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Study

MARKET REPORT TURKEY – PHOTOVOLTAICS

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GOALS OF THE STUDY

- The goal of this study is to give German companies the precise information they need on the photovoltaic market in Turkey so as to effectively and efficiently plan their entry into the market.
- Important information on the photovoltaics market, along with the current conditions affecting it, is succinctly presented in a way that is easy to understand.
- Readers are given a comprehensive understanding of the overall conditions concerning photovoltaics (PV) in Turkey, including a detailed analysis of legal framework conditions for PV and the current feed-in tariff system.
- Current and future market prospects and market sectors with particular potential are identified.
- The study also provides practical information on the possible legal forms and structures of market entry.
- The range of financing options available in Turkey are described in detail.
- The study includes expert tips that highlight particular details and warn against obstacles. An interactive navigation menu and interactive cross references and hyperlinks enable readers to quickly and easily find content and important external documents.
- The study is published as part of the “renewables – made in Germany” export initiative of the Federal Ministry of Economic Affairs and Energy (Bundesministeriums für Wirtschaft und Energie - BMWi) and is also part of the dena Market Information System, which provides German industry with very detailed information specific to relevant technologies and export markets of interest.

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Analytical section

- Analysis of the environment (technological, socio-demographic, economic and political information related to PV)
- The demand side of the PV market in Turkey (market sectors)
- The supply side of the PV market in Turkey (industry structure)

Practical information

- Market entry and legal framework conditions
- Financing and support

- This photovoltaics market report on Turkey was drawn up from January to May 2013 and then thoroughly updated from October to December 2014.
- Its findings are based on a comprehensive analysis of factors defining the market.
- In a first step, the technological, socio-demographic, economic and political environments of Turkey‘s PV market are analysed.
- Building on this, individual PV market sectors, actors and the goods and services available are considered.
- The study also presents practical information on market entry and the legal framework conditions for PV in Turkey.
- Finally, supranational and national providers offering financing options for PV are described and risk assessments for Turkey presented.

EXPLANATION OF THE SOURCES USED

For this market report, a broad range of secondary sources was first analysed and then verified by means of primary research

Secondary sources

- Internal sources: dena market analyses, the dena country archive, the dena market information system
- External sources: data from international organisations (IEA, OECD, WB, EIB, GIZ, GEF, GTAI, IMF, CIA, EIA, UNDP)
- Publications from ministries and national organisations (TÜİK, TEİAŞ, ETKB, TEDAŞ, HGK, DMI, YEGM, EPDK)
- PV market reference studies, specialist articles in international and national publications, company and press reports, local news in Turkey
- Creation and use of an extensive database on the Turkish PV market: data administered using an Excel template
- Analysis and interpretation of the data generated by dena's own technical and country experts.

Primary sources

- Primary data collection: semi-structured qualitative interviews with selected PV market experts to obtain operational and contextual knowledge (representatives from companies and associations)
- Survey period: January to April 2013, and November 2014 (for the update)
- Data from the interviews was coded and used to validate the results of the secondary research, to close gaps in information and to generate background knowledge.
- All legal information has been checked by legal experts with local expertise.
- Complementary structured interviews were held with selected local and international financing experts.

TIPS FOR READERS

The information provided is also **interactive:**

Interactive table of contents: **a flow bar at the foot of the slide** orients readers within the report. A specific chapter can be sought by clicking on the corresponding icon.

Cross references between thematically linked content helps readers orient themselves quickly and carry out targeted research. Clicking on the icon takes you to content on related topics.

Hyperlinks to important primary sources have been integrated into the study. Clicking on the icon takes you to the original source.

Other icons used:

Information directly derived from the interviews held with experts (January to April 2013 and November 2014)

Special facts and references (from secondary and primary sources) relating to the PV market that should to be taken into account

References to basic legal issues, legislative texts

Details on the duration of (permit) processes

Information on costs incurred

OVERVIEW OF UNITS OF MEASUREMENT USED

Exchange rates (annual average)	
2011	1 Euro = 2.341 Turkish Lira (TRY)
2012	1 Euro = 2.316 TRY
2013	1 Euro = 2.568 TRY
Abbreviations	
Wh	Watt hour
TOE	Tonne of Oil Equivalent
Energy units and conversion factor	
1 TOE	= 11.63 Wh
Unit symbols	
k (Kilo)	= 1,000
M (Mega)	= 1,000,000
G (Giga)	= 1,000,000,000
T (Tera)	=1,000,000,000,000

Source: ECB (2014)

EXECUTIVE SUMMARY (1/3)

Continuing economic growth in Turkey, growing energy consumption combined with stagnating fossil power generation, and Turkey's visionary goals for marking the centenary of the founding of the modern state in 2023 are good omens for the stronger development of forward-looking energy technologies such as photovoltaics.

Turkey has an annual average of 1,527 kWh/m² of solar radiation, thus it has a high level of natural solar energy potential. Its primary energy supply has so far been based mainly on fossil fuels (coal, gas, oil), 73 percent of which are imported. In the area of renewable energies, only hydroelectric power is well developed. Turkey is interested in developing new energy sources to diversify its energy mix. The government's planned and massive expansion of nuclear energy is problematic because of the risk of earthquakes in the country. Renewable energies, including photovoltaics, could be a sustainable alternative. By 2023, the government plans to meet 30 percent of the country's energy needs using renewable energy sources.

Turkey has also liberalised its energy sector, providing positive impetus for increased international competition in the energy and power market. Its energy authority, EPDK, regulates power tariffs centrally, although German companies with offices in Turkey can also participate in the Turkish energy market as IPPs (independent power producers).

PV, with an installed capacity of around 38 MW (as of October 2014) has played a marginal role in the Turkish energy market so far, although a feed-in tariff was introduced in 2005. In 2011 the renewable energy legislation was revised. The resulting increase in the feed-in tariff combined with falling system prices, especially since 2013, is currently leading to strong growth in the PV market.

Photovoltaics began developing in Turkey in 2000 with small-scale off-grid plants producing less than 20 kWp. By 2009, the overwhelming number of installations were off-grid systems. However, due to an increase in the feed-in tariff, massive growth has been recorded in the number of on-grid systems installed since 2011.

PV has experienced enormous growth, especially in 2013 and 2014. In October 2014, installed output capacity was approximately 38 MWp. However, photovoltaics share of gross electricity generation (< 1 percent) is still insignificant.

EXECUTIVE SUMMARY (2/3)

German companies can also profit from the Turkish feed-in tariff system. Projects in this area must be registered with the EPDK.

Demand in the Turkish PV market is growing steadily. Most currently installed systems are located in the urban and industrial areas around Istanbul, Ankara and Kayseri. For future large-scale projects, sites to the south and southeast of Anatolia are of particular interest due to the high levels of solar radiation they receive.

Most of these PV plants are currently installed in the commercial sector (72 percent). According to market experts, the commercial customer sector (businesses such as manufacturing, commerce and the tourism industry) will grow even more strongly in future, remaining the biggest buyer group in the long term. Public sector customers contributed 27 percent and private customers around 1 percent to overall market volume from 2000 to 2014.

Market experts expect the private customer sector to grow, while the public customer sector is not expected to increase its stake. According to forecasts, market experts believe that the accumulated output capacity of PV will reach at least 400 MW in 2015 and rise to over 1 GW by 2016, with a subsequent annual growth rate of over 100 percent.

Supply in the Turkish PV market is relatively well organised. Along the value-added chain, international companies as well as strong Turkish firms are supplying the areas of module production, EPC and trade. PV products are distributed in Turkey through a network of local and international dealers. China dominates the country's PV module imports, garnering 58 percent of the market in 2014. The import share of German PV modules was worth 4.1 million Euros (9 percent of the total volume) in 2014.

There are market entry opportunities for German companies in the area of O&M and in the manufacture and distribution of special components. It is important to note, however, that Turkey wants to promote local industries all along the PV value-added chain, so its renewable energies law offers local content incentives as an added bonus to the feed-in tariff for PV plants that use locally produced components.

Choosing the right legal form for the company is crucial in entering the Turkish market. If a company intends to build up long-term business relationships and make major investments, the founding of an Anonim Şirket (AG) or Limited Şirket (GmbH) is recommended. Operation of a PV plant generating over 1 MW requires an A.Ş. or Ltd. Şti and nominal capital equal to 20 percent of the total investment amount.

EXECUTIVE SUMMARY (3/3)

In order employ foreign staff at a Turkish company, a residency permit and a work permit are required. Since 2014, work permits include a residency permit. The process for obtaining these is similar to standard international procedures. It should be noted, however, that requirements for some professions, (e.g. engineering, law) are more restrictive.

Relatively speaking, the approvals process for PV power generation is transparently regulated. There are basically two regimes. A simplified regimen for smaller plants (producing less than 1 MW) allows operation without a license. These plants can also derive profit from the feed-in tariff without restriction.

The process for plants producing more than 1 MW is more complex and an operator's licence is required. Applications for these licenses can only be made within a specific period and a specified total capacity may not be exceeded if the plant is operating within the feed-in tariff system (YEK Belge). However, this total capacity can be increased by order of the Council of Ministers. Data and limits for 2014 and 2015 have not yet been released.

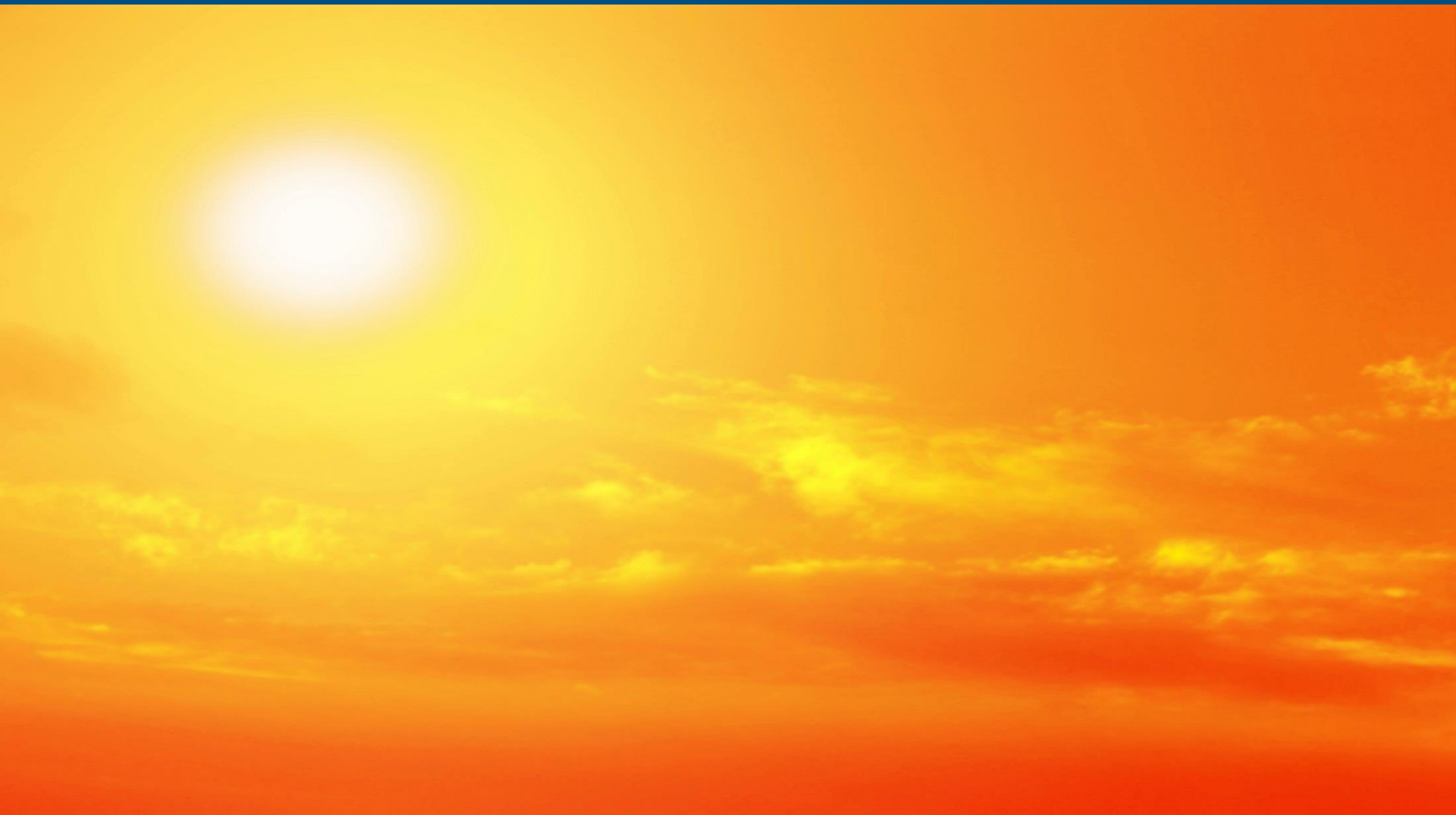
The approvals process for plants begins with an application for a preliminary licence, which is then converted into an operator's licence once all the legal preconditions are met. These preconditions include securing a site, managing the grid connection process and obtaining building and operating permits.

Site security and the building approvals process are fairly simple. However, the grid connection procedure is quite complex. PV plants must compete for available grid capacity, which is awarded in a tendering process. This bears a risk that price dumping impacts the profitability of projects or that projects are unable to be implemented due to a lack of grid capacity. This scenario does not apply to licence-free PV plants (< 1 MWp). So far only two tenders have been awarded for grid connection after the first round of licensing for solar plants. Additional tenders are planned for December 2014. More details are not yet available.

In recent years, the base interest rate in Turkey has been much higher than that in Europe. Turkey's base interest rate has been falling continuously since 2012, until the beginning of 2014 when strong interest rate hikes were made to support the Turkish Lira. Currently, the TCMB does not expect any further increases in the interest rate for 2014/2015, as this would counteract the objective of limiting inflation. Inflation for the entire year of 2014 is expected to be over 9 percent. The falling exchange rate against the Euro and the US dollar in particular has reduced the purchasing power for imports of German products. National financers MidSEFF and TurSEFF offer funding at the national level, while the EBRD and EIB provide it at the EU level. At the international level, the World Bank Group (via IFC and MIGA) also offers financing for renewable energy projects.

Given Turkey's ongoing EU membership negotiations, it is assumed that offers from European lending institutions (the European Investment Bank and European Bank for Reconstruction and Development) will increase. However, the situation in Turkey in terms of crime and crime prevention is regarded as critical.

ENVIRONMENT ANALYSIS



ENVIRONMENT ANALYSIS

The following questions are answered in this chapter:

- What is the environment for the PV market in Turkey like?
  - **Technological information:** What natural and technical preconditions are there in Turkey for the use of PV?
  - **Socio-demographic information:** How is prosperity progressing in the country's constantly growing population and what role does the middle class play in this development? How is the availability of qualified technical employees for the PV industry? How widespread is access to electricity? How does economic crime/terrorism affect business operations?
  - **Economic information:** How are economic growth, the unemployment rate and the inflation rate developing? What are the numbers on primary energy generation and consumption? And on electricity generation and consumption? How is the electricity market organised? How are energy prices in Turkey?
  - **Political information:** What are the current government's main goals? Which political programmes are specifically relevant to PV?

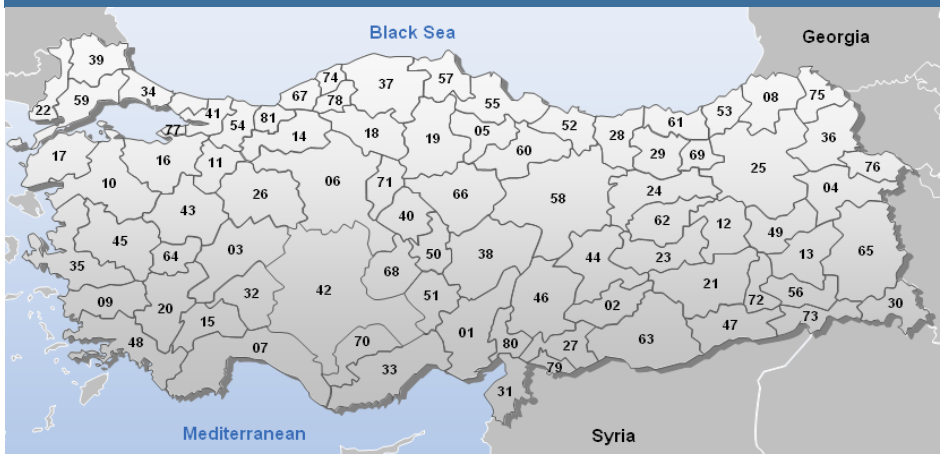
ENVIRONMENT ANALYSIS: BRIEF OVERVIEW OF THE BASIC DATA

General information (2014):

Area	783.562 km²
Population	77.3 million
National languages	Turkish (official language), Kurdish
Form of government	Parliamentary republic
Administrative structure	81 provinces
GDP per capita*	20,839 TRY (~ € 8,114.88*)
Economic growth (estimated)	2.3 %
National budget (in bill.) (estimated)	Income: 403.2 TRY (~ € 133.82 **) Expenditure: 436.3 TRY (~ € 144.81**)
Inflation rate (estimated)	9.2 %
Unemployment rate	9.7 % (2013)

* Annual average exchange rate 2013 GTAI (2014): € 1 = 2.568 TRY
** Exchange rate as of March 2014 GTAI (2014) € 1 = 3.013 TRY
Sources: GTAI (2014), MALIYE (2014), CIA (2010), IMF (2011), World Bank (2014a)

Political map of Turkey showing its provinces



Source: INSCALE GmbH, adapted by dena (2012)

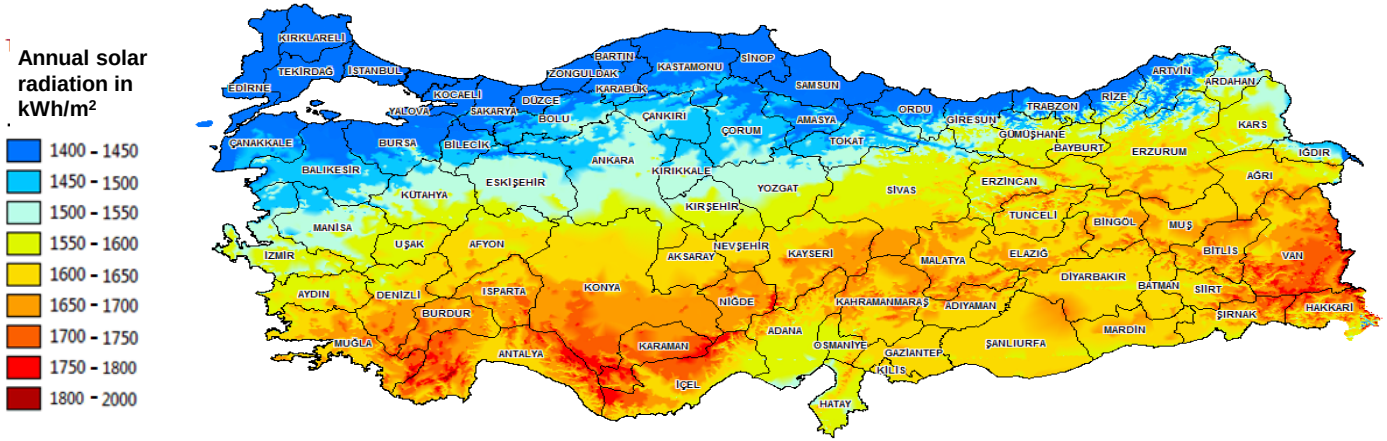
01. Adana
02. Adıyaman
03. A.karahisar
04. Ağrı
05. Amasya
06. Ankara
07. Antalya
08. Artvin
09. Aydın
10. Balıkesir
11. Bilecik
12. Bingöl
13. Bitlis
14. Bolu
15. Burdur
16. Bursa
17. Çanakkale
18. Çankırı
19. Çorum
20. Denizli
21. Diyarbakır
22. Edirne
23. Elazığ
24. Erzincan
25. Erzurum
26. Eskişehir
27. Gaziantep
28. Giresun
29. Gümüşhane
30. Hakkari
31. Hatay
32. Isparta
33. Mersin
34. İstanbul
35. İzmir
36. Kars
37. Kastamonu
38. Kayseri
39. Kırklareli
40. Kırşehir
41. Kocaeli
42. Konya
43. Kütahya
44. Malatya
45. Manisa
46. K.Maraş
47. Mardin
48. Muğla
49. Muş
50. Nevşehir
51. Niğde
52. Ordu
53. Rize
54. Sakarya
55. Samsun
56. Siirt
57. Sinop
58. Sivas
59. Tekirdağ
60. Tokat
61. Trabzon
62. Tunceli
63. Şanlıurfa
64. Uşak
65. Van
66. Yozgat
67. Zonguldak
68. Aksaray
69. Bayburt
70. Karaman
71. Kırıkkale
72. Batman
73. Şırnak
74. Bartın
75. Ardahan
76. Iğdır
77. Yalova
78. Karabük
79. Kilis
80. Osmaniye
81. Düzce

ENVIRONMENT ANALYSIS: BASIC ENERGY INDUSTRY DATA

General energy data (2012)				
Primary energy consumption	1,345.6 TWh			
Electricity generation capacity	64.044 GW			
Total gross electricity generation	228.08 TWh			
Total electricity consumption / per capita	194.9 TWh / 2,521 kWh			
Net electricity imports	5,827 GWh			
Net electricity exports	2,954 GWh			
Forecast average development of electricity consumption (2013 - 2016e) in GWh	2013	2014e	2015e	2016e
	255.5	271	287.3	302.7
Gross electricity price (Ø January- June 2014)		Industry	Households	
	TRY	0.234	0.354	
	€	0.08*	0.12*	
Installed renewable energy capacity (as of: 31 Oct. 2014)	Geothermal	PV	Wind	Biomass and waste
	404.9 MW	38 MW	3,511.8 MW	286.7 MW
Average annual solar radiation	1,527 kWh/m²			

* Exchange rate as of March 2014 GTAI (2014) € 1 = 3.013 TRY
Sources: YEGM (2012a, 2012b), TEİAŞ (2012a), TEİAŞ (2014a, 2014b), IEA (2014),TEDAŞ (2013), INEA (2013), dena (2013), TÜIK (2014)

TECHNOLOGICAL INFORMATION: NATURAL POTENTIAL



Source: YEGM (2013)

Climate and geography

- Turkey has three main climate zones; a continental climate in central, eastern and south-eastern Anatolia, a damp climate in regions near the Black Sea, and a Mediterranean climate in the Aegean/Mediterranean region.
- Average annual temperature is 12.8 ° C.
- Temperatures on the south coast reach a maximum at an average of 18 to 20 ° C, on the west coast the average temperature is 14 to 15 ° C and in the country's interior it is 9 to 18 ° C.

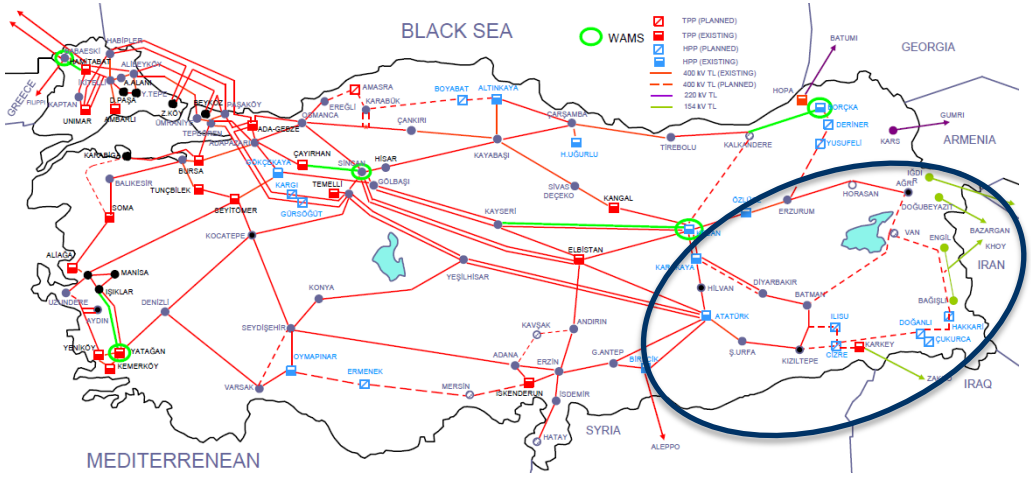
Solar radiation

- Average annual solar radiation is around 1,527 kWh/m², which is 2,640 hours of sun a year or 7.2 hours a day. The country's south and south-east have the highest solar radiation levels.

Sources: YEGM (2013), ETKB (2011c)

TECHNOLOGICAL INFORMATION: THE ELECTRICITY GRID

- Turkey's electricity grid is divided into a transmission grid (total length 49,993 km, ≥ 36 kV) and a distribution grid (total length 1,000,000 km, ≤ 30 kV).
- Expanding the electricity grid is one of the Turkish government's major goals. As part of a strategic plan for 2011 to 2015, the grid operator, TEİAŞ, has been given an annual budget of 1.1 bill. TRY (approx. €0.4 bill. *) to improve the electricity grid's reliability, quality and availability.
- The map to the right shows the electricity grid. Red lines show the existing grid, dotted lines the planned 400. kV power lines. The electricity grid is scheduled for expansion, especially in the country's east and south.



Source: TEİAŞ (2010)

- Turkey's electrification rate reached 100 percent in 2007, but high losses from the electricity grid are a major problem . In the south-east, (see the marked area on the map) losses from transmission lines were over 70 percent in 2009.
- The government would like to reduce these losses by increasingly privatising local network operators and building new transmission lines.

Country	Grid losses in 2010*
Turkey	14 %
Ø Europe	6 %
Ø Arab States	12 %
Ø World	8.3 %

* Average annual exchange rate 2013 GTAI (2014): 1 € = 2.568 TRY
Sources: ETKB (2011c, 2012a), TEİAŞ (2011), UNDP (2007)

* Percentage of electricity produced
Sources: World Bank (2010b), GEKA (2012)

SOCIO-DEMOGRAPHIC INFORMATION: PROSPERITY INDICATORS

- The HDI* is increasing in the country's south-east through to its west and north-west, revealing Turkey's wealth gap (see map). In 2013, after a rapid rise through the ratings, especially after 2010, Turkey ranked 69th in a global comparison (2012 ranking: 92nd).
- The country's GINI index** fell from 2006 until the financial crisis in 2008, indicating increasing inequality. Compared with 2005 , income distribution was more balanced in 2011 and middle class purchasing power is increasing.

Source: UNDP (2014)

* HDI, Human Development Index: An indicator of a population's prosperity defined by the World Bank. The higher the HDI, the greater the prosperity.
** GINI index: A set of economic parameters for representing unequal income distribution. The higher the GINI index, the greater the income inequality.

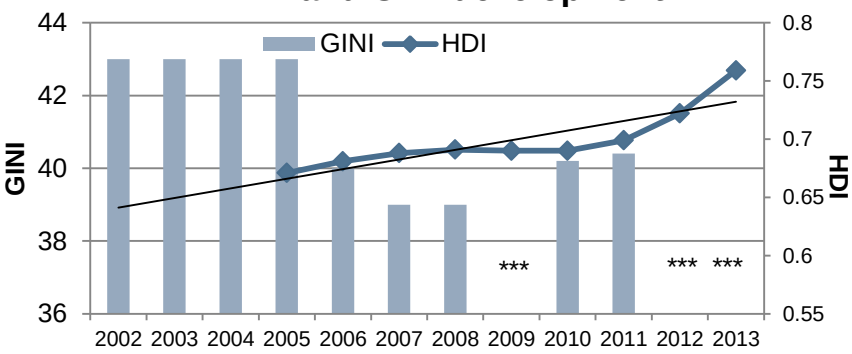
Country	Comparative HDI values (2013)
Turkey	0.759
Ø EU 28	0.857
Ø Arab States	0.682
Ø World	0.702

Source: UNDP (2014)

Regional distribution of HDI

Sources: CEDIM (2010)

HDI and GINI development



*** Data for 2009 not available, 2011 current
Sources: World Bank (2009b), UNDP (2014)

SOCIO-DEMOGRAPHIC INFORMATION: POPULATION DEVELOPMENT, WITH A FOCUS ON THE MIDDLE CLASS

Population development

- Turkey had 77.3 mill. inhabitants in 2014. The population is set to increase to 94.6 mill by 2050.
- Most Turks live in cities; less than a tenth live in the country.

Household income

- Average household income is currently around 956 Euros per month. Higher income earners* live mainly in major cities such as Istanbul. The poverty rate is highest in rural areas such as central and eastern Anatolia.

Education and training of skilled workers

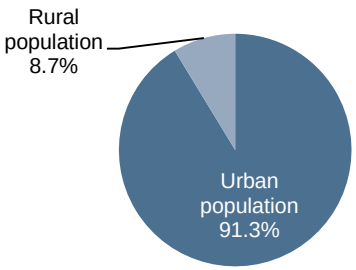
- The unemployment rate was about 9.7 percent in 2013. The labour market is characterised by a ready supply of specialist technical employees. In an international comparison, Turkey is at roughly the same level as the Czech Republic and Poland (see below).

Availability of skilled labour, 2012**

	Skilled workers	Engineers	Management	IT skills
Turkey	6.19	7.56	6.11	7.4
Poland	6.13	6.26	5.05	7.49
Czech Republic	6.27	6.47	5.2	7.2
China	4.44	5.73	4.74	6.69
Bulgaria	3.96	5.4	3.53	7.15

* According to the OECD's definition
** The IMD World Competitiveness Yearbook assesses countries according to the levels of skilled employees available, using a scale ranging from 0 (= none available) to 10 (= many available).
Sources: GTAI (2014), TÜIK (2014b) ZAMAN (2012), TÜİK (2011b), IMD World Competitiveness Yearbook (2012)

Distribution of inhabitants in Turkey (total 77.3 mill.)*



* In 2013, rural regions were designated predominantly as urban areas, thereby greatly increasing the statistical proportion of the urban population compared to 2012 (77.3 %).
Source: TÜİK (2014b)

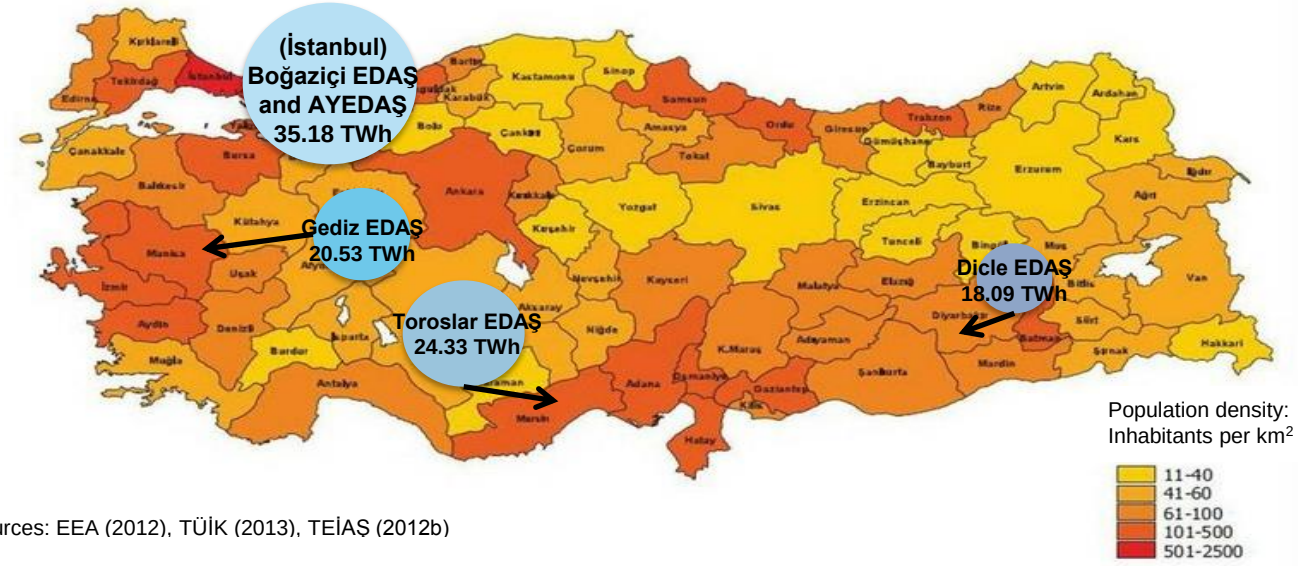
Proportion of the middle class* in selected regions

Istanbul	Eastern Marmara	Western Anatolia	Mediterranean	Central-east Anatolia
70 %	70 %	60 %	60 %	40 %
Average in Turkey: 58 %				

* According to the OECD's definition
Sources: TÜİK (2011a), dena's own research (2013, 2014), ZAMAN (2012)

SOCIO-DEMOGRAPHIC INFORMATION: POPULATION DENSITY AND POWER CONSUMPTION

Population density in Turkey and power consumption (2012) in the major distribution regions



Population centres (pop. in mill.)	
Istanbul	13.7
Ankara	4.8
İzmir	3.7
Bursa	2.4
Adana	1.9

Sources: EEA (2012), TÜİK (2013), TEİAŞ (2012b)

- Turkey's largest population centre is Istanbul *İl/İlçe merkezleri* with 13.71 mill. residents, or 18 percent of the country's total population. The country's other major urban centres and economic hubs are Ankara (4.8 mill.), İzmir (3.7 mill.), Bursa (2.4 mill.) and Adana (1.9 mill.). This density of inhabitants, businesses and industries, and thus of customers for electricity, means that there is a very high demand for energy. Eastern Turkey is less densely populated and industry there less developed.
- An analysis of power consumption in the regions for PV-relevant groups of customers (private, commercial and public-sector customers) can be found in the "Demand side" chapter.

Source: EEA (2012)

SOCIO-DEMOGRAPHIC INFORMATION: SECURITY RISKS AND CORRUPTION

The following risks could make entry into the PV market in Turkey more difficult:

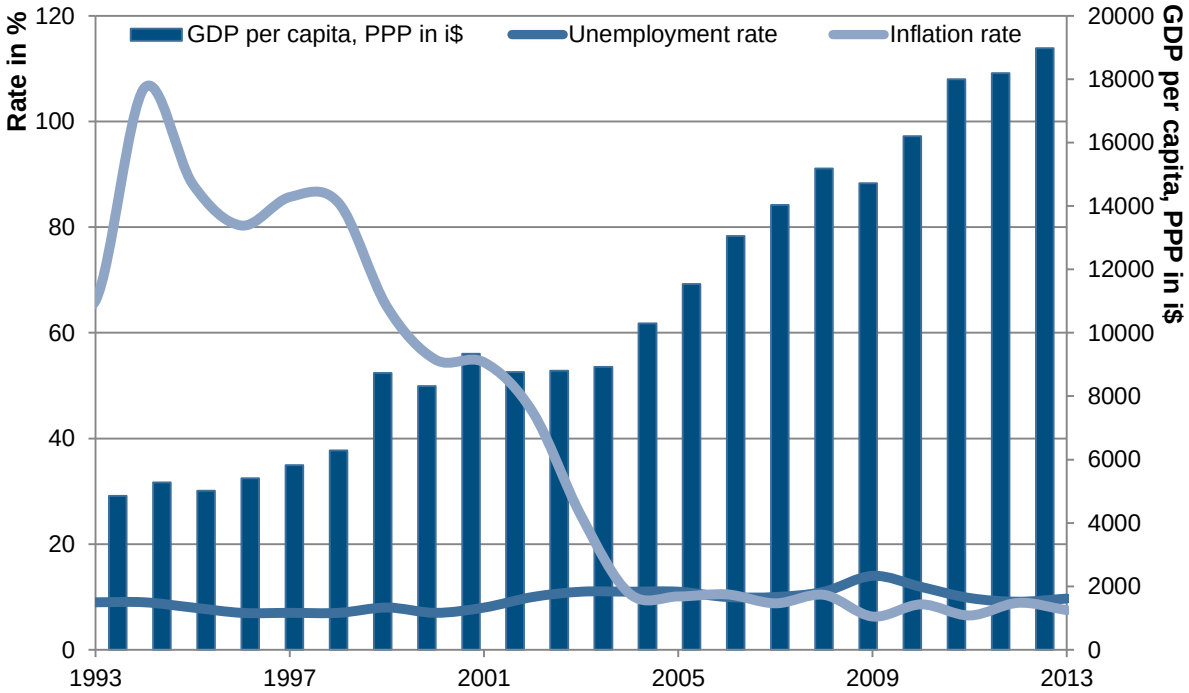
Corruption and the rule of law
▪ Motivated by its desire to become a future EU member, Turkey has made significant improvements in strengthening the rule of law over the past decade. The Bertelsmann Transformation Index 2014 (BTI*) gives Turkey's transformation towards democracy and a market economy a rating of 7.51, defining it as "advanced". ▪ According to Transparency International however, the level of corruption in Turkey is high compared with that in central European states. You will find a detailed calculation and assessment on their website at www.transparency.org. ▪ The "Bribe Payers Index 2011", published by Transparency International, ranks Turkey among the countries whose companies tend to pay bribes abroad (ranked 19 out of 28).
Security risks - terrorism and border conflicts
▪ Germany's Federal Foreign Office (Auswärtiges Amt) has stated that given past terror attacks, including attacks against non-military targets, in all areas of Turkey, it must be assumed that there is ongoing danger of a terrorist threat. ▪ Areas near the border with Syria and Iraq in particular should be avoided due to the tense situation ▪ Despite talks between the government and the PKK, the south-eastern part of the country in particular has repeatedly seen armed conflict.

* The BTI rates the transformation of countries towards a market economy and democracy on a scale from 1 to10, with 1 representing a "failed or blocked" transformation and 10 a "very advanced" transformation.

Sources: BTI (2014), TI (2014), FCO (2014)

ECONOMIC INFORMATION: RISING BIP AND A FALLING INFLATION RATE

Unemployment rate, inflation rate and GDP per capita



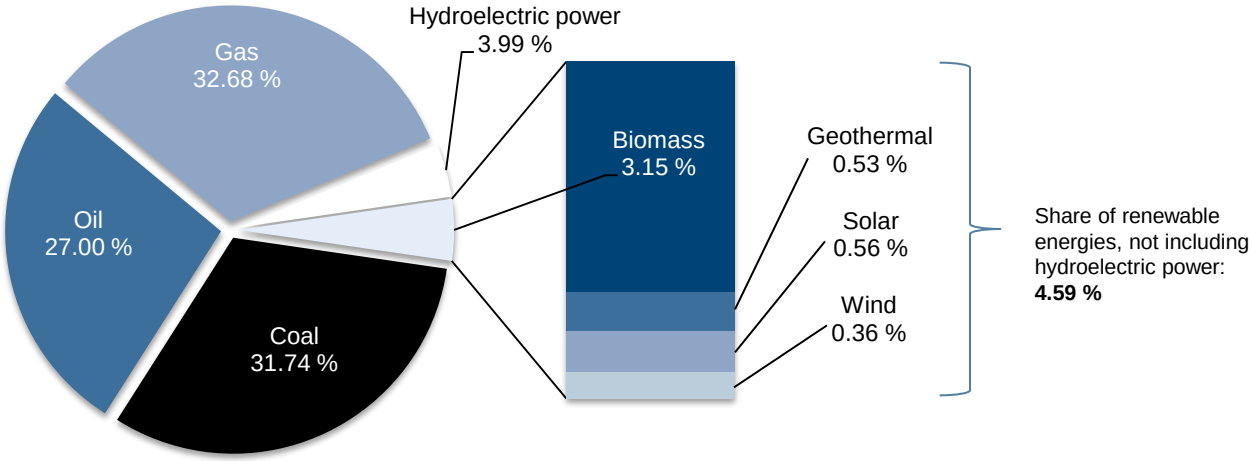
Sources: World Bank (2011, 2014), TÜİK (2012a, 2012b)

- Until the global economic and financial crisis in 2008, Turkey was recording very strong economic growth, with average growth of 8.5 percent in 2011. Real GDP growth in 2014 and 2015 is estimated at 2.3 and 3.1 percent.
- Structural obstacles are weakening even stronger growth in the Turkish economy, although privatisation – especially in the area of electricity generation and distribution – is designed to result in greater mobilisation of the economy.
- The annual inflation rate ranged from 10 to 6.5 percent from 2004 to 2014 and has been relatively stable ever since.
- During the financial crisis, the unemployment rate increased from 11 percent to just over 14 percent. It has been falling ever since then and was at 9.7 percent in 2013.

Source: GTAI (2014)

ECONOMIC INFORMATION: PRIMARY ENERGY CONSUMPTION

Share of individual energy sources in Turkey's primary energy consumption of 1,331 TWh (2011)



Fossil-fuel power plants: Dependency on imports

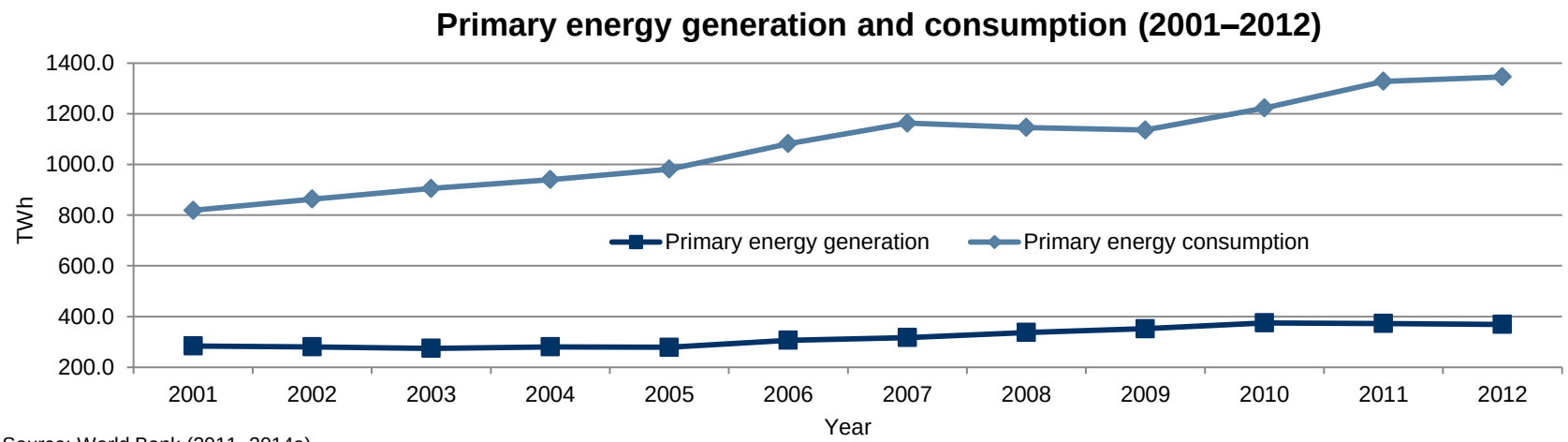
- 71 percent of energy generated in Turkey comes from fossil-fuel energy sources, mainly from coal (32 percent), gas (33 percent) and oil (27 percent). These fossil-fuel energy sources are mainly imported. Turkey's main trading partners are Russia (gas) and Iran (oil).

Predominance of hydroelectric power

- Of all the renewable energies, the one Turkey mainly uses is hydroelectric power, which provides about 4 percent of the country's primary energy supply. This is followed at 3 percent by biomass, which is used mainly for heat generation.
- Geothermal, wind and solar energy all play very marginal roles thus far.
- The proportion of solar energy used, 0.56 percent, is due to the widespread use of solar-thermal plants in Turkey. Primary energy supply statistics due not include photovoltaics.

Source: ETKB (2011b)

ECONOMIC INFORMATION: PRIMARY ENERGY GENERATION AND CONSUMPTION

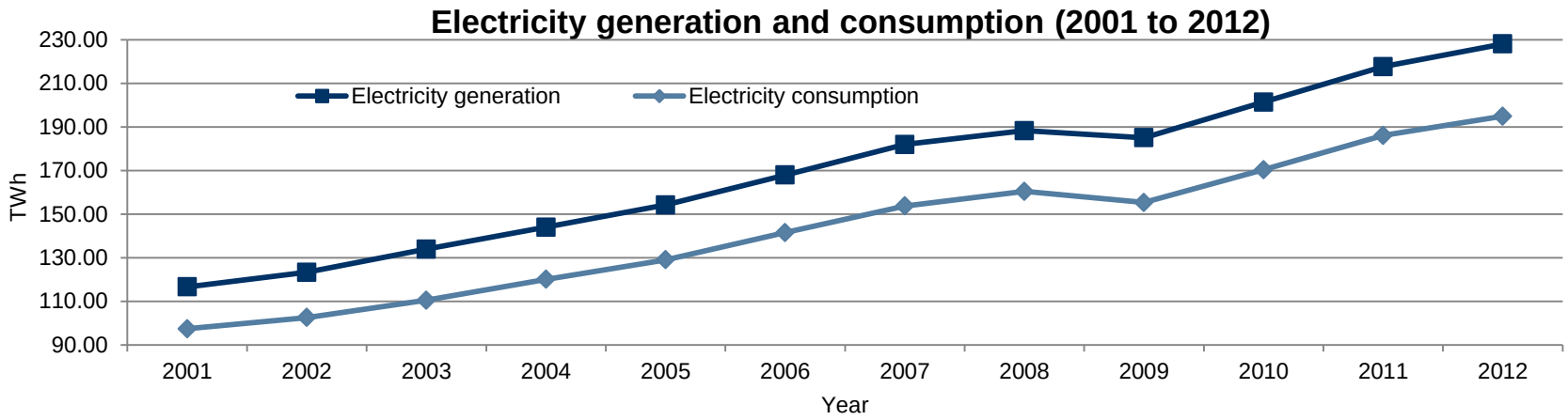


Source: World Bank (2011, 2014a)

- Turkey is an energy importer, importing 63 to 73 percent of its energy from 2001 to 2012. In 2012, a total of 368.9 TWh of primary energy was generated and a total of 1,345.6 TWh consumed.
- As the diagram above shows, primary energy generation increased only slightly between 2001 and 2010 and stagnated thereafter, whereas consumption increased greatly, especially since 2009. The reason for this is Turkey‘s growing economy.
- The energy ministry (ETKB) has forecast that in 2023 primary energy consumption will be supplied by coal (37 %), gas (23 %), oil (26 %), hydroelectric power (4 %), nuclear energy (4 %), biomass (2 %) and other renewable energies (4 %). Compared with 2011 (see the previous slide) this would mean expanding the use of nuclear energy and building more coal-fired power plants. The share of gas and biomass in the mix would fall, while the share of hydroelectricity, other renewable energies and oil will remain constant compared with 2011. However, given increasing primary energy generation, this would mean that market volume would increase in absolute terms.

Sources: EIA (2013, 2014), CNBC (2012), World Bank (2011, 2014a), ETKB (2012a)

ECONOMIC INFORMATION: ELECTRICITY GENERATION AND CONSUMPTION



Sources: EIA (2011, 2012, 2014,) ETKB (2011a)

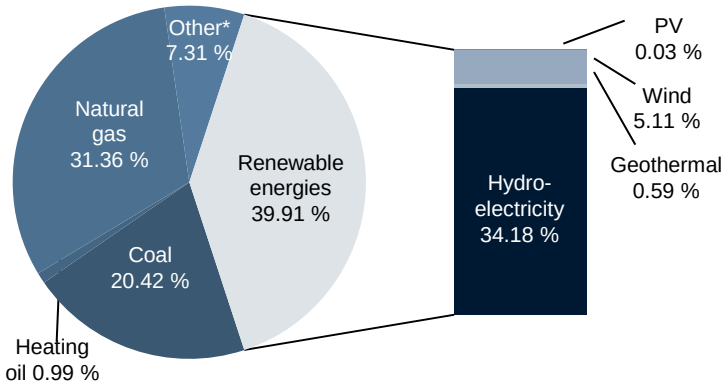
- The diagram above shows the development of electricity generation and consumption from 2001 to 2012. It implies that net electricity generation exceeds consumption, so that Turkey should be able to export electricity. However, this is not the case. The difference is nullified by losses from the electricity grid (see the slide on the electricity grid).

- The financial crisis in 2008/09 briefly curbed the steady increase in electricity generation and consumption since 2001. The basic reason for the increase is strong economic growth.
- To meet the country's needs, electricity generation capacity will be expanded (see the preceding slide) and losses from the grid reduced. The grid operator in the south-east, DisComs, will also be privatised (see the slide on the electricity grid).

Source: ETKB (2011a), EIA (2014)

ECONOMIC INFORMATION: ELECTRICITY GENERATION CAPACITY AND ITS EXPANSION 2013/14

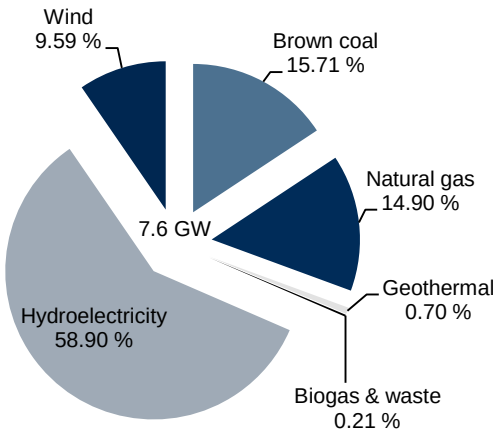
Installed capacity: 68.7 GW (October 2014)



- Conventional fossil-fuel power plants, mainly thermal power plants, make up 60 percent of Turkish power plant parks generating electricity.
- The proportion of renewable energies of electricity generation capacity was around 27.4 GW in 2014. Hydroelectric power dominates (34 percent of installed electricity generation capacity), followed by wind power (about 5 percent).
- Photovoltaics still plays a minor role (approx. 38MW, as of 10/2014).

* "Other" includes diesel, asphaltite and naphtha
Source: TEİAŞ (2014b)

Government plans for expanding generating capacity by 7.6 GW 2015/2016



- Turkey's electricity needs are due to increase by about 10.25 percent by 2016, so the government plans to install 5.7 GW of new generation capacity in 2015 and 1.9 GW in 2016.
- Most of this new capacity will be generated by hydropower (4,470 MW), brown coal (1,192 MW) and natural gas (1,131 MW) power plants.
- Most of the planned extra renewable energy power plants will use wind energy.

By 2023, 30 percent of the country's energy demand should be met by renewable energy sources. The plan is also to install two nuclear power plants in Mersin-Akkuyu and Sinop with a total capacity of 10 GW by then, with a third power plant under construction.
For details on long-term expansion plans, see the slide on "Goals for 2023".

Source: EPDK (2014), TEİAŞ (2012a), ETKB (2012b)

ECONOMIC INFORMATION: ORGANISATION OF THE ELECTRICITY SECTOR IN TURKEY

Turkey's electricity market is becoming increasingly privatised. The legal framework for this is established by the ETKB ministry and the regulatory authority, EPDK. Below is a list of the actors involves and the quotas of private companies in the various areas of business.

Energy ministry: ETKB

Regulatory authority: EPDK

The energy market regulatory authority (EPDK) regulates the energy market; its remit is to guarantee stability and transparency.

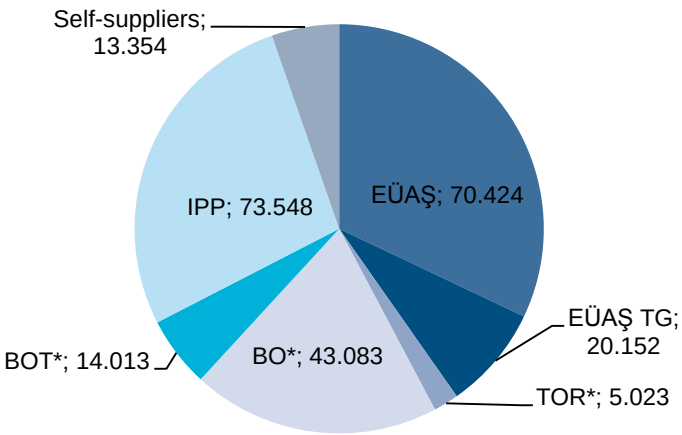
State enterprises

Generation: 60 % private*	Transport: 100 % state-run*	Wholesale: 65 % private*	Distribution: 38 % private*
EÜAŞ	TEİAŞ	TETAŞ	TEDAŞ
The state-run electricity supplier (EÜAŞ) produced 39 % of electricity generated in 2013 . 61 % of electricity is produced by private companies (for details on operator models see the following slide).	The state-run grid operator (TEİAŞ) is responsible for load and power grid management.	TETAŞ is the state-run electricity wholesaler and has 35.2 % of the market (2011). Private companies make up the rest of the wholesale market.	8 of Turkey's 21 distribution companies belong to the state-run distribution company (TEDAŞ), the rest are in private hands. TEDAŞ recently announced the launch of a process to sell four more state-run distribution companies.

* The background colour indicates the degree of privatisation: the lighter the box, the higher the proportion of private operators.
Sources: ETKB (2012b, 2013), TETAŞ (2012, 2013), ÖİB (2010, 2013)

ECONOMIC INFORMATION: ELECTRICITY MARKET STRUCTURES IN TURKEY

Electricity market: electricity generation (GWh) 2013



Source: TEİAŞ (2014b)

There are market opportunities for PV especially for IPPs and to a lesser extent for self suppliers.

Liberalisation and private-sector actors

- The proportion of private electricity generated has grown in the past 17 years from 10 percent (1996) to 62 percent (2013).
- This was due to the creation of a legal framework for private sector electricity generation, initially on the basis of the BO*, BOT* and TOR* models. IPP models were subsequently introduced. Private-sector interest has been motivated by the guaranteed purchase of electricity.

Special operator models

- BOT, BO or TOR operator models*: these models were used mainly in the 1990s for hydroelectric and thermal power plants. Future projects will only be carried out with IPPs.

Independent power producers (IPPs)

- IPPs produced 31 percent of the electricity generated in 2013.
- 99 percent of private hydroelectric, geothermal and wind power plant capacity was generated by IPPs in 2012.

Self-suppliers

- Companies also produce electricity for their own use.
- Surplus electricity has to be sold at a fixed price to TETAŞ or private wholesalers.
- 0.1 percent of renewable energy projects (not including hydroelectricity) have the status of a self-supplier project.

* Operator models: Build–Operate–Transfer , Build–Operate, Transfer of Operational Rights
Sources: TEİAŞ (2012a)

ECONOMIC INFORMATION: GROSS ELECTRICITY PRICES BY SECTOR

- National electricity tariffs, which are set for all end consumers, are regulated by the energy authority EPDK and published quarterly. The electricity price consists of production, distribution and electricity grid costs, electricity consumption tax and value-added tax.
- End consumers can choose one of two electricity tariff systems: a basic tariff for any time of day or a pricing system that varies according to the time of day (the tariff is highest in the evening and lowest at night). However, end consumers are unable to switch electricity providers.
- In 2013, the proportion of taxes in the price of electricity was21 percent for commercial consumers, 18 percent for households and 15 percent for industry and agriculture.
- Electricity prices have tended to increase since 2010 for households and industry, yet have remained relatively steady since 2012.

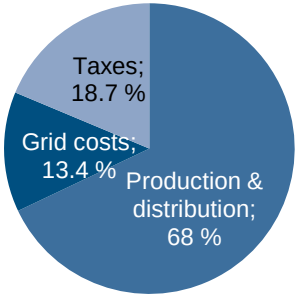
Source: TEDAŞ (2013), UPESAŞ (2013)

Electricity prices in Kuruş*/Euro cents per kWh**

Month/Year	Industry	Households
01/2012 – 06/2012	20.7/8.94	30.9/13.34
06/2012 – 12/2012	22.8/9.85	33.9/14.64
01/2013 – 06/2013	24.1/9.39	35.7/13.90
06/2013 – 12/2013	23.4/9.11	35.3/13.75
01/2014 – 06/2014	23.4/7.76	35.4/11.75

* 1 TRY = 100 Kuruş
* * Average annual exchange rate from 2010 until 2014 and March 2014 exchange rate according to GTAI (2014)
Source: TÜIK (2014), TEDAŞ (2013)

Main components of the electricity price for households in 2013



Sources: TEDAŞ (2013)

POLITICAL INFORMATION: ENERGY MARKET GOALS FOR 2023

The Turkish government has set itself some ambitious goals to mark the 100th anniversary of the Turkish Republic in 2023, identifying needs for action in the area of future energy supply and defining concrete goals for expanding it.

Security of supply

- Turkey wants to make more use of its own coal, oil and gas reserves, so it increased its investment in exploration of its oil and gas reserves by a factor of 12 from 2002 to 2010.
- It also wants to make increasing use of nuclear power. The government's stated national goal is to have two more nuclear power plants in operation by 2023.

The use of nuclear power is particularly controversial due to the somewhat high risk of earthquakes in Turkey.

Renewable energies

- 30 percent of Turkey's energy requirements is scheduled to come from renewable energy sources by 2023.
- 3 GW of solar (PV, CSP, CPV) energy generation by 2023 is likewise planned.
- The entire economic potential of hydroelectric and geothermal energy should also be exploited by then.
- A target goal of 20 GW of installed wind energy generation capacity has also been set for 2023.

It is not currently clear what share of the 3 GW of solar energy planned to be generated by 2023 will be derived from photovoltaics.

Geostrategic goals

- Minimising the negative effects of energy activities on the environment
- Reducing the growth rate of greenhouse gas emissions from the energy sector

With this in mind, a massive expansion of nuclear power has been endorsed as a climate-friendly form of energy.

Sources: ETKB (2011b, 2012a)

POLITICAL INFORMATION: THE LEGAL SITUATION IN TURKEY FOR PROMOTING PHOTOVOLTAIC

A number of PV plants generating around 1 MWp had been built in Turkey by 2005, most of them off-grid. Targeted promotion of on-grid-PV began in 2005. The charts below show the main legal developments.

2005: Renewable Energies Act (no. 5.346)

- This law guarantees remuneration for the feeding in of PV electricity of between 6 and 6.5 US cent/kWh (about 5 to 5.5 €ct/kWh) over a period of ten years.
- One obstacle to the development of PV: a feed-in tariff that is too low and therefore unattractive.

2011: amended Renewable Energies Act no. 5.346 (law no. 6.094)

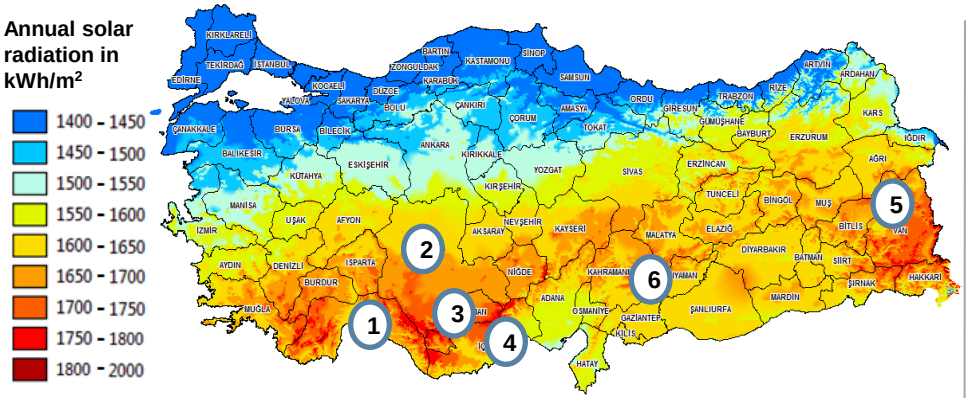
- The law guarantees a feed-in tariff for PV of 13.3 US cent/kWh (about 10.2 €cents).
- It also grants a local content bonus of up to 6.2 US cent/kWh (about 4.8 €cents) for systems using locally produced components.
- This incentive is paid from the time the plant is commissioned for a period of ten years.
- The current prices are paid for plants that are commissioned before 31 December 2015.
- For plants with a system size over 1 MWp, the available licences have been limited to 600 MW and certain target regions defined, → see the following slide.

Since 2012: Legal framework for plants generating < 500 kWp or < 1 MW

- A legal framework for the market sector of licence-free plants generating < 500 kWp was published in March 2012. For → details see the chapter on “Legal framework conditions”.
- It was decided in early 2013 to increase the size of licence-free plants to 1 MW.

Sources: dena (2011), ETKB (2011b)
Texts of statutes can be downloaded from http://www.mevzuat.gov.tr/Kanunlar.aspx.

POLITICAL INFORMATION: THE FRAMEWORK FOR LARGE-SCALE ON-GRID PROJECTS



Sources: YEGM (2013)

N°	City or province	Ø Solar radiation [kWh/m²]	Upper limit* "cap" [MW]
1	Antalya	1,602–1,681	58
2	Konya	1,530–1,710	92
3	Karaman	1,651–1,682	38
4	Mersin	1,571–1,653	35
5	Van & Ağrı	1,545–1,655	77
6	K, Maraş & Adıyaman	1,577–1,629	27

* PV plants generating over 1 MWp require a licence. There is also an upper limit or "cap" for these plants.

- Turkey's Renewable Energies Act imposes strict framework conditions on the building of plants with a system size over 1 MWp :
  - Licensing has been limited to a maximum of 600 MW of PV.
  - Regions and related upper limits for installations ("caps") have been defined.

For details on the approvals process for large-scale on-grid plants, see the chapter on market entry.

- The table shows the cities and provinces with the market caps defined by the government for PV plants requiring a licence*. Outside these regions only plants generating under 1 MWp can be built.

- Sites for authorised PV plants requiring a licence* must have at least 1,650 kWh/m² of solar radiation annually. This must be demonstrated by measurements made over a period of at least six months.

SUMMARY: ENVIRONMENT ANALYSIS

- Turkey has a very high level of natural solar potential, with average annual solar radiation of 1,527 kWh/m².
- To date, PV has played a marginal role in the Turkish electricity market despite the existence of a feed-in tariff since 2005. An increase in the tariff set by an amendment of the Renewable Energy Act in 2011 has led to a rapid expansion in PV. The heaviest expansion occurred in 2013 and 2014, with installed capacity increasing twenty-fold to 38 MW within just two years.
- The electricity grid is densest in Turkey‘s western regions, while the country’s south-east has a low-density grid with limited transmission capacity. The country’s electrification rate is 100 percent.
- Prosperity has been steadily increasing in Turkey since the 2000s. In a regional comparison (MENA) the country occupies one of the top rankings. The higher earning middle classes live mainly in the country’s urban centres.
- Security risks such as corruption, terrorism and the current border conflicts with Syria could make entering the Turkish market more difficult, especially in the south-east.
- In recent years Turkey has recorded stable economic growth, with real GDP growth of 2.3 percent expected in 2014.
- Primary energy generation is based on fossil-fuel energy sources (coal, gas and oil), of which 71 percent is imported.
- Although energy consumption has been continuously increasing in recent years, energy generation has grown weakly in comparison. Reducing Turkey’s import dependency on its main trading partner, Russia, remains an important goal. The steep increase in electricity consumption due to rapid economic growth since 2001 was slowed only briefly by the financial crisis in 2008/09.
- Turkey‘s electricity needs are met mainly by fossil-fuel power plants, using mainly coal and gas. The proportion of renewable energies in electricity generation, not including hydroelectric power, is still low but is rising constantly. By 2023, 30 percent of the country’s energy needs should be met by renewable energy sources. Turkey also wants to greatly expand its use of nuclear power, which is controversial internationally because of the risk of earthquakes there.
- The Turkish electricity market is centrally regulated by the state energy authority EPDK (Enerji Piyasası Düzenleme Kurumu). Private-sector actors have been able to participate in the Turkish electricity market as IPPs, BO, BOT, TOR and self-suppliers since 1994. Electricity tariffs are regulated by the EPDK. End consumers can choose from two types of tariff, but they cannot change electricity providers.

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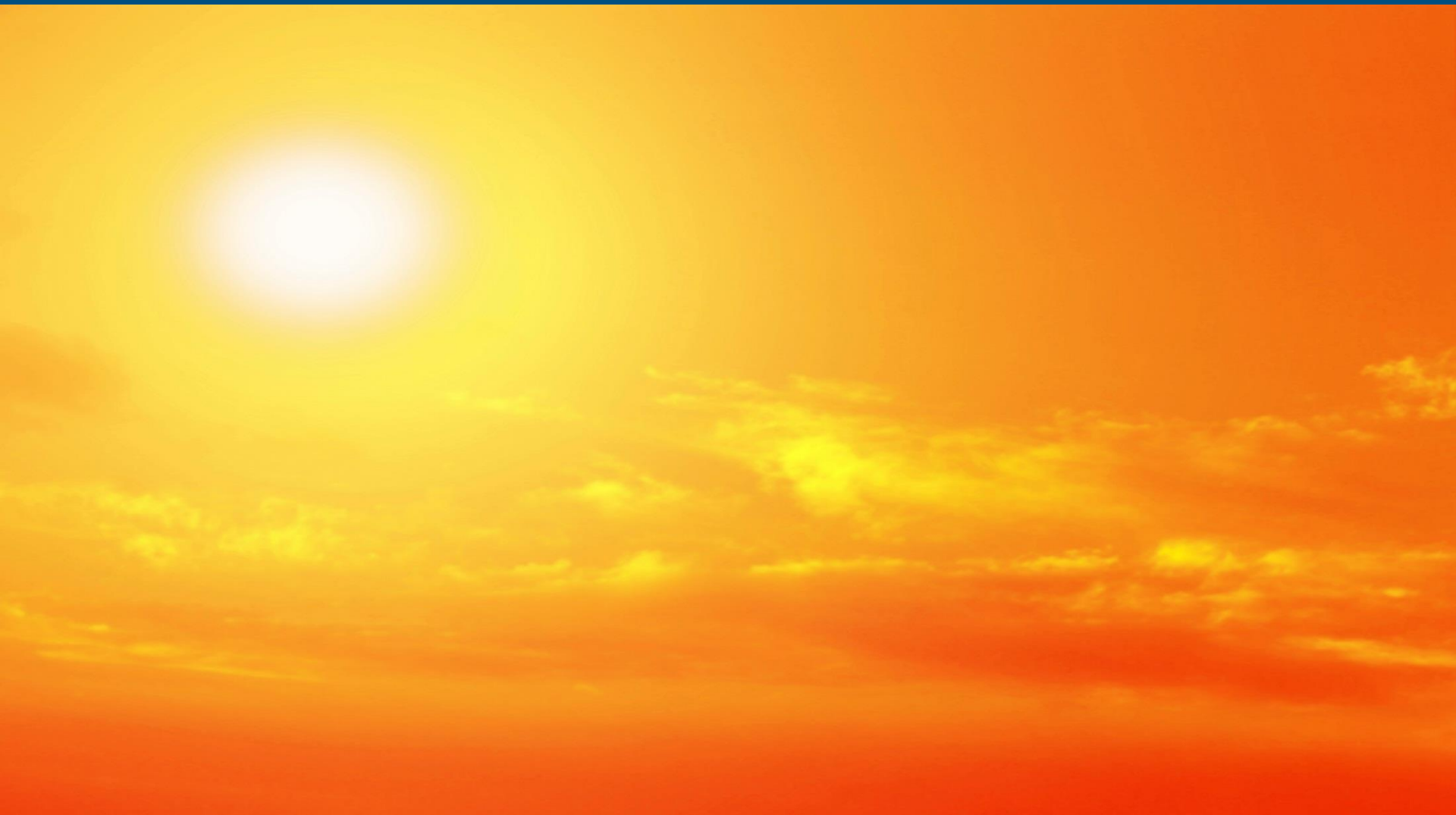
DEMAND SIDE

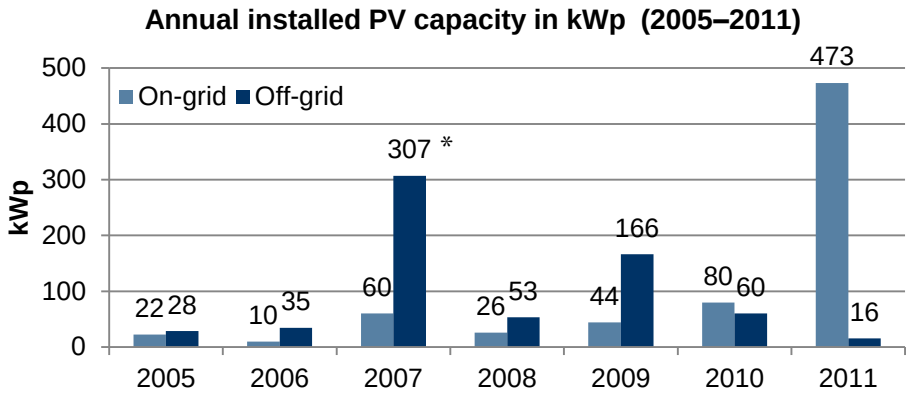


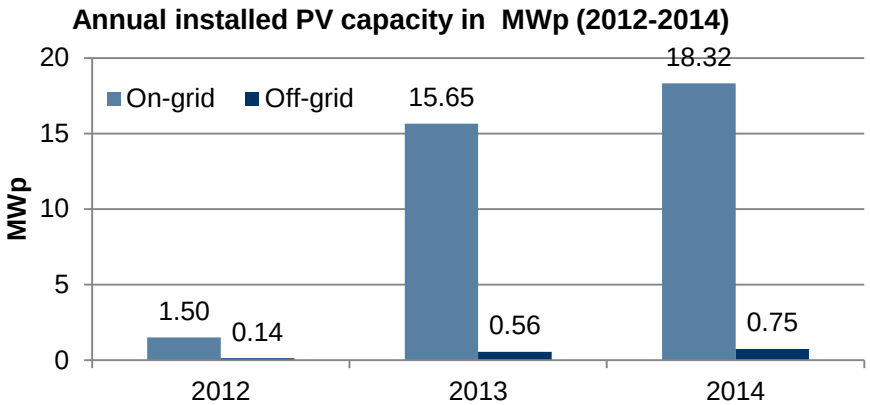
DEMAND SIDE

The following questions are answered in this chapter:

- **Development of the PV market:** How are the off-grid and on-grid sectors in Turkey? What PV programmes and incentives exist?
- **Large-scale PV projects:** What large-scale on-grid projects are already installed or still to be built?
- **Market sectors:** How big are the individual market sectors in Turkey? How will the different sectors develop? What are the sector-specific driving forces in the market? How large is the total PV market in Turkey? How are projects awarded and what market opportunities are available to German companies?

DEVELOPMENT OF OFF- AND ON-GRID PV





* The high quota of off-grid plants is due to the expansion of PV transmission masts for Turk Telekom.

- Photovoltaics began developing in Turkey in 2000 with small plants generating less than 20 kWp. PV plants were initially only used for research purposes at various universities. At the end of 2005, accumulated installed capacity was only about 300 kWp. Until 2009, most systems were off-grid systems. An increase in the feed-in tariff has led to a massive increase in on-grid systems since 2011.
- PV has experienced enormous growth, especially in 2013 and 2014. In October 2014, installed output capacity was approximately 38 MWp. However, photovoltaics share of gross electricity generation (< 1 percent) is still insignificant.

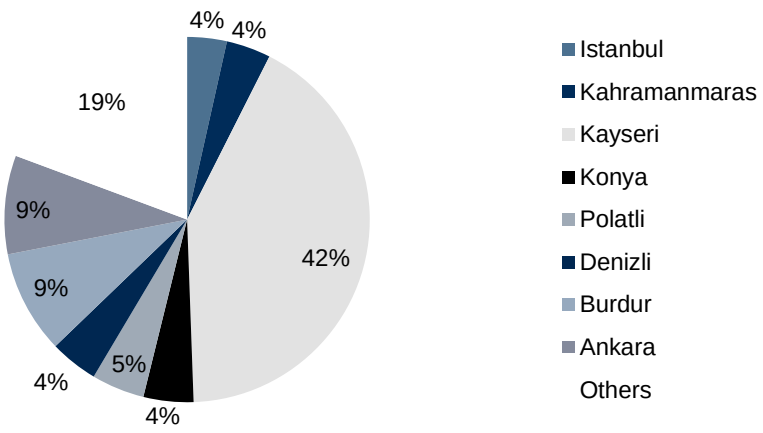
According to industry association representatives, the off-grid sector will not have emerged from its niche position in Turkey by 2020. Less than 10 percent of plants installed annually will be off-grid systems (used in agriculture, e. g. pump systems, backup systems).
In contrast, it is assumed that the on-grid sector will grow rapidly in the next few years because of the increased feed-in tariff.

Sources: dena (2013), dena's own research (2013, 2014)

REGIONAL DISTRIBUTION OF PV PLANTS IN TURKEY

- Most PV plants are installed in urban and commercial centres, around cities like Istanbul, Ankara and Kayseri.
- In Mugla, a PV research centre has been developed at the Ege University.
- Of particular note is the PV boom in 2013 and 2014 in the commercial sectors of Turkey. In Kayseri, one of the most important industrial and commercial centres of the country, a total of 16 MW of PV capacity was installed in 2013 and 2014.
- The largest crystalline plants, with a cumulative capacity of 2 MW, are in Polatli. Halk Enerji was the project developer.

Regional distribution
(Proportion of total installed capacity)



Source: dena's own research (2012, 2014) based on press reports and company websites

According to statements by company representatives, project locations in south and south-eastern Anatolia are particularly interesting for large-scale on-grid plants, due to the area's high levels of solar radiation. There are also special incentives for establishing industries in these regions - see the slide on "Special economic zones". However, inadequate infrastructure (especially affecting transport routes and electricity grids) may be problematic.

Source: dena's survey of experts (2013, 2014)

DEVELOPMENT OF THE ON-GRID SECTOR 2013/2014

- To promote the expansion of grid-integrated PV, Turkey has set a feed-in tariff for photovoltaic-generated electricity (→ see the slide on "Political programmes to support PV").
- When the law in this area was amended in 2011, the feed-in tariff was raised to 13.3 US cent/kWh, increasing the attractiveness of on-grid PV plants.
- It was also decided that plants generating less than 500 kWp could be operated without a licence (for details see the slide on "Permit processes" →).
- Various plants, especially those generating less than 500 kWp, were built and commissioned in 2012.
- In April 2013, the freedom to operate a plant without a licence was extended to include plants generating up to 1 MW, which has led to the construction of larger PV plants in 2013 and 2014.

Source: dena's own research (2013, 2014)

Known large-scale on-grid projects completed in 2013/14 (> 1,000 kWp)

Plant name	Sector	EPC	Site	kWp
Özkoyuncu Madencilik	commercial	Else Enerji	Kayseri	1,012
Hasçelik A.Ş.	commercial	Else Enerji	Kayseri	1,015
Beşler Tekstil A.Ş.	commercial	Else Enerji	Kayseri	1,015
Özkoyuncu Enerji	commercial	Else Enerji	Kayseri	1,035
Ravaber A.Ş.	commercial	Else Enerji	Kayseri	1,079
Türkmen A.Ş.	commercial	Else Enerji	Kayseri	1,150
Hasçelik Kablo	commercial	Else Enerji	Kayseri	1,150
Besa Inşaat A.Ş.	commercial	Else Enerji	Ankara	1,150
Anfa A.Ş. (Konya)	commercial	Teknoray Solar	Konya	1,499
Polatlı	public	Halk Enerji	Polatlı	1,800
Hasçelik Kablo	commercial	Else Enerji	Kayseri	2,300
Anfa A.Ş.	commercial	Teknoray Solar	Burdur	2,998
Özkoyuncu Madencilik	public	Else Enerji	Kayseri	3,174

Source: dena's own research (2013, 2014) based on press reports and company websites

OVERVIEW OF PLANNED ON-GRID PV PROJECTS 2015/2016

- The table provides an overview of the PV projects that will be commissioned by 2016, according to press reports.
- As part of the first state PV tender in May 2014 for plants > 1 MW and a combined capacity of 600 MW, a total of 496 applications were submitted with a combined capacity of 8,900 MW.
- Two projects have been approved so far.
  - One project in Elaziğ with a capacity of 8 MW;
  - One project in Ersurum with a capacity of 5 MW.
- In addition, industry experts expect a variety of licence-free plants (<1 MW) to be realised in the commercial sectors in 2015 and 2016.

Project	Project developer	Site	Planned installed capacity (MW)
Elaziğ*	Solentegre Enerji	Elaziğ	8
Ersurum*	Halk Enerji	Ersurum	5
Karabuk**	Domilux Leuchten Herstellung und Vertrieb GmbH	Safranbulu	0.728

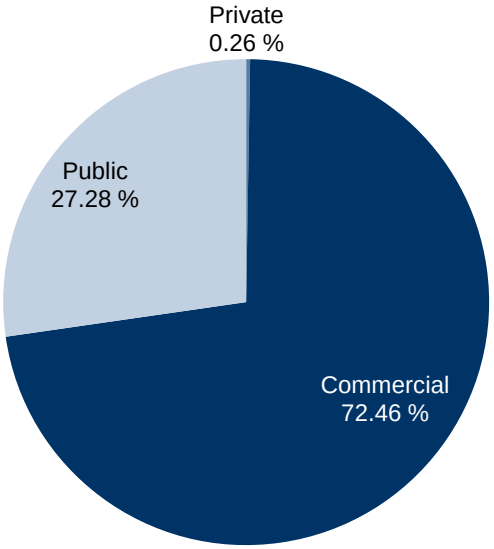
*PV tender projects in 2014.
** Examples of planned commercial plants.

So far, there have been significant delays in approving project proposals in the area of state tenders. Therefore, legal experts recommend designing projects that fall within the scope of the licence-free operation. This can be achieved by making sure no single system component exceeds the 1 megawatt limit.

Sources: dena's own research (2013, 2014), Sun & Windenergy (2014)

MARKET SECTORS – AN OVERVIEW

Accumulated installed PV output by sector, approx. 38.4 MW (2014)



Private households – approx. 100 kWp

With less than 1 percent of installed accumulated capacity, the private customer sector is the smallest.
The existing plants are mainly isolated facilities supplying off-grid households with electricity.

Commercial customers – approx. 28 MWp

The commercial customer sector, with 72 percent of installed accumulated capacity, is the most important sector in Turkey. More than three quarters of the plants were constructed between 2010 and 2014.

Public customers – approx. 10 MWp

Fewer large-scale plants serve the public customer sector. More than half of these plants were constructed between 2012 and 2014.

According to market experts, the commercial sector has the greatest potential for future growth in Turkey. One reason for this is the increasing profitability of PV plants. For details see the slide on “Market sectors – commercial customers”.

Sources: dena‘s own research based on company websites (2013, 2014), dena‘s survey of experts (April 2013, November 2014), INEA (2012)

MARKET SECTORS – PRIVATE HOUSEHOLDS

Private households	▪ PV systems on the roofs of private residential /apartment buildings. ▪ Typical system size: 3 kWp. ▪ Main incentive for PV: income from the feed-in tariff.

- TEDAŞ estimates that there are 25.3 million customers in the private household sector. According to ANEL, electricity prices for private customers will increase annually by 10 to 12 percent, enhancing the appeal of PV electricity generation.
- According to experts, interesting PV regions for private customers with single family houses are urban centres with high levels of solar radiation such as Adana, Mersin, Gaziantep, Antalya and Alanya.
- Cooling systems use lots of electricity. Thus, PV plants can effectively contribute to reducing electricity costs.
- Solar thermal energy plants supplying warm water (simple thermosyphon systems) are very popular among private customers in Turkey, while PV plants have so far been less in demand. The comparison below is designed to help develop arguments for attracting private customers to PV.

Reservations about PV*	Market drivers for solar thermal energy*
▪ High acquisition costs compared with solar thermal ▪ Fear of additional costs for servicing & maintenance ▪ Feed-in tariff system: fear of bureaucratic hurdles	▪ Lower acquisition costs and fast return on investment ▪ Simple technical operation/maintenance ▪ Licence-free operation (no licence required)

Industry experts recommend that German PV companies take the following into account in addressing private customers:

- Private Turkish customers mainly use the Internet to research products. A good website in Turkish and a presence on the main Turkish Internet portals are very important.
- German companies already have a competitive advantage from the “Made in Germany” label, which inspires a high degree of trust.
- Targeted cooperation with solar thermal plant installers and dealers can help make private customers more aware of the benefits of PV.

* From the point of view of industry representatives.
Sources: TEDAŞ (2008), EPDK (2012), dena‘s survey of experts (April 2013, November 2014)

MARKET SECTORS – COMMERCIAL CUSTOMERS

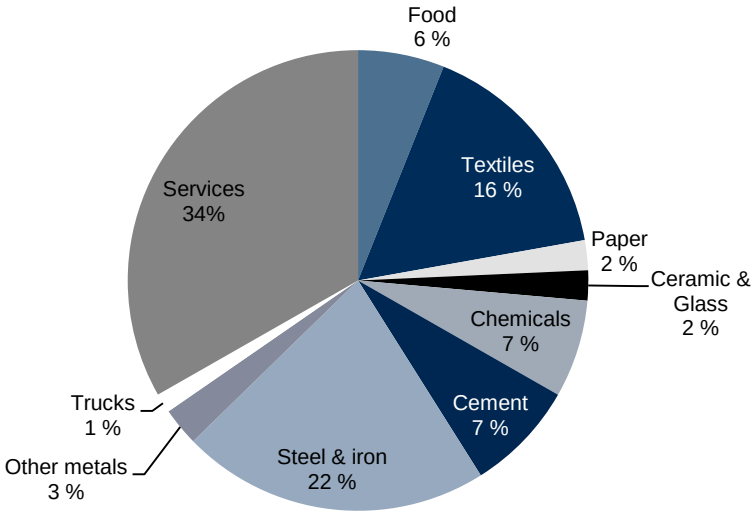
Commercial customers

- PV systems on the roof of a building used for commercial purposes, e. g. factory, warehouse, supermarket etc.
- Typical system size: approx. 30 kWp.
- Main incentive: income from the feed-in tariff.

- In 2012 medium-sized enterprises and large-scale industry used around 93,332 GWh of electricity. The chemicals industry recorded the highest increase in electricity consumption between 2010 and 2011 with a rise of 64 percent, and between 2011 and 2012 with a rise of 9 percent.
- The price of commercial electricity increased by 12 percent from 2010 to 2012 and experts expect it to increase further. This has resulted in growing interest in other power sources, such as PV, which is already attractive due to the feed-in tariff. According to industry representatives, PV is already profitable.
- Industry representatives expect strong growth in the commercial customer sector by 2015. The number of companies is growing and industry associations also expect to attract new customers.

Enterprises in the commercial sector that use large amounts of electricity (textiles cement, chemicals) and the services sector (tourism) are of interest as customer groups. There are around 1,000 shopping centres whose roofs could be of interest for PV plants in Turkey. Tesco installed initial reference plants on its supermarkets in 2007. As well as the additional power supply, the enhancement of their image is also attractive to commercial customers.

Total industrial electricity consumption: 93,332 GWh (2012)



Source: dena's survey of experts (April 2013, November 2014), ETKB (2010), ETKB (2011) DEK-DMK (2014), TEDAS (2013)

MARKET SECTORS – PUBLIC-SECTOR CUSTOMERS

Public-sector customers

- PV systems on the roofs of public-sector buildings (e. g. administrative buildings, universities, airports).
- Financing at the federal, regional and local levels.
- Typical system size: 20 to 200 kWp.
- Main incentives: creation of impetus for the wider use of PV (flagship projects), an enhanced image through the pioneering use of technology, low-cost supplies of electricity and water in remote areas.

- Public contracts offered at the federal, regional and local level in Turkey are generally awarded through invitations to tender.
- Foreign companies can find out about current government invitations to tender from the online public procurement portal, EKAP (www.ekap.kik.gov.tr). Invitations to tender are also published in the bulletin for public invitations to tender (Kamu İhale Bülteni) (www.istekli.ihale.gov.tr/).
- Smaller, local projects are often simply announced in local newspapers, so it is recommended that companies look for such invitations to tender in cooperation with regional partners.
- Foreign companies and joint ventures between Turkish and international companies are completely excluded from tendering certain contracts. This must be checked for each individual invitation to tender.
- Market experts expect the public sector to play a slighter role in the market in future, because public investment in PV is stagnating and no further large-scale funding and support programmes for PV are planned.

According to industry experts, most public invitations to tender for on- and off-grid PV projects are currently being awarded at the local authority level. A local mayor usually has authority to decide directly on awarding contracts at the local level, so companies seeking to initiate PV projects should establish local contacts.
Local authority water treatment plants are an especially interesting area for PV because they use lots of electricity, which PV could partly supply.

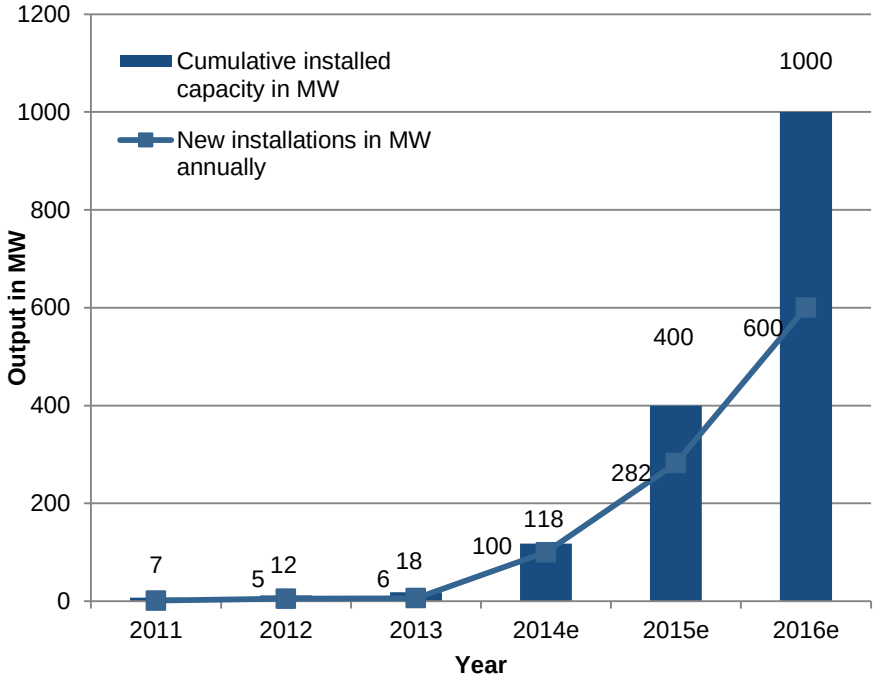
Sources: dena's survey of experts (April 2013, November 2014), EKAP (2013), AuWi Bayern (2012)

PV MARKET VOLUMES IN TURKEY

Forecasts of the PV market's development generally assume positive and swift market growth in the coming years. However, figures vary greatly across different sources due to the market's lack of maturity.

- The consulting firm Apricum believes that at least 400 MW could be installed in 2015, and over 1 GW of combined PV output online in 2016. Subsequently, growth rates of over 100 percent per year are expected.

- The very strong response to the tender for 600 MW of PV capacity has delayed the allocation of licensed projects by the government. However, this sector is still expected to grow rapidly in future.



Source: TÜIK (2014), EPIA (2014), Apricum (2014), dena's survey of experts (November 2014)

- **The main incentives** for the development of the Turkish PV market are the massive increase in electricity consumption and prices, the feed-in tariff, and the country's proximity to the EU as a trading partner.
- **Obstacles** include a lack of financing options, cumbersome administrative processes, and a population largely unaware of the uses of PV (see the slide on "Market sectors – private customers").

Sources: dena's survey of experts (2013 , 2014), Apricum (2014), EPIA (2014), PV Magazine (2014)

SUMMARY: DEMAND SIDE

- Photovoltaics began developing in Turkey in 2000 with small off-grid plants generating less than 20 kWp.
- To promote the expansion of on-grid PV plants, Turkey has established a feed-in tariff for electricity from photovoltaics. German companies can also profit from the Turkish feed-in tariff system and must register their plants with the EPDK in order to do so.
- Until 2009, most plants were off-grid systems. The on-grid sector has grown since the feed-in tariff was increased to 13 US cent/kWh in 2011.
- As of April 2013, licence-free operation was extended to include plants up to 1 megawatt. This has resulted in the installation of larger PV plants in 2013 and 2014.
- PV has experienced enormous growth, especially in 2013 and 2014. In October 2014, installed output capacity was approximately 38 MWp.
- Most of these PV plants are in urban and commercial centres around Istanbul, Ankara and Kayseri. According to company representatives, project sites in southern and south-eastern Anatolia are especially interesting for large-scale on-grid plants.
- The first projects have already been awarded under the government's tender for licence-free PV plants (>1 MWp). However, significant delays in the approval process have already arisen. Consequently, growth is currently concentrated in the licence-free PV segment (<1 MWp).
- Most installed plants are currently operating in the commercial sector (approx. 72 percent), with approx. 27 percent of installed cumulative capacity used by the public sector and less than 1 percent by private customers.
- According to market experts, the commercial sector will remain the most important in future. Companies can use existing capital and financing loans to invest in PV plants and generate income from the feed-in tariff. Growth in the private-customer sector has also been forecast. However, strong growth in the public sector is not currently expected.
- According to the industry association GENSED, at least 400 MW of PV capacity will have been installed by the end of 2015.

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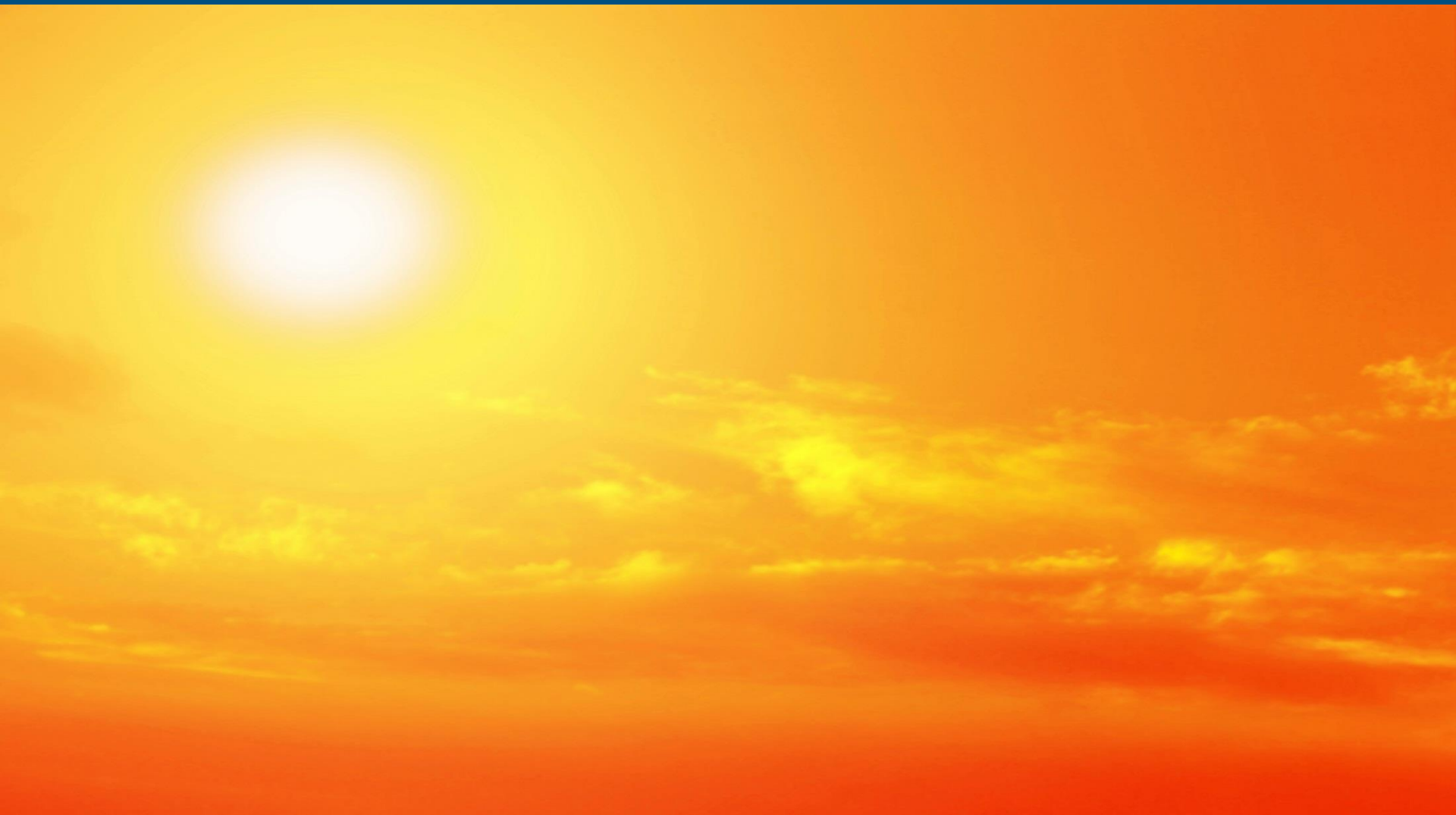
SUPPLY SIDE



SUPPLY SIDE

The following questions are answered in this chapter:

- The **PV value-added chain:** Who are the most important local and international actors in the Turkish PV market? At what phases does local PV value added occur?
- **Distribution and sales:** Who are the most important PV distributors? Which countries are the main exporters of PV modules to Turkey? Which countries are the main customers for Turkish PV modules?
- **Evaluation of the local industry:** Where are there market entry opportunities for foreign companies? How has the PV industry developed in Turkey in recent years?
- **Industry representatives:** Who are the most important industry representatives and how have they established themselves locally?

THE PV VALUE-ADDED CHAIN IN TURKEY (1/3)

- Although Turkey's domestic PV market is still manageable, with an accumulated market volume of around 38 MW (as of 10/14), an amending of the feed-in tariff in 2011 has led to the development of a local PV industry.
- Various international PV companies along the value-added chain have already positioned themselves in the market.
- Some Turkish companies trading internationally have expanded their businesses to include PV. Turkish industry-specific PV component and module manufacturers, EPCs and dealers are also present in the market. Local manufacturers profit in particular from low production costs.
- Most of the PV modules and components produced are exported to Europe.
- The companies in the following lists are either members of the Turkish solar industry association GENSED, their products are distributed by dealers in Turkey, or they have been mentioned in reports on PV market activities in Turkey.

PV suppliers

Flat glass

- TR Trakya Cam Co. / Sisecam

There are no ingot, wafer or PV cell manufacturers in Turkey.

PV module manufacturers

TR	ANEL ENERJI*
TR	Solarturk Enerji*
JAP	Mitsubishi Electric
JAP	Sharp
CN	C-SUN
CA	Canadian Solar Turkey
DE	ONDULINE AVRASYA*
DE	Schott Solar*
DE	Solarwatt
DE	Sovello
DE	Wiosun Mesan*
TR/D	Hayat Enerji / CW Enerji / Telefunken
CN/TR	China Sunergy / Akfel Group
CN	Chinaland Solar
CN	Dongguan SunWorth Solar Energy
CN	Gs Pv Holdings Group
CN	Hanwha Solar
TR	Solarturk*
TR	Sunlego
CN	Ningbo ETDZ Huixing
CN	Suntech Enerji
CN	Zhejiang Aurorapv Solar
CN	Zhejiang Yuanzhong Solar
CN	Znshýne Pv-Tech
US	International Solar Electric Technology
TR	Tera Solar
TR	Solimpeks*
TR	Bereket

*Member of the PV industry association, GENSED
- Headquarters in Turkey
- Production in Turkey, but not PV-specific
- PV-relevant production in Turkey

Withdrawn from the PV business

THE PV VALUE-ADDED CHAIN IN TURKEY (2/3)

BOS

Inverters

- DNK Danfoss Solar
- TR ESIS ENERJI*
- TR Linetech
- TR MAVI Solar*
- DE Fronius Istanbul*
- DE Ltı Reernergy
- DE SMA Solar
- DE Solutronic
- DE Steca
- CN SADER
- CN Shenzhen Gold Power
- CN Shenzhen Growatt
- US Morningstar

Batteries

- TR Mutlu Akü
- DE Sonnenschein
- TR Eurostar
- TR Yigit Akü*
- TR AC DC Elektronik Sistemler

Mounting systems

- TR MGS Merkez Galvaniz
- TR Tekom Puk*
- DE Schletter

Cables/Electronics

- CH Multi-Contact*
- TR Başoğlu Kablo
- TR EGE Kablo
- TR Lapp Kablo
- CH ABB*
- JAP Toyota
- DE Bosch
- DE Siemens*

Dealers

- TR AKASENERJI
- TR Alpes Enerji
- TR Alsa Solar
- TR Asunim *
- TR Best Elektrik
- TR BMD Solar*
- TR Depar Solar
- TR FORM TEMIZ ENERJI*
- TR Gazioglu Solar
- TR İpekler Elektrik*
- TR Kosi Solar
- TR Lemsolar
- TR Mayy Alternatif Enerji
- TR Modül Solar*
- TR NEO Enerji*
- TR ODC Yapı
- TR PV Teknik
- TR Rsb Yapı*
- TR Savior*
- TR Sergün
- TR Suneco
- TR Teksan
- TR Yesa Enerji
- DE LCS Solarstrom AG Türkiye*
- CN Clean World Enerji

* Member of the PV industry association, GENSED

- Headquarters in Turkey
- Production in Turkey, but not PV-specific
- PV-relevant production in Turkey

THE PV VALUE-ADDED CHAIN IN TURKEY (3/3)

EPC

- TR/DE Ideema Sun energy
- TR/DE iRES Enerji / Phoenix Solar
- TR AGS Energji*
- TR AKIS GRUP ENERJI*
- TR Antak Enerji
- TR Bisam Solar*
- TR Centrosolar
- TR Cleanglobe – CG Solar Enerji
- TR DPE Solar
- TR EKINLER ELEKTRONIK* SAN & Alternative Energy
- TR Else Enerji*
- TR Enisolar*
- TR Ezinç
- TR Güvenli Enerji
- TR Halk Enerji*
- TR Hizmark Solis Enerji*
- TR KORONA ENERJI*
- TR Laterna Alternatif Enerji*
- TR Mimta Solar
- TR Motif Proje*
- TR Norm Enerji Sistemleri*
- TR ORBIT MÜHENDISLIK*
- TR Solar Nokta*
- TR Solen Enerji
- NL GiraSolar Türkiye
- IT/TR Tekno Ray Solar / EnerRay Srl*
- FR RES*
- DE Renovo Energie
- DE abakus solar AG
- DE Conecon GmbH
- DE Gehrlicher Merk Solar
- DE IBC Solar Turkiye*
- USA SunEdison*
- TR TalesunAnadolu*

Plant operators

IPP:

- TR/DE Borusan – ENBW*
- TR Polat Enerji*

* Member of the PV industry association, GENSED

- Headquarters in Turkey
- Production in Turkey, but not PV-specific
- PV-relevant production in Turkey

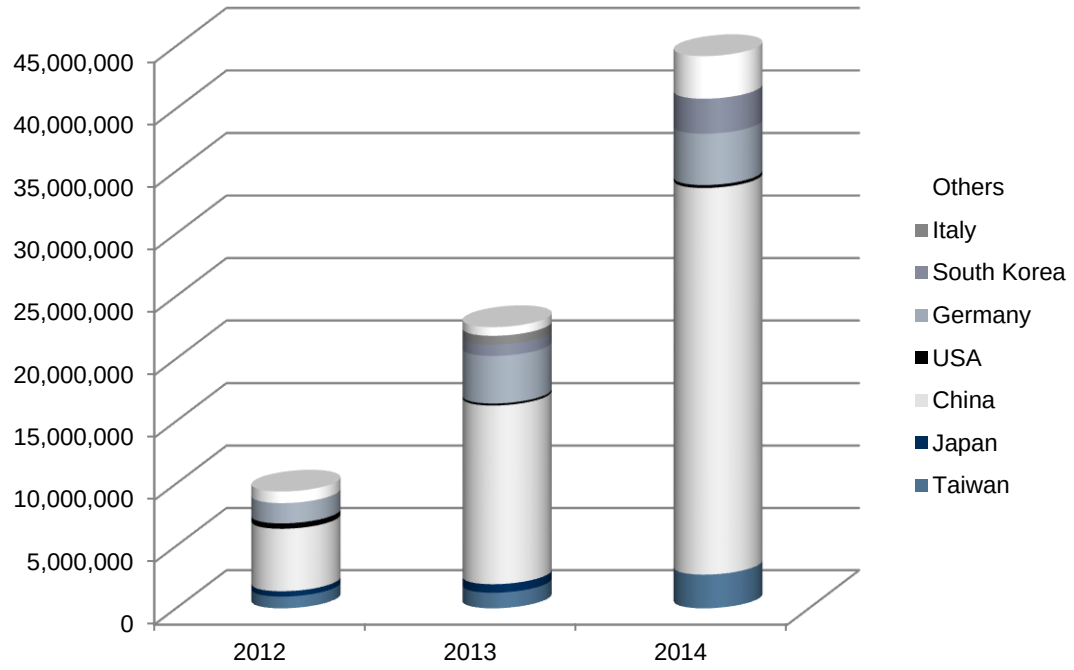
BRAND PORTFOLIO OF THE MOST IMPORTANT PV DISTRIBUTORS IN TURKEY

- In Turkey there are already many PV retailers and distributors. Distributors usually also offer to install PV systems.
- PV products are often sold by retailers who also sell other products in the renewable energies area.
- The list below provides an overview of the most important PV distributors.

Name	BMD Solar	Form Temiz Enerji	Kosi Solar	Depar Solar	Akas Enerji
Modules	Viktram Solar Lorentz MAGE Sunrise	Sharp Lorentz Canadian Solar Centrosolar	LCS Yingli Jinko Galaxy CSUN	Sunways Lorentz Suntech	Saint-Gobain
Inverters	Morningstar SMA Victron Energy	Morningstar Steca Fronius SMA	Siemens	Morningstar SMA	Morningstar
Batteries	Sonnenschein Eurostar	Yigit Akü	Siemens	AC DC Elektronik Sistemler	k.A.
URL	www.bmdsolar.com	www.formsolar.com	www.kosisolar.com	www.deparsolar.com	www.akasenerji.com

IMPORTS OF PV MODULES TO TURKEY (2012 to 2014)

Imports of PV modules, 2012 to 2014*, in Euros

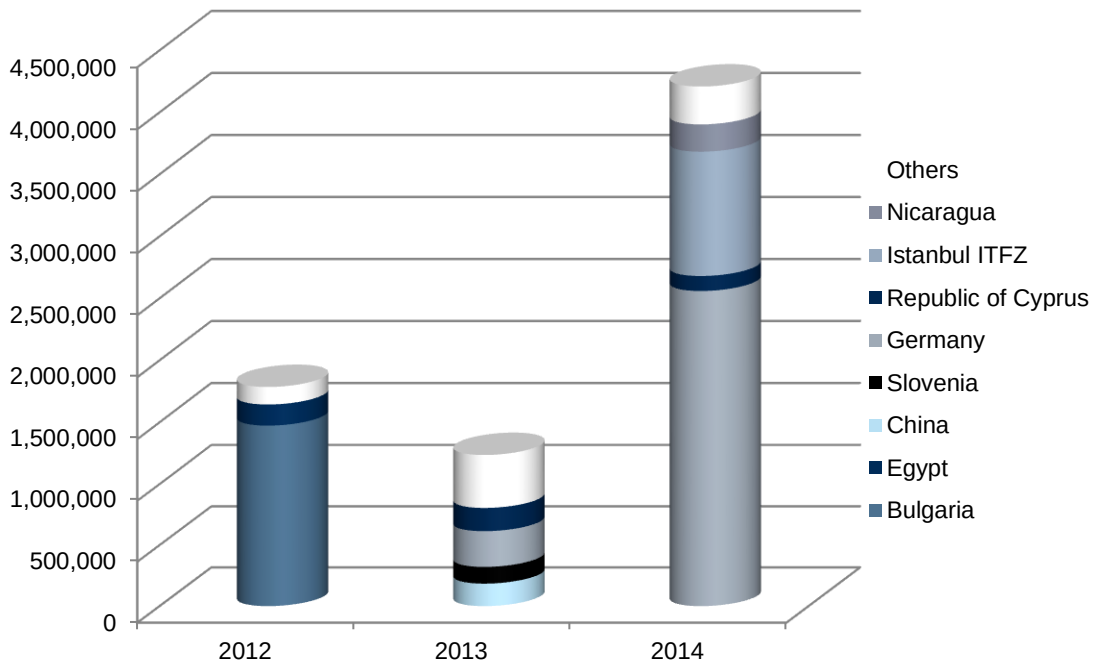


*as of September 2014
Source: TUIK (2014)

- From 2012 to 2014, China, Taiwan, South Korea and Germany had the highest share of imports of PV modules to Turkey.
- From 2012 to 2014, Germany's share of the total volume was 12.5 percent (about 9.5 mill. Euros of a total of 76.5 mill. Euros). The Chinese share, at 50.3 mill. Euros, was responsible for 66 percent of all imports.
- The chart shows that Germany is increasingly falling further behind China, whose share of PV module imports has grown massively, especially since 2011.
- In 2014 (as of September 2014), China's share of imports was 31 mill. Euros, or about 70 percent. Germany's share was worth 4.1 mill. Euros (9.3 percent of total volume).

TURKISH PV MODULE EXPORTS (2012 to 2014)

Exports of PV modules, 2012 to 2014*, in Euros

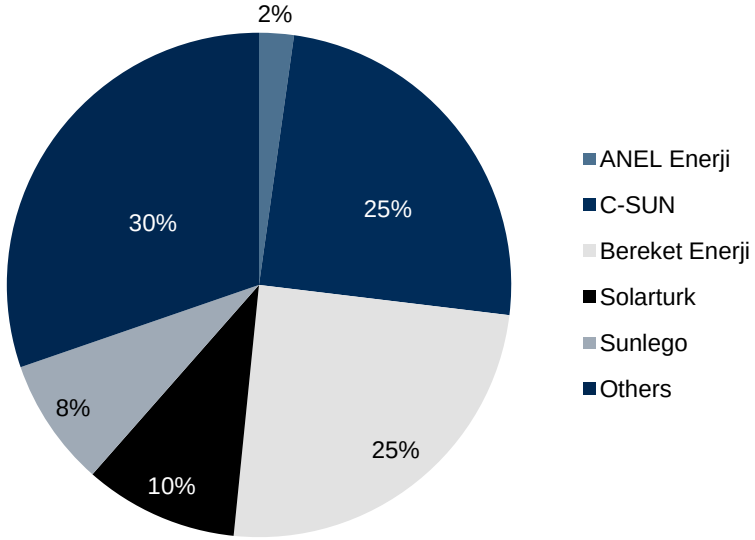


*as of September 2014
Source: TUIK (2014)

- The PV modules made in Turkey have so far been mainly for export.
- Between 2013 and 2014, Turkish PV modules were exported mainly to Germany.
- The reason for the high quota of exports to Bulgaria in 2012 is that Turkish PV-module manufacturers and EPC ANEL Enerji have implemented different large-scale projects there.
- The export quota to Northern Cyprus is also due to the fact that ANEL Enerji uses the modules it makes itself to build PV plants in Northern Cyprus.

PV MODULE PRODUCTION IN TURKEY

PV-Modul-Produktionskapazität in der Türkei (April 2014): insgesamt 608 MW



Source: dena's own research (2014) based on the company websites of PV module producers

- By the end of 2012, PV modules in Turkey were being produced exclusively by Turkish companies such as Solarturk Enerji, Tera Solar und ANEL Enerji in Turkey. Up to this point, most of the country's annual production capacity came from Solarturk Enerji.
- Within the space of just one year (April 2013 – April 2014), PV module production capacity rose from 185 to 608 MW.
- This increase in Turkey is largely due to new production capacities of the Chinese company Sunergy and the Turkish company Bereket Enerji .
- Both companies have established production capacities of 152 MW and are currently two of the largest PV module manufacturers.

According to industry representatives, costs advantages such as low wage costs make Turkey an attractive production location.

Sources: Balkans (2012), Photovoltaik (2012), Çolak/Çubukçu (2011), ANEL Enerji (2012), GENSED (2014)

EVALUATION OF LOCAL PRODUCTION (1/2)

PV suppliers / PV components

- No ingots, wafers or PV cells are currently produced in Turkey.
- There are a few manufacturers of PV-module components like flat glass, frames and mounting systems.
- Trakya Cam Co. is the region's leading flat glass manufacturer and is increasingly orienting its business activities towards PV, including in the MENA region.

PV modules

- As of April 2014, Turkey's most important module manufacturers were Solarturk Enerji, ANEL Enerji and Bereket Enerji .
- The modules are certified in accordance with international standards.
- PV modules installed in Turkey have so far mainly been imported from abroad (Asia or Europe). See the slide on "PV module imports".
- China Sun Energy began producing modules in Turkey in mid-2013 and now supplies not only the Turkish market, but also Eastern Europe.

BOS

- There are some Turkish companies operating in the area of BOS.
- The Inci Aku Co. company makes gel batteries for PV systems.
- Mavisis makes inverters for on- and off-grid plants.
- Mounting systems are also made by Turkish companies such as MGS Merkez Galvaniz and Tekom Puk. Most of these are for export.
- Foreign firms have the greatest market share.
- Inverters and battery systems are mainly obtained from renowned international manufacturers.

Although PV modules are made in Turkey, it has so far been more economical to import them from Europe or China.

Source: dena's own research (2013, 2014) based on company websites

EVALUATION OF LOCAL PRODUCTION (2/2)

Distribution

- There is already a diverse range of distributors of PV products in Turkey.
- International manufacturers, mainly from Germany and in recent years increasingly from China, have concluded distribution agreements with distributors to secure their sales in Turkey.

EPC

- In the area of EPCs, Turkish and international companies with local offices are present in the market.
- The companies operating the largest number of projects are ANEL Enerji (TR), Else Enerji (TR) and Halk Enerji (TR). Teknoray Solar and Girasolar are also involved in many projects.
- EPCs have established predominantly tight supply agreements with PV module manufacturers.
- Halk Enerji used modules from Bosch Solar until 2012; ANEL uses its own PV modules; Enisolar has so far mainly used modules from Bosch Solar, Sharp and Q-Cells.
- The German company Gehrlicher Solar uses mainly modules from Canadian Solar for its projects in Turkey.

O&M

- In the area of O&M in particular, there are gaps in the market in which mainly Turkish companies have thus far been active. Given increasing long-term demand, interesting prospects for German companies may open up here.

Turkey's central PV industry association, GENSED, currently has 105 members (as of November 2014). Membership in the association has doubled since May 2013, reflecting the enormous interest in Turkish market, and on the side of foreign companies, as well.

There are no customs duties on PV products imported into Turkey. However, it is advantageous to be able to speak Turkish, to work with local partners and to take cultural differences into account in implementing projects in Turkey. This can be particularly helpful in dealing with sometimes complex approvals processes. For details see the chapter on "Market access".

Sources: dena's own research (2013, 2014) based on the company websites, dena survey of experts (2013, 2014), GENSED (2014)

SUMMARY: SUPPLY SIDE

- The Turkish PV market, with an accumulated market volume of about 38 MW (as of 10/14), is still manageable. However, the amended feed-in tariff from 2011 has resulted in the establishment of a local PV industry serving the domestic market.
- In addition to international companies, strong Turkish companies are also active all along the value-added chain, particularly in the areas of module production and EPC.
- The major domestic module producers are Solarturk Enerji, ANEL Enerji and Bereket Enerji. The Chinese company China Sunenergy has been producing modules in Turkey since mid-2013.
- National and international companies are active in the area of EPC. A number of companies have established a presence here in recent years.
- There is already a strong network of local and international traders distributing PV products. International manufacturers (mainly German and Chinese) have concluded distribution agreements with distributors to secure their sales in Turkey. The majority of imported PV modules (68 percent in 2014) come from China. Germany‘s share of the market was worth 4.1 mill. Euros (9 percent of total volume).
- Turkish production supplies the domestic market to a modest degree, as modules are mainly exported to neighbouring countries such as Cyprus and Bulgaria.
- The central PV association GENSED currently has 105 members – already twice as many as in May 2013. This reflects the enormous interest in the Turkish market, and on the side of foreign companies, as well.
- There are market entry opportunities for German companies, especially in the area of O&M and in the manufacture and distribution of special components.

SOURCES

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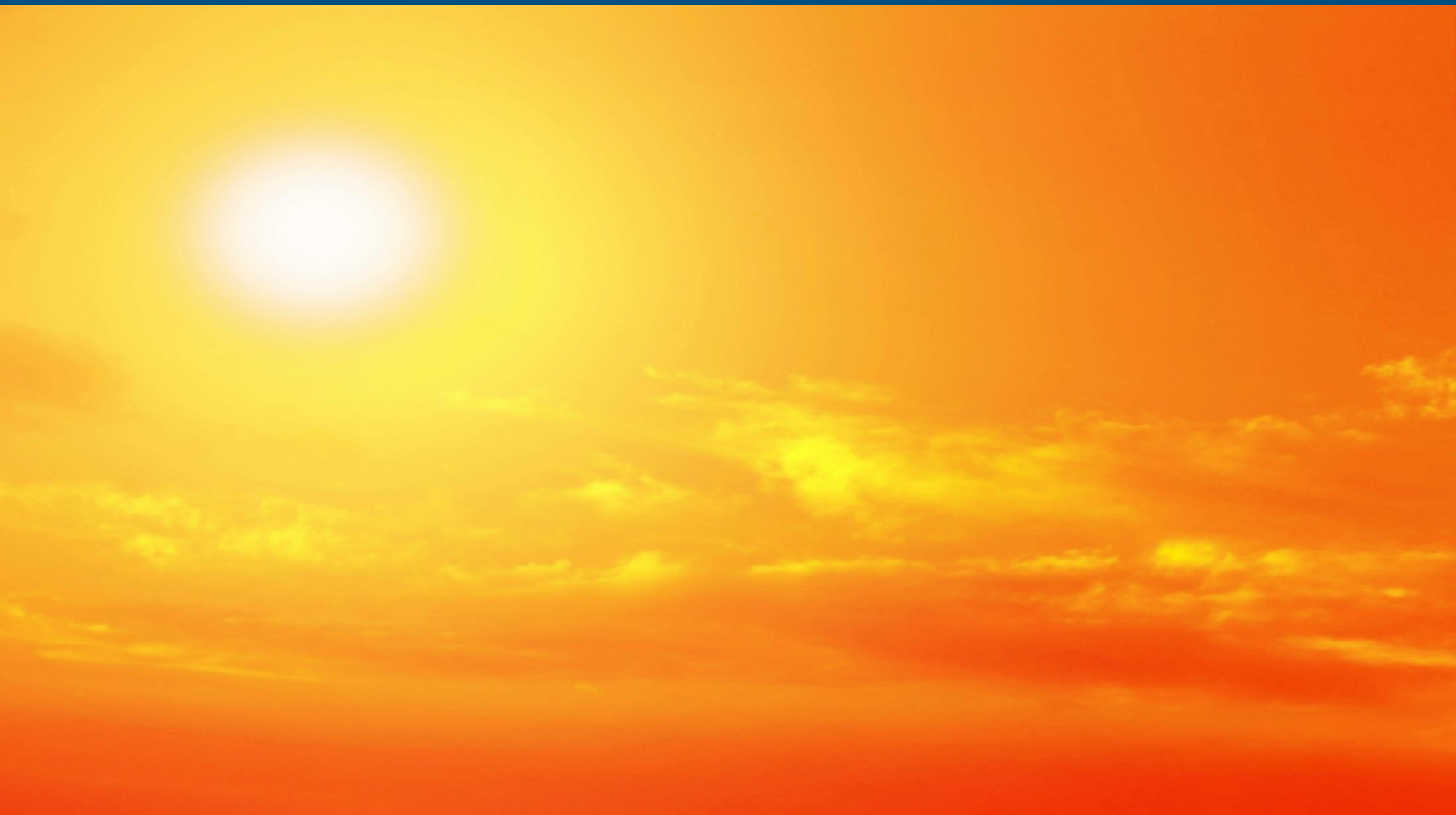
MARKET ACCESS AND LEGAL FRAMEWORK CONDITIONS



MARKET ACCESS AND LEGAL FRAMEWORK CONDITIONS

- This chapter on "Market access and legal framework conditions" was drafted in cooperation with the law firm of Bezen & Partners, Istanbul. It will answer the following questions:
  - **The legal framework for business operations:** What are the common legal forms of a company? What legal regulations apply to employees and employers? What are the rules on deploying foreign employees? What local content regulations are there? How is patent law organised?
  - **Investments:** What trade agreements are there between Turkey, Germany, the EU and the rest of the world? Are there any special economic zones in Turkey?
  - **Tax and customs law:** How is tax law structured and what tax incentives are there? How is the customs duty system organised?
  - **Product-specific import restrictions:** What import restrictions must be taken into account?
  - **Product certification:** What regulations apply to plant and component certification?
  - **Permit procedures:** What are the individual steps towards obtaining an operating license for a PV plant in Turkey? Or building and operations permits? Or a grid connection?

AN OVERVIEW OF THE LEGAL FORMS OF A COMPANY AND THEIR APPLICATION

Foreign companies can use various corporate forms for operations in Turkey. The law on foreign direct investment (law no. 4.875) regards foreign and Turkish companies as equal.

Liaison office ("Irtibat Bürosu")

A liaison office offers initial possibilities for entry into the Turkish market. However, companies with this legal form may not carry out business activities or earn revenue. Their activities are restricted to purely those of support (e. g. advertising, product presentation, market research). To establish a liaison office, a permit from the Ministry of the Economy's "General Directorate of Foreign Investment" (Ekonomi Bakanlığını Teşvik Uygulama ve Yabancı Sermaye Genel Müdürlüğü) is required, which is granted for a period of at least three years. An application for such a permit involves submitting various required documents that have been notarized or certified and bear an apostille. Applications can take up to one month on average to process.
Application: A liaison office gives an investor an opportunity to research the market and build business contacts. A liaison office can be founded with an application to and permit from the relevant tax office.

Branch office ("Şube")

Branch offices are regarded as having been founded upon submission of the necessary documents to the commercial register and chamber of commerce. A so-called "representative capital" of 1,000 TRY must also be registered with the commercial register. Companies with this legal form can basically participate in any business activity carried out by the founding company. The founding company is liable to the full extent of its assets. The managing director of a branch office does not have to be a Turkish citizen, but must hold a residence permit and a work permit.
Application: A branch office involves paying in only a small capital amount. The effort and cost involved in submitting documents and founding a branch office are similar to those involved in founding a company. Once the required documents, which have be notarized or certified and bear an apostille, are submitted to the commercial register, a branch office is regarded as founded.

Sources: Luther Rechtsanwaltsgesellschaft mbH (2012), Erten (2005), Hasan (2012)

AN OVERVIEW OF THE LEGAL FORMS OF A COMPANY AND THEIR APPLICATION

Partnership – General partnership

There are no minimum capital requirements for founding a collective partnership company ("Kollektif Şirket") or limited partnership company ("Komandit Şirket").

a) Collective partnership company: Under the provisions of Turkey's Commercial Code, articles of association in written form, which must be submitted to the commercial register, are required to found a collective partnership company. The partners' signatures must be notarized. At least two partners are required to found this kind of company. Once a collective partnership company is registered in the commercial register, it attains the status of a legal person. Partners in a collective partnership company are liable with their personal assets without limit for the obligations of the collective partnership company if the company's assets are insufficient.
Application: It is easy to found this type of company but large-scale enterprises prefer not to found companies with this legal form because of the liability involved.

b) Limited partnership company: A limited partnership company has two kinds of partners. The general partner is a partner with unlimited liability, while the limited partner is only liable for the limited partnership company's obligations to a limited extent. Legal persons can only take on the role of a limited partner. If a limited partner wants to contribute assets in kind as capital, the value of the assets in kind must be examined by an appraiser, who is appointed by a court upon application. Once a limited partnership company is entered in the commercial register, it gains the status of a legal person.
Application: It is easy to found this type of company but large-scale enterprises prefer not to found companies with this legal form, especially not if the company intends to operate a solar power plant. Under the provisions of the Turkish Commercial Code, a company operating a solar plant with a capacity of 1 MW or more must be a joint stock company or a private limited company.

Sources: Erten (2005), Hasan (2012)

AN OVERVIEW OF THE LEGAL FORMS OF A COMPANY AND THEIR APPLICATION

Private limited company ("Limited Şirket", Ltd. Şti)

A private limited company can be founded by natural and/or legal persons (with at least one and a maximum of 50 partners, who can be 100 percent foreign). Before a Ltd. Şti is founded, natural persons who are partners must apply for a so-called "potential tax number" from the relevant tax office. The initial capital investment must be at least 10,000 TRY (about 4,300 Euros) and can consist of money or assets in kind. 25 percent of the initial capital investment must be paid in before the company is founded, with the remaining 75 percent payable within 24 months. At least one partner must be the managing director. Managing directors are liable to the full extent of their personal assets. Recourse to the other partners, who are liable with their total personal assets on a pro-rata basis depending on their holding, will only be made as a second priority.
Application: The low initial capital investment required makes founding a Ltd. Şti less expensive than founding a joint stock company. However, partners are liable with their personal assets for debts owing to the state (e.g. tax debts). Shares must also be assigned before a notary, which entails stamp duty costs (see the slide on "Tax law").

Joint stock company ("Anonim Şirket", A.Ş.)

A joint stock company can be founded by natural and/or legal persons (with at least one partner), who can be 100 percent foreign. Before a A.Ş. is founded, natural persons who are partners must, as with a PLC, apply for a so-called "potential tax number" from the relevant tax office. There must be share capital upon foundation of at least 50,000 TRY (about 21,500 Euros), which can consist of money or assets in kind. 25 percent of the initial capital investment must be paid in before the company is founded, with the remaining 75 percent payable within 24 months.
Application: An AG is particularly advisable for projects with loan financing. A.Ş. are also preferred in the granting of loans because it is easier and more common to arrange a share pledge with an A.Ş. than it is with a Ltd. Şti. Furthermore, shares do not have to be assigned before a notary.

The founding of a A.Ş. or Ltd. Şti is particularly recommended for a PV company.

Sources: Hasan (2005), Bezen & Partners – Legal Alert (2013), Bezen & Partners – Corporate Note (2012)

EMPLOYEE LAW AND EMPLOYER OBLIGATIONS

Employment in Turkey is regulated by the Turkish Labour Act (law no. 4.857) and related regulations as well as the Union and Collective Bargain Contract Act (law no. 6.356).

Labour law

- Employment contracts can be temporary or unlimited.
- Working hours: A weekly maximum of 45 working hours is legally prescribed. There are also minimum rest periods for employees. After four hours of work daily, a break of at least 15 minutes must be granted; in a working day of 7.5 hours or more, a 60-minute break must be provided.
- Night work: All work carried out between 8 pm and 6 am is regarded as night work. It can only be done for a total of 7.5 hours, except in compelling or exceptional cases, after which a break of at least eleven hours must be granted.
- A probationary period may not be longer than two months.

Turkish labour law is employee-friendly. Past cases show that employment contracts are generally interpreted in favour of the employee.

Social security and income

- 1 to 6.5 percent of wages is paid for accidents at work and illness and is paid in full by employers.
- Sick pay is set at 11 percent (the employee pays 5 percent and the employer 6 percent).
- Age, mortality and disability insurance is set at 20 percent (the employee pays 9 percent and the employer 11 percent).
- Unemployment insurance is 4 percent of wages (the employee pays 1 percent, the state 1 percent and the employer 2 percent).
- German employees working temporarily in Turkey normally continue paying tax in Germany. However, after six months they will be obliged to pay income tax in Turkey.

Private insurance and payments into pension plans are widespread in Turkey and are also sometimes carried out by employers for employees as part of the employment contract. A state contribution of 25 percent is added to pension payments.

Sources: IHK Hannover (2010), Turkish employment law (2013), working hours regulation under Turkish labour law (2013), Mollamahmutoğlu (2008)

DEPLOYING FOREIGN EMPLOYEES (1/2)

Foreign employees require a **residence permit** as well as a **work permit***.

Residence permit

- German citizens can stay in Turkey for tourist purposes for up to three months without a visa.
- The immigration police (Yabancılar Şubesi-Emniyet Müdürlüğü) can extend this period upon application after the three months.
- Following the May 1998 amendment to the law and under Paragraph 9 of the Turkish Foreigners Act (law no. 5.683), Germans residing in Turkey can be issued with a residence permit valid for up to five years – regardless of the resident's marital status or the purpose of residence.
- Individual applicants should ask the immigration police about the preconditions for the issuing of a residence permit (İkamet Tezkeresi). An applicant's financial situation is most decisive in the granting of long-term residence and must be proven. Bank statements, pension statements and Tapu (entry in the Turkish property register) etc. can be submitted as proof of solvency. As a rule of thumb, it is currently required to show proof of a bank account in Turkey, which is credited with the equivalent of 300 US dollars per month.
- Turkey's Ministry of Labour and Social Security (Çalışma ve Sosyal Güvenlik Bakanlığı) decides on the duration of the validity of a residence permit for employment purposes.

An application for extension of a residence permit must be made within 15 days after the permit expires. In Istanbul you can apply online for an appointment at the immigration police office (Emniyet Müdürlüğü).
After obtaining a work permit, the permit holder must apply again for a residence permit within 30 days, otherwise the work permit becomes invalid.
*As of 11 April 2014 residents will no longer have to apply for a residence permit if they have a valid work permit.

Sources: IHK Hanover (2010), German consulate, Antalya (2012) , Ekşi (2011)

DEPLOYING FOREIGN EMPLOYEES (2/2)

Work permit

- Work permits for foreigners in Turkey are regulated by law no. 4.817 on "Work permits for foreigners". The "Regulations of the law on work permits" and "Regulations on employing foreign citizens via direct foreign investment" also apply to foreign employees in Turkey.
- Work permits are issued under the provisions of existing laws and regulations by the Ministry of Labour and Social Security. Employers must either have capital of 100,000 TRY, be in a business earning a minimum gross turnover of 800,000 TRY, or have transacted export business worth 250,000 USD in the past financial year.
- The following kinds of work permits exist in Turkey:
  - temporary work permit: normally for one year of employment, it can be extended to up to a maximum of six years.
  - unlimited work permit: this is granted to foreigners who have been living in Turkey without a break for eight years or have already held a work permit for six years.
  - work permit for freelancers: foreigners who have been living in Turkey without a break for at least five years can obtain a freelancer work permit.
  - work permit in exceptional cases: for foreign spouses living in Turkey for several years.
- Employment of a foreigner by a company in Turkey is subject to the so-called "One to five rule". This means that five Turkish citizens must work in a company before one foreign employee can be employed. In the case of foreign direct investment, Turkey's Ministry of Labour and Social Security will classify key personnel under the relevant regulations as "special cases".
- Applications for work permits can be lodged in Turkey and abroad at Turkish consulates. These generally take 30 days to process after submitting all the necessary documents.

Those applying to work in certain occupations (e.g. as engineers) in Turkey must obtain a so-called "equivalency diploma", and register with the relevant professional body if necessary, in order to practice their trade in Turkey.

Sources: IHK Hanover (2010), Ekşi (2011), Özdemir (2008), Invest in Turkey (2014)

THE TURKISH TAX SYSTEM

Turkey has one of the most competitive corporate tax rates in the OECD region. The passing of the new company tax act (2006) has improved the system's efficiency and brought Turkish taxes into line with international standards.
Turkey's tax system can be divided into three main areas:

Tax	Rate and conditions
Company tax (Company tax act)	▪ Companies with offices or management in Turkey are liable to pay tax without restriction (S.3 of the KVK). ▪ Tax must be paid on income earned in Turkey and abroad. Companies with no offices in Turkey only have to pay tax on profits earned within the country. ▪ The company tax rate is currently 20 percent.
Sales tax / value-added tax	▪ The standard value-added tax rate is 18 percent and is levied on PV products. Goods sold outside Turkey are not subject to value-added tax.
Income tax	▪ Income tax is assessed based on the amount resulting from the difference between gross pay and social security payments. This tax must be deducted by the employer and paid to the tax office by the 23rd day of the following month. Different kinds of income are taxed incrementally at the rates shown below (as of 2014, based on annual income): ▪ up to 11,000 TRY = 15 % ▪ 11,001 to 27,000 TRY = 20 % ▪ 27,001 to 60,000 TRY = 27 % ▪ over 60,000 TRY = 35 %
Stamp duty	▪ Under Turkish tax duty law, all "papers" are subject to stamp duty. ▪ Stamp duty is levied at 0.948 percent (2014) of the value of the contract and is payable upon signing of the original. The maximum amount payable is 1,545,852.40 TRY. ▪ However, there are exceptions to this rule, which are stipulated in the Stamp Duty Act or other laws and regulations (e. g. share certificates, endorsements).

Sources: AWO (2012), Income Tax Act (2006), Value-Added Tax Act (1984), Finance Office

DOUBLE TAXATION AGREEMENT

Turkey and Germany have concluded an agreement to avoid double taxation.
The agreement covers income and company tax in Turkey, and income, company and business tax in Germany. The agreement regulates the taxation of dividends, interest and profits.

Regulations of the double taxation agreement	
Dividends	If a German legal or natural person is a partner in a Turkish company, its dividends will be subject to the following taxes: ▪ In the case of a legal person, the income tax levied on a stake of at least 25 percent will be 5 percent of the gross amount of the dividends. ▪ On a stake of less than 25 percent, income tax of 15 percent is levied on the gross amount of the dividends.
Interest	Tax on interest paid to a German legal or natural person by a Turkish company is regulated as follows: ▪ Income tax of 10 percent, if the German legal or natural person is not a financial institution. ▪ Banks are exempt from such tax.
Profits from the sale of shares	When a German legal or natural person sells shares in a Turkish company, the sale is subject to the following income tax regulations: ▪ No tax is imposed in Turkey if the German seller has held the shares for more than one year. ▪ Income tax must be paid in Turkey on the sale of shares that the German seller has held for one year or less.

Source: Double taxation agreement (2012)

PATENT LAW AND INTELLECTUAL PROPERTY PROTECTION

Turkish patent law is largely based on the European Patent Convention, the Community Patent Convention and Spanish patent law. It protects inventions that meet the criteria of "novelty", "inventive activity", "industrial applicability" and "an invention beyond the normal technical standard".

The **Patent Institute** is the most important intellectual property protection organisation. The institute's headquarters are in Ankara. It is responsible for issuing, registering and publishing patents and all other commercial intellectual property rights. It also monitors this protection. The Institute has wide authority in the area of monitoring and issuing patents.

A **patent can be issued** with or without a preliminary examination. A patent granted after preliminary examination is protected for 20 years, one granted without preliminary examination is valid for seven years.

Steps in the application process:

1. The first step in the application process concludes with an announcement of the registration of the patent in the patent institute's bulletin.
2. The next step is the drafting of an examiner's report to establish patentability. Patents can be registered without preliminary examination if the applicant does not refuse it. Otherwise, a recognised international institution carries out an examination as to its novelty.
3. The process concludes with an announcement of the patent in the patent bulletin.

Turkey is a signatory to the following **international agreements** on patent protection:

- Paris Convention for the Protection of Industrial Property (1996)
- Patent Cooperation Treaty
- Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (1996)
- European Patent Convention (2000)
- Hague Convention Concerning the International Registration of Industrial Designs (2005)
- Geneva brand protection agreement (2005)

Sources: Herfurth & Partner (2006), legal regulations with the force of law on patent rights protection (2013), Noyan (2006)

INTERNATIONAL (TRADE) AGREEMENTS

Turkey maintains close economic relations with the EU and in particular with Germany.

Germany – Turkey

- Germany and Turkey have traditionally enjoyed very good relations. Cooperation between them has been underpinned by the German-Turkish Non-Aggression Pact and the first trade agreement between the two countries, which was concluded in the 1920s.
- Germany is Turkey's most important trading partner and is home to the largest Turkish community in Europe.
- Germany is one of the EU's main supporters of Turkey's accession to the European Union.

Membership in International organisations

Cooperation agreements with Europe:

- 1963: Signing of an association agreement between Turkey and the EEC; Turkey becomes an associate member of the WEU (1995–2000)
- 1987: Turkey applies for full membership of the EC
- 1995: Agreement on a customs union between Turkey and the EU
- 2008: Agreement on a revised accession partnership for Turkey

International cooperation agreements (a selection):

- 1952: NATO membership
- United Nations (1945) and special organisations
- OECD (1948)
- Council of Europe (1949)
- Organisation of the Islamic Conference (OIC, 1969)
- Central-Asian summit of the Cooperation Council of Turkic-Speaking States (OATCT, 1992)
- Black Sea Economic Cooperation (1992)
- G-20

You will find a detailed list of Turkey's membership of international organisations at the following link: http://www.mfa.gov.tr/sub.tr.mfa?23a3fc26-4f3b-47dd-943e-d8934cdad97e.

Sources: dena's own research (2012), Turkish Foreign Ministry (2011)

LOCAL CONTENT REGULATIONS

Local content: current status

Turkey provides support for local content under paragraph 6/B of the Renewable Energies Act (law no. 5.346), which stipulates that operators of renewable energies plants can obtain higher remuneration as well as the feed-in tariff if their plant uses electrical and mechanical equipment that was wholly or partly produced in Turkey. Various premiums are currently being paid and those for photovoltaic plants are shown in the box to the right. The prerequisite for this is that the plant must be commissioned before 31.12.2015.

Details on local content rules for PV

Operators can obtain an extra local content bonus for the first five years of a plant's operation. The amounts are shown below.

- PV panel integration and mechanism: + 0.8 US cent/kWh;
- PV modules: + 1.3 US cent/kWh;
- Turkish PV cells: + 3.5 US cent/kWh;
- Inverters: + 0.6 US cent/kWh;
- Other solar radiation-absorbing mechanical system components: + 0.5 US cent/kWh.

Local content: outlook

Turkey's support for local content is regulated in detail in the Renewable Energies Act and can be downloaded from http://www.mevzuat.gov.tr/MevzuatMetin/1.5.5346.pdf.

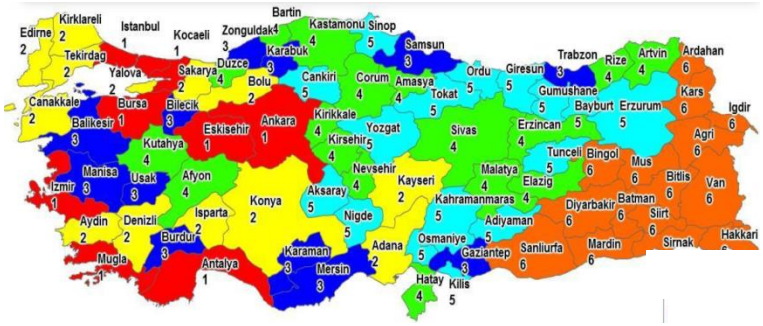
The international PV industry is protesting against these protectionist rules, which breach international free trade agreements, thus Turkish legislators may retract or attenuate them.

Sources: AWO (2012), dena: Exporthandbuch Türkei (2010/2011), Turkish Renewable Energies Act, Bezen & Partners – Solar Information Note (2012)

REGIONAL ECONOMIC DEVELOPMENT AND SUPPORT PROGRAMMES

Turkey has divided its territory into various zones* for the purposes of economic development (according to levels of socio-economic development, Zone 6 being the least developed and Zone 1 the most developed). It has also developed comprehensive state-run economic development programmes. The greatest benefits per programme can be obtained in Zone 6, the lowest in Zone 1. Regional divisions are shown to the left. The table on the right outlines the support programmes.

Classification of territories into 6 zones



** The individual measures are: a = exemption from customs, b = VAT exemption, c = tax-exempt allowance on income tax, d = reduced taxes , e = support in paying social security premiums, f = site securing, g = support in interest payments, h = VAT refund.

Central support programmes

Support programme	Application	Measure**
General	▪ The amount of support varies according to investment. ▪ Only available with a minimum investment of 1,000,000 TRY in regions 1 and 2 and of 500,000 TRY in regions 3-6.	a, b, c, e
Regional	▪ The amount of support is determined through separate regulations and by law.	a, b, c, d, e, f, g
Large-scale projects	▪ Investment of at least 50,000,000 TRY or investment in key industries (e. g. the electronics industry)	a, b, c, d, e, f
Strategic investments	▪ Investment volumes over 50,000,000 TRY ▪ Imports of the product to be manufactured must have been worth at least 50,000,000 USD in the preceding year. ▪ Manufacturing capacity of the product subject to support must be lower in Turkey than imports.	a, b, c, d, e, f, g, h

* According to Ministerial IResolution (Bakanlar Kurul Kararı) No. 2012/3.305 and Communiqué No. 2012/1
Sources: AWO (2012), Turkish Ministry of the Economy (2012), KPMG (2012)

CUSTOMS AND IMPORT RESTRICTIONS

Customs tariff agreements
Turkey's customs regulations are derived from the rights and obligations of GATT/WTO, the Customs Union and other bilateral and multilateral agreements, such as the Free Trade Agreement. The most recent update of the country's import regime of 31.12.1995 (published in official gazette no. 22.510) was published in official gazette no. 28.159 of 31.12.2011.
In contrast to the EU's agreements with EFTA and Eastern European states, the exchange of goods between the EU and Turkey is regulated by three agreements, each of them applying to different goods.

Pan-European accumulation in the EU-Turkey Customs Union
The Customs Union agreement concluded by the EU and Turkey allows all industrial and commercial goods made in Turkey or in the Union, or imported there from third countries in which free trade is carried out, to be transported into Turkey (and the EU) without incurring customs duties if the goods are accompanied by a A.TR form. The A.TR form is not proof of origin, but a confirmation that the goods are in free circulation.

The customs regulations of the Customs Union apply to PV components from the EU.

Importers pay a 6 percent tax (Kaynak Kullanımını Destekleme Fonu) on suppliers' loans. Special rules also apply in industrial areas (Organize Sanayi Bölge and Serbest Bölge) to products imported only temporarily into Turkey.

Sources: AWO (2012), Tax and Customs Union (2014)

PV PRODUCT CERTIFICATION

Standardisation of products in Turkey

- Turkey's standards institute, TSE (Türk Standardları Enstitüsü), is responsible for introducing and monitoring standards, which are largely based on the DIN standards.
- Application of the CE conformity label has been introduced in Turkey step by step since January 2003, with different individual groups of products required to carry the label from different times. Products bearing a CE conformity label can be marketed within the European Union without further checks.
- An amendment to the law in the form of the Communiqué on monitoring the import of products that must carry the CE label (published in Turkey's official gazette no. 25.452 of the 4 May 2004) means that products already bearing a CE label do not need a CE certificate for import into Turkey. Products originating in Europe that do not bear a CE label can also be freely imported upon submission of a CE certificate, although customs authorities will report their import to the Ministry for Science, Industry and Technology.

Special regulations applying to PV components

The Solar Plant Regulations set the standards to be fulfilled. Paragraph 4 of the Solar Plant Regulations sets the following standards for the output of solar plants: TS EN 61215, TS EN 61646, TS EN 62108. In cases of safety checks, TS EN 61730 also applies.

Sources: AWO (2012), Communiqué on monitoring the import of products (2004), Solar Plant Regulations

PERMIT PROCESSES: IMPORTANT ACTORS IN PV PROJECT DEVELOPMENT

Authority	Actors			
National authorities	**Ministry for Energy and Natural Resources (MENR)** - Determines and supervises national energy policy	**General directorate for recording and exploiting electricity resources (EİE)** - Coordinates support programmes, incl. the feed-in system - Functions as an energy agency (providing training, political consultancy, campaigns, etc.)	**Turkish electricity transmission grid operator (TEİAŞ)** - Provides grid connections, and grid usage and grid connection contracts	**Local grid operators (21 DisCos + TEDAŞ)** - Provide grid connections
Energy sector bodies	**Energy Market Regulatory Authority (EPDK)** - Issues licences for energy market activities - Issues licences granting special feed-in tariffs for renewable energies	**General directorate for energy affairs (EIGM)** - Implements national energy policy for MENR		
Local authorities	**Regional and local authorities** - Issues planning and construction permits (where necessary) for plants generating > 1MW			

Source: dena Exporthandbuch Türkei (2010/2011)

PERMIT PROCESSES: AN OVERVIEW OF PROCESSES (IN GENERAL)

The permit process consists of the following steps (For details on individual steps in the process, see the following slides):

Founding of a company → Application for a preliminary licence → Development phase → Grid connection process → Issue of an operator's licence → Construction phase → Start of operations

- After successfully founding a company, (see the slide on "Legal forms of companies"), the permit process begins with an application to the EPDK for a preliminary licence (as of April 2013). A preliminary licence is valid for 24 months and can be extended for a further 12 months if necessary. Within this period, the preliminary licence holder is entitled and obliged to obtain all the permits, authorisations and licences etc. required to begin with the investment. This is mainly for permits with respect to the location. If the preliminary licence holder does not meet these preconditions within the prescribed period, the EPDK will not issue a licence and the preliminary licence expires. However, it should also be noted that measurements must be conducted on the site for a period of one year prior to applying for a preliminary licence (see slide 86).
- If the EPDK approves the licence application, a so-called "confirmation of approval" is provided to the applicant so that he can fulfil the preconditions set by the EPDK within the specified period (e. g. an increase in capital, so that the share capital is 20 percent of the investment amount). Applicants also must pay a licence fee to the EPDK to obtain a licence. The EPDK sets this fee every year. A annual licence fee for the current year also must be paid to the EPDK. Both fees are determined by the capacity of the plant and increase according to the number of MW to be installed.
- The operator's licence specifies the time limit for the construction phase and information about the plant. The EPDK sets the time limit in accordance with a schedule submitted by the applicant as part of the application.
- The development phase is the time limit within which the project must be developed and all the measures required for construction must be initiated. These include the obtaining of construction permits, grid connection (see slide 88), applications for changes to the building plans etc.
- During the construction phase, the plant's construction must be completed and all the permits required for its commissioning applied for or obtained. The plant is commissioned after the end of the construction phase and preliminary inspection of the plant by MENR. MENR's final inspection and approval of the plant must take place within one year after the preliminary inspection.

THE LEGAL FRAMEWORK FOR LARGE- AND SMALL-SCALE PLANTS

The legal regulations on operating a PV plant in Turkey do not differentiate between the capital of an operator from Turkey or one from abroad, but they do differentiate between plants of different system sizes.

General legal framework: plants over 1 MWp

- Under the terms of the regulations on the Electricity Market Act, plant operators require an **operator's licence**, ➔ see the following slide.
- The regulations apply to all energy sources equally and are oriented towards general **legal frameworks for independent power producers (IPPs)**, which are defined in particular by the following laws and regulations:
  - Electricity Market Act (Elektrik Piyasası Kanunu) No. 6.446 of 2013
  - Regulations on the Electricity Market Act (Elektrik Piyasası Lisans Yönetmeliği)
  - The Use of Renewable Energy Sources for Electricity Generation Act (Yenilenebilir Enerji Kaynaklarının Elektrik Enerjisi Üretimi Amaçlı Kullanımına İlişkin Kanun) No. 5.346
- **Remuneration:** Electricity generation can be remunerated in accordance with the feed-in tariff. ➔ See the slide on "Applying for feed-in remuneration".

Licence-free plants under 1 MWp

- **Licence-free electricity generation**:
  - Operators of plants under 1 MWp do not need an operator's licence and also do not have to register a business.
  - However, operators must lodge an informal application with the local grid operator, submit documents and specify the plant's site.
- **Self-suppliers:** Electricity from these plants is designed mainly to cover the generator's own needs.
- **Remuneration:** Electricity generation can be remunerated in accordance with the feed-in tariff. ➔ See the slide on "Applying for feed-in remuneration".

Source: EPDK (2014)

APPLYING FOR AND OBTAINING AN OPERATOR'S LICENCE FOR A PLANT GENERATING OVER 1 MWp

The following guidelines must be taken into account in obtaining a licence from the EPDK to operate a PV plant generating more than 1 MWp:

General guidelines

Company law preconditions:

- Founding of a Ltd. Şti or a A.Ş. in compliance with the regulations of the Turkish commercial code.
- Issuing of registered shares (exception: publicly listed companies)
- When submitting a preliminary licence application, the share capital must be 5 percent of the investment amount specified by the EPDK.
- Share capital must be 20 percent of the investment amount to receive an operator's licence (this capital can be increased once the EPDK has approved the licence application)

Verification required to operate a plant :

- Project presentation
- Feasibility study, including an environmental impact certificate from the Ministry for the Environment and/or local authorities
- Certification of potential grid connection from the relevant grid operator (TEİAŞ or one of the regional energy suppliers) or participation in a competition process for a grid connection (e.g. for wind and solar power plants)
- Positive assessment of the project's feasibility by the relevant authorities
- Bank guarantees (These must be arranged for both the preliminary licence and the operator's licence.)

PV-specific guidelines*

- The first round of licensing was held in June 2013, with the following conditions:
  - An individual licence application may not be for a capacity in excess of 50 MW.
  - Licence applications may not exceed a total capacity of 600 MW.
- According to press reports, a second round of licensing will take place from 1 to 7 April 2015. Information concerning the total capacity is not yet available.
- The Council of Ministers is authorised to increase or reduce this limit. The Council of Ministers makes such decisions annually.
- Data measurements must be analysed for at least one year on site. Details of these must be included in the communiqué on data measurement analysis by applicants for licences to operate wind and solar plants as well as in the communiqué on licence applications for wind and solar plants and the implementation of data measurement analysis for wind and solar plants.
- Solar radiation at the site must be at least 1,620 kWh/m2 per year in horizontal measurements; otherwise the licence application will be rejected.
- For a preliminary licence application to be successful, the site must meet certain conditions (see slide 87).

* In accordance with EPDK resolution No. 3.842 of 24 May 2012

Sources: EPDK resolution (2012), publication of the Turkish Ministry for Energy and Natural Resources (2011); Licence Act (2014), Yeşilekonomi (2014)

SITE SECURING AND LAND USE

- Ownership of a property must firstly be determined. If land is privately owned, it is preferable to buy it from the owner. If it is state-owned, rights of usage can be established by contract.
- Compared with other countries, sites are often secured by compulsory appropriation. The law on the electricity market allows for so-called 'accelerated compulsory appropriation', for which the licence holder must lodge an application with the EPDK. The Council of Ministers must approve every such application. The process is carried out by the finance ministry. The site's value is assessed by an appraiser appointed by a court and is recorded in a certified appraisal.
- If compulsory appropriation has taken place, ownership of the property is transferred to the treasury (Hazine). The treasury and project developer then conclude a contract for use of the site for the project under development.
- After the land-use plan has been amended and approved by the relevant authority, the licence holder can apply for the issuing of a building permit (Yapı Ruhsatiyesi). See the next slide for details of this process.
- The land-use plan is amended with the help of a planning office.
- Depending on the site, an application for an amendment of land use may have to be lodged with the local authority (Belediye) or government (Valilik) .

The following sites are excluded from use as sites for PV plants:

- land used exclusively for agriculture
- land on which special plants grow
- planted agricultural land
- irrigated agricultural land
- sites adjoining agricultural land that could impact the integrity of the agricultural usage.

Sources: dena 2010/2011, law on the use of renewable energy sources for generating electricity (2005), EPDK decision No. 3842 from 24 May 2012

GRID-CONNECTION AND GRID-USE PROCEDURES

Licence application → Invitation to tender → Participation in a tender → Award/Grid connection → Licence

- The electricity grid is operated by the electricity grid operator TEİAŞ (Türkiye Elektrik İletim A.Ş.). Two contracts, between TEİAŞ and the applicant for the licence, must be signed in order to have the plant connected to the grid and to use the grid. These are connection contracts and contracts of use, which are not negotiable.
- During the awarding of the licence contract, the opinion of TEİAŞ or the distribution company of the respective region is obtained concerning the connection to the grid.
- It should be noted that solar plants can only be built in certain regions of Turkey. MENR (T.C. Enerji ve Tabii Kaynaklar Bakanlığı), has published a list (titled "Determining the location and capacity of solar plants") of these showing the regions, the substations and the grid connection capacity available for licence applications for 2013. The intent is to update the list annually until 31 December 2015.
- If more than one licence application is lodged for the same region and/or same substation, the licence applicant awarded the connection to the grid is decided in a tender. The basic precondition is that the operator of the solar plant wants to profit from the feed-in tariff. The tendering procedure is specified in the guidelines on competitions for applications for licences to operate wind and solar plants (which came into force on 6 December 2013). The tender is published on the TEİAŞ website, naming the applicant for the licence for each plant and specifying the connection capacity being sought.
- The licence applicant, invited by TEİAŞ to participate in the tender, can participate in the tender and must submit a bid in a sealed envelope to TEİAŞ. If the licence applicant does not participate in the tender or does not win the tender, the plant cannot be built. The tender amount, which is levied on a per-MW basis, must be paid by the successful bidder within three years after the plant begins operating. If two licence applicants submit a bid for the same amount, the tender is decided in a second round. The second bid cannot be lower than the first.
- It should also be mentioned that those participating in the tender must submit a bank guarantee to TEİAŞ in order to participate. The amount is calculated as follows: 10,000 TRY x the capacity to be installed (MW) (as of 2014). If the tender is successful, a second bank guarantee must also be submitted to TEİAŞ, whereas the first bank guarantee will be refunded.

Source: Bezen & Partners – Information Circular Solar Tender (2013), competition guidelines (2013)

CONSTRUCTION AND OPERATION PERMITS

Construction permits

- Paragraph 21 of the Turkish Building Act (law no. 3.194) states that all construction projects require a construction permit.
- Local authorities are responsible for sites in urban areas. Otherwise, applications should be submitted to the government.
- The documents required to lodge an application for a construction permit are listed in Paragraph 22 of the Building Act .
- Construction must begin within two years after the issuing of a construction permit and may take a maximum of five years; otherwise, the construction permit becomes invalid and may have to be renewed.
- Each application for a construction permit must be decided on within 30 days (Paragraph 22 of the Building Act). If the application does not include all the required documents, the applicant will be informed of this within 15 days of the submission of the application. Applications are processed within 15 days after the documents are submitted.
- A permit to use the building or land must then be obtained from the local authority (local authority or government, depending on the site).

Operation of a PV plant

- The Regulations on Generating Electricity with Solar Power Plants formulate guidelines on
  - the technical standards of a plant
  - electricity meters to be installed
- The operator must set up a measurement system that forwards the following information to the EİE:
  - Solar radiation at the PV plant
  - Wind speed
  - The amount of electricity generated that has actually been fed into the electricity grid

The deadlines outlined above are set by law, so they may not usually be changed.
It should be noted that other regulations may apply as well as the Building Act. This will depend on the site's location.

Sources: Şimşek (2010), Turkish Building Act (1985)

FACTS: FIRST PV LICENSING ROUND 2013/2014

Details about the first PV tender

- The first round of licensing for solar plants was held from 10 to 14 June 2013.
- A total of 496 applications were submitted to the EPDK within four days.
- Although licence applications were limited to a total capacity amount of 600 MW, the total capacity of the licence applications received was 8,900 MW.

Results of the first PV tender for grid connection

- To date, only two tenders for grid connection have been completed in 2014.
- The following are the results of these tenders:
  - A grid connection point with a capacity totalling 8 MW was auctioned in Elaziğ. Four parties took part in this tender. The highest bid of 827,000 TRY/MW (approx. 287,000 EUR) won the contract for the connection point.
  - A grid connection point with a capacity totalling 5 MW was auctioned in Erzurum . Two parties took part in this tender. The highest bid of 68,000 TRY/MW (approx. 24,000 EUR) won the contract for the connection point.

Preview of upcoming tenders for grid connection

- New tenders for grid connections are not yet fixed.
- According to press statements, these are planned for December 2014.

Quelle: TEİAŞ (2014)

SUMMARY: MARKET ACCESS AND LEGAL FRAMEWORK CONDITIONS

- The first step towards market entry can be made by founding a company in one of the various legal forms available. The company‘s intended business is vital in making this decision. Founding an Anonim Şirket (AG) or a Limited Şirket (GmbH) is recommended because of the economic benefits these forms bring. Operation of a PV plant generating more than 1 MW requires a A.Ş. or Ltd. Şti with share capital of 20 percent of the total investment amount.
- A residence permit and work permit are required for the deployment of foreign employees in Turkish companies. Since 2014, the residence permit has been included in the work permit. Stricter regulations apply to the exercise of certain occupations (e.g. engineers and lawyers).
- Applications for a licence to operate a solar plant can only be lodged within a certain period and may not exceed a total capacity of 600 MW if the plant is to be operated within the feed-in tariff system (YEK Belge). It should be noted that this total capacity can be increased by a resolution of the Council of Ministers. Data and limits for 2014 and 2015 have not yet been released.
- The provision of grid connections for solar power plants is subject to a competitive process and is ultimately decided by means of a tender. Companies invited by TEİAŞ to participate in the tender submit bids for a grid connection in the relevant region. MENR has published a list showing the substations and capacities available for solar power plants.
- So far, only two tenders for grid connection have been completed under the first round of licensing of solar plants. Additional tenders are planned for December 2014. Further details are not yet available.
- Compared with other countries, sites are more often secured by compulsory appropriation. The law on the electricity market also allows for so-called “accelerated compulsory appropriation”. As of 2012, every such accelerated compulsory appropriation must be approved by the Council of Ministers.
- The approvals process begins with an application for a preliminary licence, which is converted into an operator’s licence if all the legal preconditions are met. These preconditions include site security, a grid connection process, and construction and operation permits.
- With the reform of the energy market, the financial requirements on the applicant have risen (e.g. an increase in share capital of the applicant prior to submitting the application for the preliminary licence and then again before receiving the operator’s licence; arranging of bank guarantees with the EPDK and TEİAŞ).

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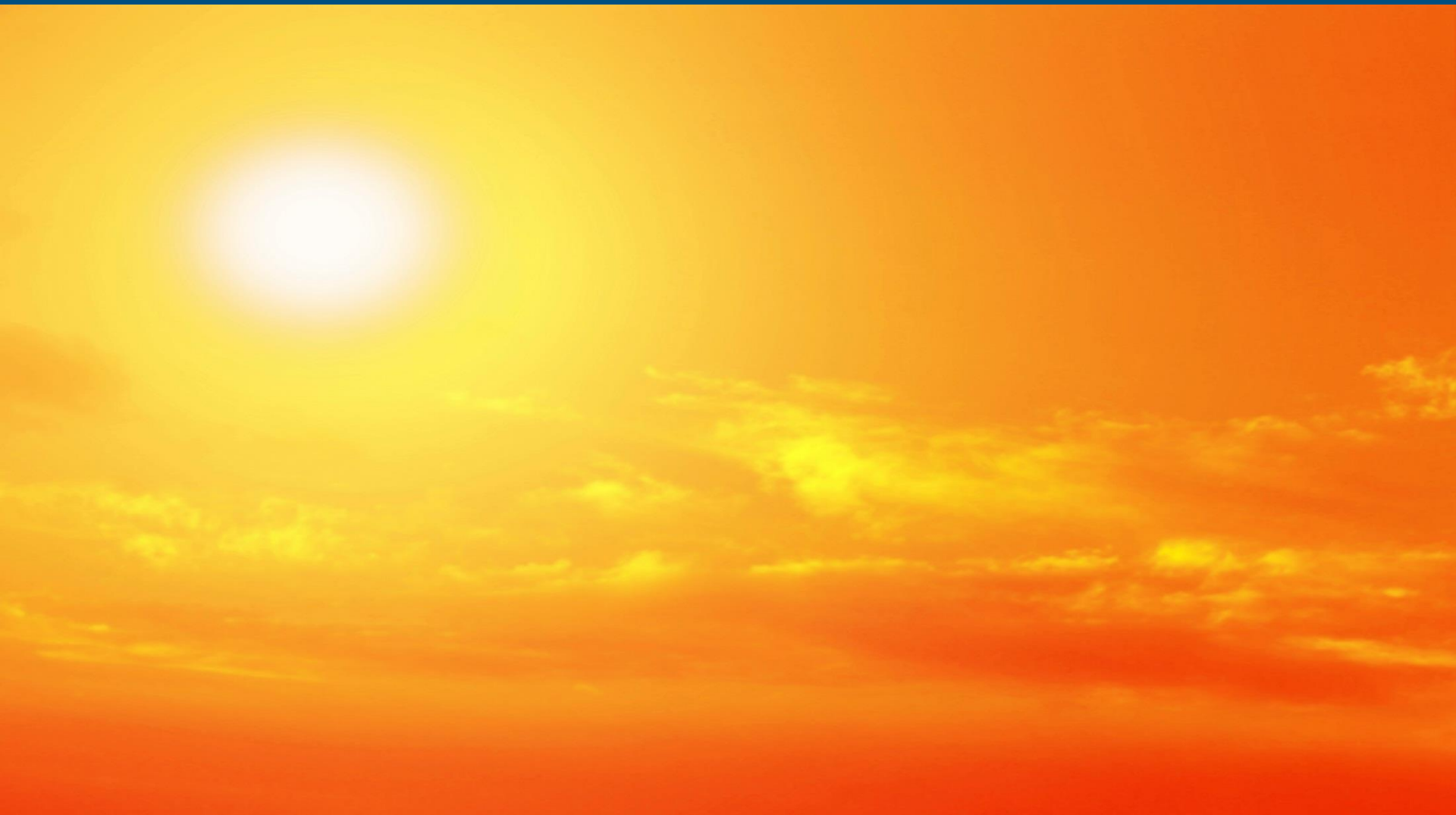
FINANCING AND SUPPORT



FINANCING AND SUPPORT

The following questions will be answered in this chapter:

- What is the current environment for financing and what are the prospects for future interest rate trends in Turkey?
- Which German, European, international, multinational, American and Turkish institutions are active in the area of financing in Turkey? How are they organised?
- What instruments are used for project financing? In what context are they implemented?
- What options are available for securing exports?
- What local project support instruments are implemented by policy-makers in Turkey?
- How is the risk situation in the country in terms of project financing and implementation?

FINANCING AND SUPPORT IN TURKEY

- The granting of tax and investment support in Turkey varies depending on location, investment volumes and the beneficiaries of the support. Accordingly, the country is divided into various development zones. Thus, for each investor it is important to become acquainted with the respective regional particularities. In addition to existing regional support, there are nationally standardized provisions in terms of feed-in remuneration and net metering.

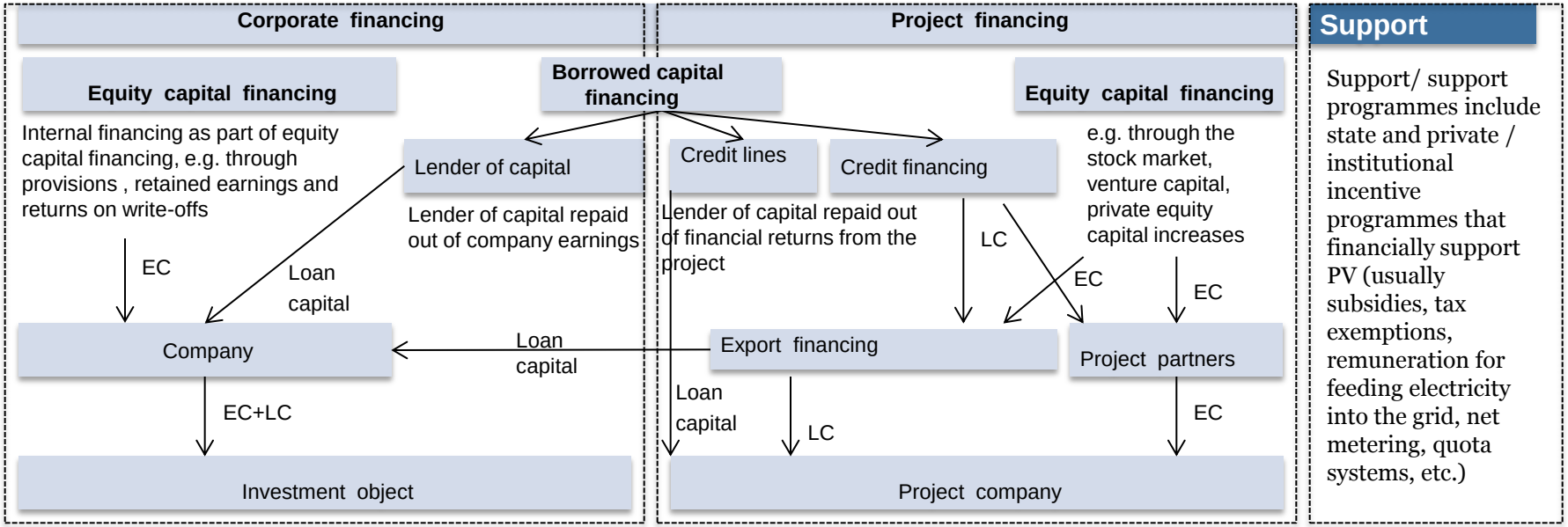
- Current interest rates for project financing through local banks and institutes in Turkey are generally higher than interest rates in the EU. At the beginning of 2014, the **prime rate rose dramatically**. The prime rate is also called the "overnight interest rate" (Gecelik Faiz Oranları). The value of the Turkish "overnight interbank funding rate" is set monthly by the central bank. One reason for increasing the interest rate was to support the Turkish Lira, which lost significant value against the Euro and the US dollar in 2013.

- The World Economic Forum has rated the relative economic situation in Turkey as "good". The World Economic Forum has Turkey's improved competitiveness as the main reason for this good initial position. This market is therefore becoming increasingly attractive to German exporters. Development financing is focused on the ongoing fight against poverty. The country's advancing negotiations towards EU accession are expected to trigger a rise in offers from multilateral donor institutions (the European Investment Bank and the European Bank for Reconstruction and Development). However, conditions in Turkey are generally assessed as negative in terms of criminality and the prevention thereof.

- To provide a systematic representation of **financing and support options**, individual support and financing instruments will be described below and placed in context, starting with the relevant institutions, banks and ministries. **State support programmes and instruments** will then be comprehensively described. A **risk assessment** of financing and project implementation in Turkey will then be carried out with the help of secondary sources.

CATEGORIES OF FINANCING AND SUPPORT

The differences between **corporate and project financing** are shown in the diagram below. With conventional financing via a bank loan, capital borrowed from the lender is repaid out of the company's earnings. Financial resources do not have to be used for a designated purpose. In project financing, however, only the financial returns (cash flow) from the project are used for repayments and the funds go into the project. The main focus of this study is on borrowed capital financing from lenders of capital and credit financing. Equity capital (EC) financing from banks will not be further discussed because of the high level of transparency of financial markets. Furthermore, f**unding instruments** will be described separately from financing. Individual support measures will be described according to each lender. Further information and explanations of individual terms will be provided on the following slides.



Source: dena's own data based on information from the Bayrische Landesbank (2003)

INTRODUCTION: DEFINITION OF TERMS

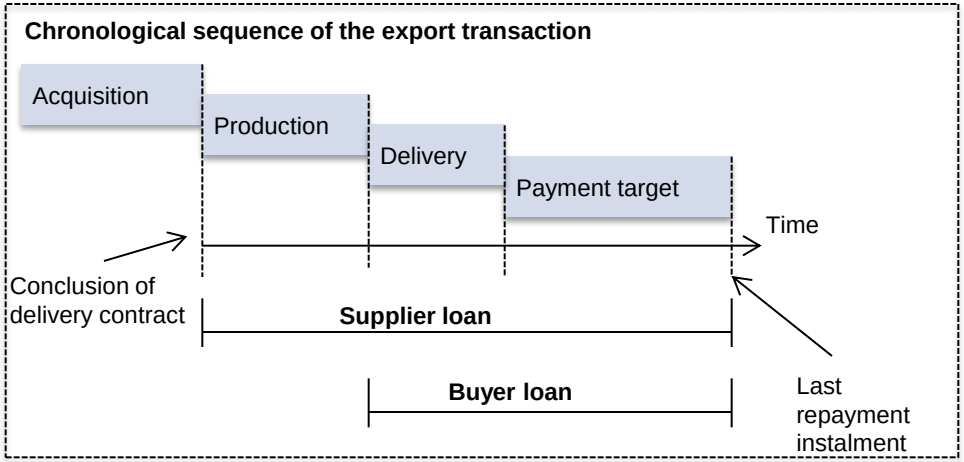
There are countless project financing offers and options but only a selection can be considered in this study. Forms of financing used in renewable energies projects are specified and defined in the table below.

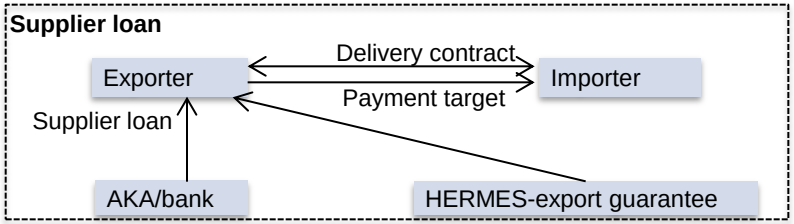
	Definition of terms
Project financing	Long-term financing of an economically self-sustaining (via the project cash flow) investment project that is a legally separate project company. The owners of a project company are the investors, who provide it with financial resources and are directly involved in the operative project or actively contribute to the project‘s success by providing specialist know-how and targeted support.
Export financing	Financing measures to facilitate exports, establish their financing conditions and reduce the risks of international business. A more precise description of supplier’s credit and buyer’s credit in particular is provided below. The basic setup and chronological structure of export transactions are shown on the following slide.
Credit financing	Classic financing using borrowed capital (a loan), in this case usually from a local commercial bank.
Equity capital financing	Financing through shares in the capital of a company or project company. This generally temporary commitment usually includes a predefined exit strategy and is often used for project financing.

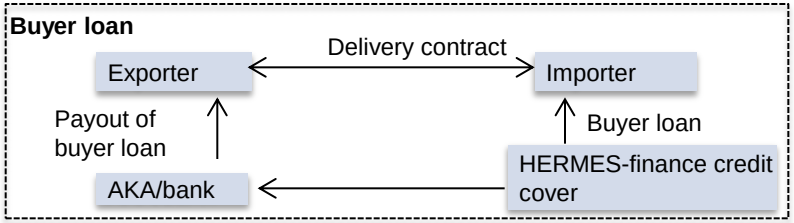
Sources: ICON (2012)

INTRODUCTION: FINANCING OF EXPORT TRANSACTIONS – EXPORT FINANCING

Instruments of export financing are measures for stimulating exports, for defining their financing conditions and for reducing risks in foreign business. Export loan guarantees are subsumed under export financing. Export loan guarantees are "insurance policies" for export transactions and are used to safeguard against payment default due to economic or political reasons. In addition to the scarcity of hard currency of the ordering country, political causes can include war, riots or payment embargoes. Economic causes are non-payment by the customer or the customer's insolvency, for example. Buyer and supplier loans are used to safeguard export transactions. A supplier loan is a loan from a bank extended to an exporter (supplier) for refinancing the payment target granted to the foreign buyer within the framework of the export agreement. To secure the loan, any claims from the delivery transaction are usually ceded. A buyer loan is a loan granted to a foreign buyer (importer). The loan proceeds are available to the German exporter for fulfilment of the delivery transaction. Financing via a buyer loan cannot be granted until the point in time of the delivery. In contrast, the supplier loan is available over the entire term of the delivery transaction. The chronological timeline, as well as the basic structure of supplier and buyer loans, is laid out in the figure below. Depending on the payment target, a distinction is made between short-term and long-term supplier and buyer loans.







Quelle: Source: dena's own data based on information from the Bayrische Landesbank (2003)

INTRODUCTION: STAKEHOLDERS

Project financing and financial funding for PV projects is available via a number of different channels in Turkey.

In the first step, the offers and instruments of the following institutions, banks and ministries are considered:

- **DEG – Deutsche Investitions- und Entwicklungsgesellschaft mbH,** as part of the KfW Bankengruppe, specialises in the financing of larger project volumes for the private sector
- **KfW IPEX-Bank**, as part of the KfW Bankengruppe, specialises in international export financing.
- **KfW Entwicklungsbank**, as financing partner for Turkish companies.
- **Northstar Europe S.A. (NSE)** is a cooperation partner of the KfW IPEX-Bank in the export financing sector
- Government-backed export credit insurance institution **Euler HERMES Kreditversicherungs-AG** in cooperation with **PricewaterhouseCoopers AG WPG** (hereinafter referred to as HERMES) for export guarantees
- **AKA Ausfuhrkredit-Gesellschaft m.b.H** as private-law counterpart to KfW
- **European Investment Bank (EIB)** as one of the world's largest providers of finance.
- **European Bank of Reconstruction and Development (EBRD)** as one of the largest providers of finance in Turkey.
- The **International Finance Corporation (IFC)** of the World Bank Group acts internationally as a financier for the private sector.
- International export credit insurance from the **Multilateral Investment Guarantee Agency (MIGA)**
- **Ministry of Energy and Natural Resources– Enerji ve Tabii Kaynaklar Bakanligi (ETKB)** in the area of photovoltaics funding via feed-in remuneration
- **Akbank, Denizbank, Finansbank, Garanti Bankası, Türkiye Sınai Kalkınma Bankası, Türkiye İş Bankası, VakıfBank, Yapı Kredi**, which extend credit lines of international institutions
- The national market regulation authority **T.C. Enerji Piyasası Düzenleme Kurulu (EPDK)** in the area of net metering for PV plants.

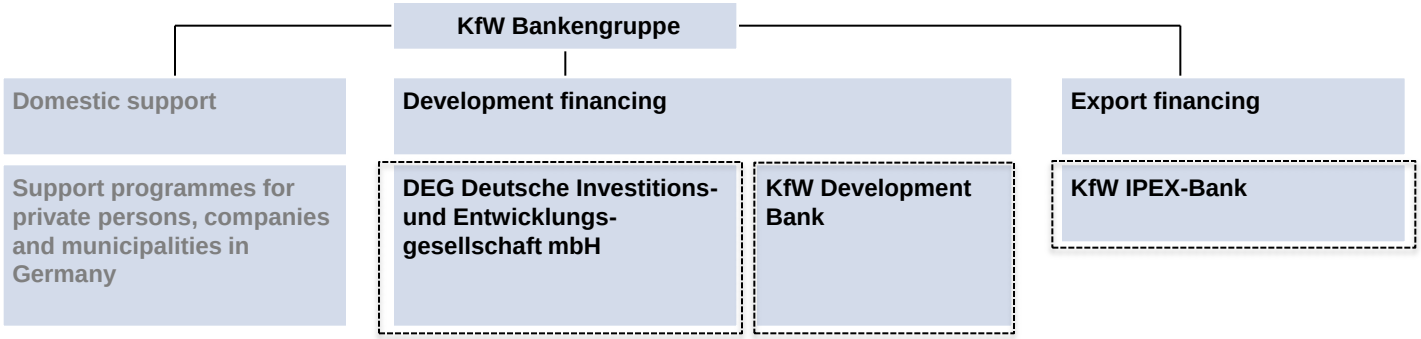
INTRODUCTION: FINANCING MATRIX ACCORDING TO FINANCING TYPE AND REGION

The table below provides a summary of the institutions, banks and ministries more precisely described in the study, showing them in a regional context as well as with their associated financing instruments. The following slides explain the financing instruments available in Germany, especially for Turkey and the PV market. The focus is then expanded to international instruments. The political support programmes for photovoltaics in Turkey will then be shown, followed by an explanation of current interest rate trends and a country-specific risk evaluation.

	Germany	Europe	America	Supranational	Turkey
Project financing	DEG	EIB	IDB	World Bank Group	TSKB/ Private banks
Export financing	HERMES AKA KfW IPEX Bank	Northstar Europe	MIGA		TSKB
Loan financing					KfW Development Bank
Equity financing		EBRD EIB		IFC	TSKB / Private banks
Support/support programmes	DEG				ETKB EPDK

Source: Own research

FINANCING AND SUPPORT VIA THE KFW BANKENGRUPPE
ORGANISATION OF THE KFW BANKENGRUPPE



DEG Deutsche Investitions- und Entwicklungsgesellschaft mbH finances and advises private companies investing in developing countries. For this purpose, it provides companies with long-term capital and accompanies them through all project phases.

KfW IPEX-Bank is responsible for international project and export financing within the KfW Bankengruppe. As its core product, it provides medium and long-term individual financing solutions. The mission of the KfW IPEX-Bank is to maintain and expand the competitiveness and internationalisation of German and European export companies. It also finances the economic and social infrastructure in Europe and supports the realisation of environmental and climate protection projects worldwide.

The **KfW Development Bank** uses a mix of support instruments. Germany supports Turkish partners in the expansion of solar power generation by means of financing instruments and through policy consultation. The great potential for more efficient energy use in the Turkish economy is also to be tapped. Programmes and plans are financed according to need. Over the last 50 years the KfW Development Bank has participated in more than 100 projects with total volume of over 4.7 billions Euros. The instruments are subsidies, loans and credits for support and development. Due to the very individual finance solutions, this area will not be explained in more detail below. Further information regarding offerings and services of the development bank can be found at: KfW Development Bank

Source:Own research modelled after that by KfW (2013) and ICON (2012)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE
KfW DEVELOPMENT BANK: LOAN FINANCING

Type	Programme specifics / criteria for funding
Loan or equity financing for Turkish cooperation partners	The KfW Development Bank works together with the European Union, the Turkish Finance Ministry and the Council of Europe Development Bank (CEB) as well as the Frankfurt School of Finance and Management, which provides technical support for projects. The KfW Development Bank lends funds to Turkish banks that in turn distribute them to their clients at their own risk. The advantage for the client is that, as a rule, the loans are subsidised, which allows for lower interest rates and longer terms than the market would otherwise dictate. Funds are received through various funding instruments (subvention funds).
Eligibility	Projects must be situated in one of 49 development regions. The development regions are provided here. Company assets may not exceed 1 million Euros and the number of employees must be less that 50.
Partner banks	AKBANK Garantibank Isbank Sekerbank
KfW Contact	KfW Office Ankara And Sokak No. 8/21 6680 Cankaya Ankara Turkey Telephone: +90 31 24 28 84 15; e-mail: kfw.ankara@kfw.de

As part of the International Climate Initiative (ICI) of Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Istanbul's Industrial Development Bank of Turkey (TSKB) was given three credit lines – worth a total of 105 million Euros – by the KfW Development Bank for the climate protection programme. The BMU funds are deployed to reduce the interest rate on the KfW market funds. The aim of the climate protection programme is to promote the use of renewable energy sources and to increase energy efficiency. It is doing its part in making energy production more environment-friendly – and less harmful to the climate – while making energy consumption more efficient. Applications and further information are available at: info@tskb.com.tr.

Source: DEG (2014a), ICON (2012)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE DEG: PROJECT FINANCING

Type	Programme specifics / criteria for funding
Loan or equity financing	**Financing of large-scale investment projects (approx. 30 million Euros and up)** ▪Participation in the equity of the company in the investment country, minority shareholding (voting rights in certain cases). ▪Loan financing for investments; potential financing of subprojects. ▪Mezzanine financing: secondary collateralisation, risk-adjusted arrangement, conversion opportunities in equity. ▪In addition to direct project and company financing, the DEG invests in financing institutes and local banks as well as venture capital funds.
Eligibility	▪ Open to all business sectors and companies from the EU, but the project must be economically viable as well as useful from a development policy perspective. ▪ Investors must demonstrate technical feasibility. ▪ DEG's equity stake less than 50 percent.
Term	▪ Four to ten years concerning loans, including grace years.
Volumes/ conditions	▪ Loans of up to 25 million Euros or EC participation, occasionally larger volumes.
Contact for Turkey	Winfried Nau DEG Representative for Turkey Kanyon Ofis Kat. 7 Esentepe Mh. Büyükdere Cad. No. 185 34394 Mecidiyeköy – Sisli Istanbul Telephone: +90 212 317-8191; e-mail: winfried.nau@deginvest.de

Source: DEG (2014a), ICON (2012)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE SUPPORT PROGRAMMES VIA DEG (1/4)

Type	Programme specifics / criteria for funding
Support "Climate partnerships with Business" (part of the International Climate Protection Initiative)	The programme supports projects that utilise and demonstrate innovative technologies, that support the introduction of climate-friendly technologies or that adapt proven technologies for greenhouse gas reduction to the specific framework conditions of the target countries. "Climate partnerships with Business" aims to support and disseminate climate-friendly technologies in emerging and developing countries. For this purpose, the International Climate Protection Initiative has at its disposal an annual total of € 120 million from the sale of rights to emit greenhouse gases as part of the European Emissions Trading System.
Eligibility	▪ Open to all business sectors and companies from the EU ▪ The project must contribute to structural development in the area of climate-friendly energy. ▪ The enterprises should employ at least ten people. ▪ The enterprises should have been well established in the market for three years. ▪ The enterprises should show annual turnover of at least € 1 million.
Expected project term	▪ 2 to 3 years
Volumes/conditions	▪ Support of up to € 200,000, but no more than 50% of the costs will be assumed
Contact	Telephone: +49 221 4986-1278; +49 221 4986-1648; e-mail: klimapartnerschaften@deginvest.de Applications and other information at: https://www.deginvest.de/Internationale-Finanzierung/DEG/Unser-Angebot/Förderprogramme/Klimapartnerschaften/

Source: DEG (2014b), ICON (2012)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE SUPPORT PROGRAMMES VIA DEG (2/4)

Type	Programme specifics / criteria for funding
develoPPP.de support	develoPPP.de aims to support companies looking to invest in developing and emerging countries to give their corporate commitment a sustainable profile. The DEG holds public-private partnerships (PPP) idea competitions several times a year. Interested companies can submit project proposals to be examined by the DEG for their PPP suitability. Financial and direct participation in projects that provide development benefits in the partner country are supported.
Eligibility	▪ Open to all business sectors and companies from the EU with annual turnovers of up to € 500 million. ▪ Companies should have at least 10 employees ▪ Companies should have a successful track record on the market for three years ▪ Companies should have an annual turnover of at least 1 mill. Euros ▪ A public develoPPP.de contribution is only made if the private partner would not implement the measure without the public partner and the measure is not legally required (subsidiarity). ▪ The companies are responsible for the implementation of the project in terms of finance, content and personnel.
Term	Individual agreement
Volumes/conditions	▪ Up to € 200,000 per project can be made available from the PPP programme. The company must assume at least 50% of the project costs.
Contact	DEG programme financing at ppp@deginvest.de or telephone: +49 (0) 221 4986-1476; Application via www.deginvest.de

Source: DEG (2014b)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE SUPPORT PROGRAMMES VIA DEG (3/4)

Type	Programme specifics / criteria for funding
"Up-scaling" support	With its "Up-Scaling" programme, DEG finances pioneering investments of small and medium enterprises (SME) in developing and emerging countries that intend to scale up innovative business models. The programme addresses companies whose financing needs lie somewhere between microfinancing and the traditional financing by commercial banks.
Eligibility	▪ Open to all sectors and companies and subsidiaries of German or European companies with annual turnovers of up to € 500 million. ▪ Companies should be able to provide at least one annual financial statement. ▪ A pilot phase, in which the technology and business model have been tested locally, must be successfully concluded ("proof of concept"). ▪ The project must be profitable. ▪ The project must have high growth potential due to market size and target group.
Term	▪ Individual agreement
Volumes/conditions	▪ The DEG finances a maximum of 50 % of the total investment volume (up to a maximum € 500,000). ▪ Capital investors must contribute at least 25 % of financing. ▪ The DEG share must be repaid in the event the project is successful (depending on pre-defined financial criteria such as cash flow, revenue or profit).
Contact	Interested companies can submit project applications for planned investment projects to the DEG at any time. Application forms can be downloaded here. DEG – Programme Financing Kämmergasse 22 50449 Cologne, Germany Telephone: +49 (0) 221 4986-1145 E-mail: tobias.bidlingmaier@deginvest.de

Source: DEG (2014c)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE SUPPORT PROGRAMMES VIA DEG (4/4)

Type	Programme specifics / criteria for funding
Support for feasibility studies	DEG uses funds from the Federal Ministry for Economic Cooperation and Development (BMZ) to assist German and other European companies in the financing of feasibility studies used to prepare investments that are useful from a development policy perspective.
Eligibility	▪ Open to all business sectors and enterprises from the EU with annual turnovers of up to € 500 million. ▪ The objective of the feasibility study is to prepare a specific investment plan that is plausible in terms of feasibility and economic viability. ▪ The costs of the study are reasonable compared to the amount of the planned investment. ▪ Due to the risks and costs involved, the study would not be conducted without public funds.
Term	▪ Individual agreement
Volumes/conditions	▪ Up to € 200,000 per project can be made available. ▪ The company must assume at least 50% of the project costs.
Contact	DEG programme financing via machbarkeitsstudien@deginvest.de Application via http://www.deginvest.de/deg/DE_Home/Unser_Angebot/Foerderprogramme/Machbarkeitsstudien/index.jsp

Source: DEG (2014b), ICON (2012)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE
KFW IPEX-BANK: SUPPLIER AND BUYER LOANS

Type	Programme specifics / criteria for funding
Export financing / loan financing	Loans are granted to buyers of German goods in the target country.
Eligibility	▪ Open to German exporters or foreign importers of German goods ▪ In addition to the volume, the requirement for the European Recovery Programme (ERP*) is HERMES cover, usually with a 5% excess.
Term	▪ 2 to 5 years, redemption: usually semi-annual instalments, depending on the term covered by HERMES
Volumes/Conditions	▪ Volumes of up to € 100 million of export order value via the European Recovery Programme, ▪ Interest rates: fixed or variable in accordance with country risk (further information on this can be found at http://www.coface.de) ▪ Volumes of € 0.5 - 5 million via small ticket exports; see next slide.
Contact	▪ Application to ERP via KfW IPEX-Bank ▪ Application for small ticket exports directly via the partner bank Northstar Europe (see following slides) ▪ Applications for supplier loans can be submitted at every credit institute. ▪ Applications for buyer loans should be directed to: KfW IPEX-Bank GmbH, Palmengartenstraße 5–9, 60325 Frankfurt am Main Telephone: +49 69 74 31-3300; e-mail: info@kfw-ipex-bank.de

*** The ERP Export Financing Programme** grants loans for financing German exports to developing countries. Within the scope of the programme, KfW IPEX-Bank and AKA Ausfuhrkredit-Gesellschaft grant loans to foreign buyers of German export goods. These funds, also referred to as CIRR loans (CIRR stands for Commercial Interest Reference Rate), must fulfil certain programme criteria (see the AKA Ausfuhrkredit-Gesellschaft subsection for more information). For example, Export transactions must be covered with a federal export credit guarantee (Hermes). Thus, KfW IPEX-Bank handles this programme for the KfW. The programme loans are supported with funds from the ERP special endowment.

Sources: BMWi (2014), KfW (2014)

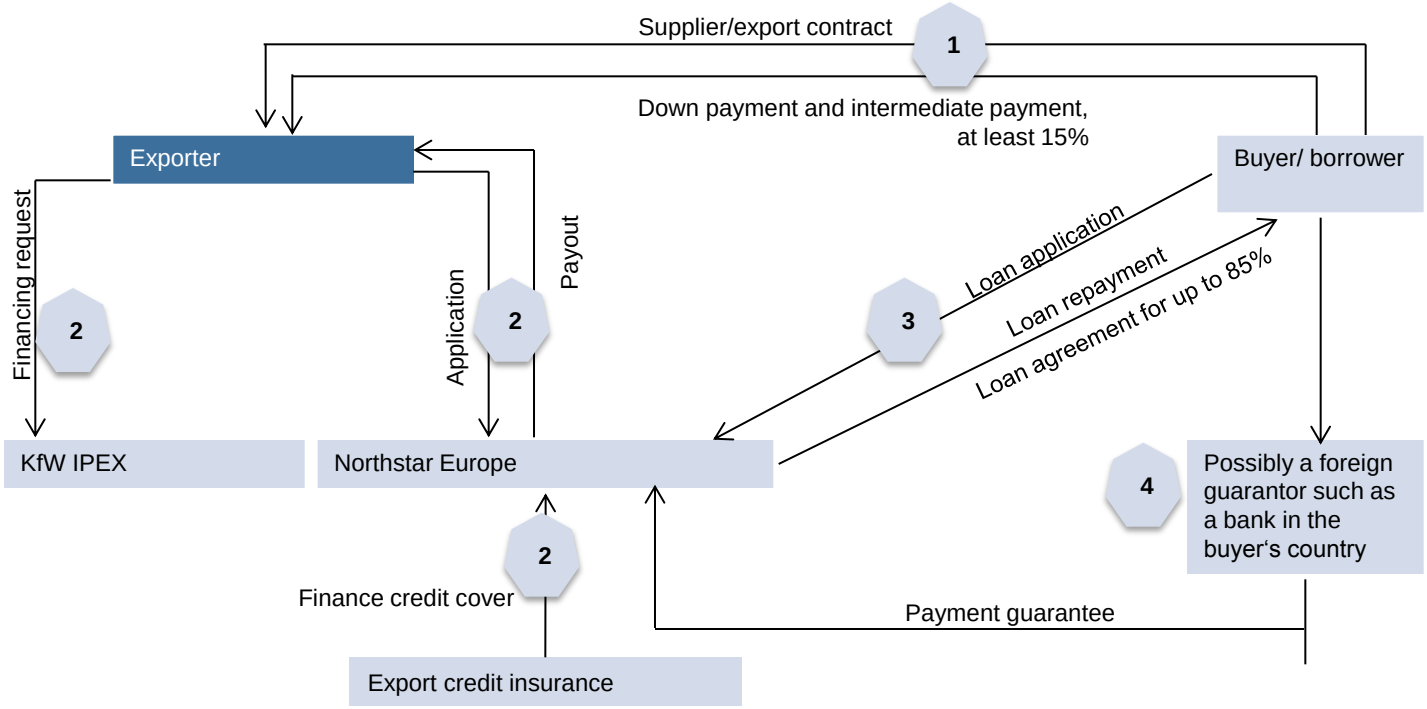
FINANCING AND SUPPORT VIA KFW BANKENGRUPPE
NSE: SMALL TICKET EXPORTS: SUPPLIER AND BUYER LOANS

Type	Programme specifics / criteria for funding
Export financing / loan financing	The lender is Northstar Europe (NSE), headquartered in Luxembourg. NSE is a newly established entity licensed by the Luxembourg Banking Commission. The majority shareholder of NSE is Northstar Trade Finance Inc. (Canada), a specialist provider of small export financing from Canada and the USA for over 15 years. More detailed information regarding the financing process can be found on the following slides.
Eligibility	▪ Open to German exporters or foreign importers of German goods ▪ NSE offers a buyer loan tied to delivery on a commercial basis. ▪ A maximum 85% of the order value may be financed. ▪ NSE conducts the financing discussions directly with the buyer. In some cases, local representatives are consulted. ▪ In order to verify creditworthiness, NSE requires attested annual financial statements from the buyer for the past three years. The documents may be submitted directly to NSE by the buyer or via the exporter.
Term	▪ Medium to long-term loan terms of 2 to 5 years in accordance with OECD consensus (usually for redeemable loans with 8 or 10 equal half-yearly instalments from the point of delivery)
Volumes/conditions	▪ Volumes of up to € 100 million of export order value through the European Recovery Programme (ERP) ▪ → Interest rates: fixed or variable, in accordance with country risk (further information on this can be found at http://www.coface.de) ▪ Volumes of € 0.5 - € 5 million through small ticket exports
Contact	▪ Directly through Partnerbank Northstar Europe (additional information can be found in the KfW IPEX leaflet); E-mail: info@northstareurope.eu; Web: www.northstareurope.eu

Sources: BMWi (2014), KfW (2014)

FINANCING AND SUPPORT VIA KFW BANKENGRUPPE
NSE: SMALL TICKET EXPORTS - SUPPLIER AND BUYER LOANS

As previously described, KfW IPEX-Bank and Northstar Europe S.A. (NSE) have entered into a cooperation agreement for the purpose of improving financing opportunities for smaller commercial export transactions. Below is **an example of a financing structure for supplier and buyer loans via NSE.**



The **1st step** of export financing is the supplier and buyer contract between the exporter and buyer, for which a down payment of 15% is required. In the **2nd step**, the exporter submits a financing request to KfW IPEX-Bank and an application to NSE. NSE covers the possible payout using an export credit insurance policy. Parallel to this in the **3rd step**, the buyer submits a loan application to NSE for the remaining 85%. In the **4th step**, it may be necessary for a foreign guarantor to grant a payment guarantee.

Sources: DEG (2014b), IPEX (2014)

EXPORT FINANCING VIA AKA AUSFUHRKREDIT-GESELLSCHAFT

As described above, AKA Ausfuhrkredit-Gesellschaft mbH is the private-law counterpart to the public KfW Bankengruppe. AKA is a special bank for export financing and is structured as a consortium bank. Its shareholders (members of the consortium) are around 25 banks, including the head of the consortium, Deutsche Bank AG.

AKA offers financing and services in conjunction with short-, medium- and long-term export transactions as well as international transactions. An important part of this is **CIRR loans**. CIRR stands for Commercial Interest Reference Rate. The CIRR is a reference interest rate that the OECD specifies to its Member States as a minimum interest rate for state-supported financing of exports of investment goods and associated services in developing countries. Depending on the currency, the CIRR is geared toward the loan costs for prime domestic borrowers, with an additional surcharge of 100 basis points. In the Member States of the euro zone, a uniform CIRR rate applies. The CIRR may be increased by a refinancing surcharge of KfW IPEX that is to be passed directly on to KfW IPEX. A surcharge on top of the CIRR as a risk margin for loan-granting banks is also common.

In Germany, public funds are only used to support exports to certain countries – the countries included on the DAC list. Turkey is on this list which can be viewed here . Funds to support exports are made available by the Federal Republic of Germany and come from various sources including the **ERP special endowment**. These funds involve fixed interest rate loans subsidised by the ERP special endowment with HERMES cover for German goods and services exported to selected countries such as Turkey (see the slide "KFW IPEX-Bank: Supplier and Buyer Loans"). In Germany, only AKA and the state-supported KfW are allowed to offer these loans.

Summary:
CIRR loans are loans
- at fixed interest rates
- with HERMES cover
- for the medium- and long-term financing of German goods and services
- in selected countries.

The process for granting CIRR loans is presented on the following slide.

Source: AKA (2014)

EXPORT FINANCING VIA AKA AUSFUHRKREDIT-GESELLSCHAFT PROCESS FOR CIRR LOANS

1. Application to AKA:
Requirements:
• Export transaction must be eligible for funding from the point of view of the federal government, which means: Is the export of investment goods and services being made to a country on the OECD's DAC list?
• Is HERMES cover available for a loan period of at least four years from the point of initiation?
• Upper loan limit (usually € 85 million)
• Loan granted in EUR or USD? (Special justification must be provided for loans in USD.)
Application:
▪ Application via the borrower's bank, which submits the loan application to AKA. Documents are required for assessing the creditworthiness of the exporter, loan recipient and the guarantor, if applicable, as well as excerpts from the export contract of sections relevant to the loan application.
2. Loan application review by AKA: Review of the loan application depends on the completeness and plausibility of the documents submitted. AKA's approval is given via the exporter's bank and is subject to the availability of CIRR funds. Approval is usually limited to three months and may be extended.
3. Provision of funds: The funds are administered by the Federal Ministry for Economic Affairs and Energy (BMWi). Due to the limited availability of CIRR funds, AKA may only apply for the loans at the BMWi within a narrow time frame. If the current CIRR rate is to be applied, the application must be submitted to KfW 10 banking days before conclusion of the loan agreement for EUR loans and 20 banking days before conclusion of the loan agreement for USD loans. At this point in time, the basic HERMES cover approval must have been received. AKA informs those involved regarding the decision of the BMWi.
4. Reservation of a CIRR rate: Only possible after confirmation by the BMWi. The reservation is valid for up to 120 days, with the current interest rate being increased by 20 basis points. An additional fee of one tenth of a percent of the reserved loan amount must also be paid. There is no obligation to accept the loan; the reservation fee is forfeited after 120 days. Approval is usually possible on short notice. (Note: the CIRR rates are set anew in the middle of each month.)
5. Conclusion of the loan-granting process: For the entire term of the loan, the interest rate applicable on the day of the conclusion of the loan agreement applies, with a refinancing surcharge from KfW depending on the market circumstances. A bank margin is added to this unless the loan recipient decides in favour of a reserved interest rate. AKA announces the conclusion of the loan agreement to the BMWi and applies for final cover approval from HERMES.
6. Payout: The loan is paid out to the exporter no later than seven banking days after submission of a payout certificate.

Source: AKA (2014)

EXPORT FINANCING VIA HERMES SHORT-TERM SUPPLIER LOANS

Type	Programme specifics / criteria for funding
Collective cover: Whole turnover guarantee policy	The whole turnover guarantee policy (APG) secures short-term receivables (payment term of up to twelve months) for German exporters making repeated deliveries to several buyers in different countries. The contract has a term of one year. Approximately two months before the agreement lapses, the exporter receives the offer of an extension.
Eligibility	German export companies with an annual coverable export turnover of at least € 500,000 from different markets. Other export credit guarantees are available for amounts smaller than this such as a turnover guarantee tailored especially for companies with low coverable export turnover, the APG-light (see following slide).
Term	• Short-term (up to 12 months)
Volumes/conditions	• Premium is set as an individual percentage of monthly turnover and is applicable for the entire term of the contract. • 5% excess (of the default total) for political risks, 10% for economic risks. Limited to the end of 2013, the excess may be reduced to 5% on request and payment of an additional premium.
Contact	Euler HERMES Deutschland AG Cornelia Cleemann Telephone: +49 (0) 40 88 34-91 85 E-mail: info@exportkreditgarantien.de; Web: http://www.agaportal.de/

Sources: Euler&PwC (2014)

EXPORT FINANCING VIA HERMES SHORT-TERM SUPPLIER LOANS

Type	Programme specifics / criteria for funding
Collective cover: Whole turnover guarantee policy - light (APG-light)	The whole turnover guarantee policy - light (APG-light) secures short-term receivables (payment term of up to four months) for German exporters making repeated deliveries to several buyers in different countries.
Eligibility	German export companies with an annual coverable export turnover of a maximum of € 1 million from different markets. The APG-light cannot be used to guard against what are known as marketable risks.
Term	▪ One year for receivables with a payment term of up to four months
Volumes/conditions	▪ The premium is based on an initial remuneration rate: 0.80% of the monthly turnover (minimum remuneration per contract year: € 1000) ▪ 10% excess for all risks in the event of loss of the receivables
Contact	Euler HERMES Deutschland AG Cornelia Cleemann Telephone: +49 (0) 40 88 34-91 85 E-mail: info@exportkreditgarantien.de Web: http://www.agaportal.de/

Another offer from Euler HERMES Deutschland AG for collective cover is revolving supplier loan cover. This offers cover to German exporters delivering goods or services to a buyer in an ongoing business relationship for receivables with a loan term of up to 24 months.

Sources: Euler&PwC (2014)

EXPORT FINANCING VIA HERMES LONG-TERM SUPPLIER LOANS

Type	Programme specifics / criteria for funding
Individual cover: Supplier loan cover	Supplier loan cover enables German export companies to secure a receivable from an individual export transaction (goods delivery or service provision).
Eligibility	German export companies
Term	▪ Payment term of the cover: short-term (up to two years, see slide 100) ▪ Payment term of the cover: medium- or long-term (two years or more, see slide 100)
Volumes/conditions	▪ Premium: A one-time payment of a certain percentage of the covered order value (without interest) as well as special processing fees which are determined individually. ▪ Excess: 5% for political risks ▪ Usually 15% for economic risks; limited to the end of 2013, the excess may be reduced to 5% on request and payment of an additional premium.
Contact	Euler HERMES Deutschland AG Telephone: +49 (0) 40 88 34-90 00 E-mail: info@exportkreditgarantien.de; Web: http://www.agaportal.de/

Source: Euler&PwC (2014)

EXPORT FINANCING VIA HERMES SUPPLIER LOANS FOR SERVICES

Type	Programme specifics / criteria for funding
Individual cover: Service cover	With service cover, a German exporter or contractor secures a receivable from an export transaction that deals in the provision of services and is not associated with the export of goods.
Eligibility	German companies in the service sector
Term	▪ Payment term of the cover: short-term (up to two years, see slide 100) ▪ Payment term of the cover: medium- or long-term (two years or more see slide 100)
Volumes/conditions	▪ Premium: a one-time payment of a certain percentage of the covered order value (without interest) as well as special processing fees ▪ Excess: 5% for political risks ▪ Usually 15% for economic risks; limited to the end of 2013, the excess may be reduced to 5% on request and payment of an additional premium
Contact	Euler HERMES Deutschland AG Matthias Jost Telephone: +49 (0) 40 88 34-95 47 E-mail: info@exportkreditgarantien.de; Web: http://www.agaportal.de/

Other offers from Euler HERMES Deutschland AG for individual cover are: finance credit cover, finance credit cover express, manufacturing risk cover, construction cover and project financing.
Information available at: http://www.agaportal.de/

Source: Euler&PwC (2014)

EXPORT FINANCING VIA HERMES
ADDITIONAL OFFERS FOR EXPORT FINANCING

Type	Programme specifics / criteria for funding
Supplementary forms of cover:	▪ **Aval guarantee (counter guarantee):** An exporter often needs to procure contract guarantees for an export transaction. The guarantor commissioned with issuing the contract guarantee debits the credit line of the exporter with the respective guarantee total. Guarantors are usually only willing to issue a guarantee if the exporter offers appropriate collateral. This can lead to limited liquidity for the exporter. With the aval guarantee, the federal government is obligated to reimburse the guarantor for a large part of the amount that it would have to pay to the foreign buyer (the warrantee) if the contract guarantee is called. ▪ **Seizure risk cover:** Seizure risk cover allows German exporters to secure their typical risks for such business in foreign countries in which, when the goods cross the border, it is not yet determined whether the goods will be sold at all or finally sold in the foreign country (e.g. for deliveries to a consignment warehouse or for sale on a trial basis) or when sale is not the primary intention (e.g. delivery to a customs or trade fair warehouse). ▪ **Leasing cover:** With leasing cover, a lessor secures its leasing receivable from a cross-border leasing transaction with a foreign lessee. ▪ **Contract guarantee cover:** Contract guarantee cover enables a German exporter needing to issue a guarantee to the buyer to secure its own contractual obligations to protect itself from losses incurred through the politically occasioned or unlawful calling of this guarantee.
Online portal/advice hotline	▪ http://www.agaportal.de Telephone: +49 (0) 40 88 34-90 00

Source: Euler&PwC (2014)

FINANCING VIA INTERNATIONAL INSTITUTIONS
ORGANISATION OF THE EUROPEAN INVESTMENT BANK

The European Investment Bank (EIB) is one of the world's largest providers of finance and active in more than 150 countries. Companies in particular can benefit from its specialisation in financing large projects through individual loans.

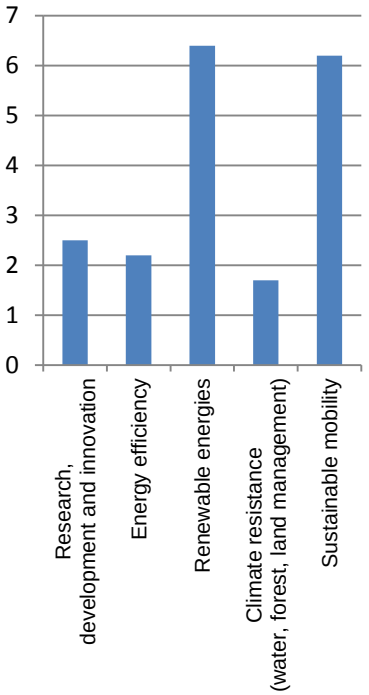
The EIB Group includes the European Investment Bank and the European Investment Fund (EIF). The owners of the EIB are the Member States of the European Union. The cooperation between the EIB and the EIF is mainly concentrated on support for small and medium-size enterprises (SME).

On behalf of the EU, the EIB also provides long-term financing for large investment projects and uses the following instruments for SME support:

- Medium and long-term global loans to financial intermediaries in the banking sector
- Venture-capital financing in FEMIP (Facility for Euro-Mediterranean Investment and Partnership) and ACP countries (Asia, Caribbean, Pacific, including South Africa). Further information is available here .

Climate protection projects account for 27 percent of the bank's loans. The majority of EIB financing in the environmental sector is awarded to EU countries. In 2013, EIB loans in the environmental sector totalled € 19 billion. Of this total, more than 90% was used for projects in the European Union. This does not include environmental protection elements of projects, the overall goal of which is not directly related to the environment. These components are currently not recorded statistically by the bank. Within the EU, the majority of financing was provided for climate protection, the environment and health, and sustainable transportation. **In the candidate and potential candidate countries of the EU, environmental projects totalling € 718.7 million were supported.** In addition, since 2012 the EIB has provided Turkey with € 300 million for climate protection projects via the Mid-size Sustainable Energy Financing Facility of the European Bank for Reconstruction and Development (see following slide). In 2011 the EIB doled out a total of € 262 million to Mediterranean partner countries for such environment projects, and €267 million to ACP countries. € 46 million went to the EU's eastern neighbour countries.

EIB financing in 2013 for climate protection (in billions of Euros)



Source: European Investment Bank (2014)

FINANCING VIA INTERNATIONAL INSTITUTIONS
PROJECT FINANCING VIA EIB

Type	Programme specifics / criteria for funding
Loan and equity financing	Financing larger investment projects: The EIB finances projects in a wide range of sectors. In general, those projects which serve the economic policy goals of the EU are considered for financing. The instruments used are loan and equity financing, guarantees and monetary bonds.
Requirements	▪ Equity capital participation less than 50% on the part of the EIB ▪ Feasibility study as well as in-depth financial information about the borrower ▪ All projects require collateralisation (state guarantees)
Term	▪ Maximum 15-year term for energy projects
Volumes/conditions	▪ Individual loans from € 25 million and up; for ACP countries (Africa, Caribbean, Pacific) from € 10 million ▪ The interest rate is fixed or variable for individual loans
Contact partner	Application via http://www.eib.org/projects/cycle/applying_loan/index.htm Telephone: +352 43 79-62000

Special case: Projects with a scope of less than € 25 million via intermediate institutions
Projects where the total investment costs are less than € 25 million may be financed via so-called global loans, which the EIB awards to local, regional or national partner banks.

Source: EIB (2014b)

FUNDING BY INTERNATIONAL INSTITUTIONS
PROJECT FINANCING VIA EBRD – TurSEFF

The EBRD has been active in Turkey since 2009, so far loaning € 500 million to banks and companies there. Its focus lies in promoting energy concepts in the context of the Sustainable Energy Initiative (SEI). In the Sustainable Energy Finance Facility (SEFF), the SEI has at its disposal a component explicitly concerned with supporting SME . In Turkey it was responsible for establishing the so-called **Turkey Sustainable Energy Financing Facility (TurSEFF)**. The funds are made available by Turkish banks.

Type	Programme specifics / criteria for funding
Loan financing	Turkey Sustainable Energy Financing Facility (TurSEFF). The loans can cover up to 100 percent of the total investment volumes and are orientated towards private households and SME in Turkey with less than 249 employees and annual revenue of less than € 50 million.
Areas of promotion and further information	▪ Residential Energy Efficiency, further information: ▪ Small Scale Commercial Energy Efficiency, further information: ▪ Small Scale Renewable Energy, further information: ▪ Commercial and Industrial Energy Efficiency, further information: ▪ Buildings Energy Efficiency and Renewable Energy, further information: ▪ Manufacturers, suppliers and installers of energy efficiency and renewable energy technology, equipment and materials, further information:
Partner banks	▪ AKABANK, Garanti Bank, Demizbank, Türkiye Bankasie, VakifBank
Volumes	USD 5 million for the themes of energy efficiency, renewable energies and projects with commercially viable real estate; USD 300,000 for small projects; USD 75,000 for residential housing projects; USD 1 million for loans to suppliers from the energy efficiency sector. Further information on the individual sectors can be found by clicking on the promotion area links above.
Contact	Project Office Asmadalı Sokak No. 27; Koşuyolu, 34718 Kadiköy, İstanbul Tel: +90 216 340 0020; Web: http://www.turseff.org/

Source: EIB (2014a), MidSEFF (2014) TurSEFF (2014)

FUNDING BY INTERNATIONAL INSTITUTIONS
PROJECT FINANCING VIA EBRD — MidSEFF

Via the financing facility **Mid-size Sustainable Energy Financing Facility** (MidSEFF), which belongs to the SEI, the EIB and the European Bank for Reconstruction and Development (EBRD) are allocating EUR 970 million for private sector investment. With a sum of nearly EUR 670 million, the EBRD is providing the majority of the financing; the EIB has contributed EUR 300 million to the facility. It comprises one of the technical aid components financed by the European Commission using IPA funding*. Projects are financed with volumes ranging from EUR 10-50 million. The programme focuses on renewable energies, urban infrastructure and infrastructure for companies.

Partner banks of MidSEFF:

- Finansbank
- Denizbank
- AKBANK
- Garantie Bank
- Türkiye Bankasi
- VakifBank
- YapiKredi

MidSEFF contact:

MidSEFF Office
Asmadalı sokak No:27
34718 Koşuyolu
Kadikoy, Istanbul
Turkey
Telephone: +90 216 340 0020
Web: http://www.midseff.com/

Since 2014, the EBRD has made USD 350 million available for the Seker and Isbank commercial banks in Turkey within the framework of the **Turkey Residential Energy Efficiency Financing Facility (TurREEFF)**. The top priority for the funding is redevelopment in the real estate sector, which should above all trigger investment in and project opportunities for construction-integrated PV systems and rooftop systems. See also: EBRD.

*The new Instrument for Pre-Accession Assistance (IPA), which first took force on 1 January 2007, combines all earlier EU accession support instruments into one structure. Thus, the IPA replaces the financial instruments used between 2000 and 2006, namely PHARE, ISPA, SAPARD, the pre-accession instrument for Turkey as well as CARDS, for the western Balkan countries. Further information can be found here: http://www.bmz.de/de/was_wir_machen/wege/ez_eu/eu-wege/mittelosteuropa/

Source: EIB (2014a), MidSEFF (2014)

FUNDING BY INTERNATIONAL INSTITUTIONS
ORGANISATION OF THE WORLD BANK GROUP

The **World Bank Group** was founded in July 1944 during the Monetary and Financial Conference of the United Nations founding members in Bretton Woods (USA), along with the International Monetary Fund (IMF). The World Bank is a special organisation of the United Nations. The World Bank Group consists of five organisations, of which IFC and MIGA are of particular relevance for realising renewable energies projects in the private sector.

The **IFC** of the World Bank Group is active worldwide as a financier of the private sector and specialises in funding large infrastructure projects. The **MIGA**, similar to HERMES, specialises in export credit insurance and export guarantees for companies.

World Bank Group					
	IBRD	IDA	**IFC**	**MIGA**	ISCSID
Full name	International Bank of Reconstruction and Development	International Development Association	**International Finance Corporation**	**Multilateral Investment Guarantee Agency**	International Center for Settlement of Investment Disputes
Mission	Support for developing countries (DC) with relatively high per capita income	Support for the poorest DCs	**Direct support of the private sector in developing countries**	**Support for DCs via credit insurance**	The ISCSID settles investment disputes between governments and foreign investors.
Target group	Governments	Governments	**Private sector**	**Private sector**	Private sector / Governments

Sources: BMZ (2014), IFC (2014)

FUNDING BY INTERNATIONAL INSTITUTIONS
PROJECT FUNDING BY IFC

Type	Programme specifics / criteria for funding
Credit and equity financing	**Financing large investment projects via credit or equity capital**
Eligibility	▪ Open to all branches of trade. ▪ Focus on telecommunications, environment protection, transport and electricity supply. However, other sectors are not excluded.
Term	▪ Usually 7 to 12 years, or a maximum of 20 years for equity capital and debt financing.
Volumes/conditions	▪ USD 1-100 million of debt and equity financing are also possible in local currencies. ▪ Loans are usually limited to 25% of the project volume. ▪ Equity between 5% and 20%.
Contact	Application via: http://www1.ifc.org/wps/wcm/connect/corp_ext_content/ifc_external_corporate_site/what+we+do/about+ifc+financing_investment+proposals Contact: Rolf Behrndt, Regional Manager Istanbul, Turkey Telephone: + 212 37 65 24 79; E-mail: RBehrndt@ifc.org

Source: IFC (2014)

FUNDING BY INTERNATIONAL INSTITUTIONS
EXPORT FUNDING BY MIGA

Type	Programme specifics / criteria for funding
Export credit insurance: supplier and buyer credits	The Small Investment Programme (SIP) provides insurance against non-commercial risks. The programme is aimed at small and medium-sized enterprises that want to insure their export business. It insures investments in the fields of agriculture, tourism, services, financing and production. It covers the following risks: currency inconvertibility or transfer restrictions, government expropriation, war and civil disturbance.
Eligibility	▪ Open to all branches of trade except petroleum, gas and mining investments. ▪ Small and medium-sized enterprises with less than 300 staff. ▪ Total assets lower than US$ 15 million. ▪ Revenue lower than US$ 15 million per year.
Term	▪ Maximum insurance term of ten years (minimum insurance term of three years).
Volumes/conditions	▪ Amounts up to USD 10 million. For insuring larger amounts refer to "MIGA's regular guarantee programme". More information can be found here: http://www.miga.org/investmentguarantees/index.cfm?stid=1796
Contact	Application via http://www.miga.org/investmentguarantees/index.cfm?stid=1802 Hal Bosher (Investment Officer) Telephone: +1 202 473 0993 migasip@worldbank.org

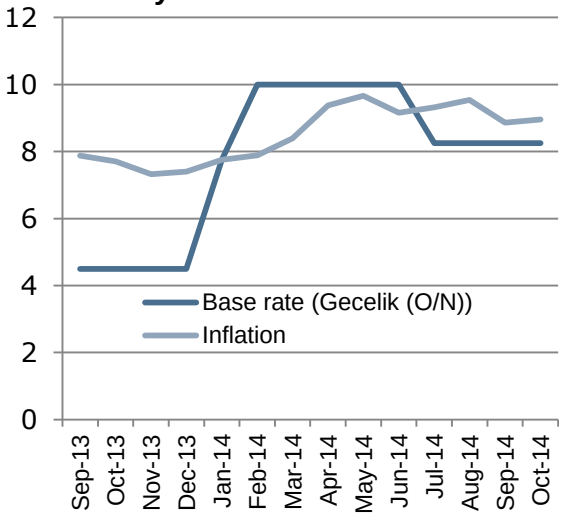
Source: MIGA (2014)

INTEREST RATE TRENDS IN TURKEY (1/2)

Türkiye Cumhuriyet Merkez Bankası (TCMB) is Turkey's central bank. The TCMB's most important tasks include open market transactions, protecting the Turkish Lira's internal and external value, managing the country's gold and foreign exchange reserves, regulating the money supply and its speed of circulation, taking regulatory measures to ensure the stability of the financial system, money and foreign exchange markets and the monitoring of financial markets. The **base interest rate** is also known as the Overnight Interest Rate or Gecelik Faiz Oranları. Turkey's central bank sets the Turkish Overnight Interbank Funding Rate every month. This is the interest rate that the TCMB aims at for loans between banks with a term of one day. This interest rate affects interest rates for consumer products such as mortgages, savings accounts and loans, among other things. **Since early 2012 this base interest was continuously reduced** to stimulate the economy. Set at over 12 percent in January 2012, the base interest rate had fallen to 4.3 percent by the end of 2013. In wake of the devaluation of the Lira and for fear of a further decline , the base interest rate took a significant hike in January 2014 to 10 percent. As a result, the Lira took a 3 percent drop against the US dollar. Inflation was at 9.3 percent in July 2014, well over the medium target rate of 5 percent. Analysts expect the full year inflation rate for 2014 to be at 9.2 percent and at 7.1 percent for 2015. **The central bank has also increased its minimum reserve requirements** for Turkish Lira and foreign currency deposits. The earlier reductions in the interest rate are working against the goals of the current central bank governor, Erdem Basci, who wants to reduce consumer price inflation to 5 percent and growth in credit volume to 15 percent this year.

In general, Turkey's **creditworthiness** in 2014 has been rated between 'good' and 'speculative' by the leading rating agencies. Turkey scores well short of Germany and is rated similar to Croatia in an international comparison. Fitch and Moodys take a less positive view of developments in Turkey's future credit rating, with Moodys changing their outlook for Turkey to negative at the beginning of this year. By their own account, reasons for this include political unrest and increased pressure on the external financial position of Turkey due to its decreased global liquidity. Moodys also cited the decline in GDP growth and uncertain political conditions as additional reasons for the change.

Interest and inflation rate trends in Turkey 2013/2014 in %



Source:TCMB (2014a)

Country	Standard & Poors	Moodys	Fitch
Turkey	BB+	Baa3	BBB-
Germany	AAA	AAA	Aaa
Croatia	BB+	Baa3	BB

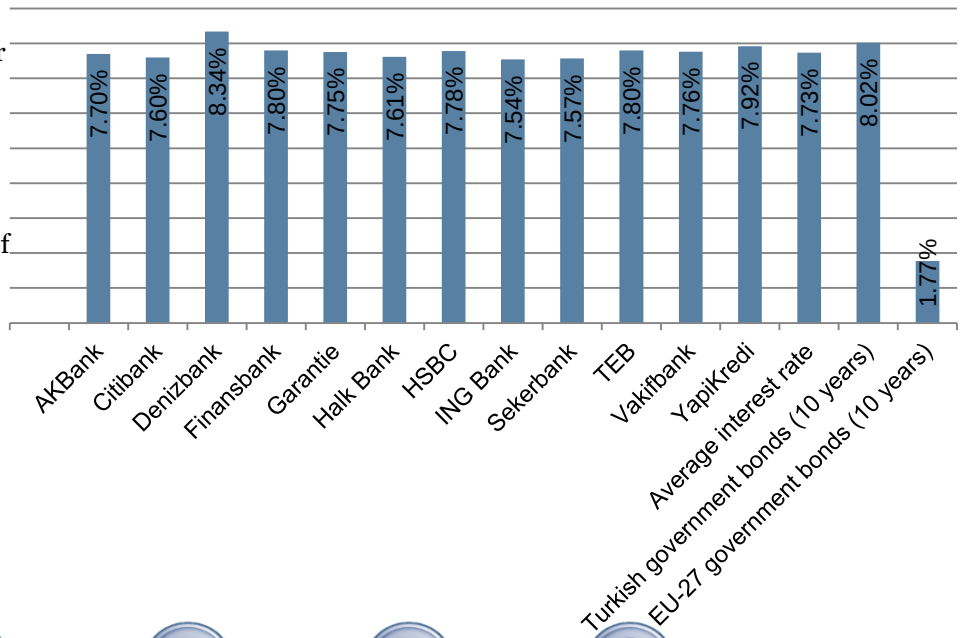
Source: TCMB (2014b), further information on ROM is available from the TCMB (2014a)

INTEREST RATE TRENDS IN TURKEY (2/2)

Annual interest rates for savings deposits held in private banks in Turkish Lira on 30 October 2014 are shown in the chart below. The figures are given for deposits of 25,000 Turkish Lira. The figures were derived from the banks' Internet sites and Bodrumbulletin.com. Turkey's biggest banks are the Yapı Kredi Bankası-Koçbank, Türikiye İş Bankası (Isbank), AKBANK and Garanti Bankası. The interest rates of AKBANK, Citibank, Denizbank, Finansbank, Garanti Bankası, Halk Bank, HSBC, ING Bank, Turkiye Bankasi, Sekerbank, TEB, Vakifbank and YapiKredi were taken into account. Interest on Turkish Lira deposits in Turkey generally lies somewhere between 6.3 and 7.5 percent, thus well above interest rates in the European currency area.

In Turkey, the average interest rate on savings deposits is 7.73 percent (2013 = 7.06 percent). Interest on loans is higher than the interest rates shown for savings deposits. Turkey offers 6.25 percent of additional interest on ten-year government bonds compared with the EU average (EU-27). Some banks have already gained some experience with renewable energies projects: The AKBANK has so far financed mainly wind energy and hydroelectric projects. By the end of 2011, the Yapı Kredi Bank had financed 122 energy projects with a volume of USD 4 billion. 76 percent of these projects were in the area of renewable energies. The Garanti Bank manages 30 percent of the total TurSEFF funds (i.e. USD 60 mill. of USD 200 mill.) and € 150 mill. Euros of MidSEFF Initiative funding. The bank also offers technical consultancy free of charge to projects worth more than USD 300,000. This free consultancy is mandatory for projects worth over USD 1 million. In 2011, the Halkbank financed renewable energies projects with a volume of € 80 million.

Interest rates on private savings deposits/government bonds in % in October 2014

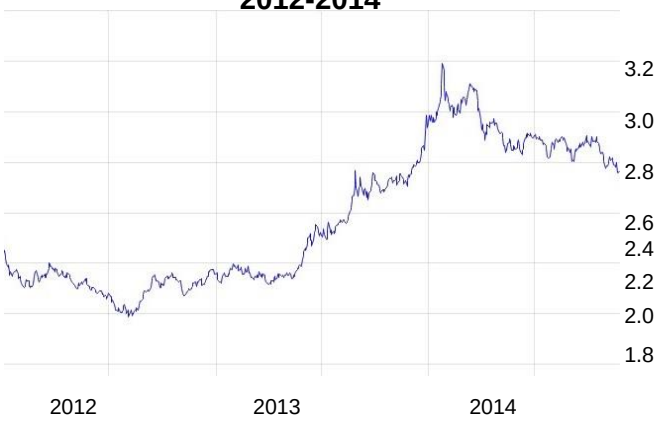


Source: BB (2014)

COUNTRY SPECIFIC RISK ASSESSMENT FOR TURKEY
CURRENCY RISKS

Turkey is faced with large deficits in foreign trade and balance of payments, which, combined with high levels of debt, make it susceptible to currency fluctuations. The Lira has dropped by around 30 percent against the Euro in two waves since 2010, but has been relatively stable in the third quarter of 2014. This stability was only possible after the Central Bank raised the lending rate significantly. The measure has made capital flow out of the country unattractive. However, higher lending rates have made it more difficult for companies to secure capital market financing. In 2013, the Lira fell by about a quarter against the Euro and dollar. The Central Bank buying up two billion dollars worth of Lira has had no effect. Economic growth of 8.8 percent in 2011 has declined significantly, falling to 2.1 percent in 2012 and 4 percent in 2013. For the current year, the World Bank and IMF expect growth to be 2.4 and 2.3 percent, respectively. Another reason for the falling exchange rate is the unstable political situation, **yet the exchange rate has stabilised in 2014**. Turkey has also been fully caught up in the latest currency crisis as the US central bank initiates the end of its expansionary monetary policy, which has convinced many investors to pull their money out in order to seek profitable investments in the USA.

Exchange rate trends: Euro/Turkish Lira 2012-2014



Hedging offers various opportunities for **eliminating exchange rate risks**. Foreign exchange (forex) hedging is the practice of eliminating currency exchange risks (in a capital investment, for example) by taking an opposite position to protect against changes in the exchange rate. Foreign currency risks, which, for example, arise when an investor makes a capital investment in a foreign currency, can be eliminated via forex hedging by taking an equal and opposite position (e.g. in the Euro).

It is also possible to **hedge risk via swaps**. Swaps are contracts between two parties that have agreed to exchange their cash flows during a specified future timeframe. In practice, there are several types of 'swaps', however, interest rate swaps and forex swaps dominate. Both types are often combined when interest income in one currency is exchanged for interest payments in a foreign currency. In an interest rate swap, future interest payments – at a fixed to floating rate – are exchanged by two parties, with specified terms. A currency swap is an agreement between two parties to use a foreign exchange transaction to conduct a spot exchange transaction and an opposite transaction in the same amount in the quoted currency.

Sources: TCMB (2014a, 2014b)

GOVERNMENT SUPPORT PROGRAMMES FOR PV IN TURKEY
THE ETKB: THE FEED-IN TARIFF

In this section, **Turkish government programmes supporting photovoltaics** are comprehensively depicted. The support instrument with its current fixed conditions, current status, notes for plant operators and information on terms and on pending amendments to the laws and contact data are all shown. Photovoltaic plants in Turkey are supported by means of feed-in tariffs. The tariffs have been based on the US Dollar since 2011 and are linked with currency developments. 100 percent of expenditure on PV plants can also be deducted from income tax and PV plants are exempt from paying license fees in the first eight years after starting operations. For the first ten years of a photovoltaic plant's operation, its operator can also receive an 85 percent reduction in fees for land use. Regional support in Turkey varies depending on the plant's location, size of the investment and recipient of the support. The country has also been divided into different zones offering varying levels of support.

Support instruments and their basis in law	Conditions	Term/ next change to the law	Beneficiaries	Contact
Standard national conditions **The feed-in tariff** Yenilenebilir Enerji Kaynakları Destekleme Mekanizması (YEKDEM, Support mechanism for renewable energies), law no. 5.346 on the use of renewable energy sources for electricity generation (of 18.05.2005 as amended on 01.01.2013)	▪ Feed-in tariff: 13.3 US cent/kWh (ca. €10.65 cent/kWh) (exchange rate of 26.11.2014: USD 1 = € 0.8008) ▪ Local content rules provide additional support for Turkish components. See the chapter on market access. ▪ The grid connections of solar plants have been capped to 600 MW until 31.12.2013, and applications for participation in the support and funding process for the following year must be lodged with the energy market regulatory authority by 31 October. ▪ PV plants receive a grid usage tariff that is reduced by 85 percent. Plants producing up to 1,000 kW for the generator's own needs are also exempt from the administrative fees charged by the EIE (office for electricity studies) and DSI (state water authority).	§ 5346: in force since 5/2005 § 6094 (legislative amendment): increased FIT since 12/2010. The feed-in tariff is set for ten years. Only plants that have begun operations or will begin operations between 18.05.2005 and 31.12.2015 can receive remuneration.	Operators of licensed PV plants. Only legal persons founded in accordance with the Turkish commercial code as a public limited company or a limited liability company that hold a production licence are eligible for the funding provided by the feed-in tariff system. Licence costs are reduced by just one percent for those generating electricity with renewable energies. The annual licence fee is also waived in the first eight years after a plant begins operations.	Enerji ve Tabii Kaynaklar Bakanlığı (ETKB) Ministry of Energy and Natural Resources Türk Ocağı Caddesi No:2 06100 Çankaya / Ankara / Turkey Tel.: +90 312 212 64 20 Fax: +90 312 222 57 60 E-mail: bilgi@enerji.gov.tr Web: www.enerji.gov.tr

Source: dena (2014)

GOVERNMENT SUPPORT PROGRAMMES FOR PV IN TURKEY
THE EPDK: NET METERING / FEED-IN TARIFF

PV plants can participate in net metering through the energy regulation authority EPDK. Net metering is consistently regulated nationally across Turkey and is aimed at operators of PV plants with a capacity of up to 500 kW, especially those generating electricity for their own use. Unused electricity capacity is remunerated via the feed-in tariff set by the ETKB and can be offset to reduce an electricity bill or establish credit. Distribution network operators are obliged to offset electricity consumption against production and buy surplus electricity **for ten years at a set price** (feed-in tariff). (See previous slide.)

Support instruments and their basis in law	Conditions	Term/ next change to law	Beneficiaries	Contact
Standard national conditions **Net metering** Elektrik Piyasasında Lisansız Elektrik Üretimine Ilişkin Yönetmelik (21.07.2011 - Son Hali: 30.12.2012 Tarihli ve 28513 Sayılı Resmi Gazetede Yayinlanan Yönetmetmelik), Ordinance on non-licensed electricity generation for the electricity market (of 21.07.2011 as amended in the publication in the statutory gazette of 30.12.2012.	PV plants with a maximum capacity of 1 MWp are entitled to participate in net metering. The electricity generated should be primarily used to cover the generator's own needs. Surplus capacity can be fed into the grid and remunerated with the regular feed-in tariff. A local content bonus of up to 6.6 US cent/kWh is granted for the plant's first five years for components made in Turkey within the framework of the net metering system. The bonus is paid for surplus electricity and calculated out of the difference between energy consumption and production.	In force since 07/2011 Term: ten years, five years for local content	Operators of PV plants generating up to 500 kW for their own consumption Net metering is available to natural and legal persons.	T.C. Enerji Piyasası Düzenleme Kurulu (EPDK) Energy Market Regulatory Authority Muhsin Yazıcıoğlu Cad. No:51/C 06530 Yüzüncüyıl / Cankaya / Ankara Tel.: +90 312 201 40 01 Fax: +90 312 201 40 5 Web: http://www.epdk.org.tr

Source: dena (2014)

COUNTRY-SPECIFIC RISK ASSESSMENT - TURKEY
WORLD ECONOMIC FORUM: RANKED 45 OF 144 COUNTRIES REVIEWED

	Criterion	Turkey (rank)	Germany (rank)
	Overall ranking	**45**	**5**
Basic data	Institutions (property rights, judicial independence)	64	17
Basic data	Infrastructure	51	7
Basic data	Macroeconomic environment	58	24
Basic data	Health situation, primary school	69	14
Efficiency boosters	Higher education and vocational training	50	16
Efficiency boosters	Efficiency of the goods markets (time needed to form a business, intensity of competition, taxation, customs regulations)	43	19
Efficiency boosters	Efficiency of the job market	131	35
Efficiency boosters	Development of the financial market (taking into account restrictions of capital flow)	58	25
Efficiency boosters	Technological progress	55	13
Efficiency boosters	Market size	16	5
Q & I	Quality of the business environment	50	3
Q & I	Innovation	56	6

Turkey ranked 45th among all the countries surveyed in the Global Competitiveness Report 2014/15 published by the World Economic Forum (WEF), **a drop over the previous year by 2 places**. However, compared to 2012, the country still ranks 14 positions better. The reasons for this lie in the country's **economic development in 2011, with economic growth at 8.4 percent. This development is also reflected in the positive evaluation of the country's macroeconomic environment and the development of its financial markets, which have not yet registered the current lower growth trends and exchange rate risks.**

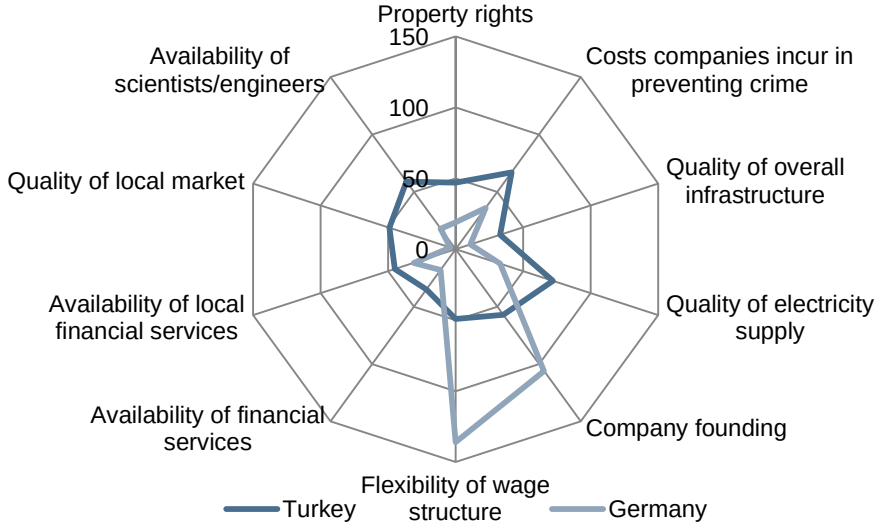
The study measures competitiveness based on twelve pillars, which are combined in the three categories of basic data, efficiency boosters and Q&I. The **basic data**, which are driven by the factor market, form 20% of the overall rating. **Efficiency boosters** make up 50% and the third category of **Q&I** 30%. The twelve individual pillars are composed of different indices, of which a selection will be presented on the next page. All in all, 144 countries were surveyed.

In the comparison with Germany, the differences in the efficiency of the job market and infrastructure reflected particularly negatively on Turkey. A **more positive** assessment was earned in terms of market size.

Source: WEF (2014)

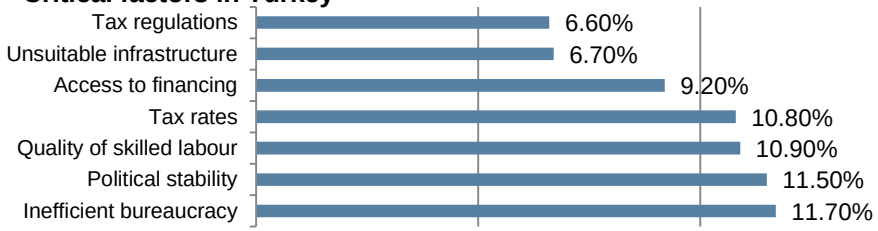
COUNTRY-SPECIFIC RISK ASSESSMENT - TURKEY
WORLD ECONOMIC FORUM: RANKED 45 OF 144 COUNTRIES REVIEWED

Risk assessment Turkey



The illustration to the left compares the risk assessments for Turkey and Germany. The illustration shows only a selection of the indices surveyed by the WEF, mainly criteria that may be critical for realising PV projects. The lower the rank (the closer to the centre), the more positive the assessment. In this report Turkey scores well, especially in the areas of **quality of overall infrastructure** and **availability of scientists and engineers**. Compared with Germany, the low quality of the electricity supply is apparent, particularly in terms of its reliability and access, which may, however, represent opportunities for PV projects. In two areas Turkey is rated as better than Germany - the flexibility of wage structures and the availability of local financial services. **The costs associated with preventing crime** are regarded as particularly critical for German companies in Turkey.

Critical factors in Turkey



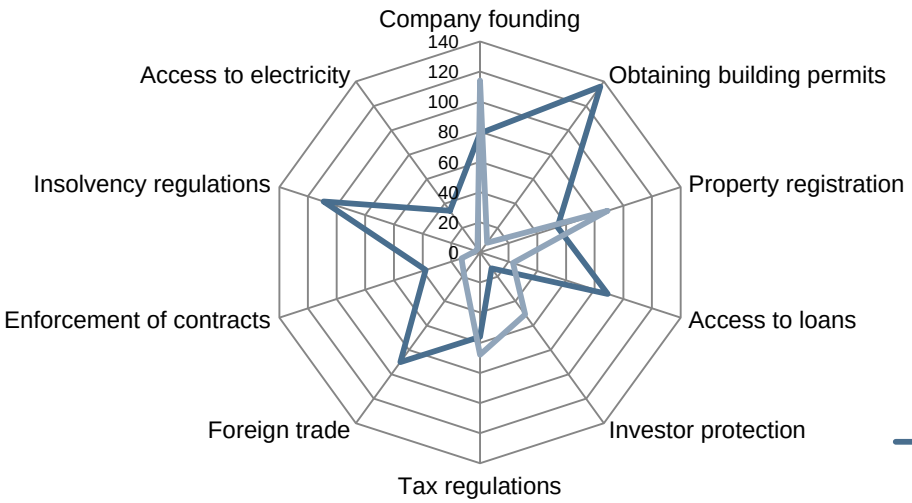
The illustration to the left summarises an independent survey by the World Economic Forum. From a pool of 15 factors, local leaders choose the 7 factors they find the most problematic for their businesses in Turkey. The leaders rated these 7 factors on a scale of 1 (most problematic) to 5 (problematic). The results are represented in the illustration by the frequency of their mention as critical factors in percentage. **Over 11 percent of those surveyed regarded inefficient bureaucracy and political stability as very critical in doing business in Turkey**.

Source: WEF (2014)

COUNTRY-SPECIFIC RISK ASSESSMENT
WORLD BANK: EASE OF DOING BUSINESS (189 COUNTRIES COMPARED)

A further risk assessment of Turkey is based on individual Ease of Doing Business criteria from the World Bank's Index. The diagram below shows an assessment comparing Turkey and Germany. The World Bank assessed a total of 189 countries, ranking them from 1 to 189. The lower the ranking (the closer to the centre), the more positive the assessment. The index is based on the following criteria: legal framework, rules and regulations, and policies and procedures in the respective country. Data was provided by more than 9,600 government officials, lawyers, management consultants and auditors from the 185 economies. The depicted indices are combined from a multitude of indices. Investor protection, for example, combines the three values of business transparency index, liability index and the legal rights of investors.*

Risk assessment of Turkey



- **Turkey ranks 71st in the world (Germany ranks 20th)** on the Ease of Doing Business Index.
- **Particularly problematic for implementing PV projects** according to this assessment were the aspects of "obtaining building permits" (according to the World Bank taking 169 days and 18 processes), "insolvency regulations" and "access to loans".
- In cases of insolvency, creditors in Turkey receive only 1/3 of the average amount paid out in the OECD. Payouts also take twice as long to be made.
- **Property registration, investor protection** and **company founding were assessed more positively** in comparison with Germany.

Source: World Bank (2014a, 2014b) * You can find detailed information on the method at http://www.doingbusiness.org.

SUMMARY: FINANCING AND SUPPORT

- Interest rate trends: In recent years, the base interest rate in Turkey has been much higher than that in Europe. Turkey's base interest rate has been falling continuously since 2012, until early 2014 when strong interest rate hikes were made to support the Turkish Lira. Currently, the TCMB does not expect any further increases in the interest rate for 2014/2015 as this would counteract the objective of limiting inflation. Inflation for the entire year of 2014 is expected to be over 9 percent. The falling exchange rate against the Euro and the US dollar in particular has reduced the purchasing power for imports of German products.
- The following German Investment and Development Corporation (DEG) programmes offer financing for photovoltaic projects: "Climate partnerships with the Private Sector" (funds projects that use innovative technologies), developp.de (supports financial and personal participation in projects) and funding for feasibility studies. The DEG also offers project financing through loan and equity financing. Export financing (supplier and buyer credits), CIRR loans and credit financing from the KfW IPEX, AKA-Ausfuhrkreditgesellschaft and Euler HERMES Deutschland AG have all proven their worth as instruments in supporting and promoting exports, as has been described above in detail.
- At the European level, the EIB is active in providing credit and equity capital financing in Turkey. The EIB and EBRD primarily provide long-term financing through private Turkish banks. The MidSEFF and TurSEFF facilities in particular offer financing for projects in the area of renewable energies. Supranational institutions such as the World Bank Group (via IFC and MIGA) offer products in the areas of loan and equity financing and export financing (supplier and buyer credits) that are comparable with those in Germany.
- As well as international institutions, local providers and banks are also active in the Turkish market, providing greatly varying financing offers. These banks offer existing financing products and also manage funds allocated by international institutions for implementing sustainable development projects and for providing lines of credit at reduced interest rates (MidSEFF and TurSEFF).
- Support: political support in Turkey is provided through tax relief, net metering and feed-in tariffs. To support PV projects, the ETKB offers the option of deducting 100 percent of expenditures on such projects from income tax. Support can vary greatly according to a plant's location and the support offered there and also varies according to the size of the investment and recipient of the support.
- As part of a general risk assessment, established country-assessment studies by the World Bank and World Economic Forum were cited. These studies rated the following issues as critical to business operations in Turkey: the quality of the electricity supply (access to electricity and reliability of supply), the efficiency of the labour market and the infrastructure. The World Economic Forum survey rated the costs associated with preventing crime in Turkey as especially problematic . However, the market's overall size and the flexibility of wage structures in Turkey were rated positively.

CONTACT PARTNERS IN TURKEY'S BANKING SECTOR

Bank	Address	Phone	Internet site
AKBANK	Sabancı Center 4.Levent 34330 İstanbul	+90 (0) 212 444 25 25	http://www.akbank.com/
Denizbank	Büyükdere Cad. No:106 34394 Esentepe - İstanbul	+90 (0) 212 336 40 00	http://www.denizbank.com/
Finansbank	Büyükdere Cad. No:129 34394 Gayrettepe - İstanbul	+90 (0) 216 522 30 30	http://www.finansbank.com.tr/
Garanti Bankası	Levent Nispetiye Mah. Aytar Cad. No:2 Beşiktaş 34340 İstanbul	+90 (0) 212 318 18 18	www.garanti.com.tr
Türkiye Sınai Kalkınma Bankası	Meclisi Mebusan Cad. 81 Fındıklı 34427 İstanbul	+90 (0) 212 334 50 50	http://www.tskb.com/
Türkiye İş Bankası	İsbank PK 134 34330 Levent İstanbul	+90 (0) 212 316 04 04	http://www.isbank.com.tr
VakıfBank	Hacı Adil Yolu, Çayır Çimen Sokak, No: 2, 1.Levent Beşiktaş/İstanbul	+90 (0) 212 316 70 00	http://www.vakifbank.com.tr/
Yapı Kredi	Yapı Kredi D Blok Plaza Büyükdere Cad. Levent 34330 Bespiktes-İstanbul	+90 (0) 212 339 70 00	http://www.yapikredi.com.tr

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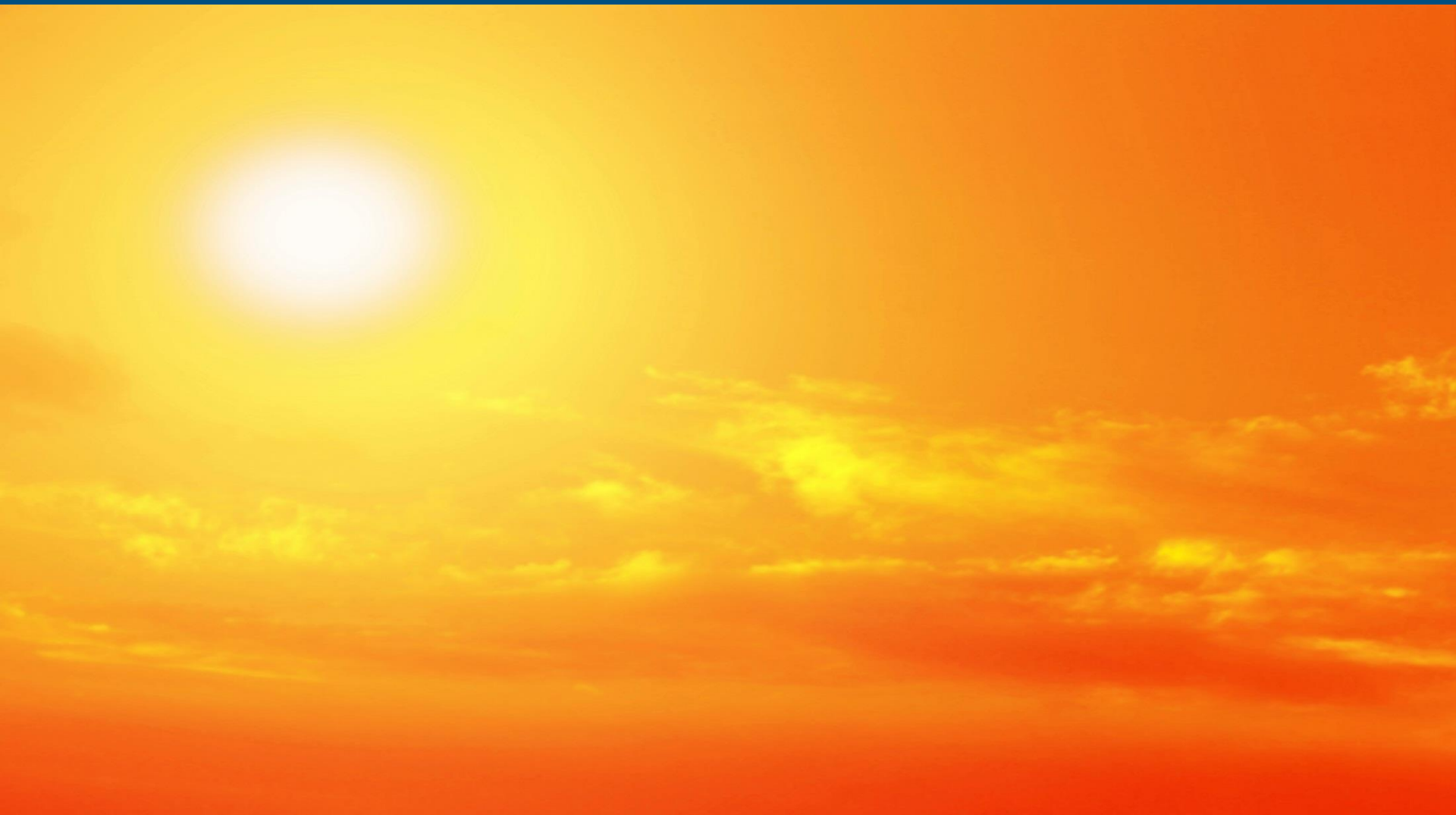
CONTACTS AND COOPERATION PARTNERS



CONTACTS (1/2)

Category	Name	Website
Ministry for Energy and Resources	Enerji ve Tabii Kaynaklar Bakanlığı (ETKB)	www.enerji.gov.tr
Energy market regulatory authority	Enerji Piyasasi Düzenleme Kurumu (EPDK; English: EMRA)	www.epdk.org.tr
State-run electricity supplier	Elektrik Üretim A.Ş. (EÜAŞ)	www.euas.gov.tr
State-run network operator	Türkiye Elektrik İletim A.Ş. (TEİAŞ)	www.teias.gov.tr
State-run electricity wholesaler	Türkiye Elektrik Ticaret ve Taahhüt A.Ş. (TETAŞ)	www.tetas.gov.tr
State-run distribution network operator	Türkiye Elektrik Dağıtım A.Ş. (TEDAŞ)	www.tedas.gov.tr
State-run General directorate for renewable energies	Yenilenebilir Enerji Genel Müdürlüğü (YEGM)	www.eie.gov.tr
Electricity producers' association	Elektrik Üreticileri Derneği (EUD)	www.eud.org.tr
Economic promotion organisation	IHK Türkei – German Chamber of Commerce and Industry in Turkey	www.dtr-ihk.de
Ministry of customs and trade	Gümrük ve Ticaret Bakanlığı	www.gtb.gov.tr

CONTACTS (2/2)

Category	Name	Website
Investment promotion agency	The Investment Support and Promotion Agency	www.invest.gov.tr
Solar energy industry association	Güneş Enerjisi Sanayicileri ve Endüstrisi Derneği (GENSED)	www.gensed.org
Patent office	Türk Patent Enstitüsü	www.tpe.gov.tr
Privatisation authority	Özelleştirme İdaresi Başkanlığı	www.oib.gov.tr
Private Turkish bank	AKBANK	www.akbank.com
Private Turkish bank	Denizbank	www.denizbank.com
Private Turkish bank	Finansbank	www.finansbank.com.tr
Private Turkish bank	Garanti Bankası	www.garanti.com.tr
Private Turkish bank	Türkiye Sınai Kalkınma Bankası	www.tskb.com
Private Turkish bank	Türkiye İş Bankası	www.isbank.com.tr
Private Turkish bank	VakıfBank	www.vakifbank.com.tr
Private Turkish bank	Yapı Kredi	www.yapikredi.com.tr

COOPERATION PARTNERS

- The following companies and organisations were involved in creating this “Market Report Turkey - Photovoltaics” as cooperative partners:

ABOUT THE RENEWABLE ENERGIES EXPORT INITIATIVE

The German Energy Agency (Deutsche Energie-Agentur GmbH - dena) constantly analyses current developments in global renewable energies markets as part of the Renewable Energies Export Initiative of the Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie, BMWi).

The goal of the “Market report Turkey – Photovoltaics” is to facilitate the German photovoltaic industry’s market entry and concrete project implementation on the ground by providing a structured representation of market developments and legal framework conditions.

You will find further information on publications from the Renewable Energies Export Initiative here:
www.exportinitiative.de

If you have any specific questions on target markets please contact:
exportinfo@dena.de