Inventory and necessity analysis shall be made for the equipment to be subjected to indigenization and a road map thereof shall be specified.</p>	YEGM	All Central Units and Affiliated, Associated and Related Institutions
<p><b>G 11. OBJECTIVE 2:</b> Taking the manufacture sector in Turkey into consideration, rates of domestic contribution shall be increased.</p>	YEGM	YEGM NEPUD PIGM TPAO EUAS TEMSAN TEIAS BOTAS TKI TTK

### Goal 12: A Result-Oriented R&D

Objective	Coordinator	Responsible Bodies
<p><b>G 12. OBJECTIVE 1:</b> Number of R&amp;D projects in energy and natural resources sector, having strategic importance, should be increased by the end of plan period.</p>	YEGM MIGEM	All Central Units and Affiliated, Associated and Related Institutions

### Goal 12: A Result-Oriented R&D

Objective	Coordinator	Responsible Bodies
<p><b>G 12. OBJECTIVE 2:</b> Energy and Natural Resources Institute and R&amp;D Coordination Department, within the scope of the Institute, shall be established.</p>	SGB	All Central Units and Affiliated, Associated and Related Institutions

## Theme 6: Improvement of Investment Environment

### Goal 13: Competitive and Transparent Markets

Objective	Coordinator	Responsible Bodies
<p><b>G 13. OBJECTIVE 1:</b> Electricity generation privatization process shall be followed to see whether it is applied according to specified plan.</p>	EIGM	EUAS Privatization Administration
<p><b>G 13. OBJECTIVE 2:</b> Preliminary studies shall be accomplished for the implementation of regional electricity tariffs instead of national tariff system until the end of the plan period.</p>	EIGM	EPDK
<p><b>G 13. OBJECTIVE 3:</b> Upon the establishment of EPIAS, energy markets shall be made more transparent, reliable and monitorable.</p>	EIGM	TEIAS EPIAS BOTAS EPDK
<p><b>G 13. OBJECTIVE 4:</b> Content and calendar related to data sharing of Ministry and its Affiliated, Associated and Related Institutions shall be determined, and reports and data thereof shall be published accordingly.</p>	EIGM	All Central Units and Affiliated, Associated and Related Institutions

### Goal 14: Improved Investment Processes

Objective	Coordinator	Responsible Bodies
<p><b>G 14. OBJECTIVE 1:</b> Governance and process structure which facilitate energy and natural resources investments shall be implemented.</p>	EIGM MIGEM	All Central Units and Affiliated, Associated and Related Institutions
<p><b>G 14. OBJECTIVE 2:</b> Alternative finance models shall be developed in order to promote the investments in energy and natural resources sectors.</p>	EIGM MIGEM	EIGM MIGEM PIGM DIAB MTA TKI TTK EUAS TPAO EPDK

## Theme 7: Raw Material Supply Security

### Goal 15: Security of Non-Energy Raw Material Supply

Objective	Coordinator	Responsible Bodies
<b>G 15. OBJECTIVE 1:</b> Explorations in regard to non-energy natural resources should be increased.	MIGEM	MTA ETI MADEN
<b>G 15. OBJECTIVE 2:</b> Integrated data bank infrastructure should be established for non-energy natural resources.	MIGEM	MIGEM MTA ETI MADEN
<b>G 15. OBJECTIVE 3:</b> National Raw Material Strategy Document involving critical raw materials shall be prepared.	MIGEM	MIGEM MTA ETI MADEN BOREN
<b>G 15. OBJECTIVE 4:</b> Infrastructure studies for enabling the exploration and reporting of Turkey's mining resources in accordance with international standards shall be completed.	MIGEM	MIGEM MTA

## Theme 8: Efficient and Effective Use of Raw Material

### Goal 16: Efficient and Effective Use of Non-Energy Natural Raw Materials

Objective	Coordinator	Responsible Bodies
<b>G 16. OBJECTIVE 1:</b> Production of processed products and their exports shall be increased.	MIGEM	MIGEM ETI MADEN
<b>G 16. OBJECTIVE 2:</b> Measures shall be designed and implemented for enabling to obtain valuable minerals from import and domestic concentrates and by recycling from secondary (waste items) products.	MIGEM	MIGEM ETI MADEN
<b>G 16. OBJECTIVE 3:</b> An operation and inspection structure enabling efficient, effective and secure mining activities in international standards shall be formed.	MIGEM	MIGEM ETI MADEN TKI TTK EUAS



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