

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

Reference Code: **GDAE6521IDB**

Publication Date: **March 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	FiT for Renewable Power Generation will Drive the Growth Momentum during 2014–2025	7
3	Introduction	8
3.1	Carbon Emissions, Global, 2001–2014	8
3.2	Primary Energy Consumption, Global, 2001–2025	9
3.3	Hydropower, Global, Technology Definition and Classification	11
3.4	Report Guidance	12
4	Renewable Power Market, Global, 2001 – 2025	13
4.1	Renewable Power Market, Global, Overview	13
4.2	Renewable Power Market, Global, Installed Capacity, 2001–2025	14
4.2.1	Renewable Power Market, Global, Cumulative Installed Capacity by Source Type, 2001–2025	14
4.2.2	Renewable Power Market, Global, Cumulative Installed Capacity Split by Source Type, 2014 vs. 2025	15
4.2.3	Renewable Power Market, Global, Comparison among Various Sources, Cumulative Installed Capacity, 2014 – 2025	17
4.3	Renewable Power Market, Global, Power Generation, 2001–2025	18
4.3.1	Renewable Power Market, Global, Power Generation by Source Type, 2001–2025	18
4.3.2	Renewable Power Market, Global, Power Generation, Source Comparison Based on Power Generation, 2014–2025	20
4.4	Renewable Power Market, Global, LCOE Comparison of Power Generating Sources, 2013–2014	22
5	Hydropower Market, Global, 2001–2025	24
5.1	Hydropower Market, Global, Overview	24

5.2	Hydropower Market, Global, Installed Capacity, 2001–2025	25
5.2.1	Hydropower Market, Global, Installed Capacity Share by Region, 2014 and 2025	27
5.2.2	Hydropower Market, Global, Installed Capacity Share by Country, 2014 and 2025	28
5.2.3	Hydropower Market, Global, Installed Capacity Share by Segment, 2014 and 2025	30
5.3	Hydropower Market, Global, Power Generation, 2001–2025	31
5.3.1	Hydropower Market, Global, Generation Share by Region, 2014 and 2025	33
5.3.2	Hydropower Market, Global, Generation Share by Country, 2014 and 2025	34
5.3.3	Hydropower Market, Global, Generation Share by Segment, 2014 and 2025	36
6	Power Market, France, 2001-2025	37
6.1	Power Market, France, Overview	37
6.2	Power Market, France, Installed Capacity, 2001–2025	38
6.2.1	Power Market, France, Cumulative Installed Capacity by Fuel Type, 2001–2025	38
6.2.2	Power Market, France, Cumulative Installed Capacity Split by Source Type, 2014 and 2025	41
6.3	Power Market, France, Power Generation, 2001–2025	43
7	Renewable Power Market, France, 2001–2025	45
7.1	Renewable Power Market, France, Overview	45
7.2	Renewable Power Market, France, Installed Capacity, 2001-2025	46
7.2.1	Renewable Power Market, France, Cumulative Installed Capacity by Source Type, 2001-2025	46
7.2.2	Renewable Power Market, France, Cumulative Installed Capacity Split by Source Type, 2001-2025	49
7.3	Renewable Power Market, France, Power Generation, 2001-2025	51
7.3.1	Renewable Power Market, France, Power Generation by Source Type, 2001-2025	51
8	Hydropower Market, France	53
8.1	Hydropower Market, France, Overview	53
8.2	Hydropower Market, France, Installed Capacity, 2001 – 2025	53
8.2.1	Hydropower Market, France, Cumulative Installed Capacity by Technology, 2001–2025	55
8.3	Hydropower Market, France, Power Generation, 2001 – 2025	57
8.4	Large Hydropower Market, France, Major Active Plants	59
8.4.1	Large Hydropower Market, France, Major Active Plants, 2002–2014	59
8.5	Small Hydropower Market, France, Major Active Plants	60
8.5.1	Small Hydropower Market, France, Major Active Plants, 2002–2014	60
8.6	Hydro Power Market, France, Investment Trends, 2014	61
8.6.1	Hydro Power Market, France, Deal Volume vs. Deal Value, 2006–2014	61

8.6.2	Hydro Power Market, France, Split by Deal Type, 2014	63
9	Regulatory Energy Policy Framework, France	64
9.1	Deregulation of Electricity Sector	64
9.2	Nuclear Energy Development	64
9.3	Renewable Energy Policies	65
9.3.1	Grenelle 2	65
9.3.2	Renewable Energy Sources and Green Chemistry Program	65
9.3.3	Wind Energy in France	65
9.3.4	Solar Energy	66
9.3.5	Carbon Tariff Plan	66
10	Hydropower Power Market, France, Company Profiles	67
10.1	Company Snapshot: Societe Hydro Electrique du Midi S.A.	67
10.1.1	Societe Hydro Electrique du Midi S.A. - Company Overview	67
10.1.2	Societe Hydro Electrique du Midi S.A. - Head Office	67
10.2	Company Snapshot: Electricite de France S.A.	68
10.2.1	Electricite de France S.A. - Company Overview	68
10.2.2	Electricite de France S.A. - Head Office	68
10.3	Company Snapshot: Compagnie Nationale du Rhone SA	69
10.3.1	Compagnie Nationale du Rhone SA - Company Overview	69
10.3.2	Compagnie Nationale du Rhone SA - 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	9
Table 2:	Primary Energy Consumption, Global (Mtoe), 2001–2025	11
Table 3:	Renewable Power Market, Global, Cumulative Installed Capacity by Source Type (GW), 2001–2025.....	15
Table 4:	Renewable Power Market, Global, Cumulative Installed Capacity Split by Source Type (%), 2014 vs. 2025	16
Table 5:	Renewable Power Market, Global, Source Comparison Based on Installed Capacity, 2014–2025.....	18
Table 6:	Renewable Power Market, Global, Power Generation by Source Type (TWh), 2001–2025.....	20
Table 7:	Renewable Power Market, Global, Power Generation, Source Comparison Based on Power Generation, 2014–2025.....	21
Table 8:	Renewable Power Market, Global, Assumptions for LCOE Calculation	22
Table 9:	Renewable Power Market, Global, LCOE Comparison of Power-generating Sources (\$/kWh), 2013–2014.....	23
Table 10:	Hydropower Market, Global, Installed Capacity (MW), 2001–2025.....	26
Table 11:	Hydropower Market, Global, Cumulative Installed Capacity Share by Region (%), 2014 and 2025	27
Table 12:	Hydropower Market, Global, Cumulative Installed Capacity Share by Country (%), 2014 and 2025.....	29
Table 13:	Hydropower Market, Global, Cumulative Installed Capacity Share by Segment (%), 2014 and 2025.....	30
Table 14:	Hydropower Market, Global, Power Generation (GWh), 2001–2025.....	32
Table 15:	Hydropower Market, Global, Generation Share by Region (%), 2014 and 2025.....	33
Table 16:	Hydropower Market, Global, Generation Share by Country (%), 2014 and 2025	35
Table 17:	Hydropower Market, Global, Generation Share by Segment (%), 2014 and 2025	36
Table 18:	Power Market, France, Cumulative Installed Capacity by Fuel Type(MW), 2001–2025	40
Table 19:	Power Market, France, Cumulative Installed Capacity Split by Source Type (%), 2014–2025	42
Table 20:	Power Market, France, Power Generation by Fuel Type (GWh), 2001–2025	44
Table 21:	Renewable Power Market, France, Cumulative Installed Capacity by Source Type (MW), 2001-2025	48
Table 22:	Renewable Power Market, France, Cumulative Installed Capacity Split by Source Type (%), 2014–2025	50
Table 23:	Renewable Power Market, France, Power Generation by Source Type (GWh), 2001-2025	52
Table 24:	Hydropower Market, France, Installed Capacity (MW), 2001 – 2025.....	54
Table 25:	Hydropower Market, France, Cumulative Installed Capacity by Technology (MW), 2001–2025	56
Table 26:	Hydropower Market, France, Power Generation (GWh), 2001 – 2025	58
Table 27:	Large Hydropower Market, France, Major Active Plants, 2002–2014.....	59
Table 28:	Small Hydropower Market, France, Major Active Plants, 2002–2014.....	60
Table 29:	Hydro Power Market, France, Deal Volume vs. Deal Value (\$m), 2006–2014.....	62
Table 30:	Hydro Power Market, France, Deals by Type, 2014.....	63
Table 31:	Abbreviations.....	71

1.2 List of Figures

Figure 1: Carbon-di-oxide Emissions from Energy Consumption, Global (MT), 2001–2014.....	8
Figure 2: Global, Primary Energy Consumption, Global (Mtoe), 2001–2025.....	10
Figure 3: Renewable Power Market, Global, Cumulative Installed Capacity by Source Type (GW), 2001–2025.....	14
Figure 4: Renewable Power Market, Global, Cumulative Installed Capacity Split by Source Type (%), 2014 vs. 2025	16
Figure 5: Renewable Power Market, Global, Comparison among Various Sources, Cumulative Installed Capacity, 2014–2025.....	17
Figure 6: Renewable Power Market, Global, Power Generation by Source Type (TWh), 2001–2025.....	19
Figure 7: Renewable Power Market, Global, Power Generation, Source Comparison Based on Power Generation, 2014–2025.....	21
Figure 8: Renewable Power Market, Global, LCOE Comparison of Power-generating Sources (\$/kWh), 2013–2014.....	23
Figure 9: Hydropower Market, Global, Installed Capacity (MW), 2001–2025.....	25
Figure 10: Hydropower Market, Global, Cumulative Installed Capacity Share by Region (%), 2014 and 2025.....	27
Figure 11: Hydropower Market, Global, Cumulative Installed Capacity Share by Country (%), 2014 and 2025.....	28
Figure 12: Hydropower Market, Global, Cumulative Installed Capacity Share by Segment (%), 2014 and 2025.....	30
Figure 13: Hydropower Market, Global, Power Generation (GWh), 2001–2025.....	31
Figure 14: Hydropower Market, Global, Generation Share by Region (%), 2014 and 2025.....	33
Figure 15: Hydropower Market, Global, Generation Share by Country (%), 2014 and 2025.....	34
Figure 16: Hydropower Market, Global, Generation Share by Segment (%), 2014 and 2025.....	36
Figure 17: Power Market, France, Cumulative Installed Capacity by Fuel Type(MW), 2001–2025.....	39
Figure 18: Power Market, France, Cumulative Installed Capacity Split by Source Type (%), 2014–2025.....	41
Figure 19: Power Market, France, Power Generation by Fuel Type (GWh), 2001–2025.....	43
Figure 20: Renewable Power Market, France, Cumulative Installed Capacity by Source Type (MW), 2001-2025.....	47
Figure 21: Renewable Power Market, France, Cumulative Installed Capacity Split by Source Type (%), 2014–2025....	49
Figure 22: Renewable Power Market, France, Power Generation by Source Type (GWh), 2001-2025.....	51
Figure 23: Hydropower Market, France, Installed Capacity (MW), 2001 – 2025.....	53
Figure 24: Hydropower Market, France, Cumulative Installed Capacity by Technology (MW), 2001–2025.....	55
Figure 25: Hydropower Market, France, Power Generation (GWh), 2001 – 2025.....	57
Figure 26: Hydro Power Market, France, Deal Volume vs. Deal Value (\$m), 2006–2014.....	61
Figure 27: Hydro Power Market, France, Split by Deal Type (%), 2014.....	63

2 Executive Summary

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

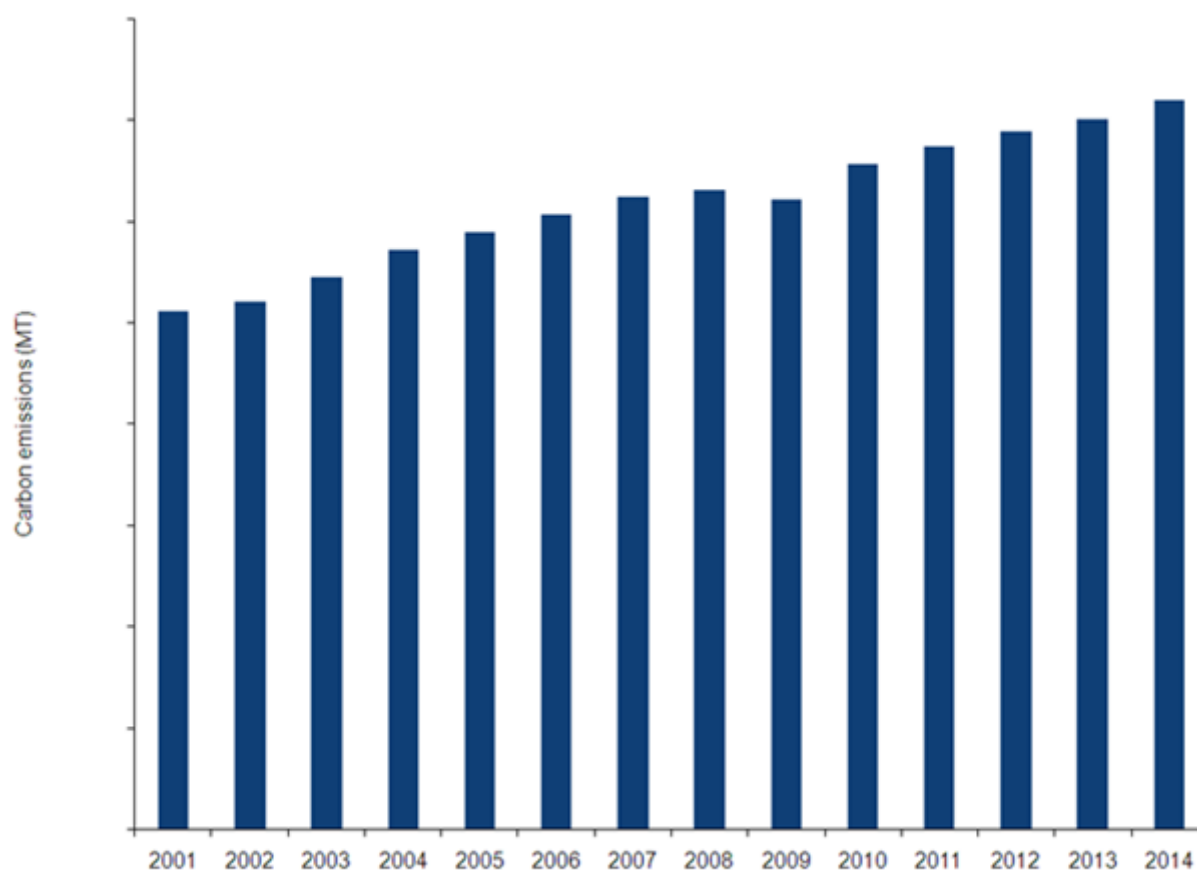
2.2 FiT for Renewable Power Generation will Drive the Growth Momentum during 2014–2025

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 1: 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 Hydro power market in France

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

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 “Hydro Power Market, Global” section gives a holistic overview of the global Hydro power 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, France” section provides an overview of the overall power market in France. The section provides installed capacity and generation data for conventional thermal, nuclear, hydro and renewable sources.

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

The “Hydro Power Market, France” chapter provides detailed analysis on the Hydro power market in the country. The section provides historical (2001–2014) and forecast (2015–2025) installed capacity and generation data. The chapter also provides 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, France” chapter gives an in depth understanding of the renewable energy policy framework in the country and government support provided for renewable power in general and Hydro Power in particular.

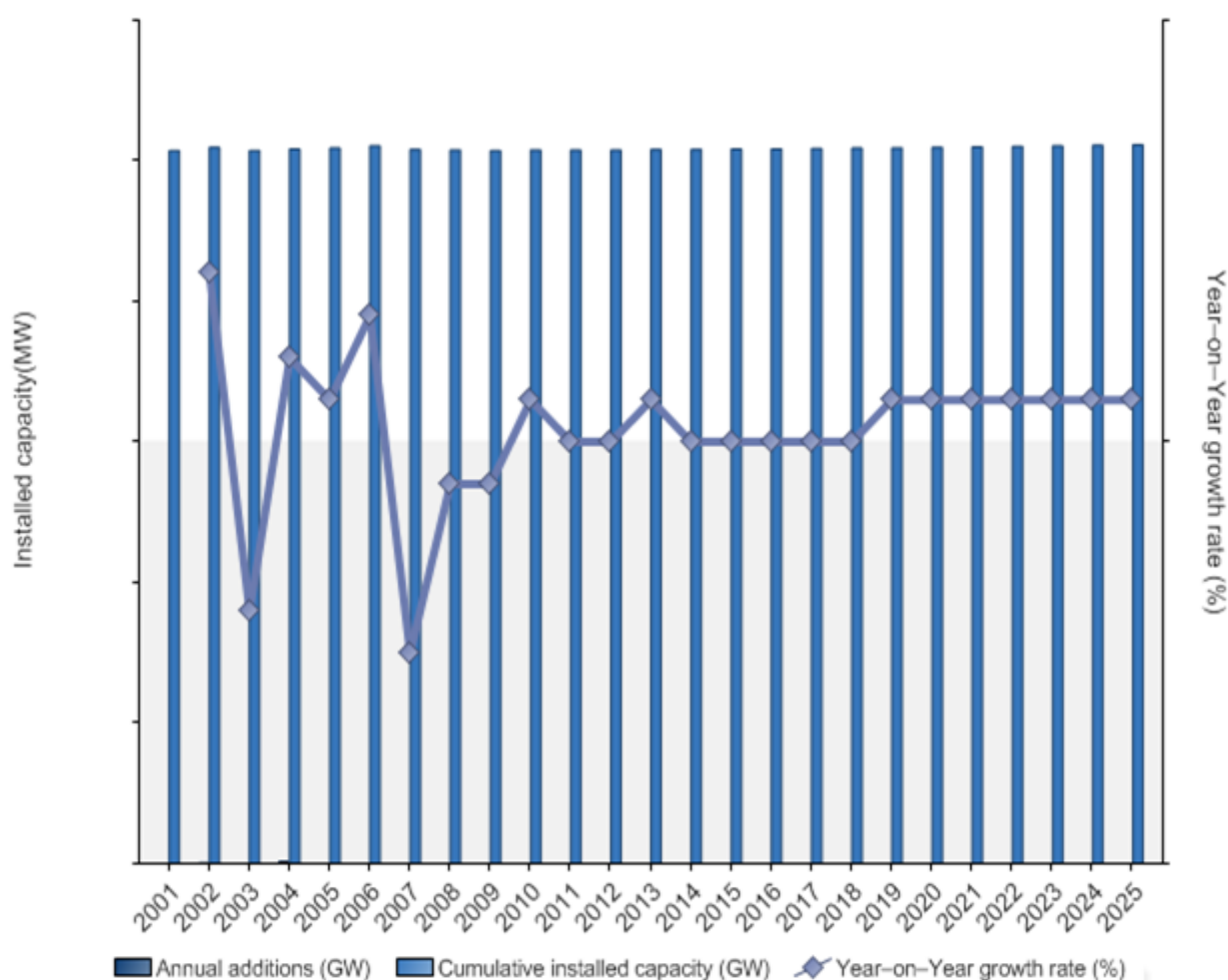
The “Hydro Power Market, France, Company Profiles” section provides company snapshots of major market participants in the country.

8 Hydropower Market, France

8.1 Hydropower Market, France, Overview

8.2 Hydropower Market, France, Installed Capacity, 2001 – 2025

Figure 23: Hydropower Market, France, Installed Capacity (MW), 2001 – 2025



Source: GlobalData, Power Database [Accessed on March 27, 2015]

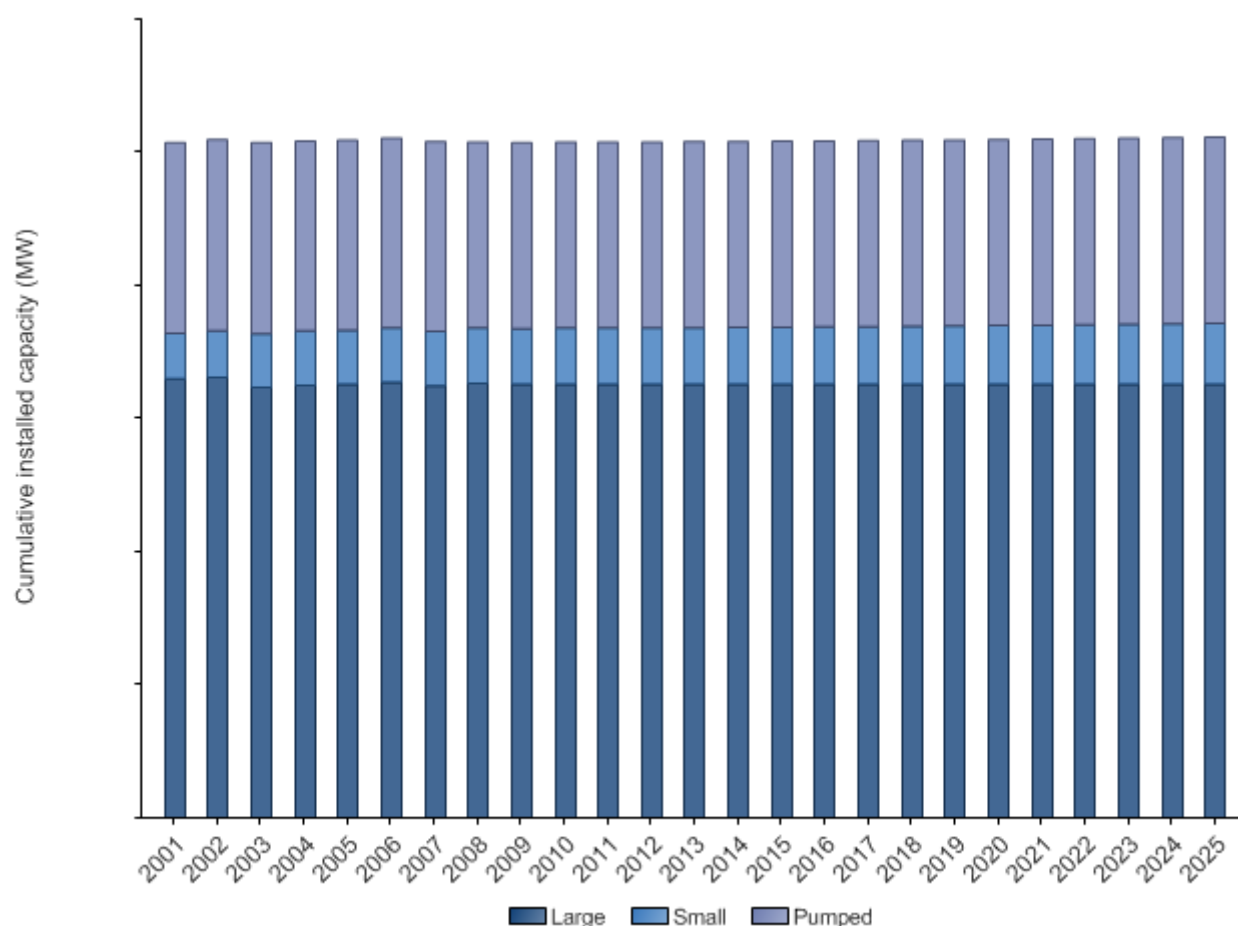
Table 24: Hydropower Market, France, Installed Capacity (MW), 2001 – 2025

Year	Annual additions (GW)	Cumulative installed capacity (GW)	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 March 27, 2015]

8.2.1 Hydropower Market, France, Cumulative Installed Capacity by Technology, 2001–2025

Figure 24: Hydropower Market, France, Cumulative Installed Capacity by Technology (MW), 2001–2025



Source: GlobalData, Power Database [Accessed on March 27, 2015]

Table 25: Hydropower Market, France, Cumulative Installed Capacity by Technology (MW), 2001–2025

Year	Large	Small	Pumped	Total hydro power capacity
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 March 27, 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 Hydro power market includes North America, Europe, Asia-Pacific, South and Central America, and the Middle East and Africa.

The North America Hydro power market includes the US, Mexico, and Turkey.

The European Hydro power 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 Hydro power 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 Hydro power market include Argentina, Turkey, Chile, Colombia, Peru, and Venezuela.

The Middle East and African Hydro power 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 France. *The World Bank*, 2015. Available from: <http://www.doingbusiness.org/data/exploreeconomies/france> [Accessed on March 17, 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.