

Solar PV in Austria, Market Outlook to 2025, Update 2015 – Capacity, Generation, Levelized Cost of Energy (LCOE), Investment Trends, Regulations and Company Profiles

Reference Code: **GDAE6536IDB**

Publication Date: **May 2015**

1 Table of Contents

1	Table of Contents	2
1.1	List of Tables	5
1.2	List of Figures	6
2	Executive Summary	7
2.1	Government Support in Conjunction with Technology Development Driving Global Renewable Power Installations	7
2.2	Austria Heading Towards a Clean Energy Mix	7
2.3	Hydropower is the Dominant Source of Power in Austria	8
3	Introduction	9
3.1	Carbon Emissions, Global, 2001–2014	9
3.2	Primary Energy Consumption, Global, 2001–2025	10
3.3	Solar PV, Global, Technology Definition and Classification	12
3.4	Report Guidance	13
4	Renewable Power Market, Global, 2001 – 2025	14
4.1	Renewable Power Market, Global, Overview	14
4.2	Renewable Power Market, Global, Installed Capacity, 2001–2025	15
4.2.1	Renewable Power Market, Global, Cumulative Installed Capacity by Source Type, 2001–2025	15
4.2.2	Renewable Power Market, Global, Cumulative Installed Capacity Split by Source Type, 2014 vs. 2025	16
4.2.3	Renewable Power Market, Global, Comparison among Various Sources, Cumulative Installed Capacity, 2014 – 2025	18
4.3	Renewable Power Market, Global, Power Generation, 2001–2025	19
4.3.1	Renewable Power Market, Global, Power Generation by Source Type, 2001–2025	19
4.3.2	Renewable Power Market, Global, Power Generation, Source Comparison Based on Power Generation, 2014–2025	21
4.4	Renewable Power Market, Global, LCOE Comparison of Power Generating Sources, 2013–2014	23
5	Solar PV Market, Global, 2001–2025	25

5.1	Solar PV Market, Global, Overview	25
5.2	Solar PV Market, Global, Installed Capacity, 2001–2025	26
5.2.1	Solar PV Market, Global Cumulative Installed Capacity Share by Region, 2014 and 2025	28
5.2.2	Solar PV Market, Global Cumulative Installed Capacity Share by Country, 2014 and 2025	30
5.3	Solar PV Market, Global, Power Generation, 2001–2025	32
5.3.1	Solar PV Market, Global, Generation Share by Region, 2014 and 2025	34
5.3.2	Solar PV Market, Global, Generation Share by Country, 2014 and 2025	35
6	Power Market, Austria, 2001-2025	38
6.1	Power Market, Austria, Overview	38
6.2	Power Market, Austria, Installed Capacity, 2001–2025	39
6.2.1	Power Market, Austria, Cumulative Installed Capacity by Fuel Type, 2001–2025	39
6.2.2	Power Market, Austria, Cumulative Installed Capacity Split by Source Type, 2014 and 2025	41
6.3	Power Market, Austria, Power Generation, 2001–2025	42
7	Renewable Power Market, Austria, 2001–2025	44
7.1	Renewable Power Market, Austria, Overview	44
7.2	Renewable Power Market, Austria, Installed Capacity, 2001-2025	45
7.2.1	Renewable Power Market, Austria, Cumulative Installed Capacity by Source Type, 2001-2025	45
7.2.2	Renewable Power Market, Austria, Cumulative Installed Capacity Split by Source Type, 2001-2025	48
7.3	Renewable Power Market, Austria, Power Generation, 2001-2025	50
8	Solar PV Market, Austria	52
8.1	Solar PV Market, Austria, Overview	52
8.2	Solar PV Market, Austria, Installed Capacity, 2001 – 2025	52
8.3	Solar PV Market, Austria, Power Generation, 2001–2025	54
8.4	Solar PV Market, Austria, Project Based Analysis, 2014	56
8.4.1	Solar PV Market, Austria, Major Active Plants, 2014	56
8.5	Solar PV Market, Austria, Investment Trends, 2014	57
8.5.1	Solar PV Market, Austria, Deal Volume vs. Deal Value, 2006–2014	57
8.5.2	Solar PV Market, Austria, Split by Deal Type, 2014	58
9	Power Market, Austria, Regulatory Scenario	59
9.1	National Reform Program 2013	59

9.2	Energy Policy	60
10	Solar PV Market, Austria, Company Profiles	62
10.1	Company Snapshot: Fronius International GmbH	62
10.1.1	Fronius International GmbH - Company Overview	62
10.1.2	Fronius International GmbH – Business Description	62
10.1.3	Fronius International GmbH - SWOT Analysis	63
10.1.4	Fronius International GmbH - Major Products and Services	67
10.1.5	Fronius International GmbH - Head Office	68
10.2	Company Snapshot: Energie AG Oberosterreich Trading GmbH	69
10.2.1	Energie AG Oberosterreich Trading GmbH - Company Overview	69
10.2.2	Energie AG Oberosterreich Trading GmbH - Major Products and Services	69
10.2.3	Energie AG Oberosterreich Trading GmbH - Head Office	69
11	Appendix	70
11.1	Market Definitions	70
11.2	Abbreviations	71
11.3	Bibliography	72
11.4	Disclaimer	72

1.1 List of Tables

Table 1:	Carbon Dioxide Emissions from Energy Consumption, Global (MT), 2001–2014	10
Table 2:	Primary Energy Consumption, Global (Mtoe), 2001–2025	12
Table 3:	Renewable Power Market, Global, Cumulative Installed Capacity by Source Type (GW), 2001–2025.....	16
Table 4:	Renewable Power Market, Global, Cumulative Installed Capacity Split by Source Type (%), 2014 vs. 2025	17
Table 5:	Renewable Power Market, Global, Source Comparison Based on Installed Capacity, 2014–2025.....	19
Table 6:	Renewable Power Market, Global, Power Generation by Source Type (TWh), 2001–2025.....	21
Table 7:	Renewable Power Market, Global, Power Generation, Source Comparison Based on Power Generation, 2014–2025.....	22
Table 8:	Renewable Power Market, Global, Assumptions for LCOE Calculation	23
Table 9:	Renewable Power Market, Global, LCOE Comparison of Power-generating Sources (\$/kWh), 2013–2014.....	24
Table 10:	Solar PV Market, Global, Installed Capacity (MW), 2001–2025	27
Table 11:	Solar PV Market, Global, Cumulative Installed Capacity Share by Region (%), 2014 and 2025.....	29
Table 12:	Solar PV Market, Global, Cumulative Installed Capacity Share by Country (%), 2014 and 2025.....	31
Table 13:	Solar PV Market, Global, Power Generation (GWh), 2001–2025.....	33
Table 14:	Solar PV Market, Global, Generation Share by Region (%), 2014 and 2025	35
Table 15:	Solar PV Market, Global, Generation Share by Country (%), 2014 and 2025	37
Table 16:	Power Market, Austria, Cumulative Installed Capacity by Fuel Type(MW), 2001–2025	40
Table 17:	Power Market, Austria, Cumulative Installed Capacity Split by Source Type (%), 2014–2025	41
Table 18:	Power Market, Austria, Power Generation by Fuel Type (GWh), 2001–2025	43
Table 19:	Renewable Power Market, Austria, Cumulative Installed Capacity by Source Type (MW), 2001-2025	47
Table 20:	Renewable Power Market, Austria, Cumulative Installed Capacity Split by Source Type (%), 2014–2025	49
Table 21:	Renewable Power Market, Austria, Power Generation by Source Type (GWh), 2001-2025	51
Table 22:	Solar PV Market, Austria, Installed Capacity (MW), 2001 – 2025	53
Table 23:	Solar PV Market, Austria, Power Generation (GWh), 2001–2025.....	55
Table 24:	Solar PV Market, Austria, Major Active Plants, 2014.....	56
Table 25:	Solar PV Market, Austria, Deal Volume vs. Deal Value (\$m), 2006–2014	57
Table 26:	Solar PV Market, Austria, Deals by Type, 2014	58
Table 27:	Power Market, Austria, Subsidiary Eligibility for Renewable Sources 2014.....	60
Table 28:	Power Market, Austria, Feed in Tariff	61
Table 29:	Fronius International GmbH, Major Products and Services.....	67
Table 30:	Energie AG Oberosterreich Trading GmbH, Major Products and Services	69
Table 31:	Abbreviations.....	71

1.2 List of Figures

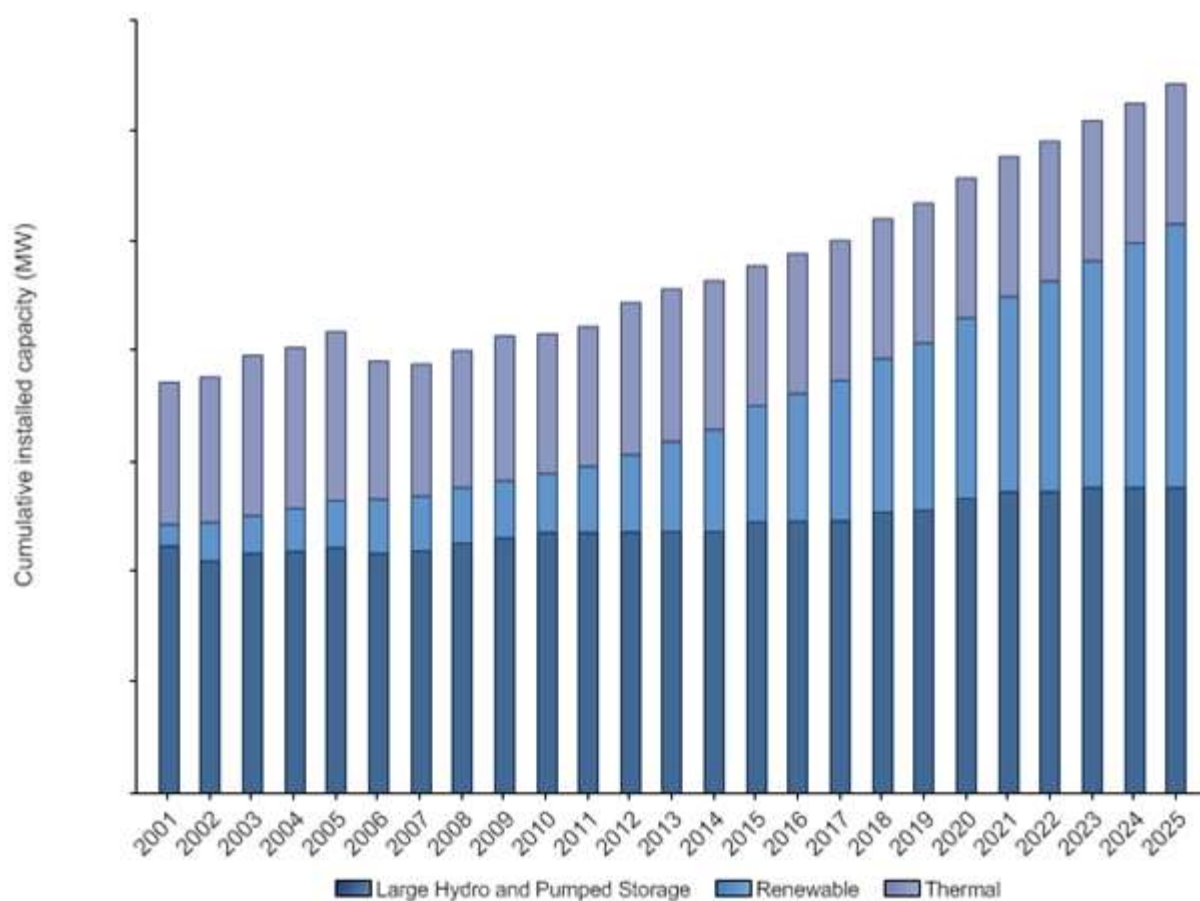
Figure 1: Power Market, Austria, Cumulative Installed Capacity by Fuel Type(MW), 2001–2025	8
Figure 2: Carbon-di-oxide Emissions from Energy Consumption, Global (MT), 2001–2014.....	9
Figure 3: Global, Primary Energy Consumption, Global (Mtoe), 2001–2025.....	11
Figure 4: Renewable Power Market, Global, Cumulative Installed Capacity by Source Type (GW), 2001–2025.....	15
Figure 5: Renewable Power Market, Global, Cumulative Installed Capacity Split by Source Type (%), 2014 vs. 2025	17
Figure 6: Renewable Power Market, Global, Comparison among Various Sources, Cumulative Installed Capacity, 2014–2025	18
Figure 7: Renewable Power Market, Global, Power Generation by Source Type (TWh), 2001–2025	20
Figure 8: Renewable Power Market, Global, Power Generation, Source Comparison Based on Power Generation, 2014–2025	22
Figure 9: Renewable Power Market, Global, LCOE Comparison of Power-generating Sources (\$/kWh), 2013–2014.....	24
Figure 10: Solar PV Market, Global, Installed Capacity (MW), 2001–2025	26
Figure 11: Solar PV Market, Global, Cumulative Installed Capacity Share by Region (%), 2014 and 2025	28
Figure 12: Solar PV Market, Global, Cumulative Installed Capacity Share by Country (%), 2014 and 2025	30
Figure 13: Solar PV Market, Global, Power Generation (GWh), 2001–2025.....	32
Figure 14: Solar PV Market, Global, Generation Share by Region (%), 2014 and 2025	34
Figure 15: Solar PV Market, Global, Generation Share by Country (%), 2014 and 2025	36
Figure 16: Power Market, Austria, Cumulative Installed Capacity by Fuel Type(MW), 2001–2025	39
Figure 17: Power Market, Austria, Cumulative Installed Capacity Split by Source Type (%), 2014–2025	41
Figure 18: Power Market, Austria, Power Generation by Fuel Type (GWh), 2001–2025	42
Figure 19: Renewable Power Market, Austria, Cumulative Installed Capacity by Source Type (MW), 2001-2025	46
Figure 20: Renewable Power Market, Austria, Cumulative Installed Capacity Split by Source Type (%), 2014–2025	48
Figure 21: Renewable Power Market, Austria, Power Generation by Source Type (GWh), 2001-2025	50
Figure 22: Solar PV Market, Austria, Installed Capacity (MW), 2001 – 2025	52
Figure 23: Solar PV Market, Austria, Power Generation (GWh), 2001–2025.....	54
Figure 24: Solar PV Market, Austria, Deal Volume vs. Deal Value (\$m), 2006–2014	57
Figure 25: Solar PV Market, Austria, Split by Deal Type (%), 2014	58

2 Executive Summary

2.1 Government Support in Conjunction with Technology Development Driving Global Renewable Power Installations

2.2 Austria Heading Towards a Clean Energy Mix

Figure 1: Power Market, Austria, Cumulative Installed Capacity by Fuel Type(MW), 2001–2025



Source: GlobalData, Power Database [Accessed on April 10, 2015]

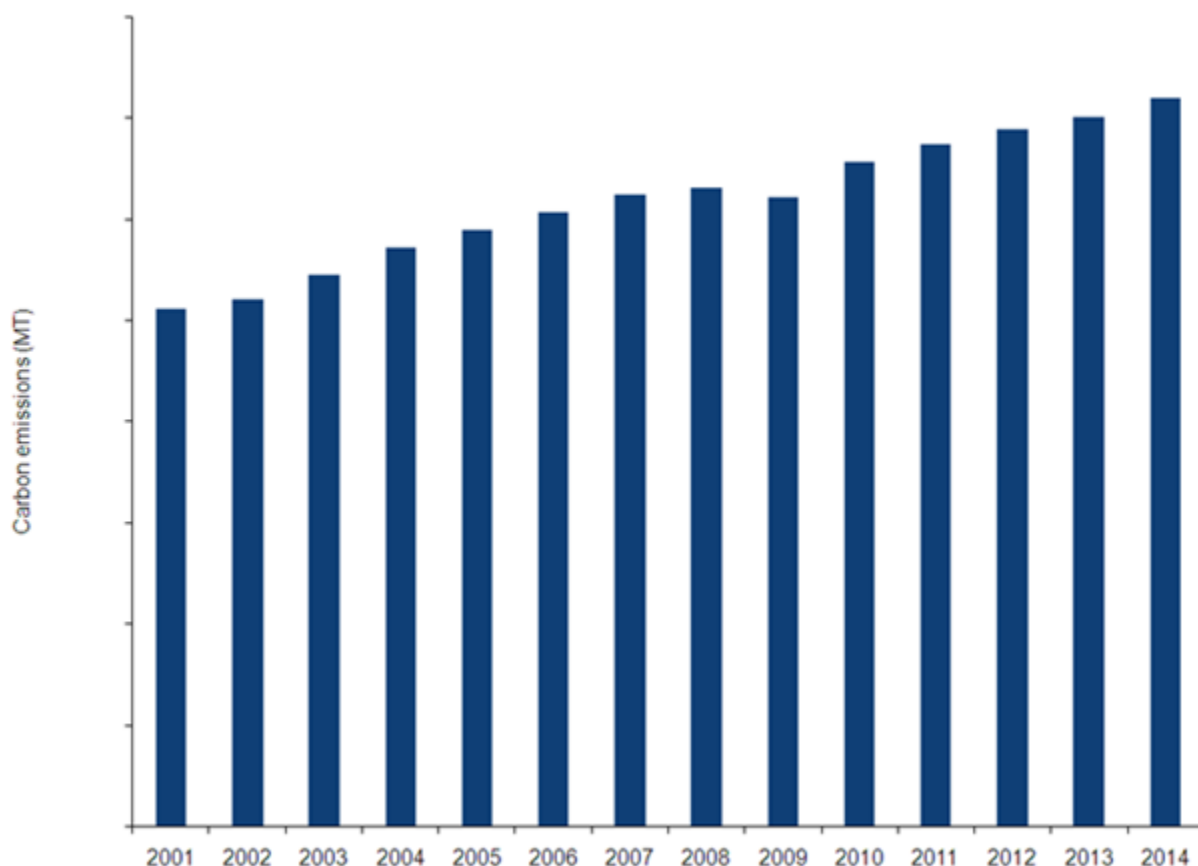
2.3 Hydropower is the Dominant Source of Power in Austria

3 Introduction

3.1 Carbon Emissions, Global, 2001–2014

The need to achieve energy stability, security of energy supply and energy independence, combined with the need to minimize carbon footprints is driving countries across the world to explore different renewable energy technologies such as wind, solar, biopower and geothermal. Battling climate change is as much a concern for most world governments as achieving energy independence and security. The concern over reducing carbon emissions has become prominent in recent years due to the increased use of fossil fuels. Global economic and social developments have resulted in a tremendous increase in the world's total primary energy supply, and a corresponding increase in carbon emissions.

Figure 2: Carbon-di-oxide Emissions from Energy Consumption, Global (MT), 2001–2014



Source: GlobalData; BP Statistical Review, 2014

Table 1: Carbon Dioxide Emissions from Energy Consumption, Global (MT), 2001–2014

Year	Carbon emissions
2001	
2002	
2003	
2004	
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	
Source: GlobalData; BP Statistical Review, 2014	

3.2 Primary Energy Consumption, Global, 2001–2025

3.4 Report Guidance

The report begins with an executive summary that gives a snapshot of the solar PV market in Austria

The Introduction section provides an overview on carbon emissions, energy consumption pattern in the world and the technology definition of solar PV.

The Renewable Power Market, Global section provides an overview of the Renewable Power market at the global level in terms of cumulative installed renewable power capacity and generation during the 2001–2025 period. It also shows the Levelized Cost of Energy (LCOE) comparison of power generation sources.

The “Solar PV Market, Global” section gives a holistic overview of the global solar PV market along with historical (2001–2014) and forecast (2015–2025) installed capacity and generation data. The section covers cumulative installed capacity split by region and by key countries in 2014.

The “Power Market, Austria” section provides an overview of the overall power market in Austria. The section provides installed capacity and generation data for conventional thermal, nuclear, hydro and renewable sources.

The “Renewable Power Market, Austria” section provides an overview of the overall renewable power market in Austria. The section provides cumulative installed capacity and generation data for renewable power sources such as wind, solar PV and small hydro.

The “Solar PV Market, Austria” chapter provides detailed analysis on the solar PV market in the country. The section provides historical (2001–2014) and forecast (2015–2025) installed capacity and generation data. The chapter also provides installed capacity share by major owners, project based analysis with information such as major active and upcoming projects. The chapter provides data on deal value versus deal volume for 2006–2014. The section also provides split by deal type and asset finance deals information.

The “Renewable Energy Policy Framework, Austria” chapter gives an in depth understanding of the renewable energy policy framework in the country and government support provided for renewables in general and Solar PV in particular.

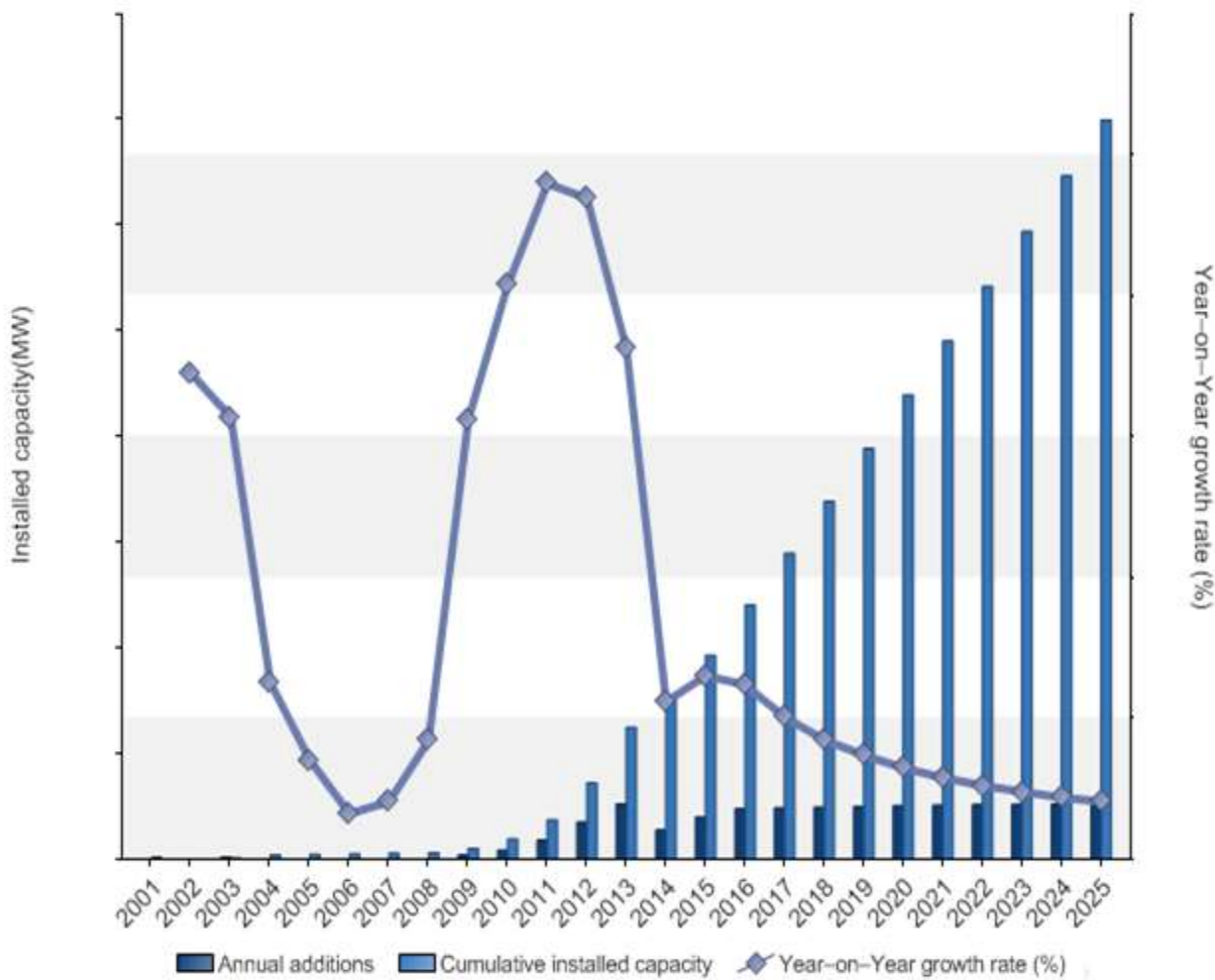
The “Solar PV Market, Austria, Company Profiles” section provides company snapshots of major market participants in the country.

8 Solar PV Market, Austria

8.1 Solar PV Market, Austria, Overview

8.2 Solar PV Market, Austria, Installed Capacity, 2001 – 2025

Figure 22: Solar PV Market, Austria, Installed Capacity (MW), 2001 – 2025



Source: GlobalData, Power Database [Accessed on April 29, 2015]

Table 22: Solar PV Market, Austria, Installed Capacity (MW), 2001 – 2025

Year	Annual additions	Cumulative installed capacity	Year-on-Year growth rate (%)
2001			
2002			
2003			
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025			

Source: GlobalData, Power Database [Accessed on April 29, 2015]

8.3 Solar PV Market, Austria, Power Generation, 2001–2025

Figure 23: Solar PV Market, Austria, Power Generation (GWh), 2001–2025

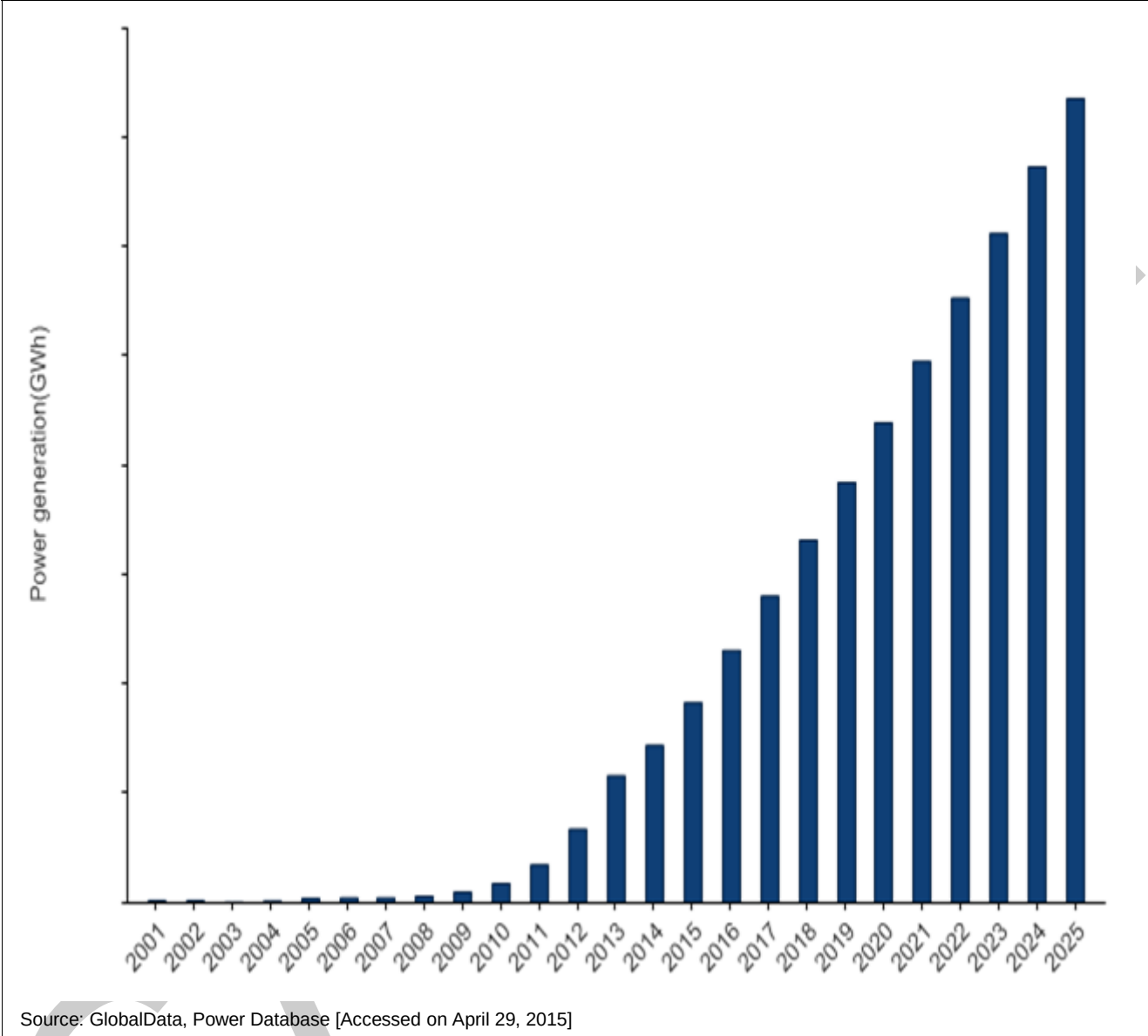


Table 23: Solar PV Market, Austria, Power Generation (GWh), 2001–2025

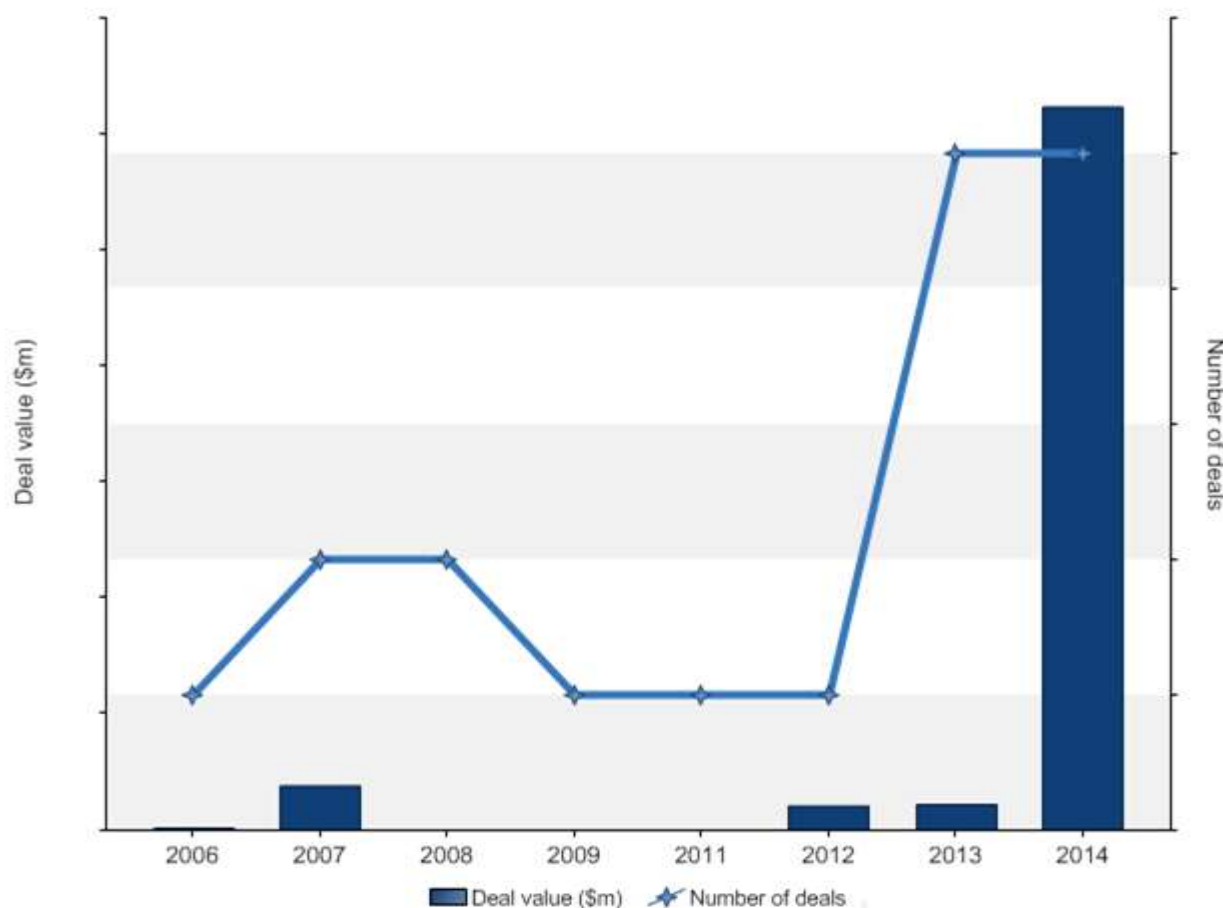
YEAR	Power generation (GWh)
2001	
2002	
2003	
2004	
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	
2021	
2022	
2023	
2024	
2025	

Source: GlobalData, Power Database [Accessed on April 29, 2015]

8.5 Solar PV Market, Austria, Investment Trends, 2014

8.5.1 Solar PV Market, Austria, Deal Volume vs. Deal Value, 2006–2014

Figure 24: Solar PV Market, Austria, Deal Volume vs. Deal Value (\$m), 2006–2014



Source: GlobalData, Power Database [Accessed on April 29, 2015]

Table 25: Solar PV Market, Austria, Deal Volume vs. Deal Value (\$m), 2006–2014

Year	Number of deals	Deal value (\$m)
2006		
2007		
2008		
2009		
2011		
2012		
2013		
2014		

Source: GlobalData, Power Database [Accessed on April 29, 2015]

11 Appendix

11.1 Market Definitions

The historic period is 2001–2014.

The forecast period is 2015–2025.

In case of Equipment Markets the historic period is 2007–2014 and forecasted period is 2015.

The global solar PV market includes North America, Europe, Asia-Pacific, South and Central America, and the Middle East and Africa.

The North America solar PV market includes the US, Mexico, and Turkey.

The European solar PV market includes Albania, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine, and the UK.

The Asia-Pacific solar PV market includes Afghanistan, Armenia, Bangladesh, China, India, Indonesia, Japan, Kazakhstan, Malaysia, Myanmar, New Zealand, South Korea, Pakistan, Philippines, Sri Lanka, Vietnam, and Thailand.

The South and Central American solar PV market include Argentina, Turkey, Chile, Colombia, Peru, and Venezuela.

The Middle East and African solar PV market includes Morocco, Algeria, Angola, Benin, Cameroon, Egypt, Ethiopia, Gabon, Ghana, Iran, Iraq, Ivory Coast, Jordan, Lebanon, Mauritania, Mozambique, Namibia, Rwanda, Sudan, Tunisia, United Republic of Tanzania, Zambia and South Africa.

The power market includes thermal conventional (coal, gas and oil), nuclear, hydropower and other renewables (includes all renewable power sources mentioned below except small hydro).

The renewable power market includes wind (onshore and offshore), solar PV, CSP(solar thermal), biomass, biogas, geothermal and small hydro.

11.2 Abbreviations

Table 31: Abbreviations	
Acronym	Expanded Form
BoS	Balance of System
CAGR	Compound Annual Growth Rate
CDM	Clean Development Mechanism
CPRS	Carbon Pollution Reduction Scheme
CUF	Capacity Utilization Factor
EU	European Union
EUR	Euro
FiT	Feed-in Tariff
GDP	Gross Domestic Product
GST	Goods and Service Tax
GW	Gigawatt
GWEC	Global Wind Energy Council
GWh	Gigawatt hour
IRR	Internal Rate of Return
ITC	Investment Tax Credit
LCOE	Levelized Cost of Energy
m	million
MMT	Million Metric Tons
Mtoe	Million Tons of Oil Equivalent
MW	Megawatt
MWh	Megawatt hour
PTC	Production Tax Credit
PV	Photovoltaic
RoE	Return On Equity
SOA	State Oceanic Administration
T&D	Transmission and Distribution
UK	United Kingdom
US	United States
VAT	Value Added Tax
Source: GlobalData	

11.3 Bibliography

The World Bank (2015). Ease of Doing Business in Austria. *The World Bank*, 2015. Available from: <http://www.doingbusiness.org/data/exploreeconomies/austria> [Accessed on April 20, 2015]

BP Statistical Review (2014). Statistical Review of World Energy 2014. BP. Available from: <http://www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy.html>. [Accessed on February 26, 2015]

11.4 Disclaimer

All Rights Reserved.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher, GlobalData.