



Financing Wind Energy in Turkey



Emre Hatem

Head of Project & Acquisition Finance

Garanti Bank

DISCLAIMER



This document has been drafted with an informative purpose, having the information contained herein merely the character of an example. The information contained herein shall not be deemed to be considered in any case as financial advice, investment advice, tax/legal advice or otherwise nor a recommendation to enter into any transaction nor should it be relied upon to make any sort of decision in any direction. Türkiye Garanti Bankası A.Ş. (hereinafter "Garanti") does not endorse, in whole or in part, any information, company, sector, investment and does not assume any obligation whatsoever to communicate any changes to this document or to update its contents.

Garanti has obtained the information included in this document (hereinafter "Information") from sources considered to be reliable. However, notwithstanding the fact that reasonable measures to assure that the Information contained herein is not mistaken or misleading, Garanti does not represent or warrant, either express or implicit, its accuracy, integrity or correctness and makes no claims, promises, or guarantees about the accuracy, completeness, or adequacy of the contents of the Information, and expressly disclaims liability for errors and omissions in the contents of the Information.

Garanti accepts no liability of any type for any losses arising from the use of the document or its contents.

This document has not been drafted according to the rules in place for the independence of investment reports, thus it does not contain objective explanations, nor has it been independently verified and does not opine on any prohibition that may exist concerning the trading of the financial instruments mentioned in the same before its divulgation.

In no case Garanti, its branches, its subsidiaries and/or its directors, officers, employees, counsels and authorized personnel shall be held responsible for any damages, losses, claims, or any sort of expenses that could result from the use of this document or from its contents.

This document is property of Garanti. Any denominations, designs, and logos are registered trademarks of Garanti. No part of this document may be (i) copied, photocopied or duplicated by any other form or means (ii) redistributed (iii) quoted (iv) furnished to (v) shared with any other person or entity without the prior written consent of Garanti.

It is understood that its recipients accept all of the warnings and conditions contained herein in its integrity.

All the data contained in this document is set forth as an example and is due to change.





- ✿ **Turkish Energy Market**

- ✿ Overview of the Turkish Energy Market

- ✿ **Turkish Wind Energy Market**

- ✿ Development of Turkish Wind Market
 - ✿ Wind Energy Potential
 - ✿ Current Licences and Expected Capacity

- ✿ **Legislation**

- ✿ Market Milestones
 - ✿ Incentives Schemes

- ✿ **Wind Power Financing Market**

- ✿ Market Structure
 - ✿ Financing Conditions

- ✿ **Challenges**

- ✿ **Case Study: Geycek Wind Power Plant**

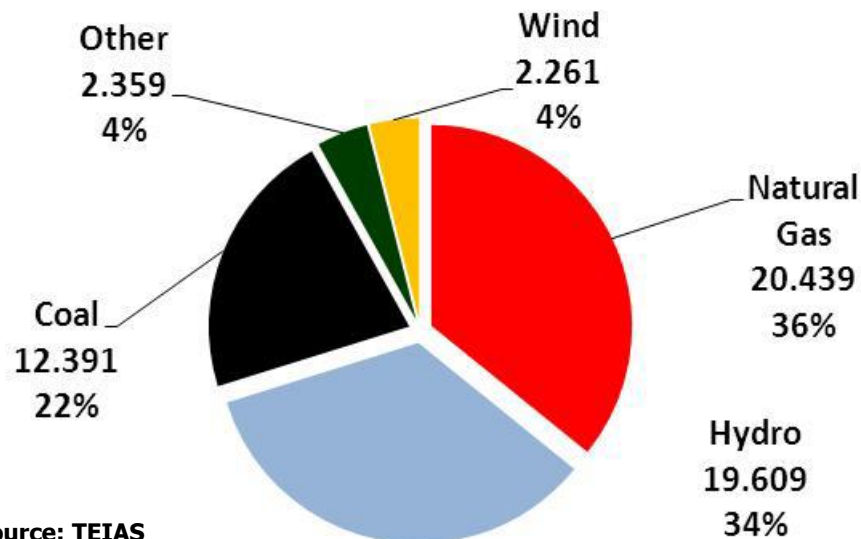
- ✿ **Market Expectations**

Turkish Energy Market Overview

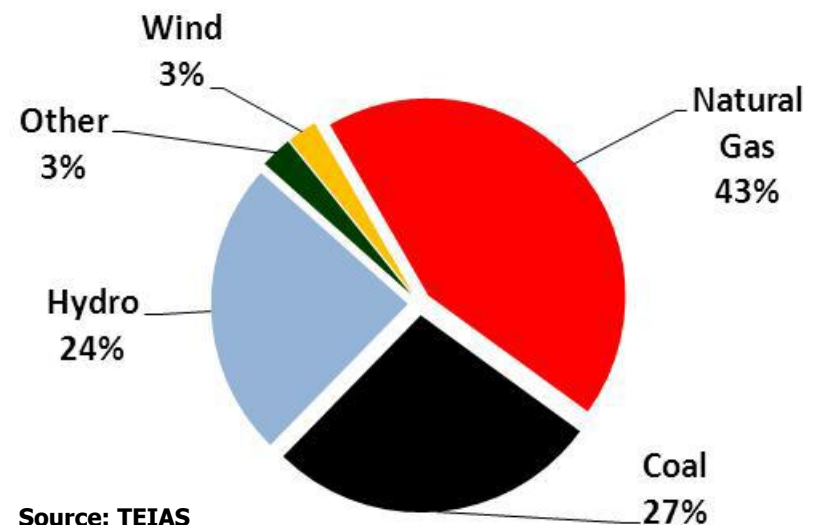


- One of the fastest growing energy markets in the World with a combined demand growth rate of **25%** in last three years. (**8.2%**, **9%**, and **5.5%** in 2010, 2011 and 2012 respectively)
- Turkey has become the **6th largest market** after Spain in EU with a total consumption of **242 TWh** in 2012. Yet there is still significant growth opportunities with a per capita consumption of **3,200kWh/capita**.
- Strong attention from domestic and foreign investors. **12,300 MW** new capacity became online during the last three years. As a result the total installed capacity reached **57,000 MW**.
- Although there is significant installed capacity in renewable energy (**22,000 MW; 39%**) there is high dependency on natural gas fired power plants. Gas fired power plants accounted for **43%** of the total generation in 2012.
- Natural gas fired power plants are also the price makers in nearly **7,000 hours** of the year. Therefore electricity prices are highly correlated with imported natural gas price.

Installed Capacity: (57,000 MW)



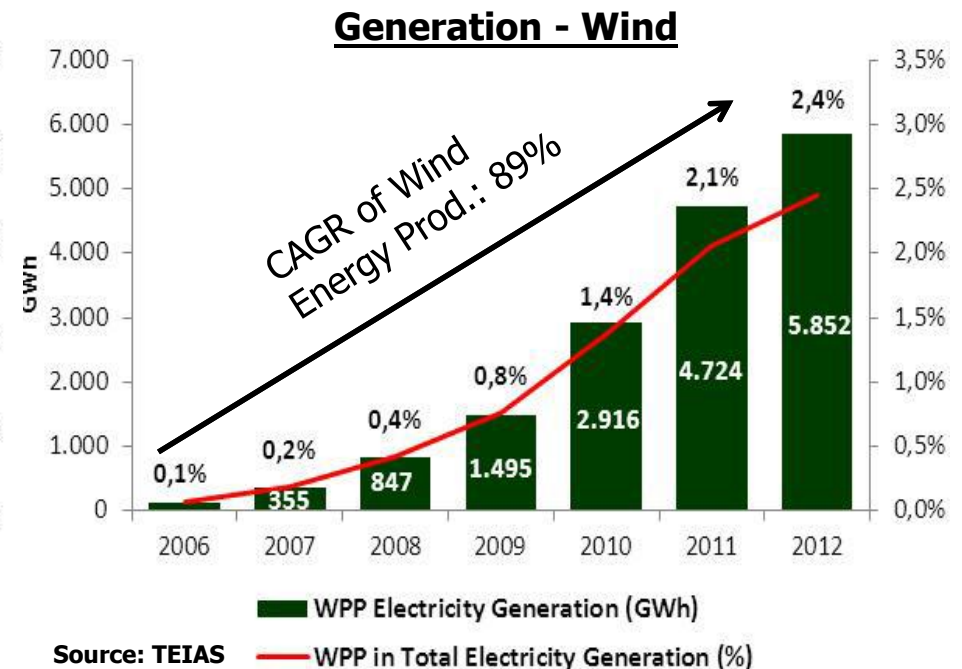
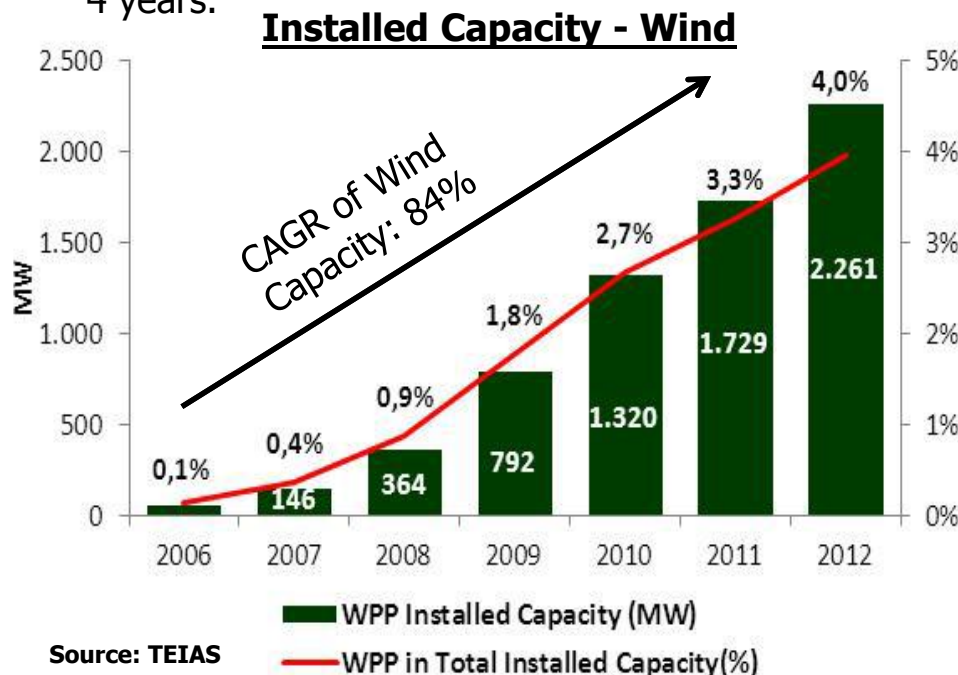
Generation: (242 TWh)



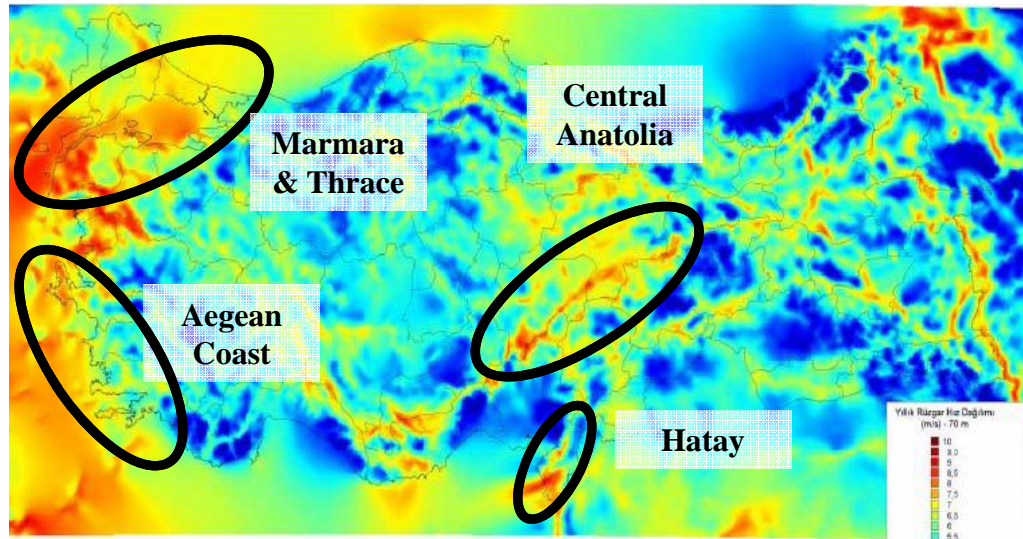
Development of Turkish Wind Market



- With the establishment of Renewable Energy Law in **2005**, the investments in the Wind sector have increased significantly.
- The installed capacity of Wind farms increased nearly **40x** in 6 years between 2006-2012.
- Considering that the majority of the current wind licenses have been granted after 2011, **the growth will continue over the coming years.**
- Within a very short period of time the total generation of the wind farms reached **2.5%** of the total annual generation of Turkey.
- There are currently **61** operational wind farms. The average **capacity factor** of these plants was **33%** in 2012 (Average capacity factor in 2011 was **35%**).
- In general, Turkey has very favourable wind potential with an average capacity factor of **33%** over the last 4 years.



Wind Energy Potential



Wind Speed (m/s)	Economic Potential (MW)
7.0-7.5	29.259
7.5-8.0	12.994
8.0-9.0	5.400
>9.0	196
Total	47.849

Source: YEGM

Average Capacity Factors of Wind Farms in Turkey	
2009	31%
2010	32%
2011	35%
2012	33%

Source: TEIAS

Garanti's Operational WPP Portfolio (21 Projects)

Tekirdağ Area

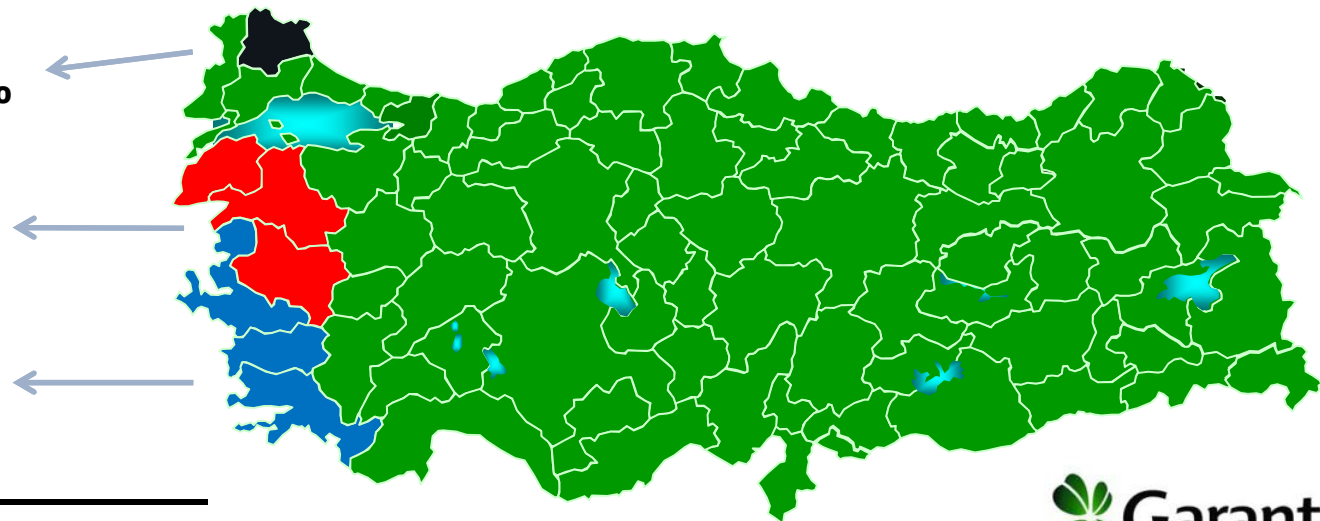
- Capacity Factor of ~**31.0%**

North of Izmir

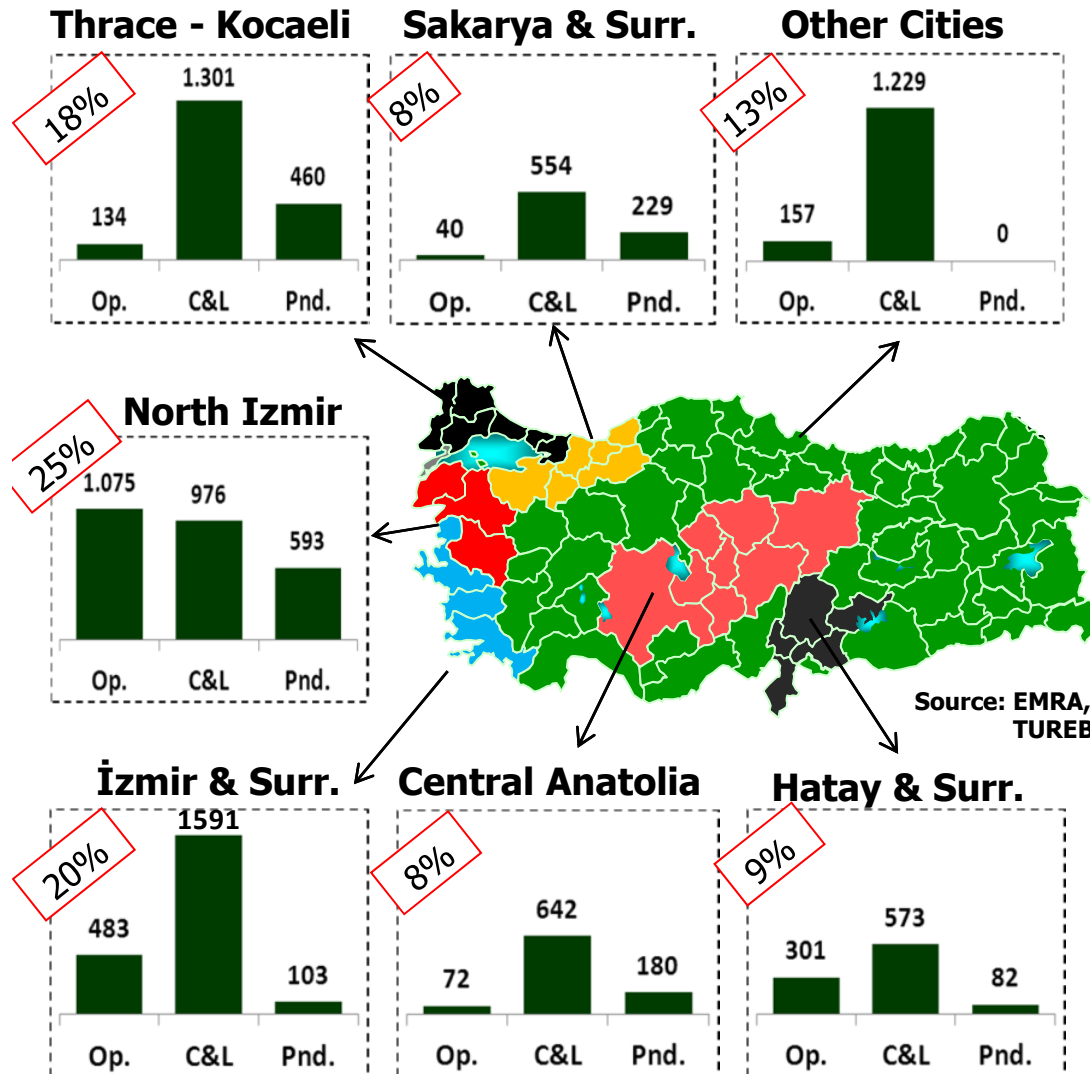
- Capacity factor changing between **31%** and **38%**.

Izmir and South

- Capacity factor changing between **30%** and **47%**.



Current Licences and Expected Capacity



Op.: Operational (MW), **C&L:** Under Construction or Licensed (MW)
Pnd.: License pending (won the competition, but not licensed) (MW)
%: Share of region (percentages are calculated based on the sub-total)

As of 2012/YE:

- Operational: **2,261 MW**
- Under Construction or Licensed: **6,866 MW**
- License Pending (w/royalty fee): **1,646 MW**
- **Sub-Total: 10,773 MW**
- Other applications (received grid connection approval, license pending) ~ **1,227 MW**
- **Total: ~ 12,000 MW**
- So far, in total **12,000 MW** of projects received grid connection approval while **9,128 MW** obtained generation license.
- According to Electricity Market & Supply Security Strategy Document, **2023** targets are:
 - **30%** renewable generation in total energy production (**27%** as of 2012)
 - Installed wind energy capacity reaches to **20,000 MW**.
- National grid operator plans to establish infrastructure for **1,000 MW/year** wind capacity to reach **2023** goals.



Wind Energy Market Milestones



2001

- Liberalization process of Turkish Electricity Market has started with the publishing of Electricity Market Law, which paved the way for IPPs.

2005

- Renewable Energy Law has come into force (Base feed-in tariff: 5.5 €/kwh for wind projects for the first 10 years of operation)
- Wind energy project financing commenced

2007

- EMRA received 78,000 MW of license applications

2010

- Currency of the feed-in-tariff was converted from EUR to USD (5.5 €/kwh → 7.3 \$/kwh) and local equipment bonus schemes were introduced

2011

- Tenders have been completed for 2007 license applications
- Royalty fees emerged for multi application sites

2012

- Total installed wind capacity has reached to 2,261 MW

Incentives Schemes - I



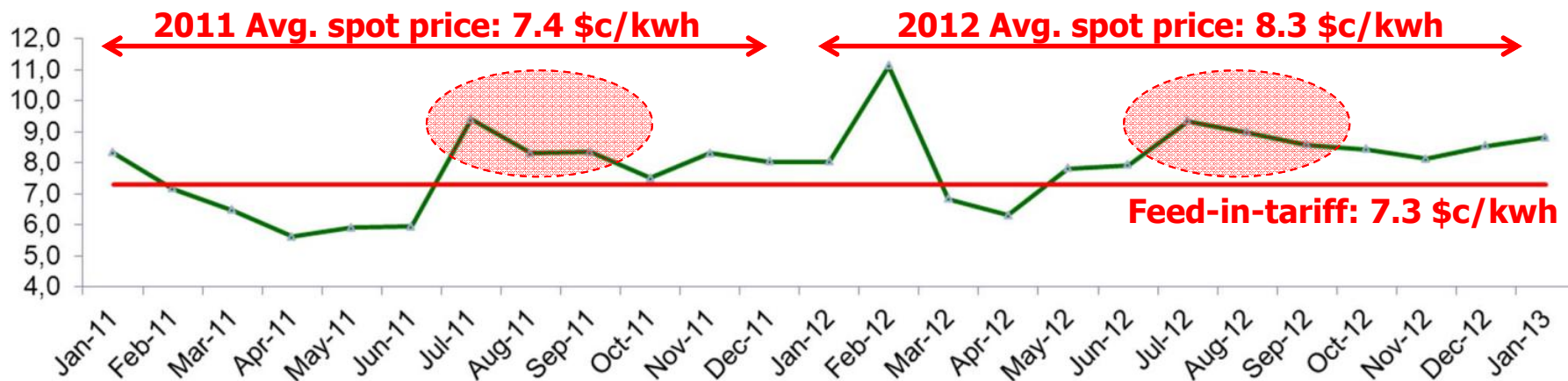
1) **Base feed-in-tariff (10 years):** The WEPPs have the right to benefit from a feed-in-tariff, which is currently **7.3 \$c/kwh** for a total period of 10 years.

2) **Additional Tariff (5 years):**

There are blade and tower manufacturing facilities in Turkey. Hence, **1.4\$ c/kwh** is more attainable the short-run.

Maximum Additional Tariff		3.7
1- Turbine Tower		0.6
2- Blade		0.8
3- Generator & Power Electronics		1.0
4- All of the mechanical equipment in rotor and nacelle groups		1.3
Base Feed-in-tariff		7.3
TOTAL		11.0

3) **Upside Potential of Spot Market Prices:** Investors have the opportunity to choose annually between the feed-in-tariff and the spot market. The spot market prices provide strong upside potential for investors



Incentives Schemes - II



✿ Pros & Cons of Spot Prices v.s. Feed-in Tariff

	Spot Prices	Feed-in-tariff
Price Risk	High: Exposed to hourly and seasonal price fluctuations	None: Constant price linked to USD
Revenue Expectation	High variability: Variable due to price fluctuations and imbalance cost	Constant: No surprises in revenue due to constant price (Imbalance cost is not on the WEPP participating RER)

✿ The development of the WEPPs which benefited from feed-in-tariff is as follows:

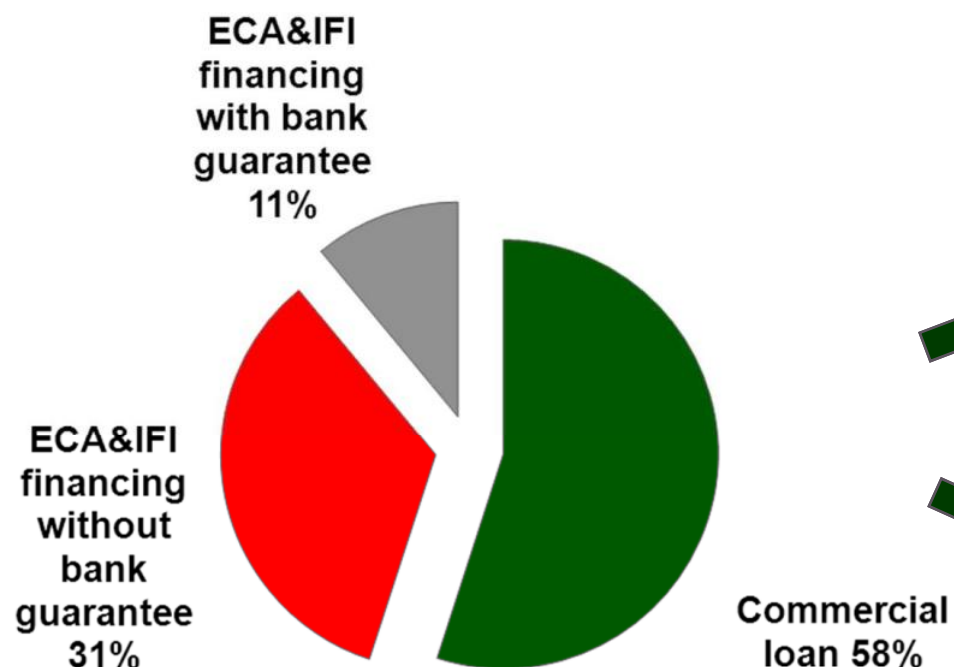
	Installed Capacity under RER Mechanism (MWe)	Total WEPP Installed Capacity (MWe)	% in Total
2011	469	1.320	36 %
2012	685	1.729	40 %
2013	76	2.261	3 %

Wind Power Financing



- As of 2012 year-end, there were **61** operational wind farms in Turkey, with a total installed capacity of **2,261 MW** (**4.0%** of total installed capacity in Turkey).

Financing Breakdown*



Funding*

ECAs & IFIs	42 %
Local Banks	58 %

Risk Retention*

ECAs & IFIs	31%
Local Banks	69%

Source: Garanti Bank Market Survey

* Breakdown by installed capacity

- Renewable energy financing funds, such as MidSEFF provided by EBRD & EIB, contributed to the development of Turkish wind energy sector.



Financing Conditions



ECA Loan

- ✿ Longer maturity (16-18 years)
- ✿ Despite insurance premium, lower all-in cost
- ✿ Project and sponsor risk covered by a local bank guarantee
- ✿ Lack of complete financing package from a single source
 - ✿ Only ECA eligible part of the project is financed and the rest is financed through a small commercial tranche

Commercial Loan

- ✿ Shorter maturity (max. 12-14 years)
- ✿ Generally higher interest margins
- ✿ Complete financing package, from a single source, including local costs

STANDARD TERMS

- ✿ D/E ratio of around 75-80%
 - ✿ Debt-sizing according to **P(75)** capacity factor, **our market price forecasts** and a **min. DSCR of 1.15x**
- ✿ Security structure
 - ✿ Project Completion Guarantee for the investment period
 - ✿ Commercial enterprise pledge, account pledge, share pledge, etc.
- ✿ Due diligence process
 - ✿ Environmental, technical, insurance and legal DD processes are similar in ECA and commercial bank financings



Challenges

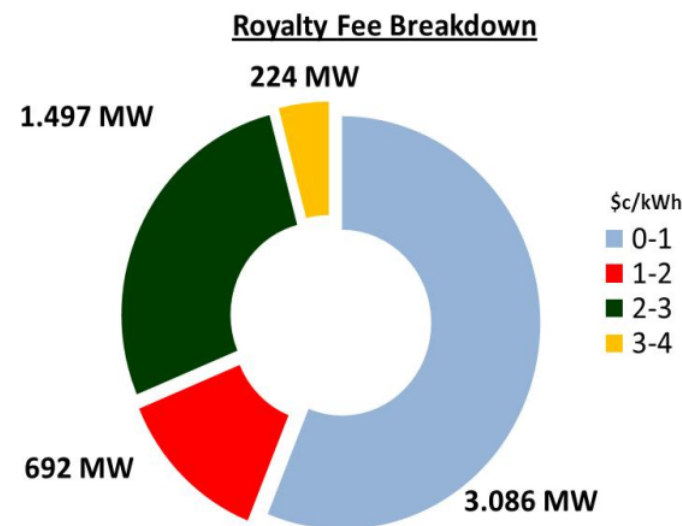


FX Risk

- ✿ Feed-in tariff is in USD. Due to the natural gas fired plants being price setters, market price is also linked to USD. Therefore, loans are usually allocated in USD in order to avoid FX risk.
- ✿ However, since the major investment costs are denominated in EUR whereas revenue and loan is in USD, the project, inevitably, faces **FX risk during the investment period**.
- ✿ Cross-currency hedging is requested for the investment period.
- ✿ Since ECA loans are provided in EUR, projects financed under ECA face FX risks. A new structure should be formulated between domestic banks and ECAs for providing ECA loans in USD.

High Royalty Fees

- ✿ **5,500 MW** capacity has been allocated to eligible wind projects via tenders.
- ✿ A standard wind project (capacity factor: **35%**) may maintain an average DSCR of **1.15x** (12 years maturity; 75% leverage) with a royalty fee of lower than **2 \$c/kWh**.
- ✿ Therefore, projects with **lower than average capacity factor** and **high royalty fees** may face financing problems (higher equity will be required).



Source: EMRA



Lack of Lump Sum & Turnkey Supply Contract

- ✿ Project Completion Guarantee is requested to cover residual completion risks apart from the wind turbine supply contract.
- ✿ Largest barrier for complete non-recourse financing.

Lack of Proper Wind Resource Assessment

- ✿ On-site measurement for at least **12 months** is a prerequisite to commence on financing talks.
- ✿ Long term correlation study is a must (not sufficient data from meteorological stations).
- ✿ An independent wind assessment study is requested.

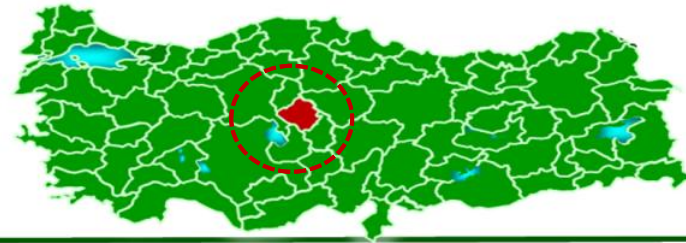
Permitting

- ✿ Financing negotiations commence with the completion of major permissions: Positive EIA decision and Energy Generation License.
- ✿ In some projects, slow progress in land allocation process, Tubitak Technical Impact Analysis and General Staff Permit delay project completion.

Case Study: Geycek Wind Power Plant



- ❖ Turkey's largest wind power plant to date
- ❖ Shall meet the entire demand of Kırşehir city



❖ Installed Capacity : 168 MW	❖ Royalty Fee : None
❖ Investment Amount : 254 mn\$	❖ P(75) capacity factor : 24%
❖ Total Loan Amount : 201 mn\$	❖ Loan Maturity : 2+12 years

Sponsors:



Financier:



Turbine Supplier and O&M Contractor:



Consultants:



Expectations for Turkish Wind Energy Market



- ✿ We believe that the goal of **20 GW by 2023** is difficult but attainable.
- ✿ The share of wind power in total generation is projected to reach **10-15%** in 2023 compared to **2.5%** in 2012.
- ✿ Total financing requirement will be around **20-25 bn\$** for upcoming **10** years, where share of ECA&IFI fundings is expected to stay around **50%**.
- ✿ The IFIs are expected to continue providing low cost funding to local banks for renewable energy financings.
- ✿ Corresponding equity requirement will be **5-8 bn\$** and number of foreign investors are likely to increase.
- ✿ Permitting processes have been improved but there is still room for further development.
- ✿ Fixed price, turn key, date certain EPC contracts might enable banks to provide complete non-recourse financings.



Garanti Bank – The Largest Lender in the Market



Total Loan Commitment(s) to Wind Power: **1.5 bn USD**

34 projects with a total installed capacity over **1.200 MW**

~ **2 million** CO₂e savings per year

~ **%40** Market Share within whole market as of **2011 year end**

~ **%55** Market Share within domestic banks as of **2011 year end**

A specialized and dedicated energy project finance team

