

Renewable Energy Market in Asia-Pacific to 2020

Amended Renewable Energy Targets Attract Increased Investment in Both Large and Small Scale Projects



GBI Research Report Guidance

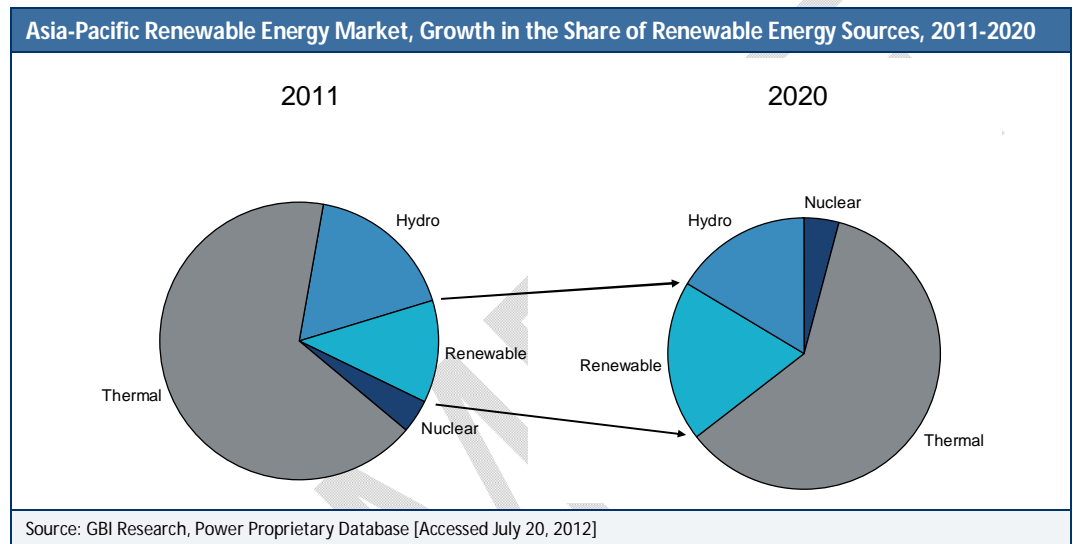
- Chapter two provides an overview of investments in renewable energy industry globally by deal type and technology.
- Chapter three provides an overview of the renewable energy industry in Asia-Pacific region (Australia, India, China, Japan, Thailand, Indonesia and Philippines).
- Chapter four provides an overview of the renewable power markets in Australia which covers cumulative installed capacity (by technology type), power generation (by technology type), renewable energy framework and active/upcoming power projects.
- Chapter five provides an overview of the renewable power markets in China which covers cumulative installed capacity (by technology type), power generation (by technology type), renewable energy framework and active/upcoming power projects.
- Chapter six provides an overview of the renewable power markets in India which covers cumulative installed capacity (by technology type), power generation (by technology type), renewable energy framework and active/upcoming power projects.
- Chapter seven provides an overview of the renewable power markets in Japan which covers cumulative installed capacity (by technology type), power generation (by technology type), renewable energy framework and active/upcoming power projects.
- Chapter eight provides an overview of the renewable power markets in Thailand which covers cumulative installed capacity (by technology type), power generation (by technology type), renewable energy framework and active/upcoming power projects.
- Chapter nine provides an overview of the renewable power markets in Indonesia which covers cumulative installed capacity (by technology type), power generation (by technology type), renewable energy framework and active/upcoming power projects.
- Chapter ten provides an overview of the renewable power markets in Philippines which covers cumulative installed capacity (by technology type), power generation (by technology type), renewable energy framework and active/upcoming power projects.
- Chapters four-ten analyze the renewable power markets for each of the countries discussed.
 - Section one of each chapter provides a market overview.
 - Section two provides cumulative installed capacity by energy source for each country's power market, accurate as of 2011.
 - Section three provides cumulative installed capacity by renewable energy sources for 2011 for each country's renewable power market by technology.
 - Section four provides annual power generation for renewable power market by technology.
 - The last section provides the renewable energy regulatory framework for each country.
 - The next section provides a list of prominent active and upcoming renewable power plants in each country.

China is the major contributor to cumulative renewable installed capacity in Asia-Pacific region, followed, in order, by India, Japan and Australia

Executive Summary

Asia-Pacific Cumulative Renewable Installations to Grow Exponentially to Reach XX GW by 2020

A number of the most rapidly developing economies in the world are situated in the Asia-Pacific region, and economic growth rates are high. This accelerated economic growth has resulted in a rise in energy demand and consumption, and as a consequence many countries have experienced difficulty with power shortages. Additionally, the fact that the majority of energy is currently produced from conventional thermal sources has resulted in increased Green House Gas (GHG) emissions. In response to this development, the need has become apparent to develop renewable resources to ensure energy security and address the issue of rising GHG emissions. The share of power generated from renewable energy sources in the Asia-Pacific region is expected to rise from XX% in 2011 to about XX% in 2020, supported by government policies and incentives. Between 2012 and 2020, the cumulative renewable installed capacity for China, India, Japan, Australia, Thailand, Indonesia and the Philippines is expected to increase at a Compound Annual Growth Rate (CAGR) of XX%, from XX Gigawatts (GW) in 2011 to XX GW in 2020.



China a Leading Figure in Renewable Energy Industry in the Asia-Pacific Region in 2011

China has emerged as a major presence in the global renewable energy industry, and is currently leading in terms of renewable energy growth in the Asia-Pacific region. Driven by government policies and measures to support growth, China has become the largest wind power market in the world, with a total installed capacity of XX Megawatts (MW) in 2011, overtaking the US. Growth in the wind power market can be attributed to a number of new installations over the last couple of years, which have introduced XX GW of wind capacity in 2009 and a further XX GW of wind capacity in 2010. About XX GW of wind capacity was added in the year 2011. Year 2012 is expected to witness XX GW of estimated wind installed capacity. China is also seeking to establish itself as a major player in the solar power industry, and the government has announced major support measures. The government has also initiated support measures for small hydro and biomass facilities. These developments are expected to promote renewable energy development in China and increase investment in the sector.

In 2011, the Chinese government announced the 12th five year plan, which will promote the development of new energy industries. This plan consists of specific deployment targets for renewable energy, including the construction of XX onshore and XX coastal and offshore wind projects by 2015, amounting to a combined XX GW of hydropower and XX GW of wind power capacity. China also has plans to develop five GW of solar energy projects. China is expected to continue investing in the renewable energy industry, and the government has set a target for XX% of the country's electricity to be being generated from renewable sources by 2020.

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Total global investments in renewable power amounted to \$XX billion in 2011

2 Introduction

2.1 Renewable Power Investments, Global

2.1.1 Renewable Power Investments, Global, 2006-2011

Total global investments in renewable power amounted to \$XX billion in 2011, increasing from \$XX billion in 2006. Included in this total are investments in wind, solar Photovoltaic (PV), Concentrated Solar Power (CSP), Concentrated Photovoltaic (CPV), biopower and geothermal technologies. This report covers all renewable power technologies apart from large hydropower. Investments included are in the form of asset finance, debt offerings, equity offerings, mergers and acquisitions, private equity and venture capital. There has been and continues to be substantial growth in the renewable technology sector globally, and various governments are concentrating on the development of the industry.

Global investments in clean energy increased to \$XX billion during the second quarter of 2012, up by XX% from the first quarter. China accounted for the majority of this amount.

Figure one illustrates total global investments in renewable energy sources, between 2006 and 2011.

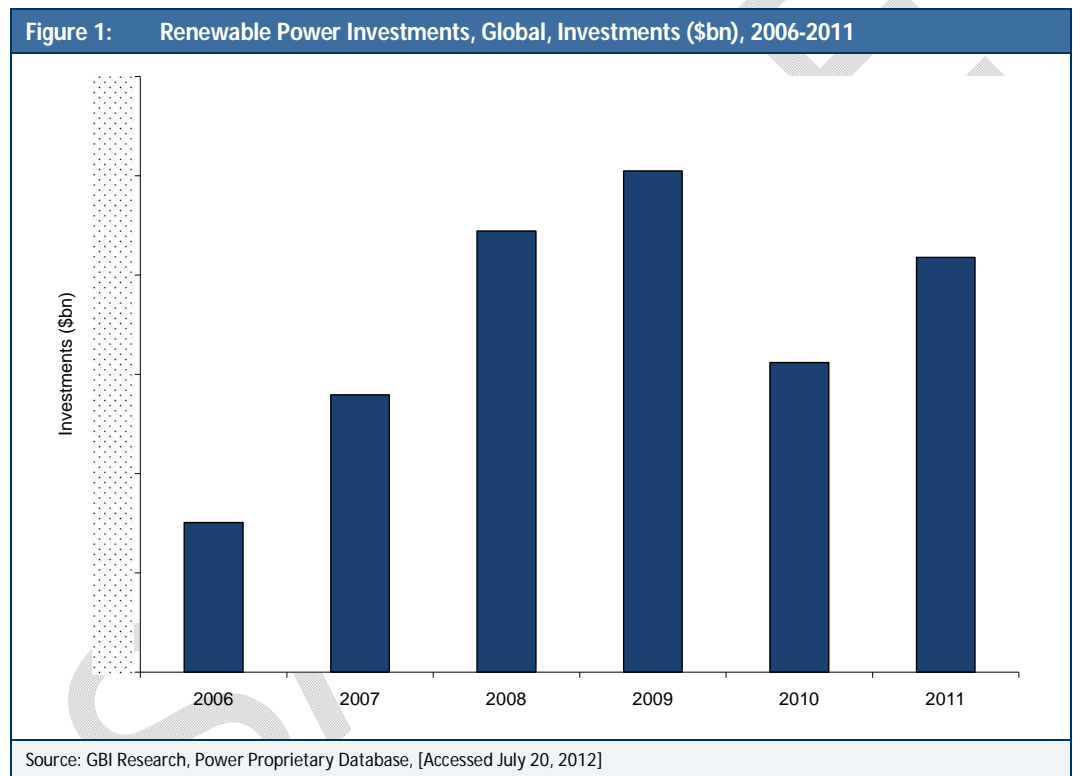


Table 1: Renewable Power Investments, Global, Investments (\$bn), 2006-2011

Year	Investments (\$bn)
2006	~10
2007	~15
2008	~25
2009	~35
2010	~20
2011	~25

Source: GBI Research, Power Proprietary Database [Accessed July 20, 2012]

Renewable installed capacity increased at a CAGR of XX% to reach XX MW in 2011

3.1 Power Market, Asia-Pacific, Cumulative Renewable Installed Capacity (MW), 2005-2020

In 2005, renewable installed capacity in the Asia-Pacific region amounted to XX MW. Between 2005 and 2011, installed capacity increased at a CAGR of XX% to reach XX MW in 2011. Over the forecast period, from 2012 to 2020, renewable energy is forecast to increase at a CAGR of XX%, from XX MW in 2012 to XX MW by 2020. Governments are promoting the installation and generation of renewable energy through various incentives and policies, and are a major driving force in the market.

Figure four shows the cumulative renewable installed capacity in Asia-Pacific between 2005 and 2020.

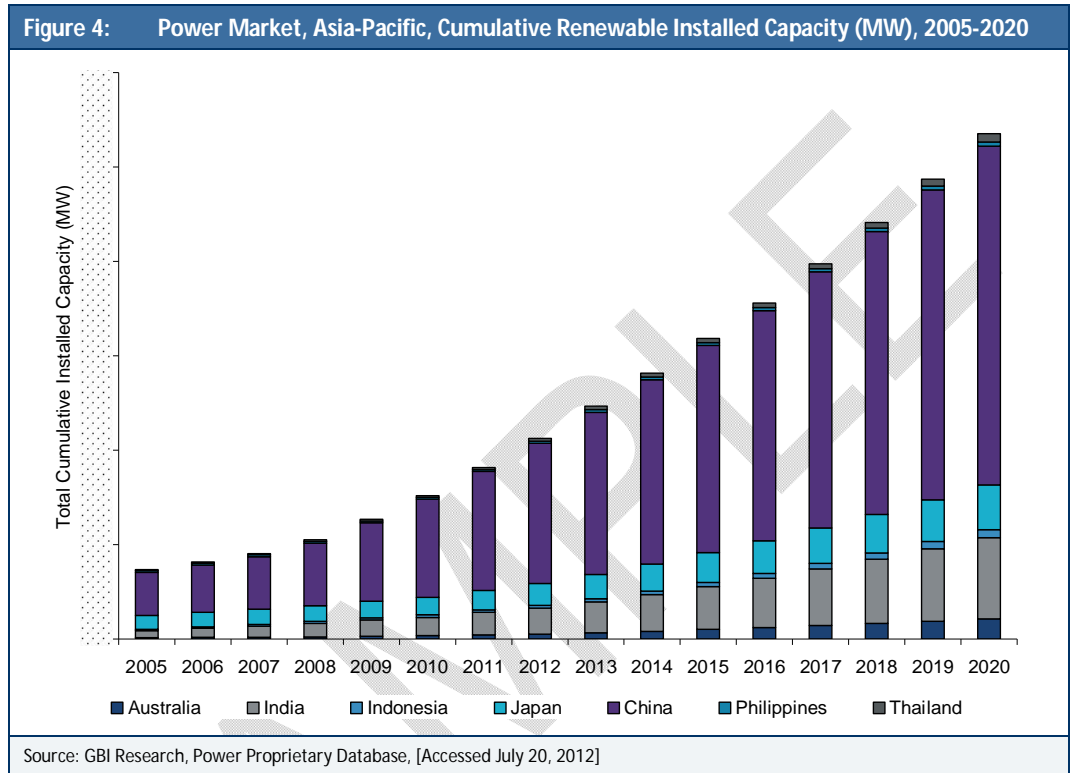


Table 5: Power Market, Asia-Pacific, Cumulative Renewable Installed Capacity (MW), 2005-2020	
Year	Cumulative installed capacity (MW)
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	
CAGR (2005-2011)	
CAGR (2012-2020)	
Source: GBI Research, Power Proprietary Database, [Accessed July 20, 2012]	

SAMPLE

3.3 Asia-Pacific Renewable Energy Market, Installed Capacities by Key Countries, 2011

The Asia-Pacific renewable energy market is currently dominated by China, which accounted for XX% of regional installed capacity in 2011. India accounts for a XX% share of regional installations in 2011, followed by Japan and Australia with respective XX% and XX% shares. Other countries accounted for the remaining XX% of regional capacity additions in 2011.

Figure seven represents the percentage share of renewable installed capacity by key countries in 2011.

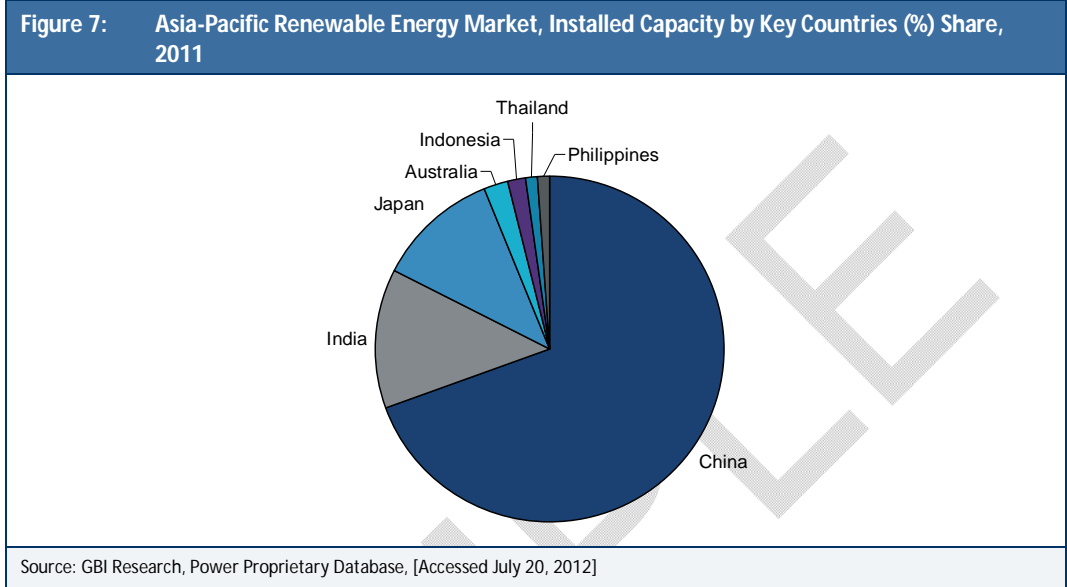


Table 8: Asia-Pacific Renewable Energy Market, Installed Capacity by Key Countries (% Share, 2011)

Country	% share
China	
India	
Japan	
Australia	
Others	

Source: GBI Research, Power Proprietary Database, [Accessed July 20, 2012]

11 Appendix

11.1 Abbreviations

Table 121: Abbreviations	
ACT	Australian Capital Territory
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
ARENA	Australian Renewable Energy Agency
AWEFS	Australian Wind Energy Forecasting System
BAU	Business-as-usual
BDTC	Biogas Development and Training Centres
CCS	Carbon Capture And Storage
CEC	Clean Energy Council
CEI	Clean Energy Initiative
CFA	Central Financial Assistance
CFL	Compact Fluorescent Lamps
CFT	Clean Technology Fund
COAG	Council of Australian Governments
COD	Commercial Operation Date
CWET	Center for Wind Energy Technology
DLEP	District Level Renewable Energy Parks
DPR	Detailed Project Report
DRET	Department of Resources, Energy and Tourism
EECA	Energy Efficiency and Conservation Authority
EGAT	Electricity Generating Authority of Thailand
EIF	Education Investment Fund
ENCON	The Energy Conservation Promotion Fund
EPG	Ethanol Production Grants
ETBE	Ethyl Tert-Butyl Ether
ETS	Emissions Trading Scheme
FDR	Fixed Deposit Receipts
FFA	Free Fatty Acid
FIDA	Forest Industry Development Agenda
FIPB	Foreign Investment Promotion Board
Fis	Financial Institutions
FIT	Feed-in Tariffs
GBI	Generation Based Incentive
GDP	Gross domestic product
GOI	Government of India
GOJ	Government of Japan
GRIHA	Green Rating for Integrated Habitat Assessment
GST	Goods and Services Tax
GW	Gigawatt

GWh	Gigawatt hours
IREDA	Indian Renewable Energy Development Agency
JNNSM	Jawaharlal Nehru National Solar Mission
JREPP	Japan Renewable Energy Policy Platform
LPG	Liquefied Petroleum Gas
LRET	Large scale Renewable Energy Target
M2M	Methane to Markets Partnership
MAFF	Ministry of Agriculture Forestry and Fisheries
MEA	Metropolitan Electricity Authority
MNRE	Ministry of New and Renewable Energy
MOEA	Ministry of Economic Affairs
MOST	Ministry of Science and Technology
MOU	Memorandum of Understanding
MPP	Minimum Purchase Price
MRET	Mandatory Renewable Energy Target
MSP	Minimum Support Price
MW	Megawatt
NBFCs	Non-Banking Financial Companies
NBMMP	National Biogas and Manure Management Program
NDRC	China's National Development and Reform Commission
NEA	National Energy Administration
NEDO	New Energy and Industrial Technology Development Organization
NEM	National Energy Market
NEP	National Science and Technology Program - Energy
NEPC	National Energy Policy Council
NSW	New South Wales
NZEECS	New Zealand Energy Efficiency and Conservation Strategy
OMCs	Oil Marketing Companies
ORER	Office of the Renewable Energy Regulator
PSALM	Power Sector Assets and Liabilities Management Corp.
PEA	Provincial Electricity Authority
PPA	Power Purchase Agreements
PV	Photovoltaic
R&D	Research and Development
RA	Renewables Australia
RECs	Renewable Energy Certificates
REDP	Renewable Energy Demonstration Program
REEEP	Renewable Energy and Energy Efficiency Partnership
REEF	Renewable Energy Equity Fund
REF	Renewable Energy Fund
RERC	Rajasthan State Electricity Regulatory Commission
RET	Renewable Energy Target
RPP	Renewable Power Percentage

RPS	Renewable Portfolio Standards
RRPGP	Renewable Remote Power Generation Program
SBCVC	Softbank China Venture Capital
SEDA	Sustainable Energy Development Authority
SERC	State Electricity Regulatory Commissions
SGU	Small Generation Unit
SLEP	State Level Renewable Energy Parks
SPP	Small Power Producer Program
SRES	Small scale Renewable Energy Scheme
STC	Small-scale Technology Certificates
SXVP	Southern Cross Venture Partners
TERI	The Energy and Resource Institute
VEEC	Victorian Energy Efficiency Certificate
VRES	Victorian Renewable Energy Certificates
VSPP	Very Small Power Producer Program
Source: GBI Research	

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11.3 GBI Research Methodology

GBI Research dedicated research and analysis teams consist of experienced professionals with a pedigree in marketing, market research, consulting backgrounds in the energy industry and advanced statistical expertise.

GBI Research adheres to the Codes of Practice of the Market Research Society (www.mrs.org.uk) and the Strategic and Competitive Intelligence Professionals (www.scip.org).

All GBI Research databases are continuously updated and revised. The following research methodology is followed for all databases and reports.

11.4 Coverage

- The objective of updating GBI Research coverage is to ensure that it represents the most up to date vision of the industry possible.
- Changes in the industry taxonomy are built on the basis of extensive research of company, association and competitor sources.
- Company coverage is based on three key factors: market capitalization, revenues and media attention/innovation/ market potential.
- An exhaustive search of 56 member exchanges is conducted and companies are prioritized on the basis of their market capitalization.
- The estimated revenues of all major companies, including private and governmental, are gathered and used to prioritize coverage.
- Companies which are making the news or which are of particular interest due to their innovative approach are prioritized.
- GBI Research aims to cover all major news events and deals in the power industry, updated on a daily basis.

11.5 Secondary Research

The research process begins with exhaustive secondary research on internal and external sources being carried out to source qualitative and quantitative information relating to each market.

- The secondary research sources that are typically referred to include, but are not limited to:
- Company websites, annual reports, financial reports, broker reports, investor presentations and SEC filings
- Industry trade journals and other literature
- Internal and external proprietary databases
- National government documents, statistical databases and market reports
- News articles, press releases and web-casts specific to the companies operating in the market

11.6 Primary Research

GBI Research conducts hundreds of primary interviews a year with industry participants and commentators in order to validate its data and analysis. A typical research interview fulfills the following functions:

- It provides first-hand information on the market size, market trends, growth trends, competitive landscape and future outlook.
- Helps in validating and strengthening the secondary research findings.
- Further develops the Analysis Team's expertise and market understanding.
- Primary research involves e-mail correspondence, telephone interviews as well as face-to-face interviews for each market, category, segment and sub-segment across geographies.

The participants who typically take part in such a process include, but are not limited to:

- Industry participants: CEOs, VPs, business development managers, market intelligence managers and national sales managers.
- Outside experts: investment bankers, valuation experts, research analysts and key opinion leaders specializing in power industry.

11.7 Contact Us

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