
SEERMAP

South-East Europe Electricity Roadmap

RES-E policy and planning in Turkey

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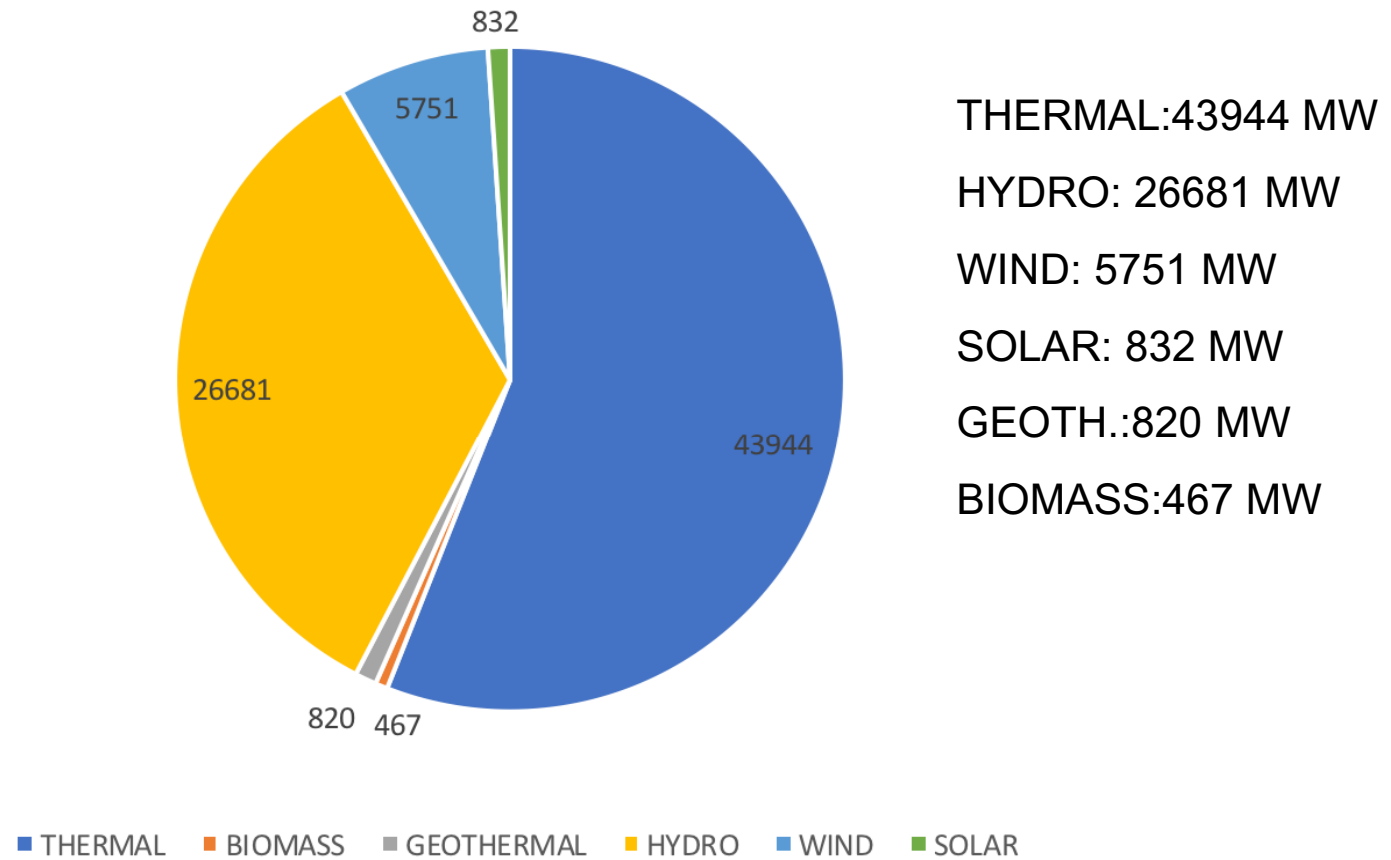
EMRA of Turkey

Licensed Solar&Wind Group

18.01.2017

Installed Capacity by the end of 2016

TOTAL INSTALLED CAP.: 78.497,4 MW



Comparison of Supply and Demand

2016 Summary	(GWh)
Production Availability	337,154.4
Suppliable Energy (with interconnection)	343,048.1
Demand	273,513.5
Production Reserve	69,534.7

Capacity Projection

Source: EMRA

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YEAR	PEAK DEMAND		ENERGY DEMAND	
	MW	Difference (%)	GWh	Difference (%)
2015	41402	1,0	268820	4,5
2016	43826	5,9	284560	5,9
2017	46383	5,8	301160	5,8
2018	49043	5,7	318430	5,7
2019	51861	5,7	336730	5,7
2020	54811	5,7	355880	5,7
2021	57689	5,3	374570	5,3
2022	60668	5,2	393910	5,2
2023	63759	5,1	413980	5,1
2024	66998	5,1	435010	5,1

Introducing RES-E Targets

- Based on Directive 2009/28/EC, Turkey's national Renewable Energy Action Plan (REAP) has been published by the Ministry on December 2014 to establish strategies to promote the development of renewable energy in Turkey.
- For Turkey, rather than the year 2020, the year 2023 is taken as the milestone, as it is the 100th anniversary year of the Republic and several macroeconomic and sectorial targets are set for that year.

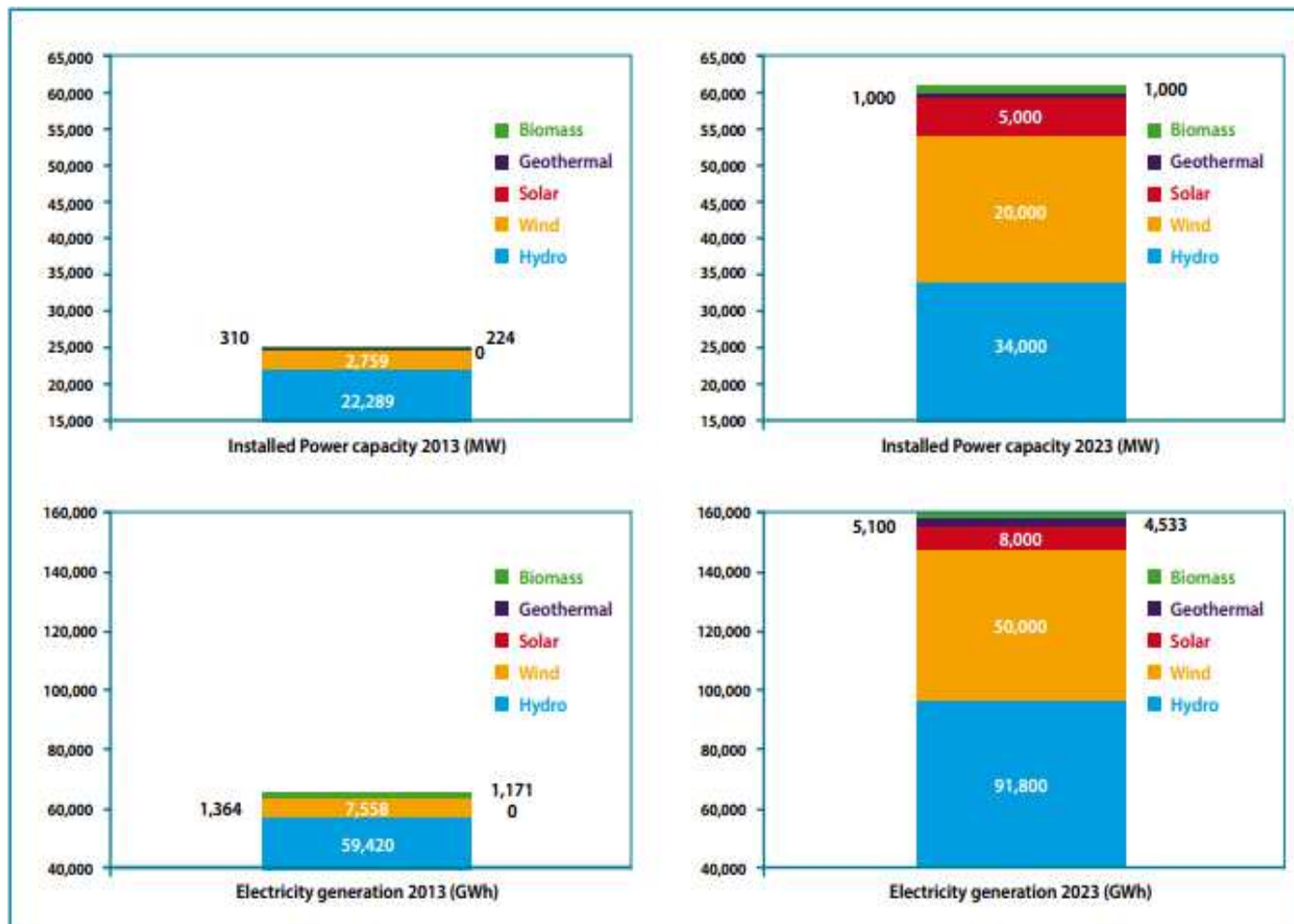
2013-2023 Targets

The targets in REAP for RES are set to:

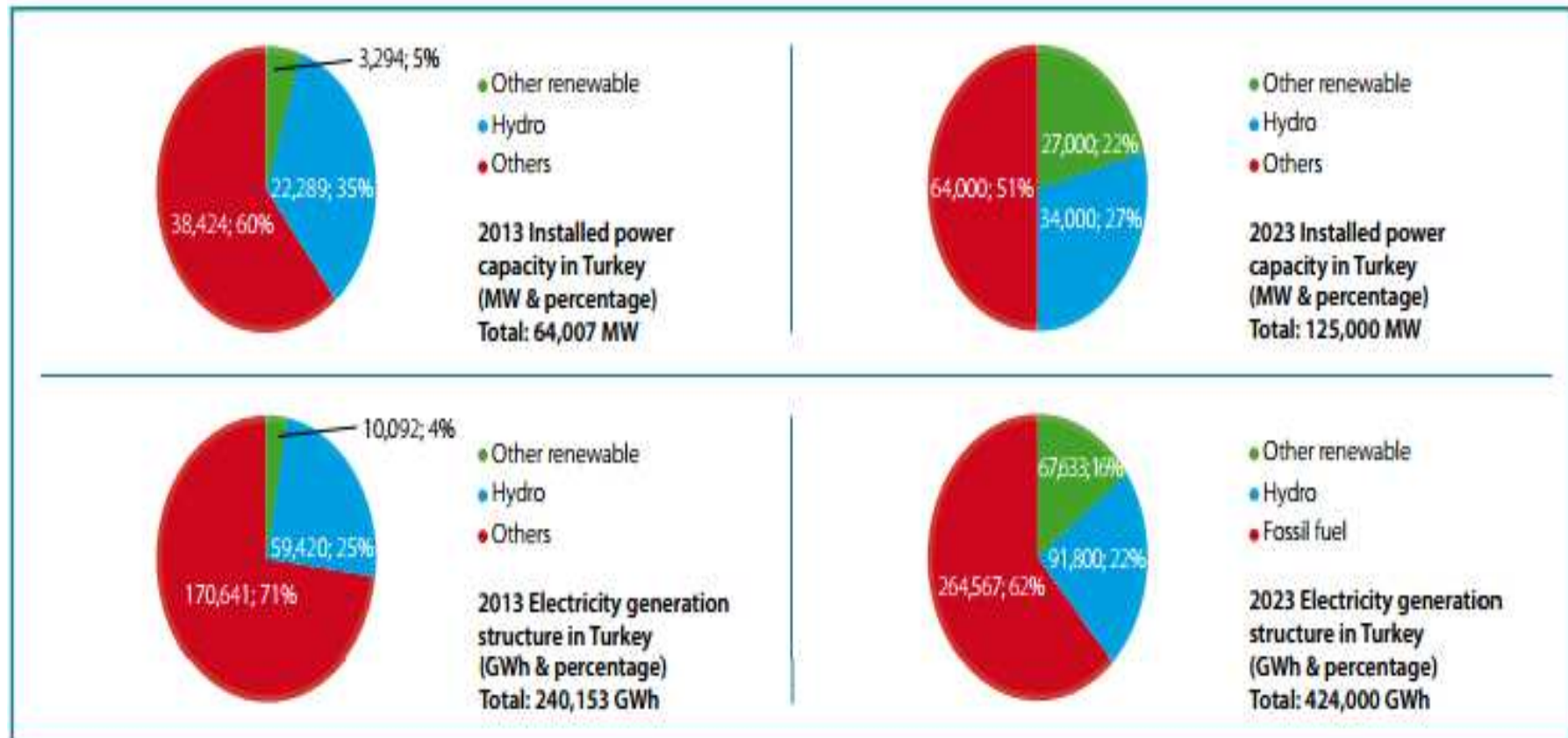
- ✓ RES-E production has increased to 30%
- ✓ 10% share of renewable energy in the transportation sector.
- ✓ Ensure technological and industrial development-higher RES-E capacity
- ✓ RES usage: climate change and sustainability to the ecosystem,
- ✓ Distributed generation based on RES-E and the usage of renewable energy in buildings.
- ✓ Agricultural sector enhancing the biofuel industry (biodiesel and bioethanol).

RES Targets

- Electricity generation and installed capacity from renewable sources:
2013 data and 2023 forecast



Expected Energy Consumption 2013-2023



RES Targets

- Overall national target for the share of energy from renewable sources in gross final consumption of energy in 2010 and 2023:

A) Share of energy from renewable sources in gross final consumption of energy in 2012 (S2012) (%)	13.5%
B) Target of energy from renewable sources in gross final consumption of energy in 2023 (S2023) (%)	20.5%
C) Expected total adjusted energy consumption in 2023 (ktoe)	107,000
D) Expected amount of energy from renewable sources corresponding to the 2023 target (calculated as B x C) (ktoe)	21,905

CO₂ emissions avoided by REAP implementation

	2023
Demand/Forecast demand (TWh)	424
RES generation (TWh) based on 30% of RES production target in 2023	127
Emission factor of natural gas CCGT (tons/MWh)	0.37
CO ₂ emissions that would be avoided by renewable energies (000 tons)	47,101
CO ₂ emissions that would be avoided by renewable energies (USD)	1.2 milliard

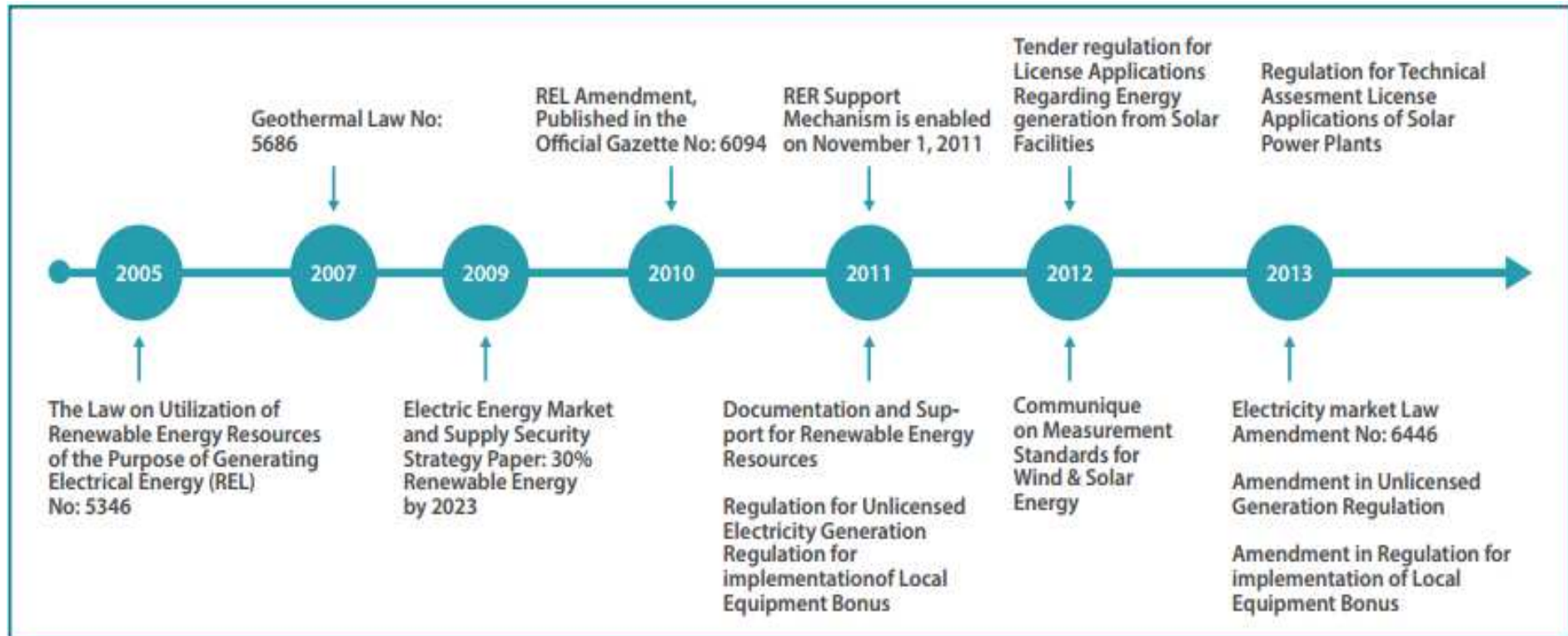
Measures for achieving the targets

Name and reference of the measure	Type of measure ¹²	Expected result ¹³	Target group and/or activity ¹⁴	Exists/Is planned	Date of the beginning and end of the measure
<p>Feed-in tariff scheme.</p> <p><i>The Law on the Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy (Law No: 5346) and its amendment (Law No: 6094) (8).</i></p> <p><i>The end date of the feed-in tariff scheme was extended to December 31, 2020 according to the Board Decision published in the Official Gazette on December 5, 2013 (No: 28842, Decision No: 2013/5625)</i></p>	Financial	Investments in renewable energy. New power capacity.	Investors, Private households	Exists	2005 - 2020
<p>Incentive to promote the use of local equipment.</p> <p><i>Local Incentives for renewable energy technologies stated in Renewable Energy Law (No:5346)</i></p>	Financial	Investments in renewable energy. New power capacity and energy generation for heating.	Industrial players, Investors Energy Investors, Industrial players	Exists	2010 - 2030
<p>Investment Incentives Program.</p> <p><i>The New Investment Incentives Program in Turkey has been in effect since the January 1, 2012 (12).</i></p>	Financial	New power capacity and energy generation for heating	Energy Investors, Industrial players	Exists	2012 - on-going
<p>Support from major international financial institutions.</p> <p><i>Promoting support from major institutions, such as TurSEFF and MidSEFF provided by EBRD, the World Bank, the Industrial Development Bank of Turkey (TSKB), the International Finance Corporation (IFC) and the Technology Development Foundation of Turkey (TTGV).</i></p>	Financial	Investments in renewable energy. New power capacity and energy generation for heating.	Industrial players, Investors	Exists	2012-2023
<p>Subsidized long-term loans for renewable energy projects.</p> <p><i>In the short term, the Turkish Government, in collaboration with the Turkish financial sector and international financial institutions focused on economic development, will analyze the possibility of enabling mechanisms to provide long-term loans for renewable energy project construction and implementation.</i></p>	Financial	Investments in renewable energy. New power capacity and energy generation for heating.	Energy promoters, Investors.	Under consideration	Under consideration
<p>Advisory services, provided by government agency under the General Directorate of Mineral Research and Exploration (MTA), on engineering and best practices in resource development.</p>	Technical	Use of geothermal potential more targeted development effort	Geothermal promoters/ investors	Under consideration	Under consideration

Key barriers and success factors

- Reducing unnecessary delays in administrative processes,
- Improve the horizontal coordination between the different bodies in charge of granting the permit
- Financial support for projects,
- Develop legal framework for the implementation of new solutions,
- Provide secure access to renewable energy for electricity generation
- Optimize the usage of any relevant infrastructure
- Develop support mechanisms

Evolution of renewable energy regulations in Turkey



WIND ENERGY:

- BEFORE NOV 1 2007: 93 LIC : 3.527 MW
- NOV 1 2007 AUCTION: 209 LIC : 7.549 MW
- APR 24 2015 AUCTION: NOT COMP. : 3000 MW
- APR 3 2017 AUCTION: NOT STARTED: 2000 MW

INSTALLED CAP: *5751 MW*

SOLAR ENERGY:

- JUNE 2013 AUCTION: 49 LIC : 600 MW
- UNLICENCED: 7000 MW PERMISSION(NOT LIC.)
- FEB 2017: RERA AUCTION: 1000 MW

INSTALLED CAP: *832 MW*

AUCTION METHODS

- BEFORE NOV 1 2007: no auction
- NOV 1 2007: cuttage from FIT (USD cent) in TL(Turkish Lira)
- JUNE 2013: one time payment at the beginning of the project in TL
- APR 2017: Cuttage from FIT (USD cent) in USD cent.
 - Zero biddings are possible
 - Might be negative (-) biddings are also possible.

OTHER REQUIREMENTS:

- CAPITAL: Calculated depending on applied capacity and resource type
- TENDER GUARANTEE: Calculated depending on applied capacity

Changes in the RES Regulation

- The Regulation on the Documentation and Support of Renewable Energy Resources (the "RES Regulation") was amended on 29 April 2016 (the "Amendments") and the Amendments became effective as of 1 May 2016.

Changes in the RES Regulation

- *Sale to the Free Market and Dual Payment System*
- *Liability for Balancing*
- *Secondary Service Contracts*
- *Detailed penalties*

Changes in the RES Regulation

- The Amendments are expected to create a more competitive energy market by introducing a dual payment system that may require participants in the RES Mechanism to make payments to EPIAŞ.
- Additionally, trade volumes in the electricity markets are expected to gradually increase since participants are now able to sell freely to the market and enter into bilateral arrangements.

Recent developments in the renewable energy legislation

- Electricity Market Law (Amendment: June 4, 2016) introduced Renewable Energy Resource Areas (“**RERA**“). RERA in privately owned or state owned lands identify the feasible areas for renewable energy generation. The Ministry of Energy and Natural Resources issued the Renewable Energy Resource Areas Regulation providing the details below:
 - (i) determination of potential RERAs,
 - (ii) feasibility and infrastructure studies,
 - (iii) publication of final RERAs in the Official Gazette,
 - (iv) prerequisites and procedures for the applicants,
 - (v) auction procedures,
 - (vi) implementation of manufacturing facility,
 - (vii) construction of RES Plants

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Thank You

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