BRICS Renewable Energy Report 2022

BRICS
ENERGY RESEARCH
COOPERATION PLATFORM

BRICS
2022 CHINA

ACKNOWLEDGEMENTS

This Report was made possible thanks to the support and advice of many individuals and organizations.

The BRICS Renewable Energy Report 2022 is the outcome of the collaborative efforts of the committee of the BRICS Senior Energy Officials. The BRICS ERCP would like to acknowledge the support from the Ministry of Mines and Energy of the Federative Republic of Brazil, Ministry of Energy of the Russian Federation, Ministry of Power of the Government of India, Ministry of Petroleum and Natural Gas of the Government of India, Ministry of Coal of the Government of India, Ministry of New and Renewable Energy of the Government of India, Ministry of Statistics and Programme Implementation of the Government of India, National Energy Administration of the People's Republic of China, Ministry of Mineral Resources and Energy of the Republic of South Africa.

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BRICS ERCP are also grateful to Ministry of Mines and Energy of Brazil; Russian Renewable Energy Development Association, Energy officials from Bureau of Energy Efficiency and Ministry of Power, Government of India, China Renewable Energy Engineering Institute, South African National Energy Development Institute (SANEDI).

BRICS ERCP would like to express gratitude to China Chairmanship for leading the preparation of the Report. Overall guidance was provided by the Deputy Director General Wei Xiaowei National Energy Administration of the People's Republic of China.

INTRODUCTION

Today's world is undergoing major changes unseen in a century. The global energy landscape is going through profound adjustments with an increase in trend towards multipolarity. Emerging economies in the Asia-Pacific region have become the main forces for energy demand growth. With global demand for energy continuing to grow, problems concerning energy resources and the environment are becoming increasingly prominent. Consequently, countries around the world have taken more active measures than before to deal with climate change. Achieving clean and low-carbon energy transition has become a global consensus. With a new round of energy technology revolution emerging, we see an increasingly prominent energy trend for low-carbon and electric structure and clean and intelligent technology. Renewable energy has become the dominant direction of global low-carbon energy transition.

In this report, analysis is conducted from the perspectives of resource overview, industry policies, development status, industrial advantages and features, development prospects and visions in light of renewable energy development in the BRICS countries. The BRICS countries adopt policies to support the steady advancement of renewable energy according to their respective resource endowments. They also increase international energy cooperation and promote the development of a more mature global renewable energy industry chain based on their respective industrial advantages and features.

In order to boost the promotion and application of innovative energy technologies in the BRICS countries, it is recommended to establish a cooperation mechanism for demonstration projects, to regularly organize and carry out exchanges on renewable energy technologies in focused areas and renewable energy policy systems. In this way, the promotion and application of innovative technologies in the field of renewable energy can be pushed ahead.

With the accelerated advancement of responses to climate change and the implementation of carbon neutrality goals, it has become the general consensus and concerted action of all countries in the world to step up the global energy transition and promote the development of renewable energy. Seeking cooperation opportunities in the field of renewable energy will become one of the main themes of the BRICS energy cooperation. On the basis of summarizing the current situation of global renewable

energy development, in the BRICS Renewable Energy Report, the basis, policies, advantages, features and prospects of renewable energy development in the BRICS countries are analyzed and studied, covering conventional hydropower, pumped storage, wind power, solar power, biomass, geothermal energy, new energy storage and hydrogen.

The report is the first BRICS cooperative research in the field of renewable energy. This study will lay the foundation for setting the priority areas and models of renewable energy cooperation among the BRICS countries.

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Chapter 1

Global Renewable Energy Development

[I]

OVERVIEW OF GLOBAL RENEWABLE ENERGY DEVELOPMENT AND UTILIZATION

The world is undergoing profound changes unseen in a century, so is the global energy landscape with an increase in trend towards multipolarity. Emerging economies in the Asia-Pacific region have become drivers of energy demand growth. As the global energy demand continues to grow, issues concerning energy resources and the environment become increasingly prominent. Countries around the world have taken more proactive measures to tackle climate change, and it has become a global consensus to pursue clean and low-carbon energy transition. As the new round of energy technology revolution unfolds, we see a more prominent trend toward a low-carbon and electrified energy mix and cleaner and smarter energy technology. Renewable energy has become the dominant driver of global low-carbon energy transition.

I. OVERVIEW OF RENEWABLE ENERGY UTILIZATION

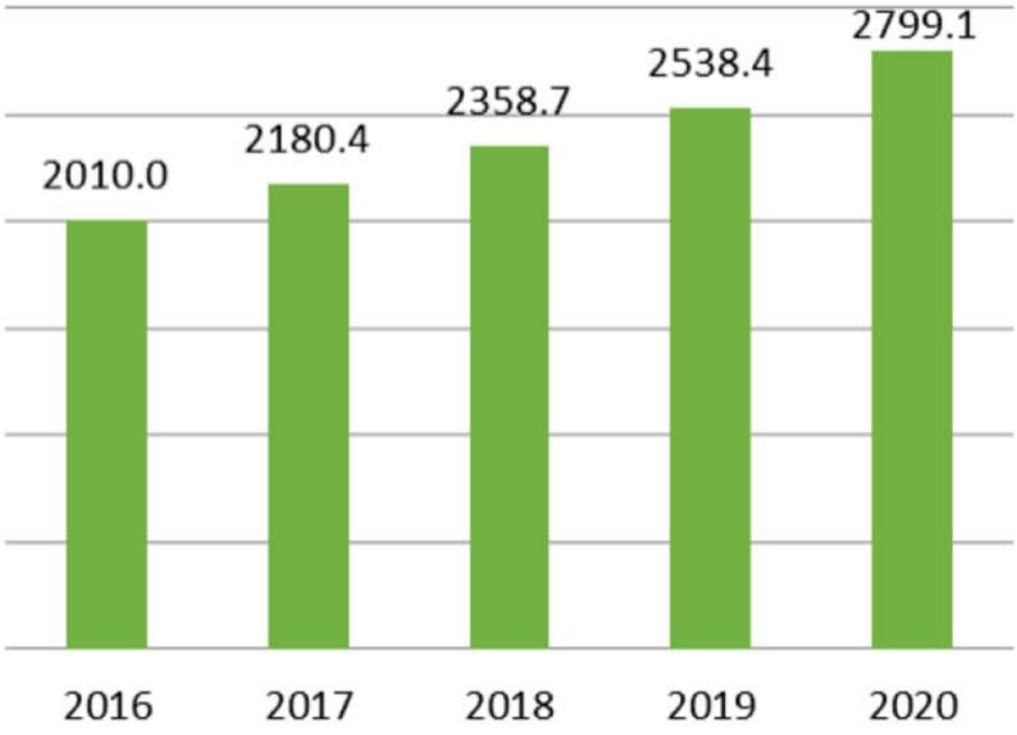
At the end of 2020, the world's installed capacity of power generation from renewable sources hit 2,799 GW, increasing by 260 GW over 2019. China's installed capacity was 934 GW, a year-on-year increase of 139 GW and a significant contribution to the global renewable energy growth. Hydropower remained the largest source of renewable energy, with a total installed capacity (excluding pumped storage) of 1,210 GW, increasing by 20 GW compared with the figure in 2019. In terms of regional distribution, the three regions with the highest cumulative installed capacity were Asia (501 GW), Europe (194 GW) and North America (177 GW).

Solar photovoltaic (PV) power and wind power developed rapidly to keep up with hydropower, with the total installed capacity of solar PV reaching 707 GW, up by 126 GW from that of 2019. The three regions with the highest cumulative installed capacity of solar PV energy were Asia (406 GW), Europe (161 GW) and North America (82 GW). The total

installed capacity of wind power hit 733 GW, up by 111 GW from that of 2019. From the perspective of regional distribution, the three regions with the greatest installed capacity were Asia (332 GW), Europe (207 GW) and North America (139 GW).

For other renewable energy sources, by the end of 2020, the global cumulative installed capacity of solar thermal energy reached 6 GW, that of biomass energy 126 GW, and that of geothermal energy 14 GW. In addition, other renewable energy sources, such as hydrogen from renewable energy and marine energy, also drew increasing attention from all countries.

Figure 1.1-1 Global cumulative installed capacity of renewable energy in recent 5 years (GW)



In terms of increment, the global installed capacity of renewable energy in 2020 increased over 260 GW, hitting another record high, including 20 GW from hydropower, 126 GW from solar PV energy, 111 GW from wind power, and 2 GW from other renewable sources, such as solar thermal energy, biomass energy and geothermal energy.