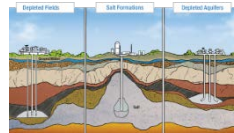


National Energy Efficiency Action Plan (NEEAP)

2017-2023



Our work within the scope of National Energy and National Mine Policy continues intensively.



**YEKA
Wind
YEKA
Solar**

FSRU

**Natural
Gas
Storage**

**National
Drilling
Core**

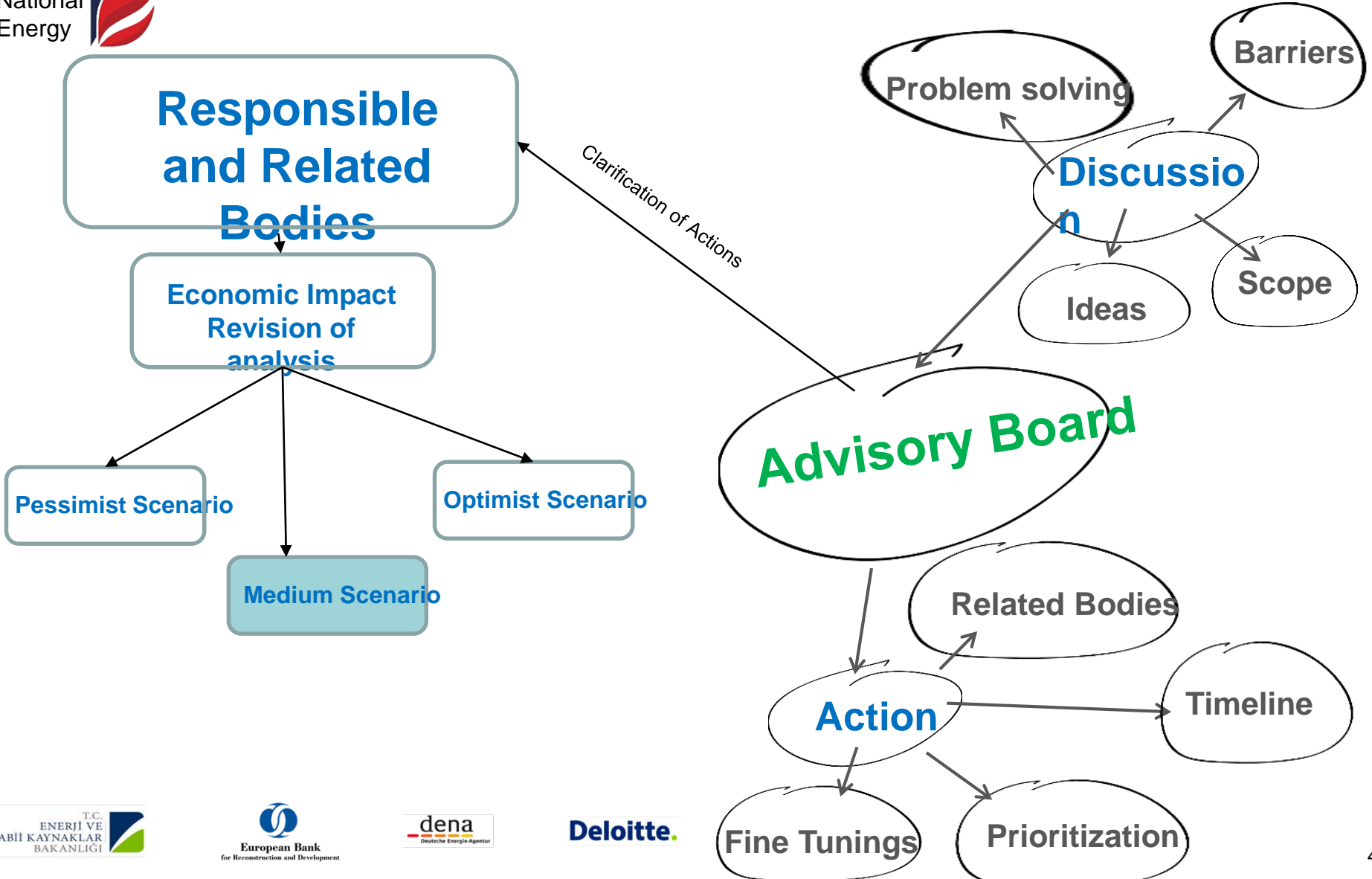
**Mersin &
Sinop NPP**

**National
Coal**





PREPERATION



Why?

The Energy Efficiency Law No. 5627 enforced in 2007 defines its fundamental purpose as to use energy effectively, avoid waste, ease the burden of energy costs on the economy, and improve efficiency in using energy resources and energy to protect the environment.

The National Climate Change Strategy of 2010-2023 aims to increase energy efficiency and reduce greenhouse gas emissions in buildings, industry, transport and energy sectors.

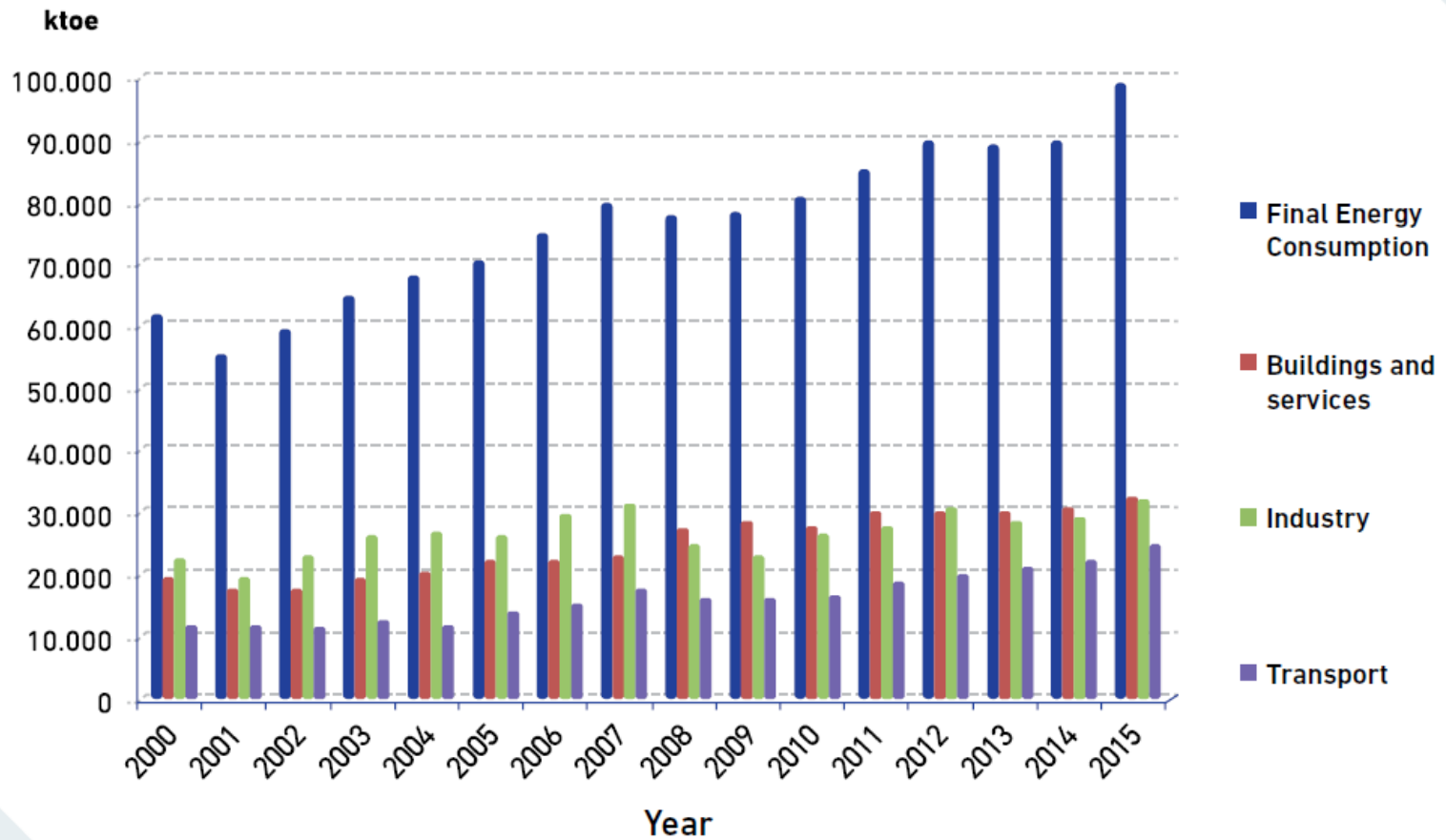
The Energy Efficiency Strategy of 2012-2023 defines a set of policies supported by result-oriented goals and devises actions that must be taken to achieve the goals.

Further, the **Tenth Development Plan of 2014-2018** defines energy efficiency measures that will be taken in the period in line with “1.14 Energy Efficiency Improvement Programme.”

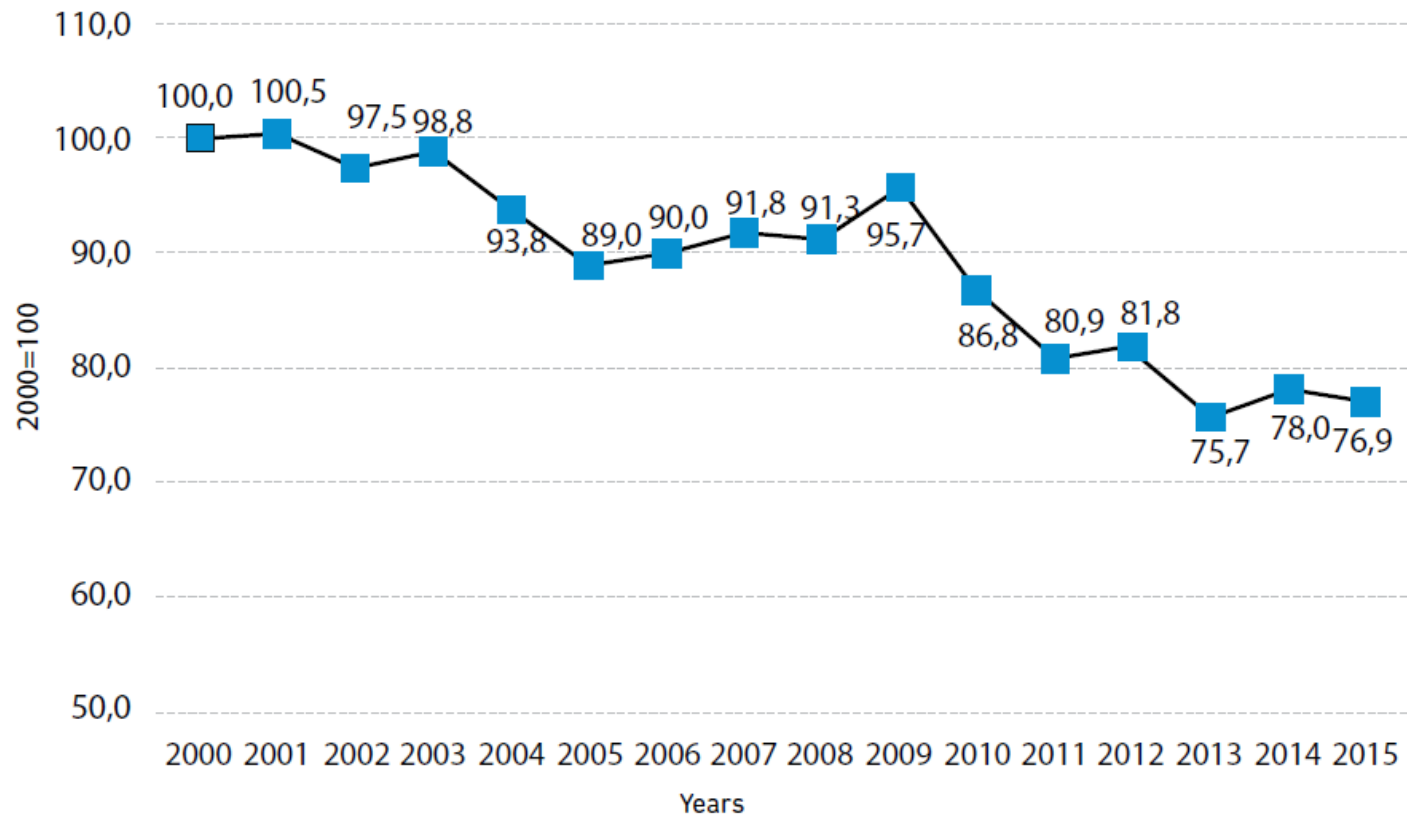
In addition, the **2015-2019 Strategic Plan of the Ministry of Energy and Natural Resources** defines energy efficiency goals under “Goal 4: A Turkey that Uses Energy Efficiently” and “Goal 5: Developed Capacity for Energy Efficiency and Saving” under “Theme: 2 Energy Efficiency and Energy Savings”.

The Directive 2012/27/EU of the European Parliament and Council of 25 October 2012 on Energy Efficiency requires the Member States to draft national energy efficiency action plans that proposes a structural framework and implementation methodology on energy efficiency. The introduction of the National Energy Efficiency Action Plan in our country is an important step in harmonising with the said Directive. On the other hand, the goals of the National Energy Efficiency Action Plan interlinked with the legislative texts listed above are also included in the National Energy and Mining Policy issued by the Ministry of Energy and Natural Resources

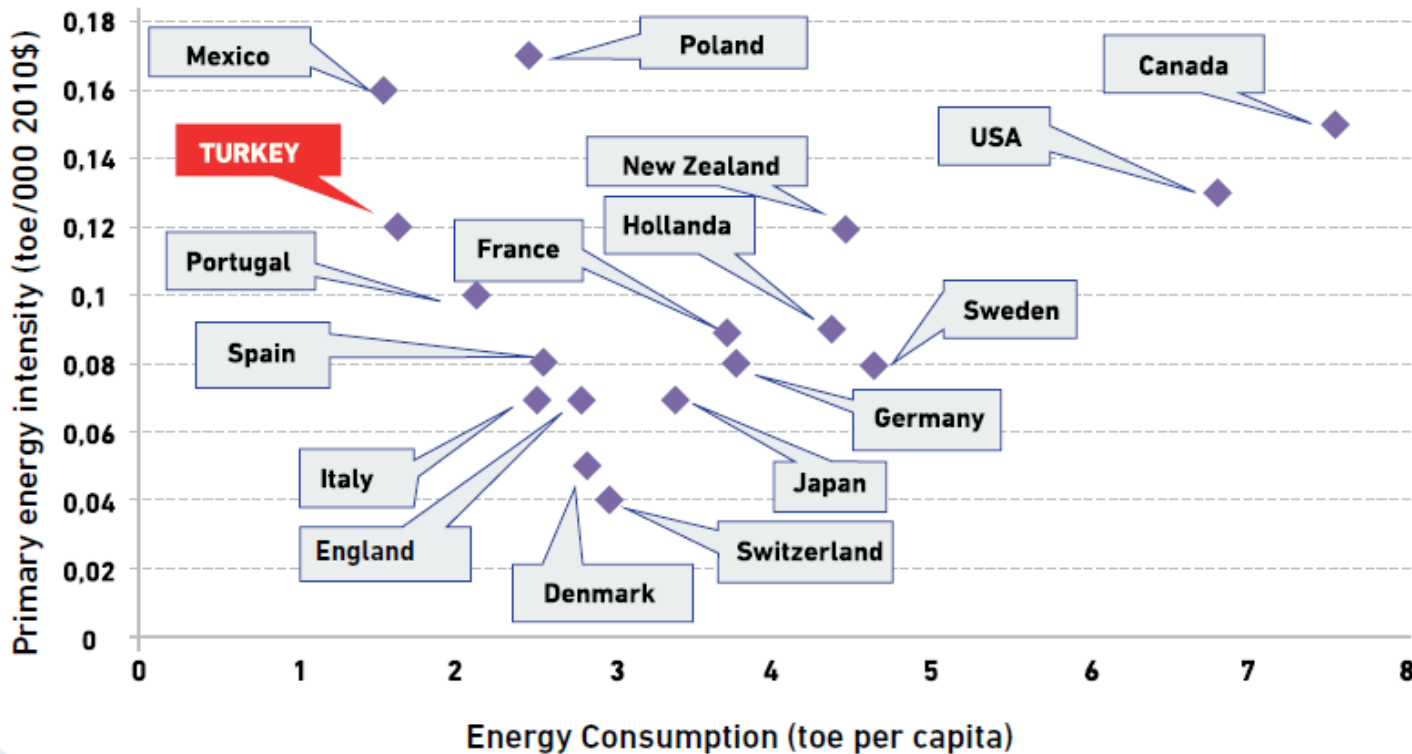
Energy Consumption



Energy Intensity



Energy Intensity: Turkey's Position



*at 2010 prices, estimated on the basis of 2009-based new GDP series published by the Turkish Statistical Institute (TURKSTAT) on 12 December 2016.

*While this figure is lower than the world average of 0.18 toe, it is higher than the OECD average of 0.11 toe. The figure is 0.08 in Germany, 0.07 in Italy and EU-28 average is 0.09 toe.

*In the period of 2005-2014, when Turkey's GDP increased by 1 unit, the energy consumption increased only by 0.7 unit. In the same period, France reduced its energy consumption by 1.1 unit, Germany 0.7 unit, Japan 3.3 units and the United Kingdom 2.0 units.

What do we aim?



**Saving
23.9
million
toe**

2023

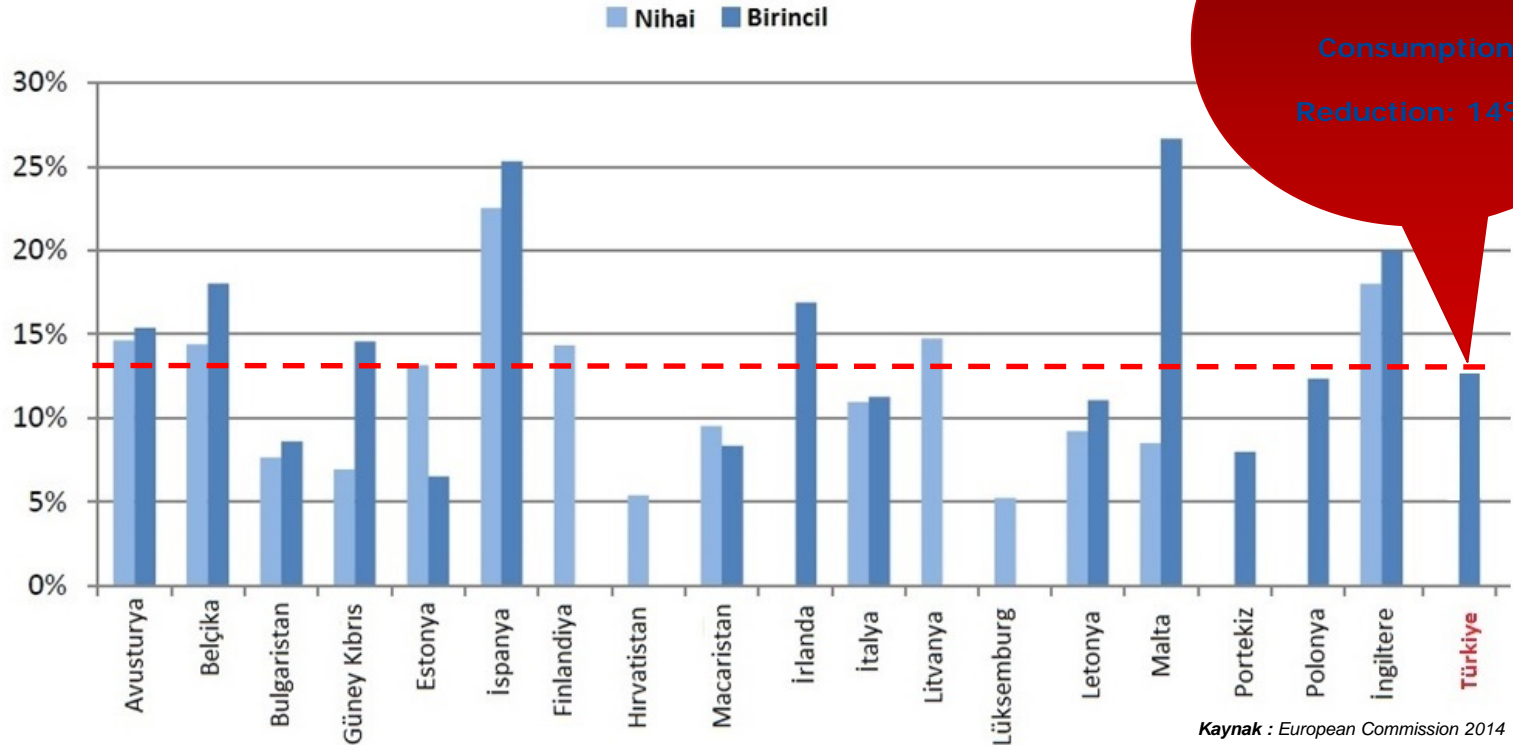
**Primary
Energy
Consumption
Reduction
14%**

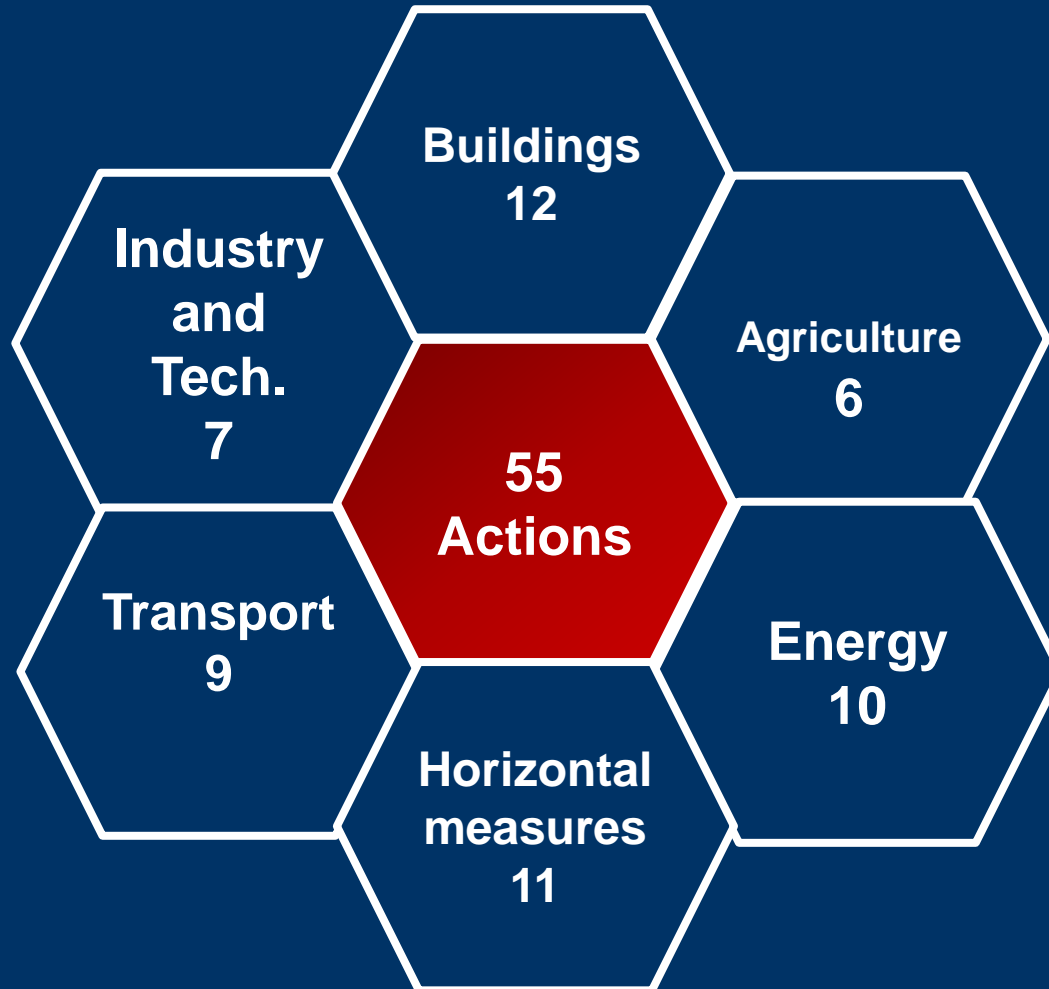
2023

**66.6 Million
tons
CO2 equiv.
Reduction**

2023

EU 2020 and Turkey 2023 TARGETS

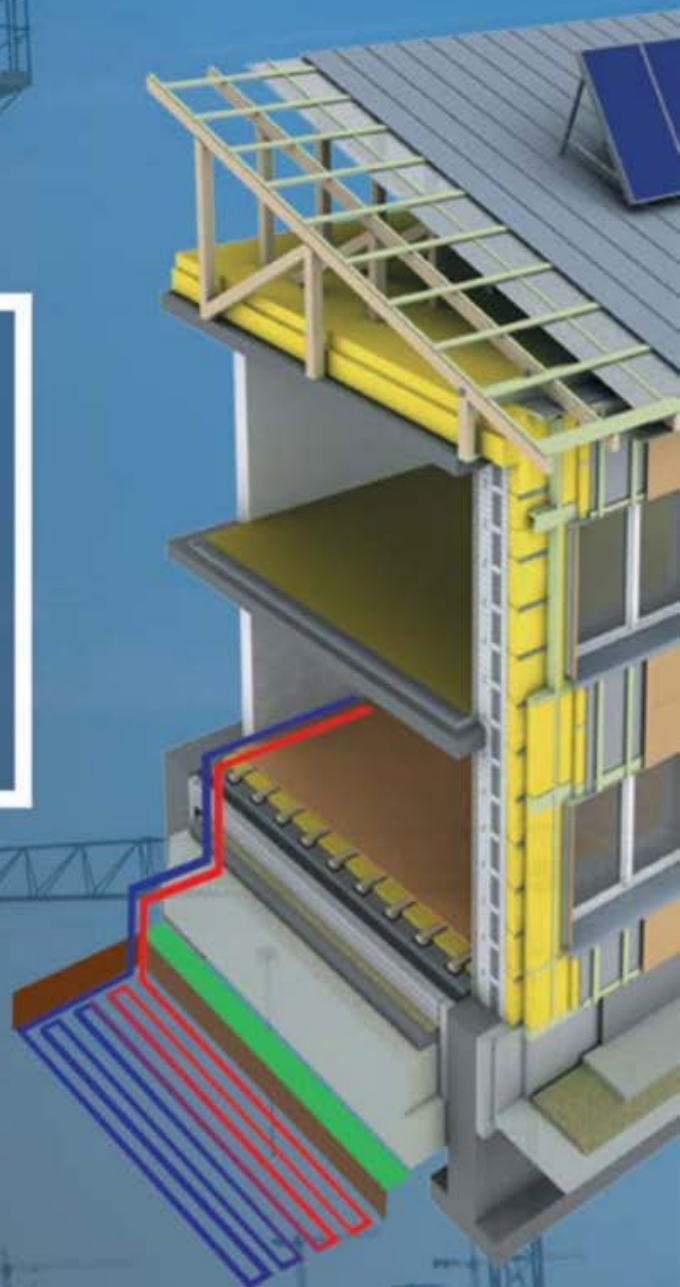


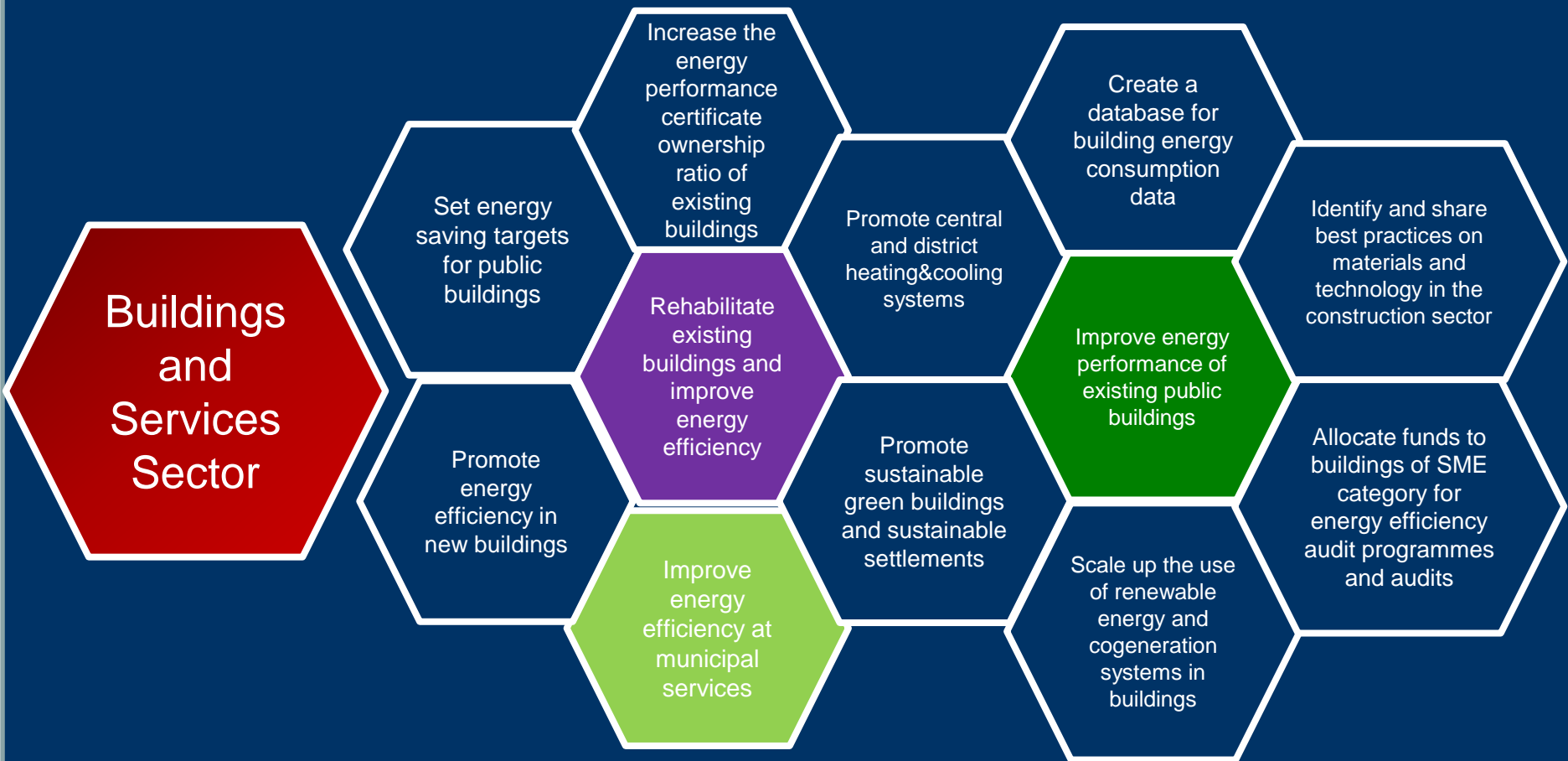




Follow *Efficiency* WIN-WIN

learn, implement & save

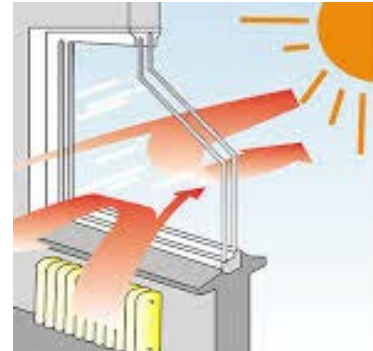




Improve energy performance of existing public buildings



- Insulation of buildings is exempt from the building license and stamp tax.
- To verification of implementations standard contracts have been prepared.
- 5,6 million building has to be insulated. (Total 22 Million)
- **Energy certification of buildings is in force.**
- **Insulation credits** from the banks will be reissued as **mortgage**. (Longer Term)
- Energy performance contracts has been sent to Assembly of Turkey
- TS 825 insulation standard is updated in accordance with needs.



Energy Performance Contract

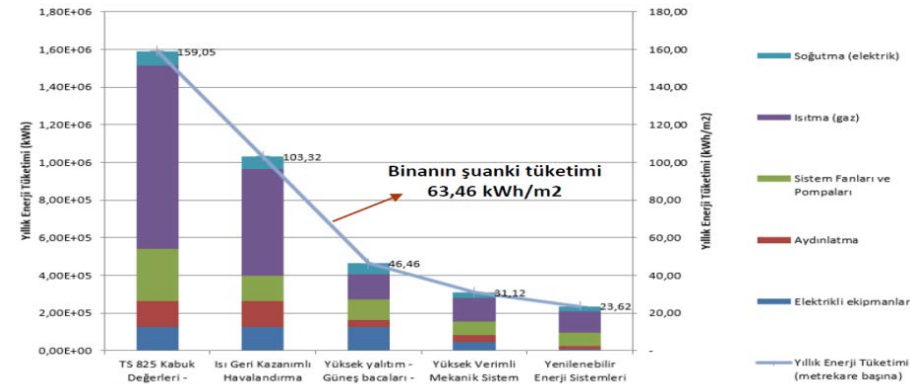
- With the Energy Performance Contracts (EPC), which allow payment with the provided savings after the project, energy efficiency investments in public buildings will be made widespread.
- The annual energy expenditures of the public sector are 6 Billion TL (1,25 b €).
- Annual saving potential is 2-2.5 Billion TL (550 m €).
- To measure and verify the savings business areas will be created .
- The number of Energy Efficiency Consultancy Companies (ESCOs) will increase.
- Municipalities will be supported via low interest credits, incentives and technical support to boost energy efficiency&green energy projects like biogas power plant, public transportation, waste management, etc.



İller Bankası (Public Municipality Bank): First Super ESCO

Green Buildings

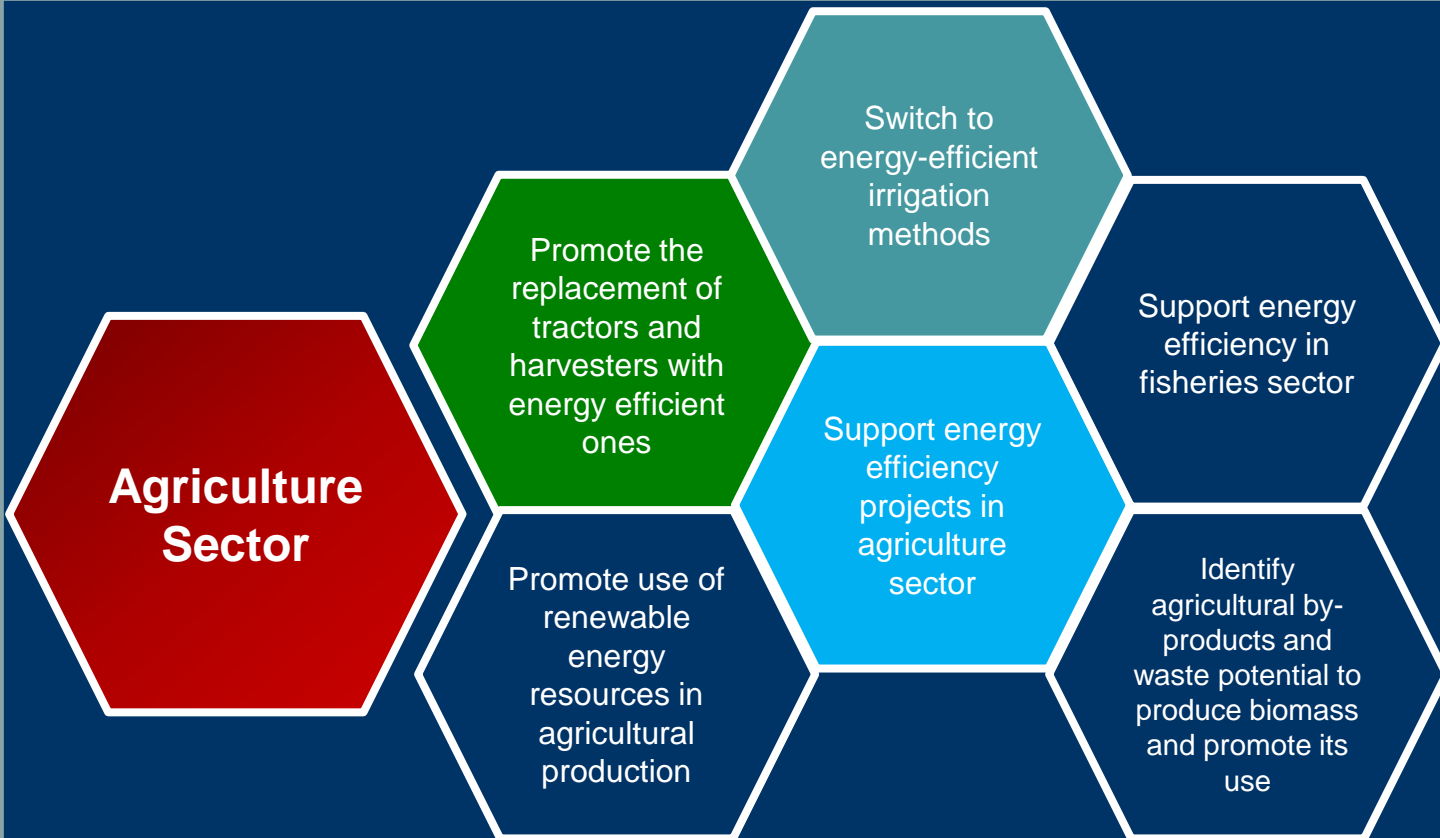
- The National Green Building Certification System will be developed.
- Certificates and establishments with green certificates will be encouraged.
- It will be ensured that the public buildings are certified in such a way as to form a specific example for the sectors.
- Standard applications such as Cezeri High School is 80% more energy efficient compared to a standard high school will be spread throughout Turkey.
- On-site production practices in the buildings will be expanded.
- The law that makes it easier to apply solar energy was put into the law. (rooftops)





MANY A LITTLE MAKES A MICKLE

learn, implement & save



Switch to energy-efficient irrigation methods

- Improving existing pumps and irrigation systems
- The use of sun (photovoltaic, concentrated solar energy systems, etc.) and wind energy will be supported,
- Solar energy usage in drying and air conditioning will be supported,
- The use of renewable energy sources will be supported in agricultural production structures (greenhouses, stables, cages, poultry, etc.).
- 50% of the renewable energy projects in agriculture are granted by the government.



- There are 2.4 million hectares of farmland can be irrigated in Turkey.
- 25.000 hectares of agricultural land supported on an annual basis will be increased by 50.000 hectares,
- Financial savings of 250 million TL (55 million €) will be provided by the end of 2023.



SAVE YOUR ENERGY

learn implement & save





Comparable and Detailed Bills & Energy Data Platform

- Comparable and detailed bills; create an energy data platform for smart management of measurement data
- Provide the consumers with the information on and means to inquire energy consumption quantities, billing information comparing against previous periods and consumption by similar consumer groups, energy efficiency improvement measures, opportunities of energy saving on energy-consuming equipment so that energy consumers in the electricity and natural gas markets avoid inefficient consumption habits.

CF AB1948077
C/Ribera del Loira, nº60 28042 - Madrid.

APellidos
CALLE
CP CIUDAD

4 RESUMEN DE LA FACTURA Y DATOS DE PAGO

Luz	XXX,XX €
Otros conceptos y servicios	XX,XX €
Impuesto electricidad	X,XX €
IVA (21 %)	XX,XX €
TOTAL IMPORTE FACTURA	XXX,XX €

(Detalle de la factura en el reverso)

Forma de pago: Domiciliación bancaria
Fecha de cargo: XXXXXXXXXXXXXXXX
Cuenta corriente: XXXXXXXXXXXXXXXX
Su pago se justifica con el correspondiente apunte bancario

5 INFORMACIÓN DEL CONSUMO ELÉCTRICO

Consumo en el periodo

Lectura anterior (real)
(09-Diciembre-2014) XXX,XXX kWh

Lectura actual (real)
(09-Febrero-2015) XXX,XXX kWh

Consumo en el periodo XXX kWh

Consumo medio diario: X,XXX €

Evolución del consumo

Consumo medio diario (últimos 14 meses): X,XXX €
Consumo acumulado (último año): X,XXX kWh

6 infoEnergía CAMBIA TU FORMA DE VER LA ENERGÍA

MI CONSUMO EN ESTA FACTURA: 311 (kWh)

CONSUMO MEDIO EN MI MUNICIPIO*: 261 (kWh)

MI CONSUMO LOS DOS ÚLTIMOS AÑOS (En kWh)

MI CONSUMO ANUAL Y MI MUNICIPIO* (En kWh)

EVOLUCIÓN DE MI CONSUMO ESTACIÓN A ESTACIÓN COMPARADO CON EL AÑO ANTERIOR: -13%, -23%, 8%, -13%

MI CONSUMO COMPARADO CON... EL MISMO PERIODO DEL AÑO PASADO: 13% LA MEDIA DE LOS ÚLTIMOS 12 MESES: 15%

¿A CUÁNTO EQUIVALE MI CONSUMO DE ESTA FACTURA?

- 256 días de una lámpara incandescente
- 507 días de una lámpara bajo consumo
- 1.270 días de una lámpara LED

SABÍAS QUE... La iluminación con lámparas de bajo consumo puede llegar a reducir tu factura entre un 15% y un 20%.

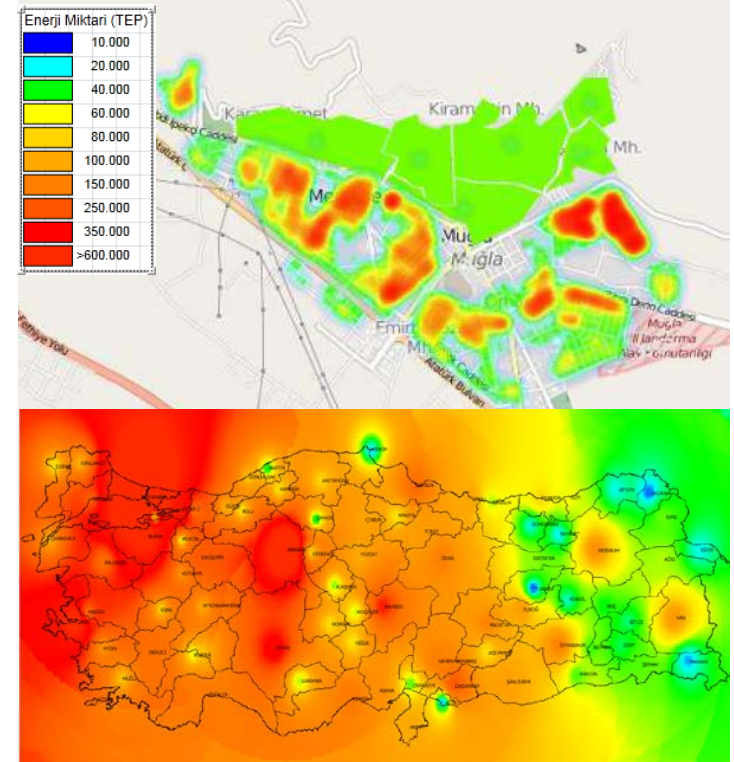
Conoce en detalle tu consumo de luz, compáralo con viviendas similares a la tuya y empieza a ahorrar en tu factura. Entra en www.infoenergiaendesa.com

*Segmento de viviendas con niveles de consumo similares a los de tu vivienda

➤ Energy distribution companies write advises in the bills.

Identify the potential of cogeneration and district heating&cooling systems and prepare a roadmap

- Conduct a nationwide analysis to identify and realise the potential of cogeneration (high efficiency cogeneration and trigeneration) and district heating & cooling systems
- Soma Power Plant's waste heat is utilized in district heating in the city of Soma. (8.000 house>>40.000)
- Renewable energy integration.



➤ Waste heat energy in thermal power plants and industrial enterprises and natural heat sources will be utilized to the utmost, heat energy market will be developed.

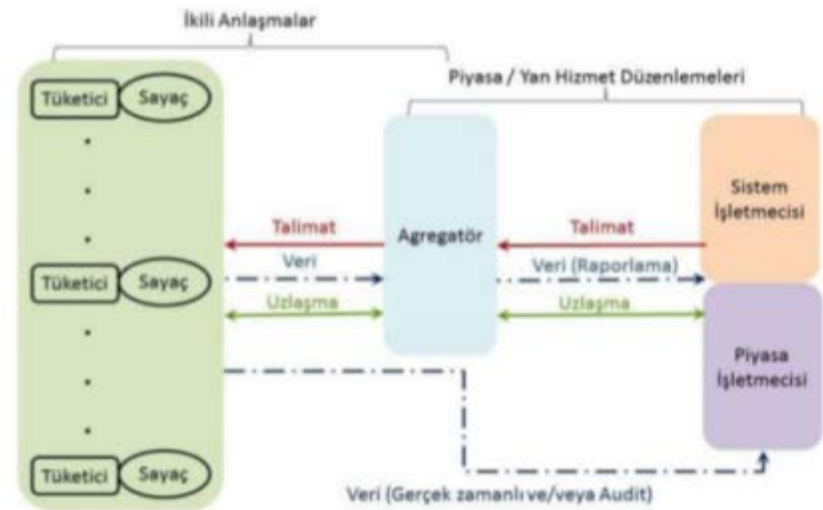
➤ Heat consumption map of Turkey has been prepared

Manisa/ Soma



Build a market infrastructure for demand-side response

- Demand-side response is an energy efficiency mechanism that enables energy consumers to manage peak demand by leveraging the flexibility of electricity consumers with flexible / shiftable loads.
- A flexible consumption portfolio will be created by selecting industrial consumers with large-scale flexible consumption or energy efficiency opportunities (eg cement, iron-steel, etc.).
- According to analyzes, other consumers will be included in the application, including housing.
- Smart meter deployment and pilot applications will be supported to create demo areas within the micro-network, smart city, smart network.



- With this method, it will contribute to the security of energy supply, efficient use of resources and making energy investment projections healthier; consumers will be able to access cheaper and higher quality energy.

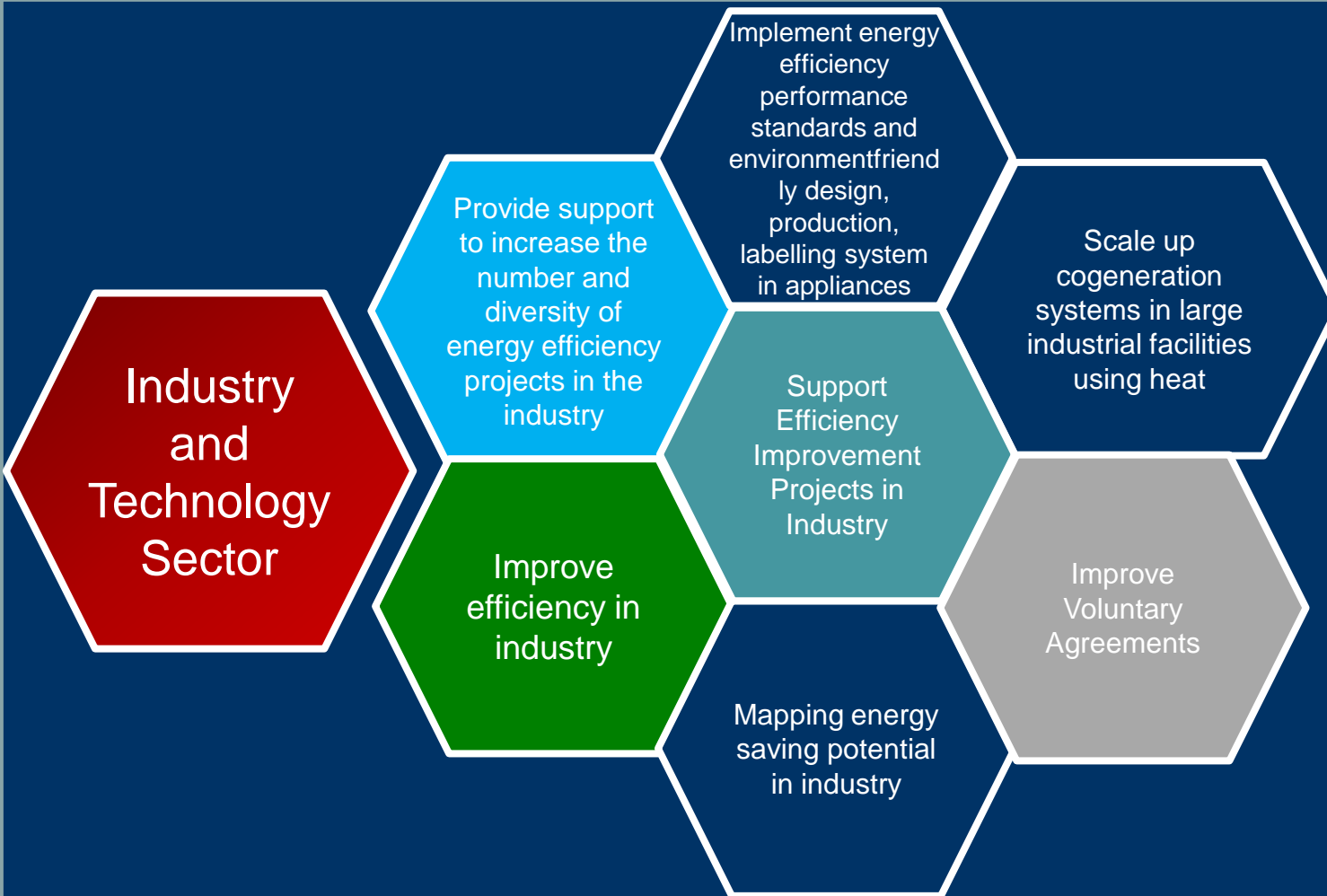


BE AWARE

be efficient

learn implement & save





Increase the number and diversity of energy efficiency projects in the industry

- The amount of support will be increased by improving the processes of Energy Efficiency Projects and Voluntary Agreements given to industrial enterprises.
 - The amount of savings from energy efficiency projects will be assessed as collateral.
 - Energy Efficiency Project support will be increased from 300,000 TL to 1,000,000 TL. (280 k €)
 - The amount of support for Voluntary Agreements will be increased from 200,000 TL to 1,000,000 TL.
- Scale up the implementation of energy efficiency projects through support or low-interest loans and enhance competitiveness of the industry.

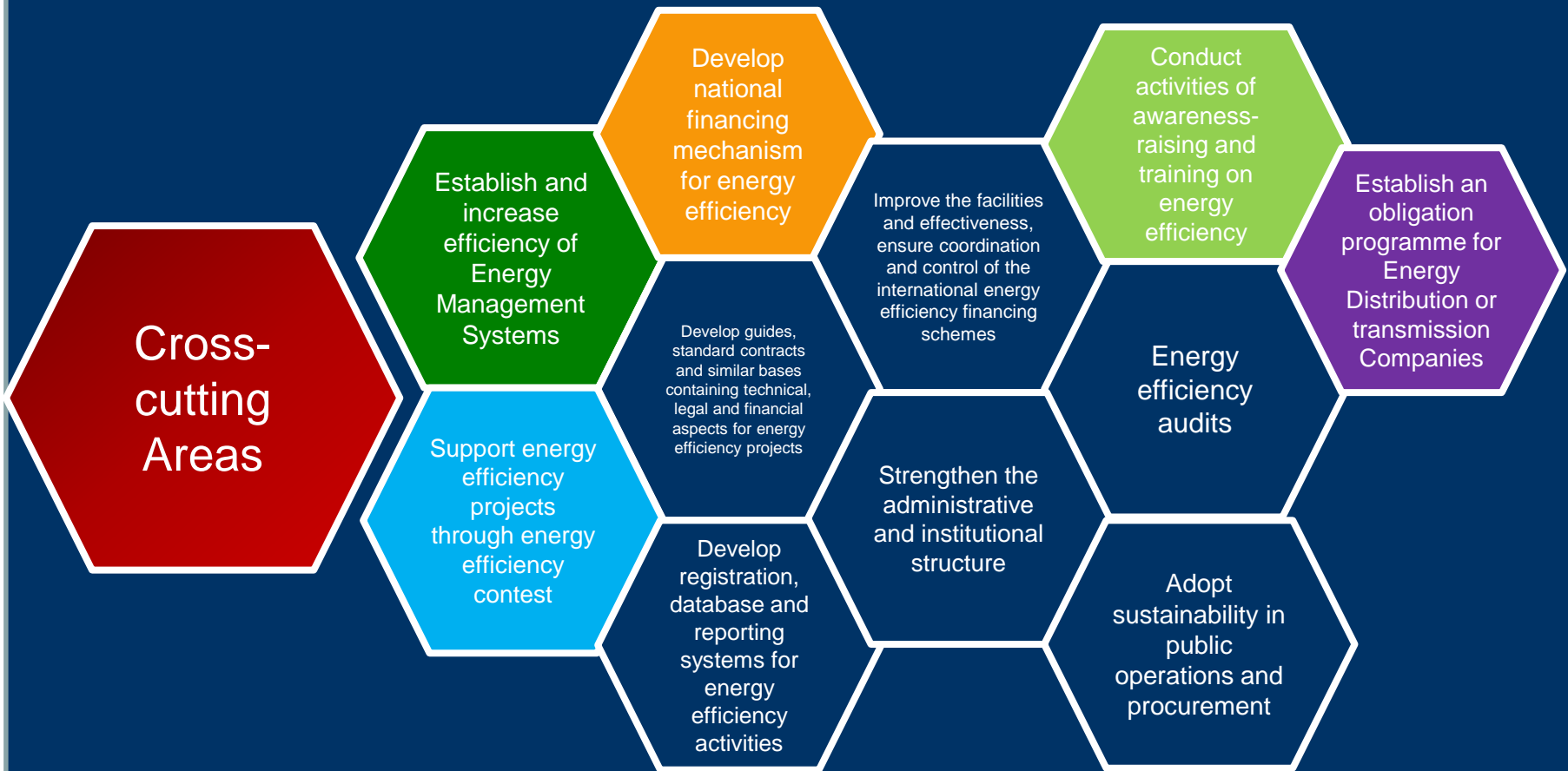


Drive *efficiently*
Save the
Environment









Establish national financing mechanism for energy efficiency

- It is expected to impose energy efficiency obligations on energy (electricity, natural gas, petroleum) distribution and/or supply companies and the obligated parties will implement energy efficiency measures.
- Where they are short of fulfilling their obligations, they will make contributions proportional to their shortfall in order to provide funds to the national energy efficiency financing mechanism.
- Other national and international funds (national budget, funds from international financing institutions etc.) will be allowed in the mechanism.
- The necessary legislative framework will be developed to establish the mechanism after detailed descriptions of needs, practice and management.
- Funds pooled annually in the financing mechanism will be disbursed to the supports included in the plan.
- Ensure coordination among the various support mechanisms created and implemented by various institutions and organisations across Turkey, and develop protocols to control and monitor such financing mechanisms



Energy distribution and supply companies will actively participate in energy efficiency studies.

Increase the number and diversity of energy efficiency projects in the industry

- Annual “Energy Efficiency Contests” will be organised; where end-use energy consumers in industry, commercial and service buildings, transport and agriculture may participate according to the criteria and priorities identified by the Ministry based on the performance of the praxis.
- Consumers with energy efficiency projects will submit their “cost per ktoe of anticipated energy saving”.
- Proposals will be ranked in an ascending order by unit cost per toe, and projects will be supported within the budget.
- The Ministry will organise contests by sector/subsector to ensure fair competition.
- Measurement, verification and reporting will be required for the unit cost per toe presented by end-use energy consumers.



Energy distribution and supply companies will actively participate in energy efficiency studies.

UEVEP 2017-2023 Indirect Impacts

Energy Saving (Cumulative)	23.901.000	toe
CO₂ Reduction	66,62	mton CO₂ equivalent
Installed Power Equivalent	2.694	MW
Potentially Saved Power Plant (CCGT)**	2,5	Billion USD
Potentially Saved Power Plant (PCPP)**	4,1	Billion USD
External dependence (Cumulative)***	6,3	mtoe (petrol)
	+	
	26,3	bcm (natural gas)

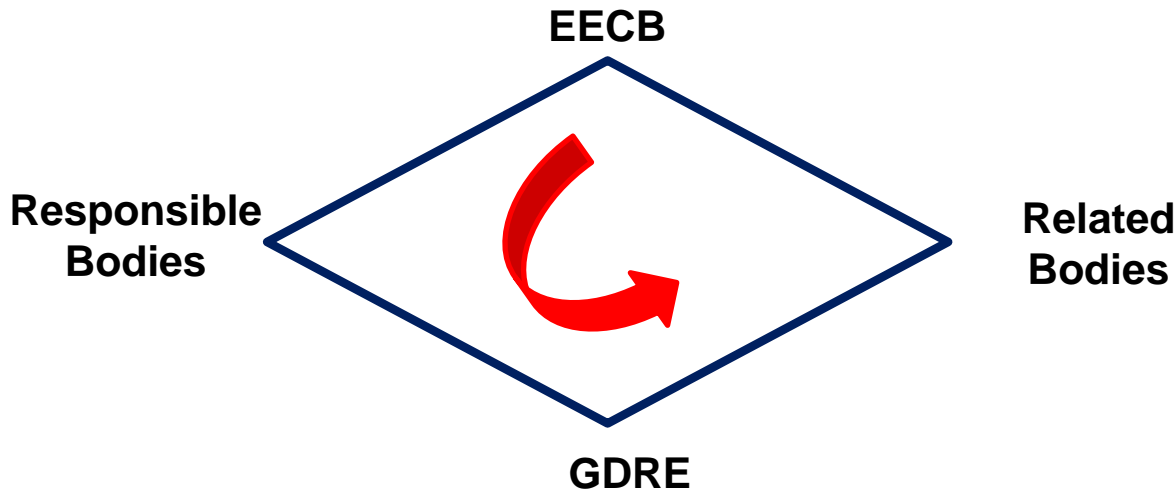
- *Annual operating time is assumed 6558 hours (2015 Turkey thermal power plants average) and the electricity of 25% of the total savings was assumed by accepting to be driven thermal energy 75% of the thermal energy to electrical energy in nature with the 17.5 rate% will return an equivalent manner.
- ** CCGT: Combined Cycle Gas Turbine, PCPP: Pulverized Coal-Fired Power Plant. // IEA, 2016. Power Generation Assumptions in the New Policies and 450 Scenarios in the World Energy Outlook 2016.
- *** 6,3 mtoe equivalent of oil equivalent of transportation fuels

Monitoring & Evaluation

The General Directorate of Renewable Energy of the Ministry of Energy and Natural Resources is the responsible institution for monitoring and coordinating the Action Plan.

The Energy Efficiency Coordination Board which is mandated, authorised and charged with preparing national energy efficiency strategies, plans and programmes, assessing the impact and revising as necessary thereof, and coordinating the introduction and implementation of new measures will also serve as the Monitoring, Evaluation and Steering Board for the National Energy Efficiency Action Plan. The board may also make general assessments of the actualisation levels of the actions under the Action Plan as well as the achievement levels of the targets defined in the Action plan. The Board is authorised to update the actions under the Action Plan, and re-designate responsible and relevant institutions and amend timelines.

Six Monitoring and Evaluation Commissions will be established on the basis of categories under the Action plan, namely cross-cutting (horizontal) areas, buildings and services, industry and technology, transport, energy and agriculture. Coordinated by the General Directorate of Renewable Energy, the Monitoring and Evaluation Commission will have at least one expert from institutions designated as responsible and relevant under the respective actions. Starting from May 2018, the Commissions will convene in May and November of every year, assess the actualisation levels of actions, and identify additional measures needed. The progress reports will be prepared and submitted to the Energy Efficiency Coordination Board. The Board may request detailed presentation, additional explanation on actions from the responsible institutions.



- **GDRE Coordination**
- **Related Bodies ensure information via GDRE's WEB Portal**
- **Evaluation**
- **EECB**
- **Publish**



Thank you

Bahadır Sercan GÜMÜŞ

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