

# 2021 Leading Global Large-Scale Solar PV Developers

Report Period: July 2020-June 2021

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# TABLE OF CONTENTS

# Table of Contents

Methodology and Definitions .....	4
Global Market Overview .....	6
Key Takeaways .....	7
Top Global Large-Scale Solar Developers By Operational Capacity .....	9
Top Global Large-Scale Solar Developers By Under Construction and Awarded Capacity .....	11
Top 10 Global Large-Scale Solar Developers By Total Capacity .....	13
Top 10 Global Large-Scale Solar Developers .....	15
Enel Green Power .....	16
Adani Green .....	18
ENGIE .....	20
Lightsource bp.....	22
The AES Corporation .....	24
Brookfield Renewable Partners.....	26
Enerparc .....	28
EDF Renewables.....	30
Canadian Solar.....	32
Scatec .....	34

# Methodology and Definitions

## Definitions:

**Operational Capacity:** Solar projects that are commissioned and currently in operational status

**Under Construction:** Projects that have a signed power purchase agreement (PPA) and where construction has begun

**Awarded (Contracted):** Projects that have signed off-takers but have yet to start construction.

**Large-Scale Projects (Utility-Scale):** Projects sized at one (1) megawatt (MW) or more

**PPA (Power Purchase Agreement):** A contract to purchase power at a set rate over a predetermined time period

## Research Methodology:

This report includes a ranking of global solar developers based on operating, in-construction, and PPA-awarded (contracted) large-scale solar projects of one megawatt or more across multiple countries. To qualify for this ranking, developers must have projects in at least two countries. All data included in this report was as of June 30, 2021. All figures are in AC. In two instances, numbers have been converted from DC to AC.

Mercom's analysts utilized both primary and secondary research to compile this report. The key component of Mercom's analysis is primary research gained from phone and e-mail interviews with company representatives. Additional analysis includes secondary research conducted by Mercom's staff and analysts. For the two companies that chose to not provide their data directly to Mercom, Mercom relied on the company's latest public information.

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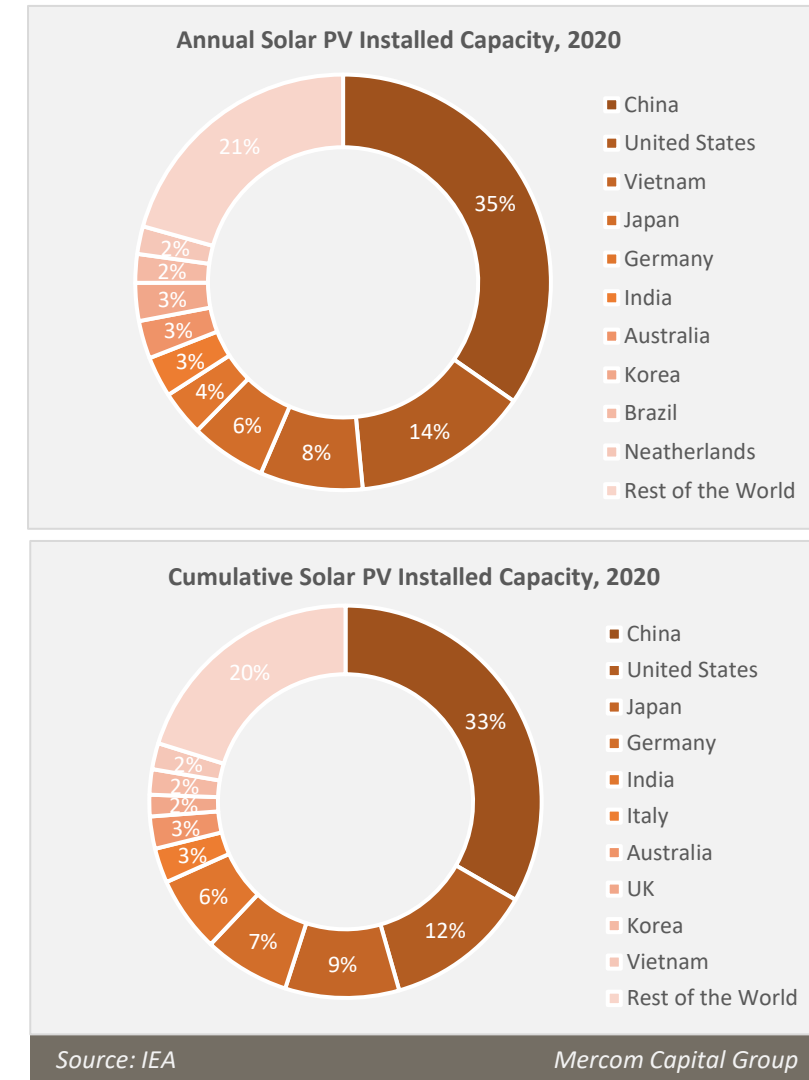
# GLOBAL SOLAR MARKET

# Global Market Overview

## Top 10 Global Solar Markets

- The global solar photovoltaics (PV) market had a banner year in 2020, with approximately 144 gigawatts (GW) installed, a 20% growth rate year-over-year.
- In 2020, China was the largest solar market, with approximately 48 GW installed, followed by the U.S. and Vietnam. Japan was fourth on the list. The top five markets collectively accounted for over 60% of the solar PV capacity installed in 2020.
- Despite COVID-19-related lockdowns, global PV installations surged as corporates and individuals were able to see the value of solar more clearly in terms of environmental as well as cost benefits during the pandemic.
- A shortage of polysilicon, supply chain issues, and labor shortages caused a delay in project completion in several countries, which pushed some projects into 2021. Top global developers were able to expand their operational portfolios and overcome these challenges.
- Looming policy changes and subsidy deadlines toward the end of the year drove the solar market in the top three countries: China, the U.S., and Vietnam.
- China, the U.S., Japan, Germany, and India collectively accounted for almost 70% of global cumulative solar PV installed capacity as of 2020.

*\*Note: The capacities mentioned on this slide refer to DC capacity. Most utility-scale projects built in 2020 have an AC-DC ratio between 1.1 and 1.6. For some countries, numbers indicated have been converted to DC values to maintain the coherency of global reporting practices.*



# Key Takeaways

- Enel Green Power emerged as the top solar developer by operational capacity with a portfolio of 4.95 GW. They were followed closely by Adani Green with a portfolio of 4.91 GW during the period.
- UK-based Lightsource bp emerged as the top solar developer based on operational, under-construction, and awarded (contracted) projects. Canadian Solar and Brookfield Renewable Partners came in second and third, respectively. Adani Green and Enel Green Power rounded out the top five.
- The top developers include several renewable energy arms of industrial and power conglomerates, subsidiaries of asset management companies, and pure-play renewable and solar companies. They hailed from all around the world, including the United Kingdom, Canada, the U.S., India, Italy, Norway, France, and Germany.
- The top 10 developers accounted for over 125 GW of operational, under-construction, and awarded (contracted) solar projects. For under-construction and awarded projects, the top large-scale solar developers accounted for almost 100 GW.
- A significant number of installations and under-construction projects by the top developers were in Latin America. Countries such as Brazil, Mexico, Chile, and Argentina with good solar resources, saw declining prices, and favorable policies.

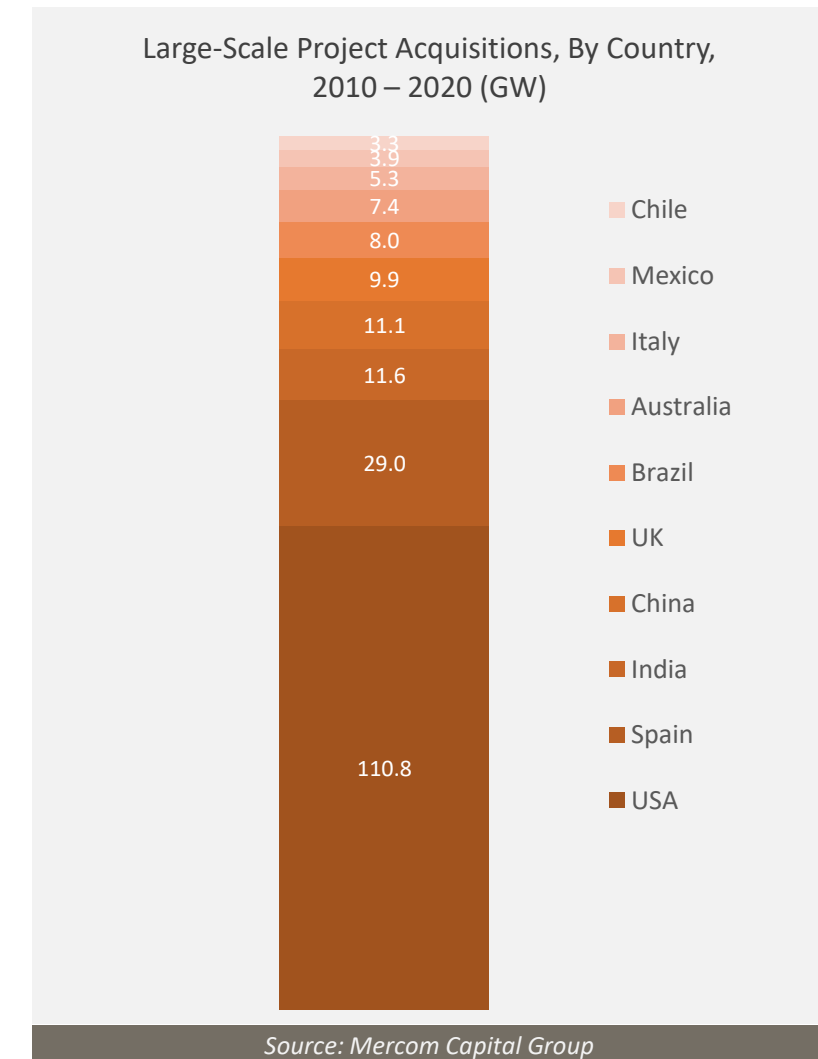
## TOP 10 LARGE-SCALE SOLAR PV DEVELOPERS BY OPERATIONAL CAPACITY

1.	Enel Green Power
2.	Adani Green
3.	ENGIE
4.	Lightsource bp
5.	The AES Corporation
6.	Brookfield Renewable Partners
7.	Enerparc
8.	EDF Renewables
9.	Canadian Solar
10.	Scatec ASA

Source: Mercom Capital Group

# Key Takeaways

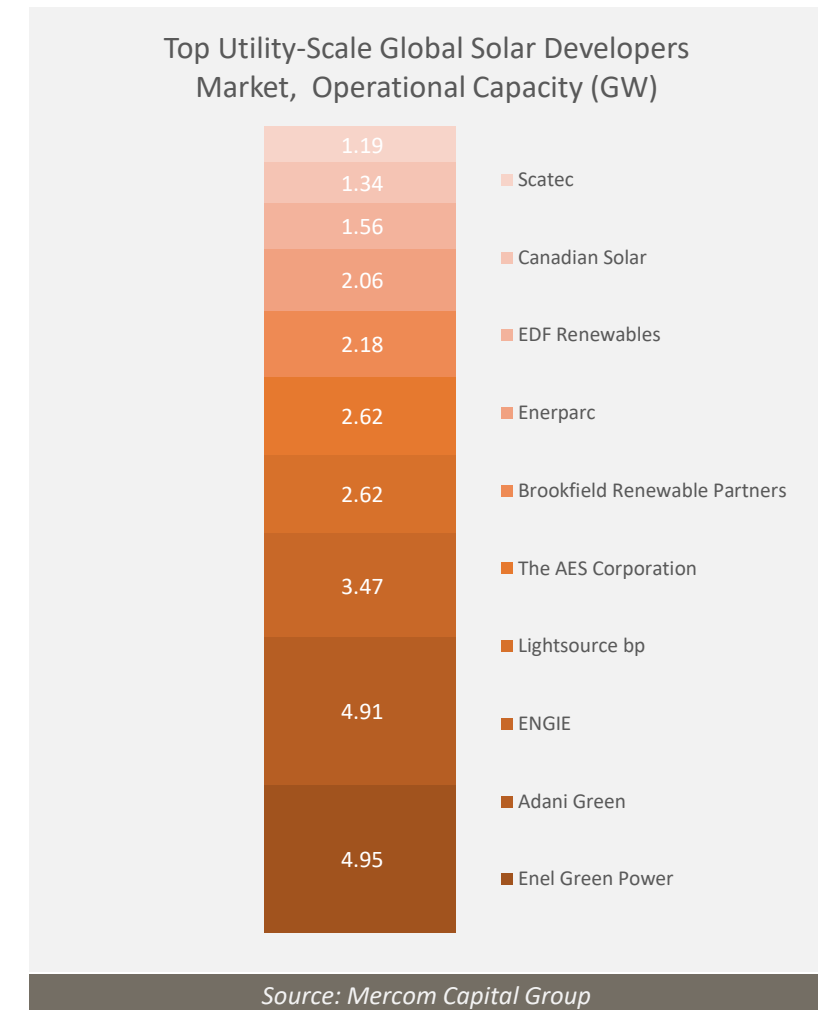
- Developers continued to expand their capacities in developed markets such as the U.S. The U.S. market, led by the utility-scale segment, is driven by several factors, including state- and central-level policies to promote renewable energy, federal investment tax credits, self-enforced carbon reduction plans and large corporations with carbon reduction goals.
- Most European markets were propelled by the competitiveness of solar generation, with solar now the cheapest source of energy. The region had been facing new challenges, such as land availability, planning approvals, grid connectivity, and the shortening of PPA periods.
- There were significant changes in the top 10 list compared to the previous year due to some large M&A deals in the industry, with gigawatt-scale portfolios changing hands. According to Mercom's 2020 Solar Funding and M&A Report, about 40 GW of projects changed hands in the calendar year 2020.
- During the reporting period of July 2020 to June 2021, over 64 GW of projects were acquired across the globe.
- For the top 10 global solar developers, the Asia-Pacific (APAC) region made up about 24% of developers' capacity, followed by North America at about 18%, Europe, the Middle East and Africa (EMEA) made up about 20%. Approximately 38% of projects were sited in Latin America.





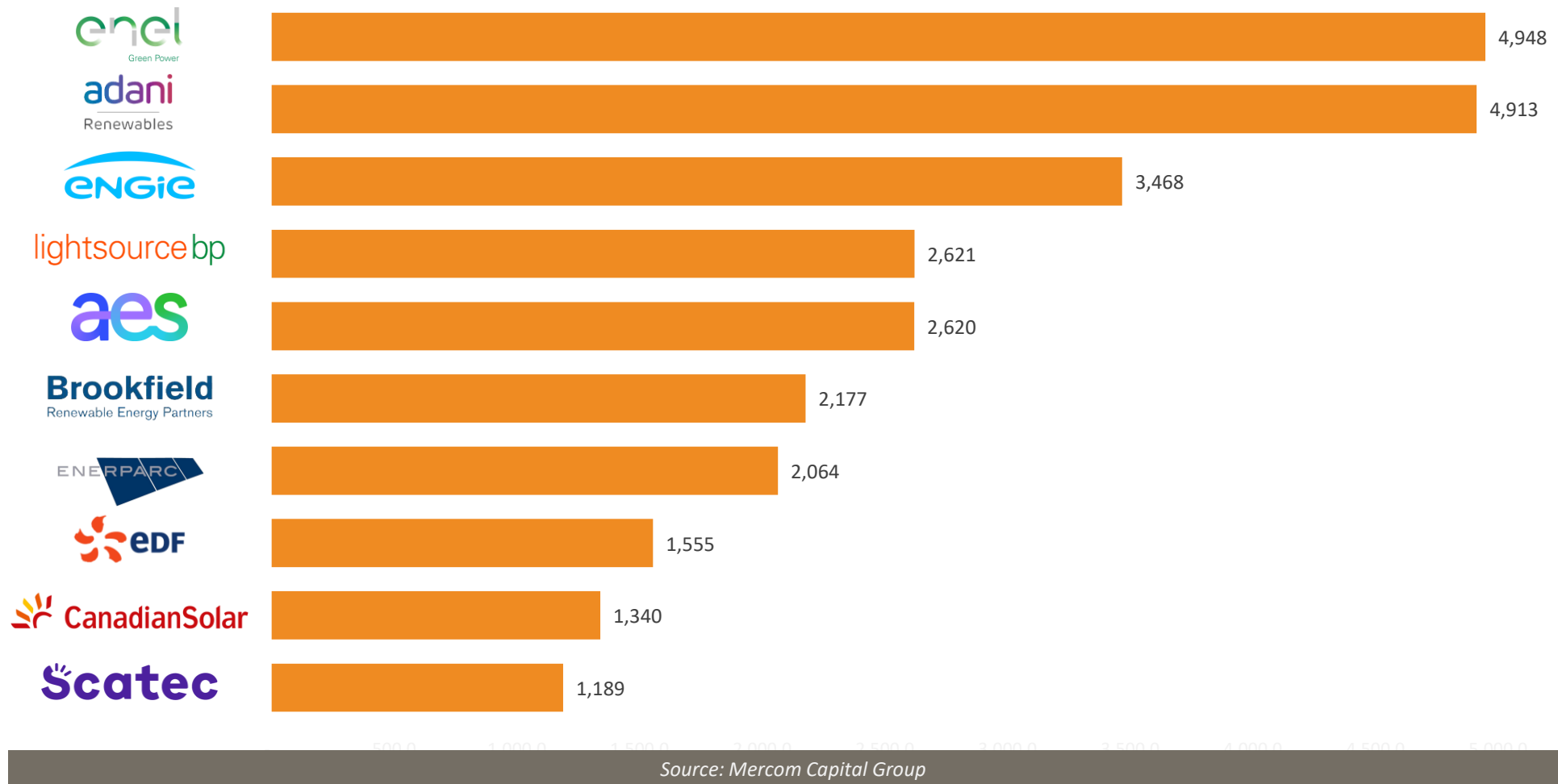
# Top 10 Global Large-Scale Solar Developers by Operational Capacity

- The top developer with the largest operational utility-scale solar capacity was Enel Green Power with 4.95 GW.
- Adani Green was the second-largest player in terms of operational capacity with 4.91 GW. This can be attributed to the acquisition of over 1.75 GW of operating assets, of which 1.40 GW was acquired exclusively from SB energy.
- ENGIE was the third largest, followed by Lightsource bp, The AES Corporation, Brookfield Renewable, Enerparc, EDF Renewables, Canadian Solar, and Scatec.
- The top 10 developers combined had 26.89 GW of operational large-scale solar projects.
- Enel Green, EDF Renewables, ENGIE, and Brookfield Renewables have committed to achieve net zero emissions by 2050 as part of their corporate strategy.
- Several companies that made the top 10 in the past did not make this year's list primarily due to divestments.
- GCL New Energy, which ranked number one in terms of operational capacity last year, didn't make the list and has adopted an asset-light approach that enabled it to develop other clean energy businesses by leveraging its existing solar power generation platform. GCL has rebranded as a green hydrogen business.



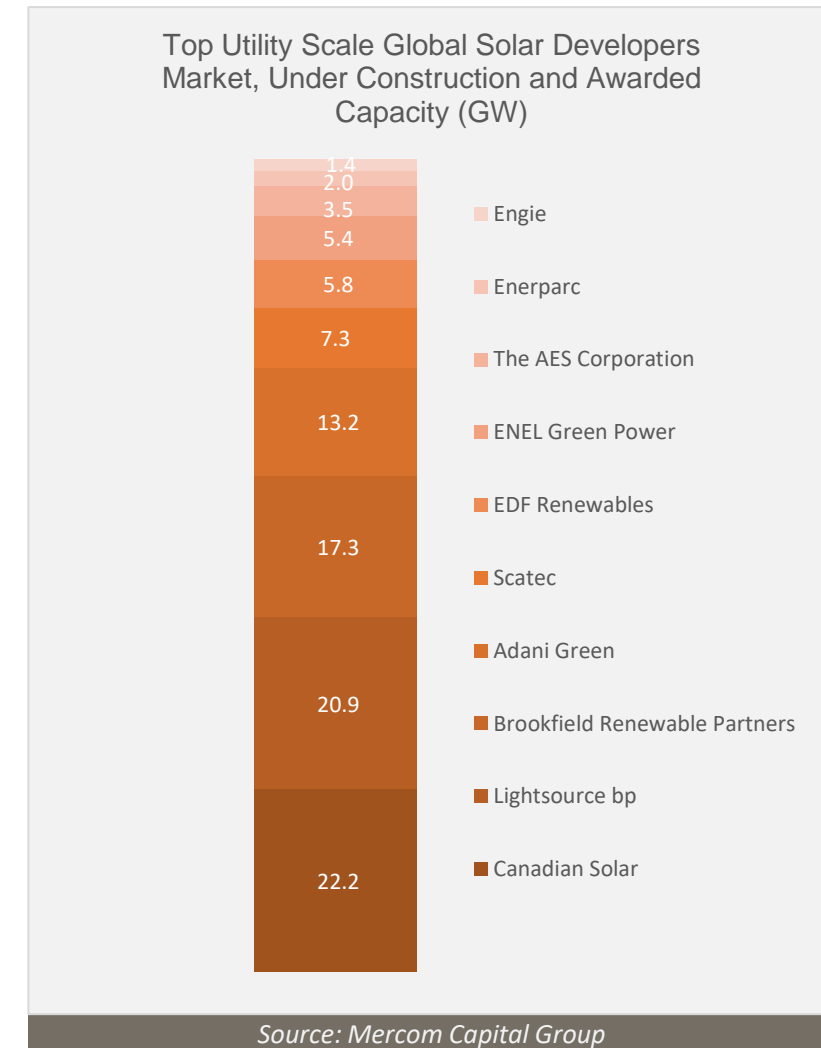
# Top 10 Global Large-Scale Solar Developers by Operational Capacity

Top 10 Utility-Scale Global Solar Developers, Operational Capacity (MW)



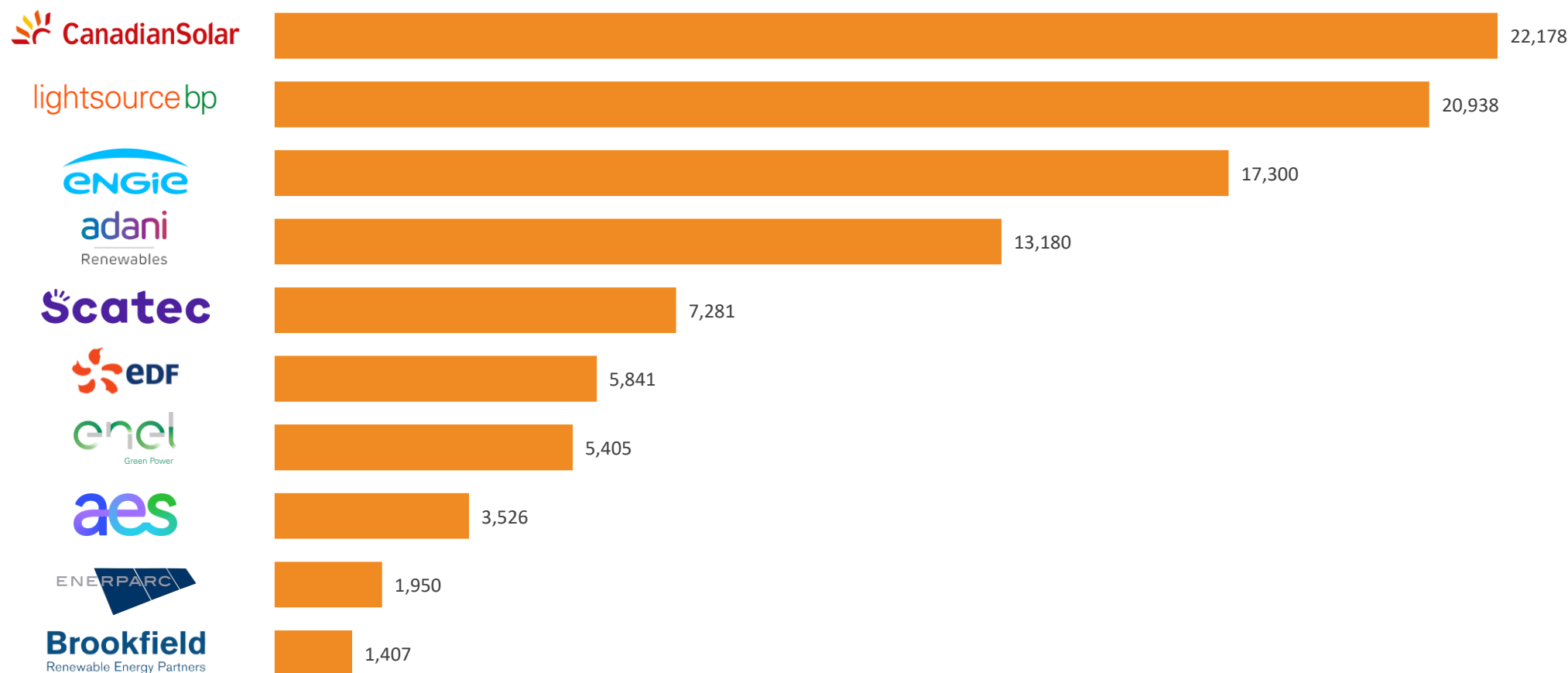
# Top Global Large-Scale Solar Developers by Under-Construction and Awarded (Contracted) Capacity

- The top 10 global large-scale solar developers accounted for 99 GW of under-construction and awarded (PPA-contracted) capacity.
- Canadian Solar came out on top in terms of under-construction and awarded capacity, with 22.2 GW of projects. Lightsource bp had the second-largest capacity with 20.9 GW, followed by Brookfield Renewable Partners.
- Canadian Solar had the highest capacity under construction, with about 5.8 GW, over 3 GW of which were located in Latin America alone. Adani Green and Enel Green Power followed suit with 4.3 GW and 2.6 GW in projects under construction.
- A significant portion of Adani Green's portfolio resulted from its acquisition of over 3.5 GW of SB Energy's portfolio.
- Lightsource bp had the largest development pipeline of about 20 GW of awarded projects, followed by Brookfield Renewable Partners and Canadian Solar with 16.5 GW and 16.3 GW, respectively.
- Adani Green, Scatec, EDF Renewables, and Enel Green Power were among the other developers with a significant development pipeline of over 5 GW.
- Pandemic-related disruptions and supply chain issues resulted in several projects being delayed and a significant number of projects in pipeline.



# Top Global Large-Scale Solar Developers by Under-Construction and Awarded Capacity

Top 10 Utility-Scale Global Solar Developers, Under-Construction Capacity and Awarded Capacity (MW)

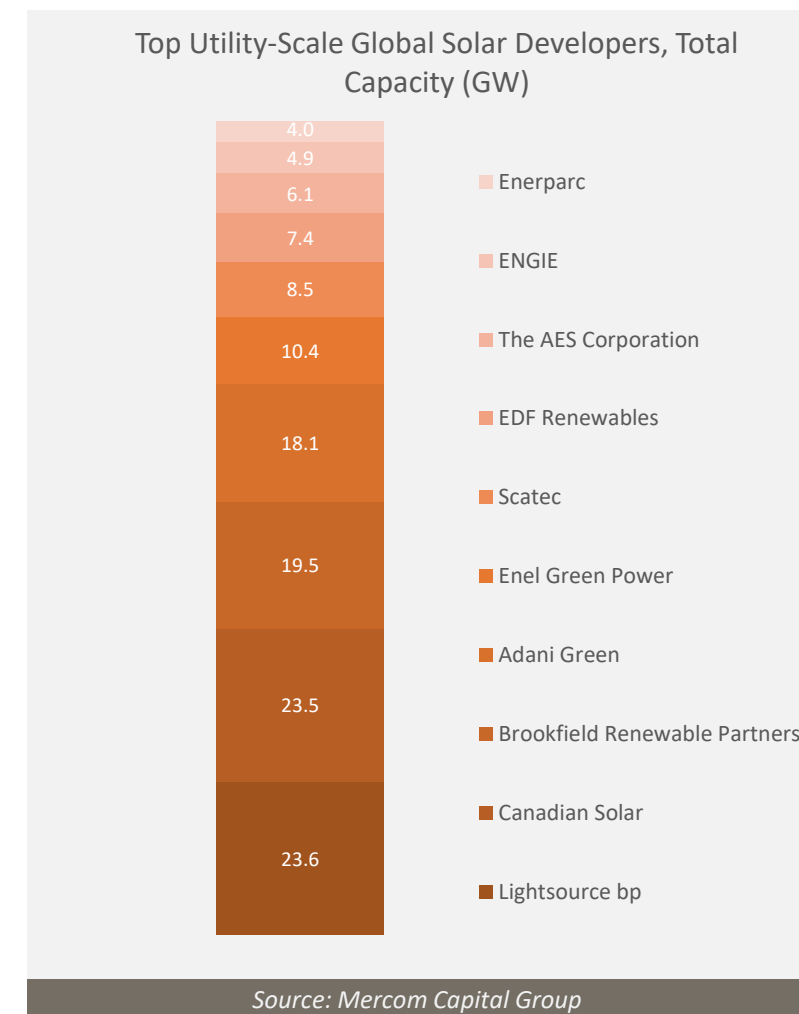


Source: Mercom Capital Group

# Top 10 Global Large-Scale Solar Developers by Total Capacity

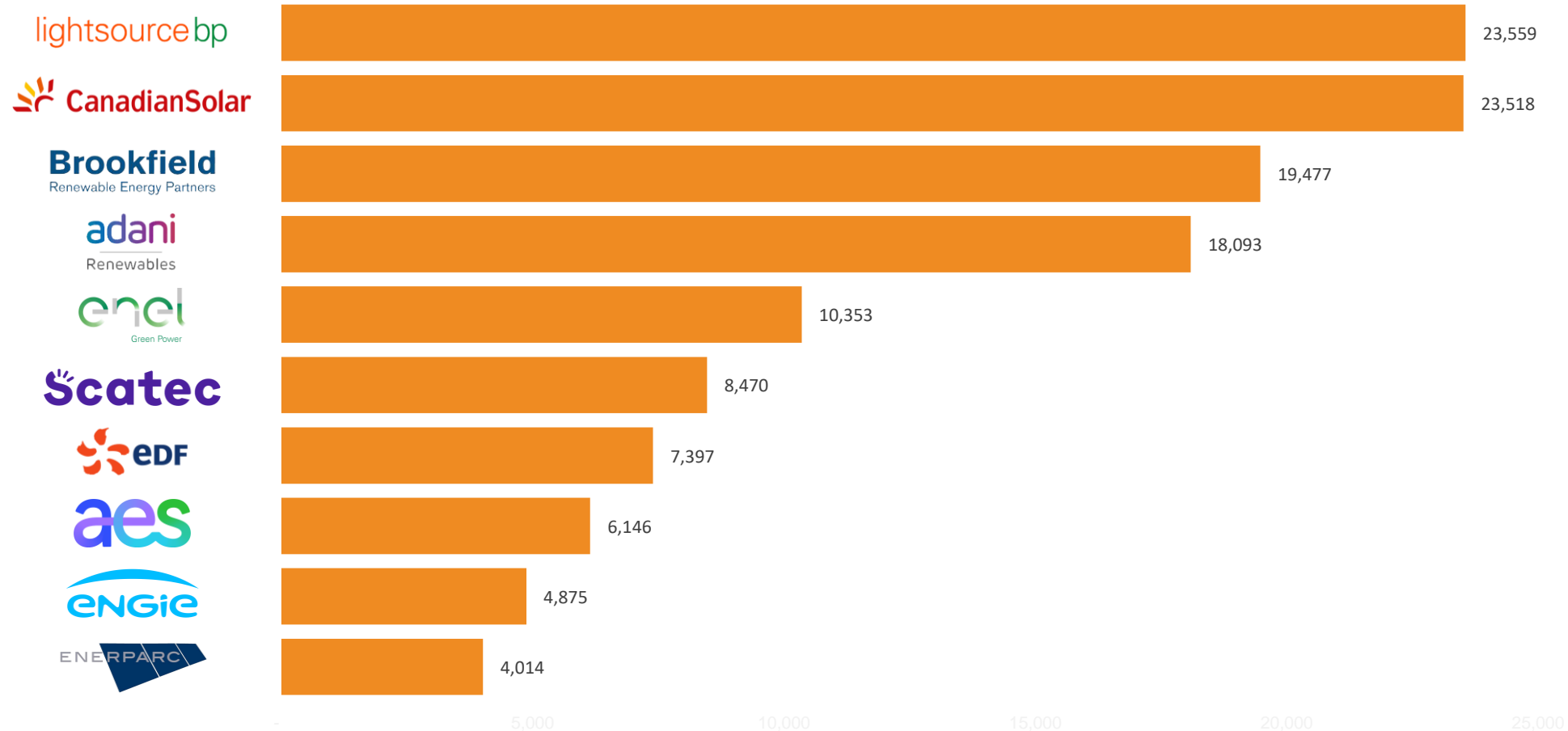
## Total large-scale solar PV capacity (operational plus development pipeline)

- Lightsource bp was the top global solar developer, with 2.6 GW of operational projects, 938 MW in projects under construction, and 20 GW of awarded projects, for a total capacity of 23.6 GW.
- Canadian Solar was the second-largest global solar developer with a total capacity of 23.5 GW, followed by Brookfield Renewable Partners, Adani Green Energy, Enel Green Power, Scatec, EDF Renewables, The AES Corporation, ENGIE, and Enerparc.
- Among the top global solar developers, three were based in North America, six were in Europe, and one was headquartered in South Asia.
- Of the European companies, Lightsource bp, Enel Green Power, and Scatec were among the top 10 large-scale global solar developers, with total capacities of 23.6 GW, 10.4 GW, and 8.5 GW, respectively.
- Of the North American developers on the leader's list of large-scale global solar developers, Canadian Solar had a total of 23.5 GW, Brookfield Renewable Partners had 19.5 GW, and The AES Corporation totaled 6.1 GW.
- The combined operational, under-construction, and awarded capacities of the top 10 developers totaled approximately 126 GW.



# Top 10 Global Large-Scale Solar Developers by Total Capacity

## Top 10 Utility-Scale Global Solar Developers, Total Capacity (MW)



Source: Mercom Capital Group

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# PROFILES: TOP 10 GLOBAL LARGE-SCALE SOLAR DEVELOPERS



Headquarter: Rome, Italy

Global Presence: Australia, South Africa, Zambia, Brazil, Chile, Peru, Colombia, Panama, U.S., Mexico, Spain, Greece, and Romania, among others

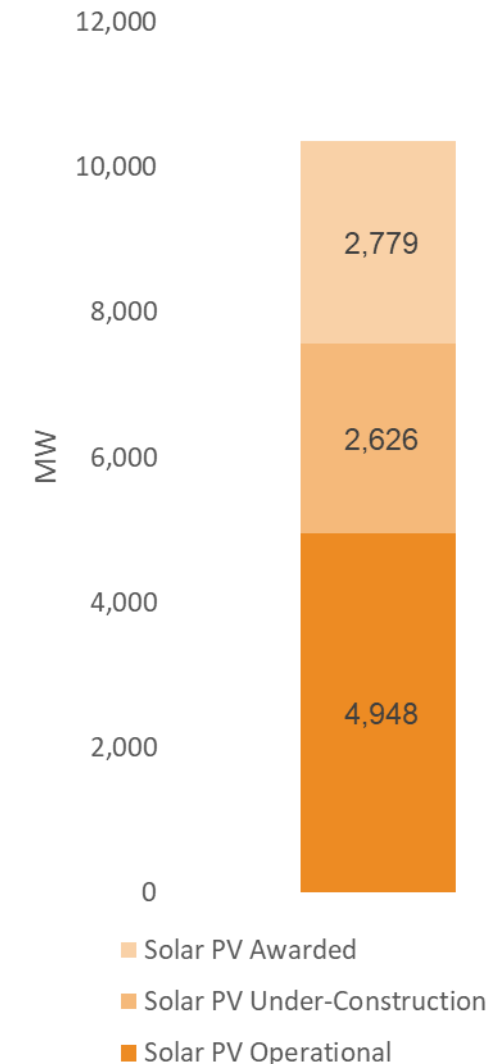
Offerings and Capabilities: Renewable Power Generation

Project Portfolio (MW): Operational Capacity: 4,948 MW; Under Construction: 2,626 MW; Awarded: 2,779 MW

**Business Overview:** Enel Green Power is a subsidiary of Enel Group and is in charge for green energy development in various countries. It has operations in over 27 countries across five continents. It develops and operates renewable energy plants worldwide and is present in Europe, the Americas, Asia, Africa and Oceania. Enel's 2021-2023 Strategic Plan foresees a global increase in additional capacity from renewable energy sources of 19.5 GW, to reach a total capacity of 68 GW.

#### Notable Developments:

1. In May 2021, Enel Green Power started construction of Roseland solar project in U.S. which is their largest project awarded. The project is expected to reach completion by June 2022.
2. Enel Green Power signed an agreement with ENEA to study and demonstrate the integration of microalgae cultivation with large scale solar projects in May 2021. Pilot project is to be developed at the ENEA Center, Naples, Italy.
3. In March 2021, ENEL Green Power Spain bought eleven solar projects, with a combined capacity of 519 MW, from Arena Power at €350 million (~\$416.89 million).
4. In February 2021, ENEL Green Power commissioned 133 MW extension of São Gonçalo solar project which already had an operational capacity of 475 MW.





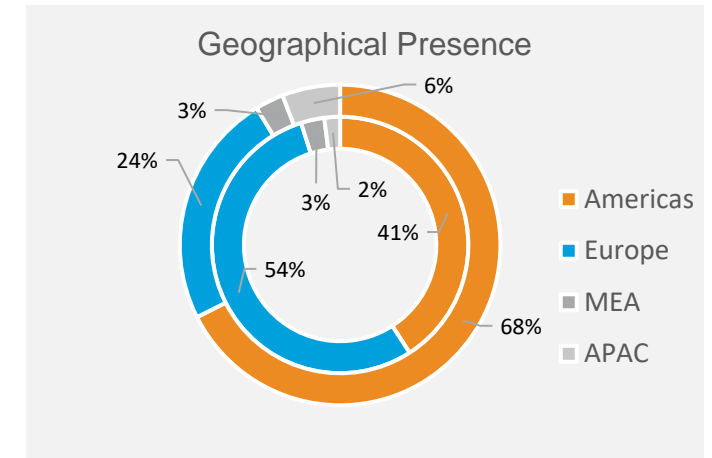


**Global Presence:** The company has solar PV projects in U.S., Chile, Brazil, Spain, India, South Africa, Australia, Mexico, Peru, Panama, Greece, and Columbia, among others. As of June 2021, Enel had 203 solar projects on its portfolio of over 10GW spread across six geographies (North America, Central America Latin America, Africa, Europe, Asia, and Oceania).

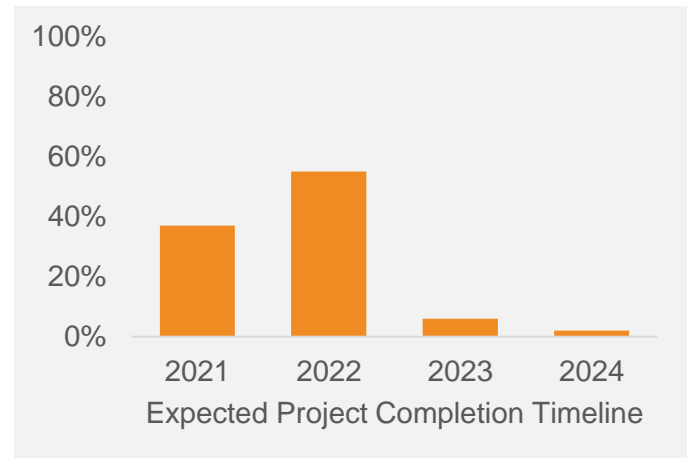
Some of their large-scale utility solar PV projects include:

1. São Gonçalo, Brazil (608.7 MW<sub>DC</sub>)
2. Roadrunner Solar, Unites States (497 MW<sub>DC</sub>)
3. Bungala, Australia (275.0 MW<sub>DC</sub>)
4. Magdalena II, Mexico (219.5 MW<sub>DC</sub>)
5. Rubi, Peru (179.5 MW<sub>DC</sub>)
6. Aurora, U.S. (150.2 MW<sub>DC</sub>)

**Pipeline Description:** Enel Green Power's pipeline includes 2,626 MW of projects under construction and 2,779 MW of projects under pre-construction phase as of June 2021. Approximately, 37% of their pipeline is expected to be completed in 2021, 55% in 2022, 6% in 2023, and the remaining 2% by 2024.



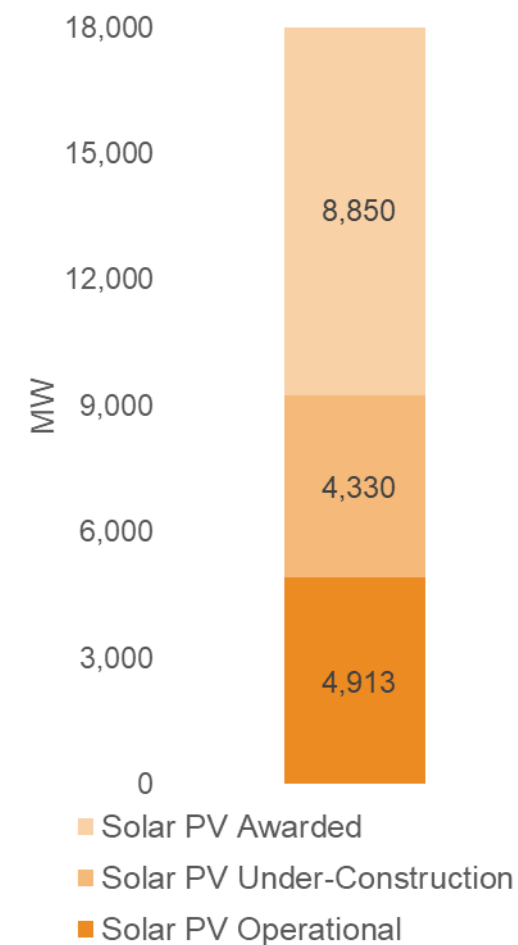
*Note: Inner circle represents number of projects breakup and outer circle represents capacity size breakup for each region*



**Business Overview:** Incorporated in 1988, Adani Enterprises manages its renewable portfolio through its subsidiary Adani Green Energy. It has one of the largest global renewable portfolio of 20.3 GW including operating, under-construction, awarded and assets under acquisition catering to investment-grade counterparties. The company develops, builds, owns, operates and maintains utility-scale grid-connected solar and wind projects. Key customers of Adani Green include Solar Energy Corporation of India (SECI), NTPC and various State DISCOMs. Listed in 2018, the company as of June 2021, has a \$25 billion market cap aiding India meet its COP21 goals.

### Notable Developments:

1. In the first half of 2021, Adani acquired 1,400 MW of operating and 3,554 MW of solar projects under construction from SB Energy. It also acquired 75 MW from Sterling and Wilson, 50 MW from Skypower and a 20 MW from Hindustan Powerprojects.
2. In March 2021, Adani raised a \$1.35 billion debt package for its under-construction renewable assets. The revolving project finance facility would initially finance the 1.69 GW solar and wind hybrid projects to be setup in Rajasthan, India.
3. In October 2020, AGEL completed the acquisition of 205 MW operating solar assets from Essel Green Energy and Essel Infraprojects. The assets are in Punjab, Karnataka and Uttar Pradesh.



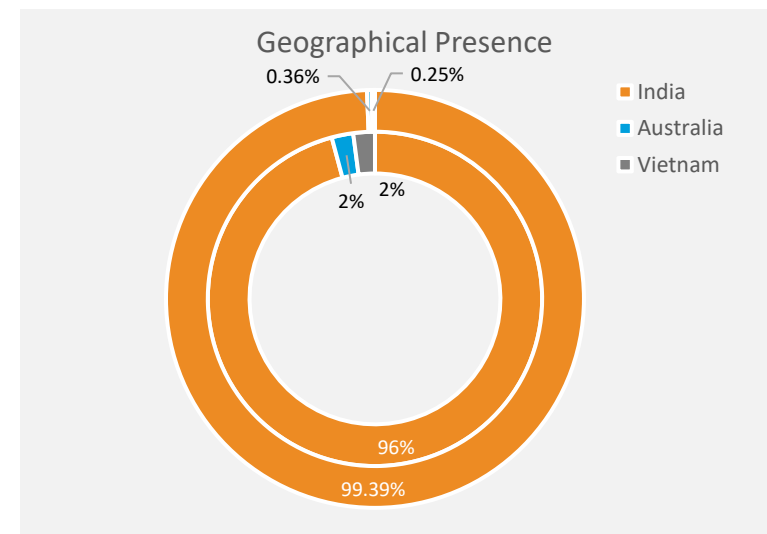
**Geographical Presence:** The company has solar PV projects in Australia, Vietnam and India

Some of the large-scale solar PV projects include:

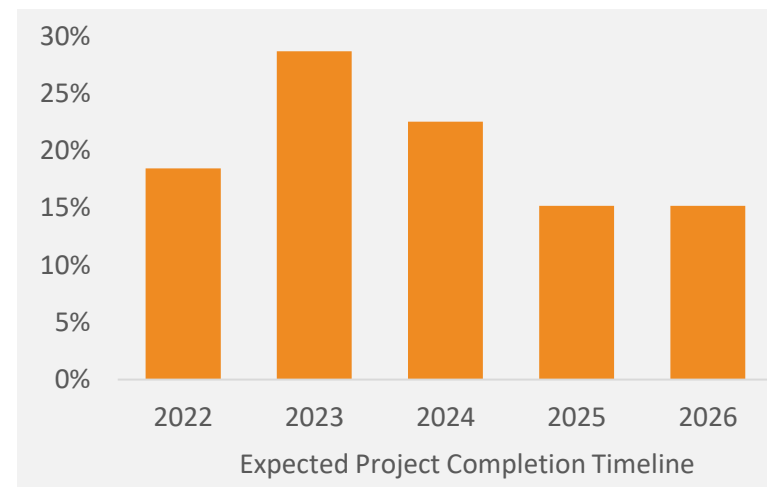
1. Kamuthi Solar Park, India (648 MW)
2. Gani Sakunala Solar Park, India (350 MW)
3. Bhadla P-3 Solar Park, India (300 MW)
4. Rajasthan NTPC ISTS project (300 MW)
5. Rugby Run, Australia (65 MW)

#### Pipeline Description:

Adani's solar project pipeline includes 4,330 MW under construction, and 8,850 MW in pre-construction phase as of June 2021. Approximately 18% of their pipeline is expected to be completed by 2022, 29% by 2023, 23% by 2024, 15% by 2025 and the remaining 15% by 2026. Under the manufacturing-linked project development tender floated by Solar Energy Corporation of India, Adani is set to develop 8 GW of solar projects (four tranches of 2 GW each) between October 2023 and October 2026.



*Note: The inner circle represents number of projects; and the outer circle represents capacity*





Headquarters: La Défense, France

Global Presence: France, Brazil, Mexico, U.S., Canada, Chile, South Africa, Malaysia, Italy, India, and others

Offerings and Capabilities: Renewables, Networks, Thermal, Nuclear, and Others

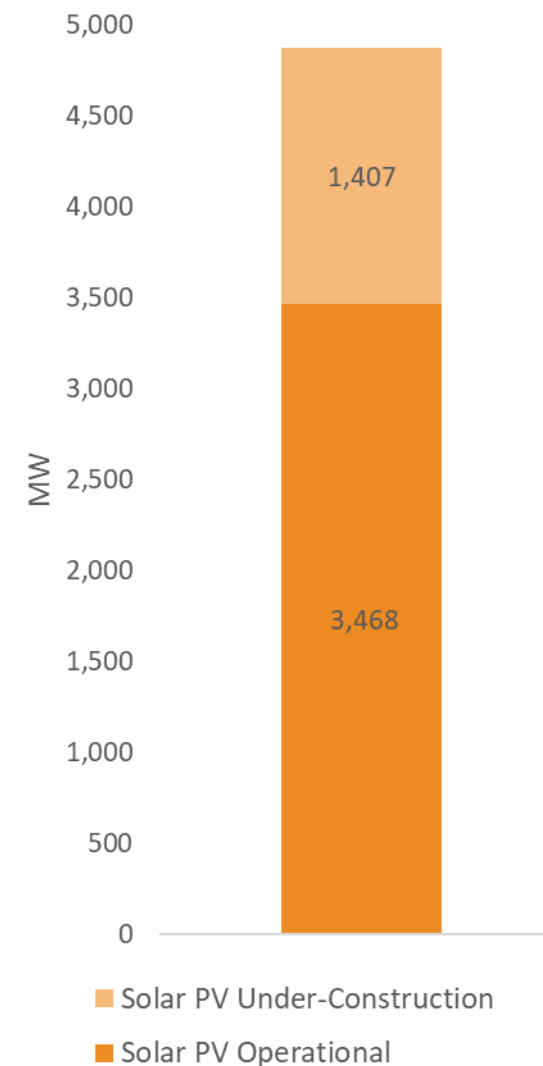
Project Portfolio (MW): Operational Capacity: 3,468 MW; Under Construction: 1,407 MW

**Business Overview:** ENGIE is a French power conglomerate involved in electricity generation and distribution from natural gas, nuclear, renewable, and petroleum. The company operates under five business lines – renewables, networks, client solutions, thermal & supply, nuclear, and others.

The renewables business arm of ENGIE is comprised of all centralized renewable energy generation activities, including financing, construction, and operation of renewable energy facilities, using various energy sources such as hydropower, onshore and offshore wind, solar photovoltaic, biomass, biogas/biomethane, geothermal, and hydrogen.

#### Notable Developments:

1. In May 2021, ENGIE entered into an agreement to acquire a 40% equity stake in Xina Solar One, a 100 MW concentrated solar project. The project has a 20-year power purchase agreement with Eskom (South African Power Utility).
2. In January 2021, ENGIE and NEOEN announced HORIZEO, a 1 GW solar park in Saucats, Gironde, France. The project will have energy storage, green hydrogen production unit, data center, and an area having both agriculture and solar energy generation.





### Geographical Presence:

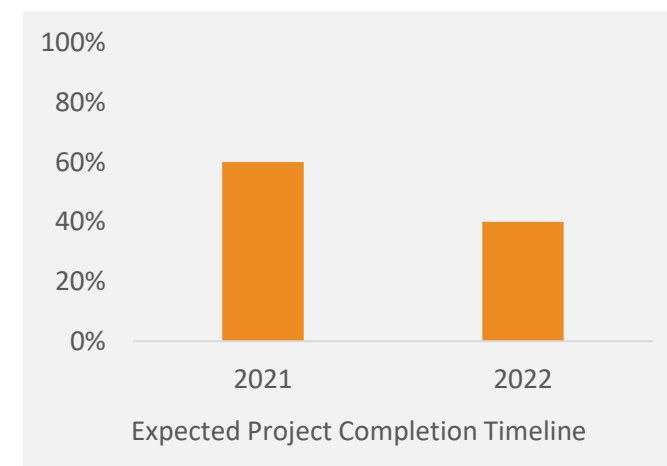
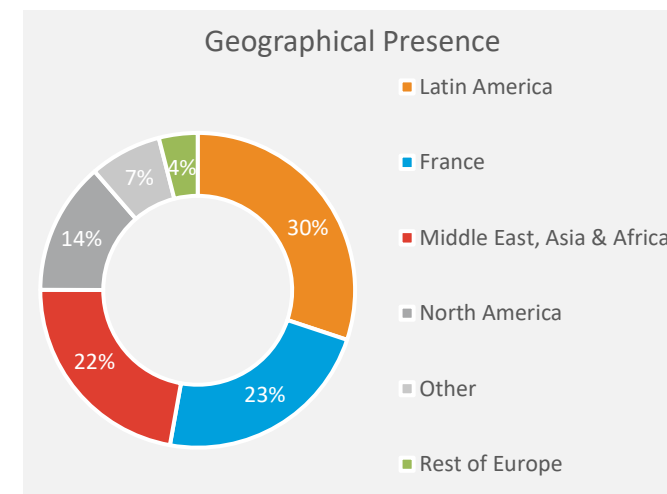
The company has solar PV projects in France, U.S. & Canada, Mexico, India, Chile, Malaysia, Italy, Latin America, Middle East, Africa and in other parts of Europe, Asia, and rest of the globe.

Some of their large-scale solar PV projects include:

1. NTPC Kadapa, India (250 MW)
2. Long Draw, U.S. (225 MW)
3. Nueva Xcala, Mexico (200 MW)
4. Kathu, South Africa (100 MW)

### Pipeline Description:

ENGIE's pipeline includes 1,407 MW of projects under construction as of June 2021. Most of their projects in the pipeline are in Mexico, India, Chile, Malaysia, U.S., and Italy. Approximately, 60% of it is expected to be completed in 2021, and the remaining 40% by 2022.





Headquarters: London, United Kingdom

Global Presence: North America, Europe, South America, and Asia among others

Offerings and Capabilities: Solar Power Generation, Development, Asset

Management, O&M Services, Financing

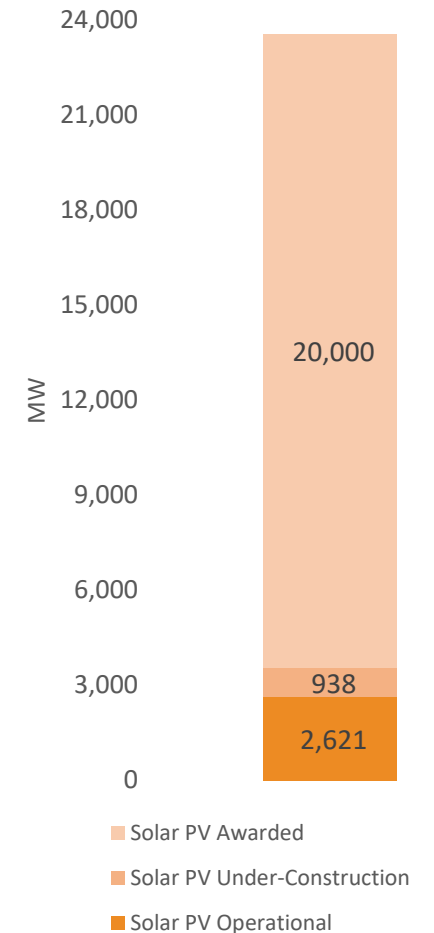
Project Portfolio (MW): Operational Capacity: 2,621 MW; Under Construction: 938

MW; Awarded: 20,000 MW

**Business Overview:** Lightsource Renewable Energy was renamed Lightsource bp after the acquisition of 43% stake by bp in 2017. The stake was increased to 50% in December 2019. Alongside its expertise in solar power generation and corporate PPAs, the company also provides funding, development, asset management, and O&M services in the solar sector. For India, Lightsource bp exclusively operates through EverSource Capital (JV of Lightsource bp and Everstone Capital). The company has projects in various countries within Asia, Europe, Australia and the Americas.

### Notable Developments:

1. In June 2021, Lightsource bp secured \$330 million from Westpac, Intesa Sanpaolo, ING, and EDC for constructing its 147.6 MW Woolooga and 73.8 MW West Wyalong projects in New South Wales, and Queensland in Australia.
2. In May 2021, Lightsource bp acquired 28.2 MW Canicattì, 40.1 MW Torre di Mastro, and 39.6 MW Manfredonia solar projects from Horizon Firms. These under development projects are based in Sicily and Apulia in Italy.
3. In April 2021, Lightsource bp signed a power purchase agreement with Amazon for its 258.6 MW Birch solar project in Ohio, U.S.



*\*An AC/DC conversion factor of 1.45 has been used to arrive at these values.*



### **Geographical Presence:**

The company has solar PV projects in countries across Australia, U.S., U.K., Spain, Greece, Portugal and others.

Some of the company's large-scale utility solar PV projects include:

1. Impact Solar, U.S. (198 MW)
2. Zaragoza Cluster, Spain (170.3 MW)
3. Penn State University, U.S. (53.5 MW)
4. Maharashtra, India (50 MW)

### **Pipeline Description:**

Lightsource bp's solar project pipeline includes 938 MW of projects under construction and 20,000 MW of projects in pre-construction phase. In May 2021, Lightsource bp added Greece to their list of active markets, progressed 400 MW in Australia and acquired 900MW of pipeline in Portugal. Most of its pipeline projects are in the U.S., Australia, Greece, Portugal and the UK.

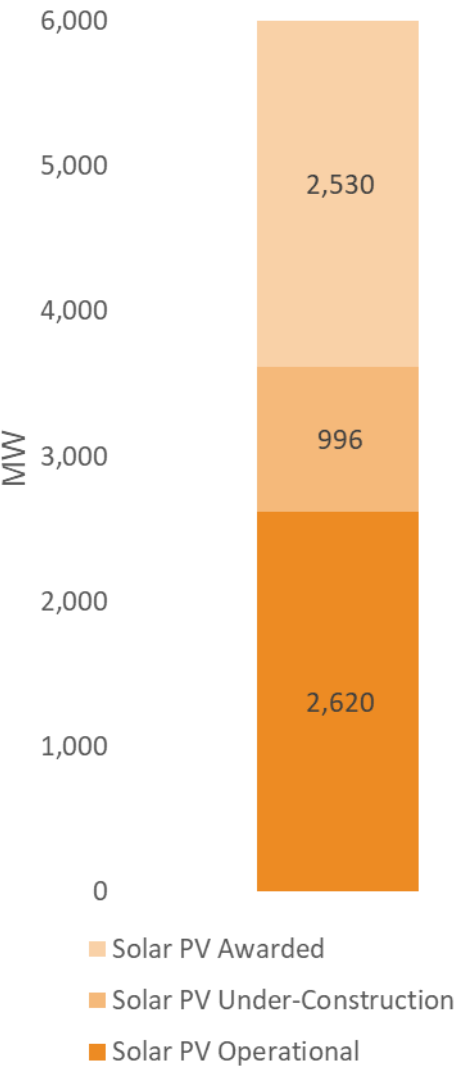


Headquarters: Virginia, U.S.  
Global Presence: U.S., Chile, Brazil, El Salvador, Dominican Republic, Mexico, Colombia, Panama, and Jordan  
Offerings and Capabilities: Transmission & Distribution; Thermal and Renewable Power Generation, Development and Construction  
Project Portfolio (MW): Operational Capacity: 2,620 MW; Under Construction: 996 MW; Awarded: 2,530 MW

**Business Overview:** AES is a global power company with a diverse portfolio of renewable and thermal power generation facilities and distribution businesses. The company mainly operates under two business lines - generation and utilities. AES owns and operates a generation portfolio of 29,688 MW, which is diversified by fuel type. Out of the total generation capacity, 40% of the capacity is sourced by renewables, including hydro, solar, wind, energy storage, biomass, and landfill gas. AES’ joint venture with Siemens, under the brand Fluence, is responsible for deploying energy storage projects.

**Notable Developments:**

- 1. In June 2021, Indiana Utility Regulatory Commission (IURC) approved AES Indiana’s plan to acquire 195 MW Hardy Hills solar project in Clinton, Indiana, U.S. The project is expected to become operational in 2023.
- 2. In February 2021, AES Indiana, announced agreement to acquire 195 MW Hardy Hills solar project in Clinton, Indiana, U.S. Invenergy is developing and managing the construction of the project. The acquisition agreement is subject to approval from the IURC.
- 3. In November 2020, AES announced an agreement with Alberta Investment Management Corporation, to merge the sPower development platform, a solar developer in the U.S., with AES’ U.S.-based clean energy development business .







## Geographical Presence:

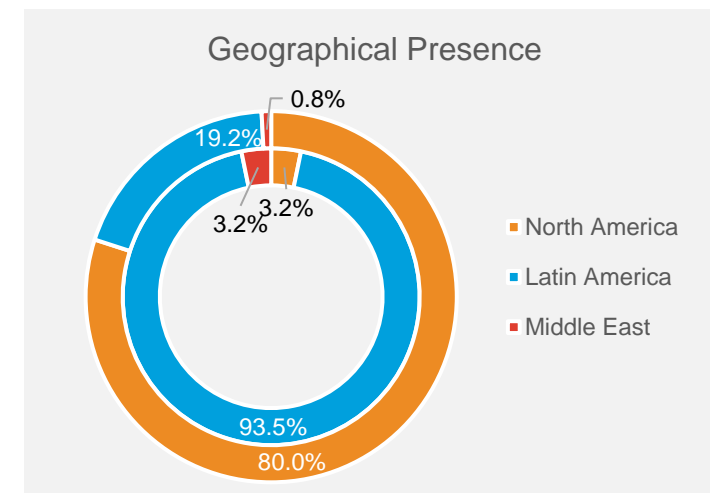
The company has solar PV projects in the U.S., Chile, Brazil, El Salvador, the Dominican Republic, Mexico, Jordan, Colombia, and Panama.

Some of the company's large-scale utility solar PV projects include:

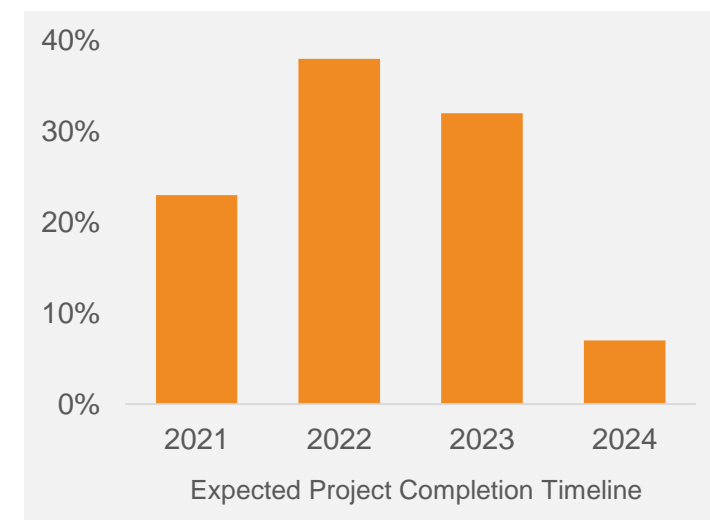
1. Highlander, U.S. (485 MW)
2. Bosforo, El Salvador (100 MW)
3. East Line Solar, U.S. (100 MW)
4. Bayasol, Dominican Republic (50 MW)

## Pipeline Description:

The AES solar pipeline includes 996 MW of projects under construction, and 2,530 MW of projects under pre-construction phase as of June 2021. Approximately 23% of their pipeline is expected to be completed by 2021, 38% by 2022, 32% by 2023, and the remaining 7% by 2024.



*Note: The inner circle represents number of projects; and the outer circle represents capacity*

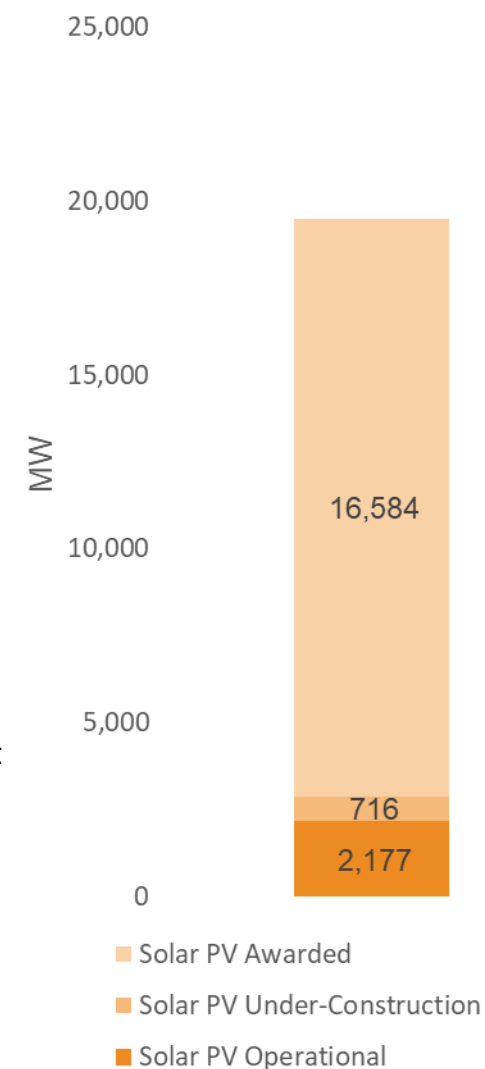


**Business Overview:** Brookfield Renewable Partners is a renewable energy developer and part of Brookfield Asset Management, which is focused on real estate, renewable power, infrastructure, private equity, and asset management.

Brookfield Renewables' operations and capacity mix are segmented by hydropower, wind, solar, storage, and other (cogeneration and biomass) sources. Their generation mix consists of hydropower, wind, solar, and storage. According to its Q2 2021 report, the company's portfolio comprises approximately 20,400 MW of generation capacity as of June 2021, with facilities in North America, South America, Europe, and Asia.

### Notable Developments:

1. In June 2021, ACME and Brookfield Renewable, signed on development of 450 MW solar project in Rajasthan, India. The project includes a 25-year power purchase agreement with Maharashtra State Electricity Distribution Company Limited (MSEDCL).
2. In May 2021, Brookfield Asset Management, parent of Brookfield Renewable Partners, received R\$1.47 billion (~\$278.4 million) from the National Bank for Economic and Social Development (BNDES) in Brazil for the construction of 700 MW solar project in Janaúba, Brazil.
3. In July 2020, Brookfield Renewable received approval to merge with Terraform Power. The merger created one of the largest integrated renewable power companies globally.





### **Geographical Presence:**

The company has developed, engineered, constructed, and managed large grid-connected PV projects around the world, including in the U.S., Brazil, and various other countries

Some examples of their grid-connected projects include:

1. Mt. Signal, U.S. (265.8 MW)
2. LILY, U.S. (103 MW)
3. CAP, Chile (101.6 MW)
4. Regulus Solar, U.S. (81.6 MW)

### **Pipeline Description:**

Brookfield renewable partners solar pipeline includes 716 MW of projects under construction, and 16,584 MW of projects under pre-construction phase as of June 2021. Most of their projects in the pipeline are in Brazil.



Headquarters: Hamburg, Germany

Global Presence: France, Australia, India, Netherlands, Spain, Portugal, and others

Offerings and Capabilities: Development, Consulting, Planning, Construction, Operation, Energy Trade, and Investment

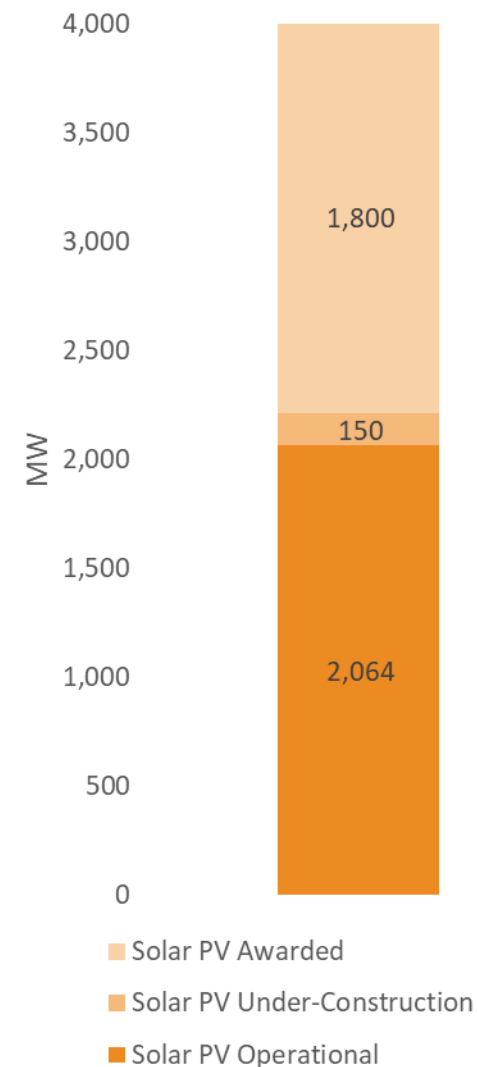
Project Portfolio (MW): Operational Capacity: 2,064 MW; Under Construction: 150 MW; Awarded: 1,800 MW

**Business Overview:** Enerparc is a German solar project developer, consultant, contractor, trader, and investor. Company offers solar parks and other solar installations for energy consumers, landowners, commercial operators, financial institutions, investment funds, and energy investors.

Enerparc specializes in design, development, engineering, procurement, construction, and operation of large-scale grid-connected solar photovoltaic installations. Company operates in all major geographies such as Europe, Middle East, & Asia with more than 200 solar projects in their portfolio.

#### Notable Developments:

1. In December 2020, Holaluz signed a 10-year power purchase agreement with Enerparc to secure power from its 84 MW solar park in Balearic Islands, Spain.
2. In November 2020, Enerparc signed 30-year power purchase agreement with Deutsche Bahn to supply power from its 90 MW solar project in Gaarz, Germany.
3. In September 2020, Prime Capital AG arranged junior debt financing of €106 million (~\$125.49 million) for 579 MW solar photovoltaic projects of MKM Invest Group across Germany (367 MW), Spain (108 MW), and France (104 MW). Enerparc develops solar projects for the group.





## Geographical Presence:

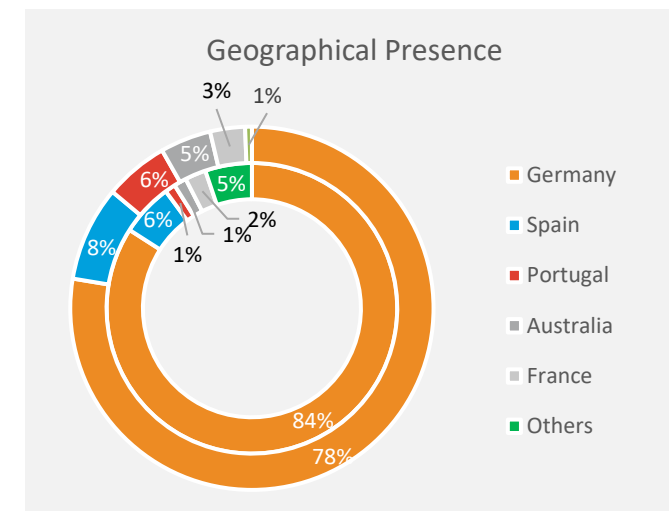
The company has solar PV projects in Germany, Spain, Portugal, Australia, France, and few other countries

Some of their large-scale solar PV projects include:

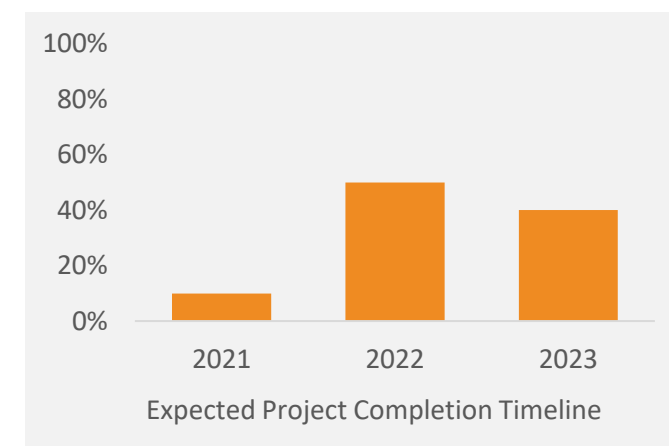
1. Gaarz, Germany (90 MW<sub>DC</sub>)
2. Neuhardenberg, Germany(80 MW<sub>DC</sub>)
3. Walddrehna, Germany (52 MW<sub>DC</sub>)
4. Heideblick, Germany (27.5 MW<sub>DC</sub>)

## Pipeline Description:

Enerparc's pipeline includes 150 MW of projects under construction, and 1,800 MW of projects in the pre-construction phase as of June 2021. Approximately, 10% of their pipeline is expected to be completed in 2021, 50% in 2022, and the remaining 40% by 2023.



*Note: The inner circle represents number of projects; and the outer circle represents capacity.*





Headquarters: Paris La Défense, France

Global Presence: North America, and other parts of Europe and the world

Offerings and Capabilities: Project Development, Construction, Asset Management, and O&M

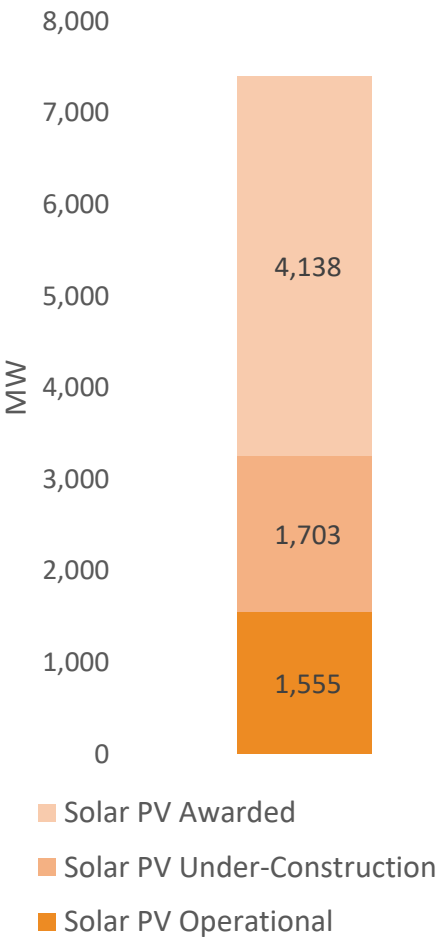
Project Portfolio (MW): Operational Capacity: 1,555 MW; Under Construction: 1,703 MW; Awarded: 4,138 MW

**Business Overview:**

EDF Group’s EDF Renewables primarily builds and operates wind and solar photovoltaic power projects in over 20 countries. It undertakes development, construction, asset management, and operation & maintenance for renewable energy projects. EDF Renewables helps governments, utilities, corporates, industries, municipalities, cooperatives, education & non-profit institutions, and property managers meet their renewable energy needs and targets. The company operates mostly in Europe and North America but is also entering emerging markets including Brazil, China, India, South Africa and the Middle East.

**Notable Developments:**

- 1. In June 2021, EDF commissioned 60 MW Timna solar power project in Arava Valley, Israel.
- 2. In April 2021, EDF, Masdar, and Nesma announced financial closing and start of construction of the consortium’s 300 MW solar power project in Jeddah, Saudi Arabia.
- 3. In March 2021, EDF announced acquisition of 49.9 MW Burwell solar project from AGR and 49.9 MW Porth Wen solar project from Countryside Renewables. Projects are under development in South-East Cambridge Shire and North Anglesey in the UK. They are expected to be operational by the end of 2022.



*\*An AC/DC conversion factor of 1.45 has been used to arrive at these values.*

**Geographical Presence:**

The company has solar PV projects in North America, Asia Pacific, Middle East, France, and in other parts of Europe and the world. Some of their large-scale solar PV projects include:

1. Palen, U.S. (500 MW)
2. Big Beau, U.S. (165 MW)
3. Maverick 1, U.S. (173 MW)
4. Maverick 4, U.S. (137 MW)

**Pipeline Description:**

EDF's pipeline includes over 4,000 MW of projects in various stages of pre-construction as of June 2021. Most of its pipeline projects are in France, North America, UAE, India, and Saudi Arabia.



Headquarters: Ontario, Canada

Global Presence: North America, Latin America, EMEA, Japan, China, and Asia Pacific (excluding Japan & China)

Offerings and Capabilities: Manufacturing of modules, inverters, systems kits, and energy storage along with development, EPC, O&M, and asset management of solar projects

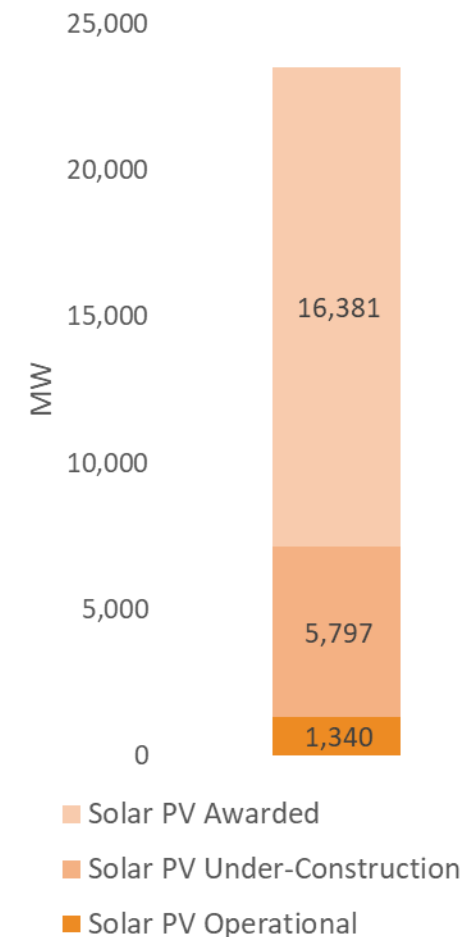
Project Portfolio (MW): Operational Capacity: 1,340 MW; Under Construction: 5,797 MW; Awarded: 16,381 MW

**Business Overview:** Canadian Solar is a solar modules manufacturer and project developer. Its manufacturing business includes solar modules, inverters, kits, and energy storage solutions for electric utility, commercial, and residential consumers. Under its solar projects business line, it offers project development, EPC, O&M, and asset management for solar photovoltaic projects across the world.

Canadian Solar's majority-owned subsidiary, CSI Solar, filed for its initial public offering and will be listed in the Shanghai Stock Exchange. Canadian Solar owned a portfolio of 23,518 MW of solar projects, including both operational and those in the pipeline, as of June 2021. Globally, the company shipped 3.7 GW of solar modules in the second quarter of 2021.

#### Notable Developments:

1. In June 2021, Canadian Solar was awarded 86 MW<sub>DC</sub> of solar projects in Japan's solar auction. Projects are prospected to reach commercial operation between 2024 and 2026 and will enter power purchase agreement with Tohoku Power Electric Company at a weighted average tariff of \$0.098/kWh.
2. In June 2021, Canadian Solar announced receipt of €50 (~\$59.67) million of a bilateral corporate facility from Banco Santander, S.A. to support its solar project pipeline in the Europe, Middle East, and Africa (EMEA) region.







### Geographical Presence:

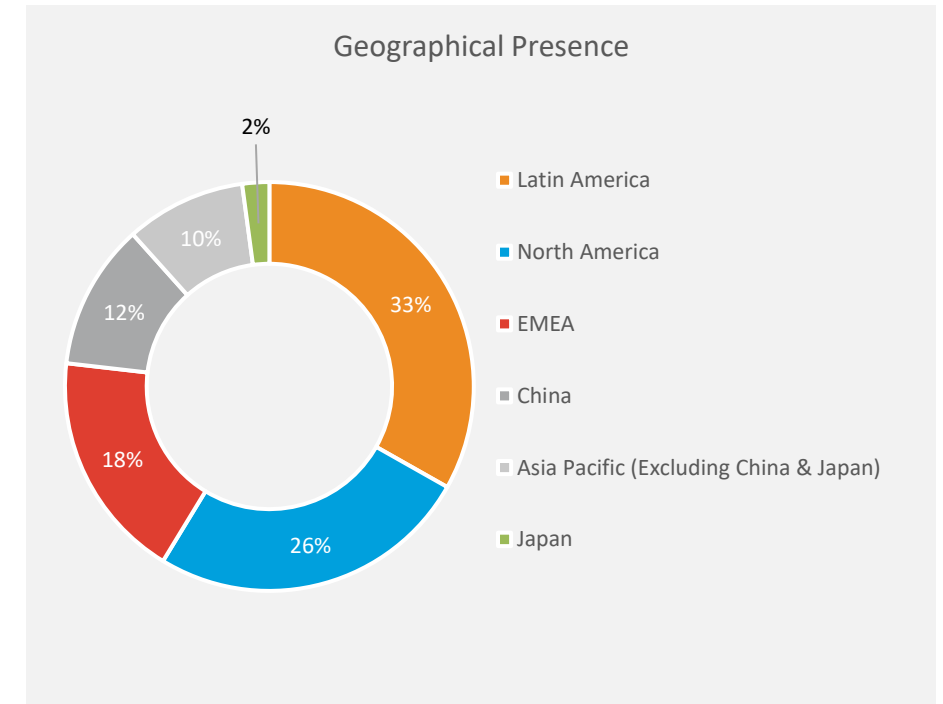
The company has solar PV projects in U.S., Argentina, Brazil, China, Japan, Australia and other countries across the world

Some of the large-scale solar PV projects include:

1. Garland Solar, U.S.(272 MW)
2. Tranquillity Solar, U.S. (257.7 MW)
3. Roserock Solar, U.S. (212 MW)
4. Cafayate Solar, Argentina (100.1 MW)
5. Guimaranía Solar, Brazil (82.5 MW)

### Pipeline Description:

Canadian Solar's pipeline includes 5,797 MW of projects under construction and 16,381 MW of projects that have been awarded as of June 2021. Most of the projects in the pipeline are in Latin America, North America, and EMEA.





Headquarters: Oslo, Norway

Global Presence: South Africa, Egypt, Malaysia, Ukraine, Brazil, Argentina, Honduras, Jordan, Mozambique, Czech Republic and Rwanda.

Offerings and Capabilities: Development & Construction, Power Production, Asset Management, O&M, Corporate, and Group Finance Services

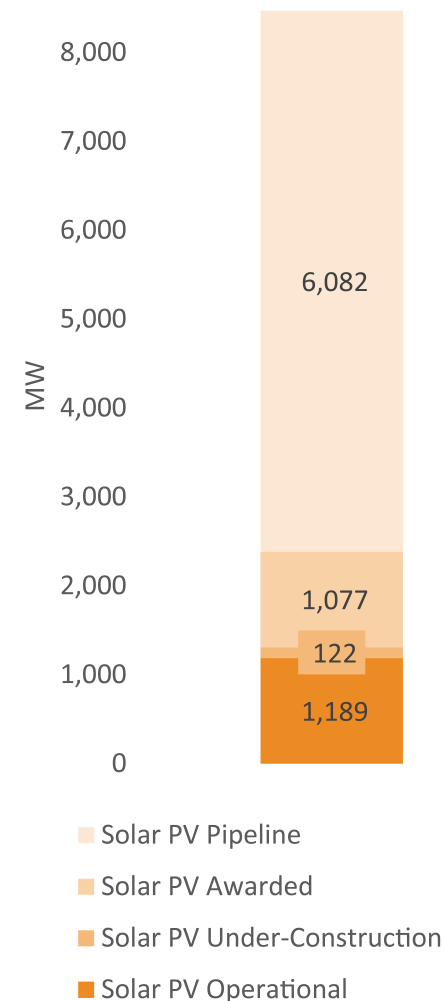
Project Portfolio (MW): Operational Capacity: 1,189 MW; Under Construction: 122 MW; Awarded: 1,077 MW; Pipeline: 6,082 MW

**Business Overview:** Scatec is a Norwegian renewable energy company which develops, builds, owns, and operates hydro, wind, and solar power projects along with energy storage solutions. The company operates under four business lines – power project development and construction, power production, O&M, corporate, group finance and asset management services,

Scatec provides construction services and development rights to organizations setting up power projects in which it has economic interests. Renewable energy produced by Scatec and its partners is sold through either power purchase agreements, bilateral contracts, spot market, or through a combination. It also offers O&M services, and asset management services for renewable power projects.

### Notable Developments:

1. In January 2021, Scatec completed the acquisition of 100% of shares in SN Power from Norfund for a total equity value of \$1,166 million. The funding was provided by provided by Nordea, DNB and Swedbank.
2. In June 2021, Scatec was awarded 540 MW of solar and 225 MW of battery storage projects in Kenhardt, Northern Cape, South Africa. Scatec holds 51% economic interest in the project and will provide EPC, O&M, and asset management services.





### Geographical Presence:

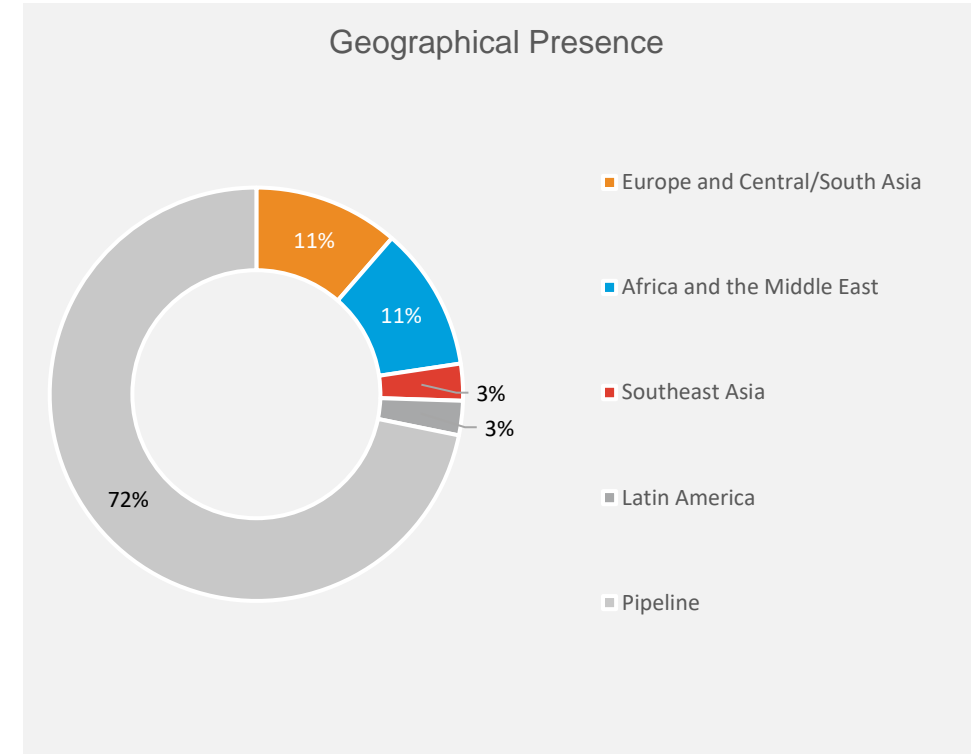
The company has solar PV projects in South Africa, Ukraine, Malaysia, Tunisia, Egypt, Pakistan, Brazil, and other parts of the world

Some of their large-scale solar PV projects include:

1. Benban, Egypt (380 MW)
2. Upington, South Africa (258 MW)
3. Quantum Solar Park, Malaysia (197 MW)
4. Apodi, Brazil (162 MW)

### Pipeline Description:

Scatec's pipeline includes projects of 122 MW of projects under construction, 1,077 MW of awarded projects or backlog projects and 6,082 MW of projects in the pipeline as of June 30, 2021.



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