Paper No. 138

RENEWABLE ENERGY DEVELOPMENT & FUTURE PROSPECTS

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By:

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Alternative Energy Development Board (AEDB) has been promoting and facilitating the development and deployment of alternative and renewable energy technologies in the country. The development of renewable energy based power generation projects is being pursued on IPP mode through private sector investors under the Government's policies.

The status of RE power projects is given below:

- Twenty Four (24) wind power projects of 1235.37 MW cumulative capacity are operational and providing electricity to the grid.
- Six (06) solar projects of 430 MW cumulative capacity are operational.
- Eight (08) sugar mill based bagasse co-generation projects of 259.1 MW capacity are operational.

Status of Projects in Pipeline

Several ARE projects, initiated under the RE Policy 2006, were not able to proceed with their development due to restrictions imposed vide decisions taken by ***CCOE dated 12th December, 2017***. Under the vision of the current Government to exploit clean energy resources and increase the share of ARE in the energy mix, the ***CCOE vide its decisions in case No. CCE-12/04/2019(V) dated February 27, 2019 and Case No. CCE-24/06/2020 dated 4th May, 2020*** allowed implementation of projects that had already achieved significant milestones of project development by placing them into following three categories;

- Category-1: 19 projects of 531 MW that have already been issued Letter of Support (LOS) subject to revision of tariff in case tariff determination has been done since more than one year or if the tariff validity period has lapsed
- Category-II: 24 projects of 1339 MW that have acquired tariff and generation license subject to revision of tariff in case tariff determination has been done since more than one year or if the tariff validity period has lapsed
- Category-III: 110 projects of 6707 MW cumulative capacity holding LOIs to be allowed to proceed ahead after becoming successful in a competitive bidding to be undertaken as per demand communicated by NTDC.

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In compliance of the CCoE's decision, AEDB has actively been facilitating the said projects for their completion as per the criterion set by the CCOE. S**ixteen (16)** wind and solar power projects falling under Cat-II with a cumulative capacity of 860 MW have been facilitated to successfully achieve Financial Closing.

In compliance of the CCoE's decision, AEDB prepared the RFP package for carrying out competitive bidding for wind and solar projects falling under category-III. The RFP packages were submitted to NEPRA for approval. NEPRA approved RFP in Feb 2021 and directed AEDB to make certain changes in RFP and submit revised RFP after AEDB Board approval. AEDB has revised the RFP documents as per NEPRA's determination. Security Documents (EPA & IA) have also been revised in view of NEPRA's determination. RFP Packages are ready to be floated upon receipt of information pertaining to IRZs and total evacuation capacity/ quantum by NTDC through the approved Indicative Generation Capacity Expansion Plan (IGCEP).

ARE Policy 2019

The Government announced a new ARE Policy 2019 in October 2020. The policy aims at creating a conducive environment supported by a robust framework for the sustainable growth of ARE Sector in Pakistan. The GOP's strategic objectives of energy security, affordability of electricity, availability for all, environmental protection, sustainable development, social equity and mitigation of climate change will further be harnessed under the ARE Policy 2019.

Salient features of the ARE Policy 2019 are as follows:

- The policy has an expanded scope encompassing all alternative and renewable energy sources, competitive procurement and addresses areas like distributed generation systems, off-grid solutions, B2B methodologies and rural energy services.
- The ARE Policy 2019 is target oriented and sets a target of achieving 20% on-grid capacity from ARE technologies by 2025 and 30% capacity by 2030.
- The ARE Policy 2019 envisages development of large scale ARE projects in all parts of the country through active participation of the provinces.
- Indicative Generation Capacity Expansion Plan (IGCEP) outputs will form the basis of all on-grid capacity procurements.
- Provinces are part of the Steering Committee envisaged in the policy that will be carrying out the planning of annual ARE induction. Provincial energy departments will be carrying out competitive bidding process as per the annual ARE procurement plan approved by the AEDB Board on recommendations of the Steering Committee.
- The most significant feature of the policy is that it makes a transition from the traditional methods of procurement based on cost plus and upfront tariffs to competitive bidding. All new ARE projects specifically wind and solar power projects will be developed through competitive bidding.

- The policy envisages simplification and rationalization of the licensing framework for non-utility procurement to minimize regulatory fee, compliance costs and timeframes.

Distributed Generation (Net Metering)

Apart from large scale RE projects, the Government of Pakistan is also encouraging utilization of renewable energy technology at consumer ends across domestic, commercial, industrial sectors. AEDB has been promoting the renewable energy based net-metering deployments under the NEPRA (Alternative & Renewable Energy) Distributed Generation and Net Metering Regulations, 2015. AEDB has been providing technical assistance and capacity building of DICSOs through donor agencies for promoting and facilitating net metering installations.

AEDB has also been carrying our certification of service providers / installers of solar systems under AEDB (Certification) Regulations, 2018 in order facilitate the consumers and DISCOs and at the same time ensuring quality of service and equipment. The certification ofservice providers / installers is carried out on the basis of applications received at AEDB. As of now, a total of 126 service providers / installers are registered with AEDB.

As of 31st May, 2021 a total of 12,188 consumers had been issued generation licenses for net-metering based solar installations with a cumulative capacity of 210.86 MW.

OTHER INITIATIVES DURING 2020-21

AEDB undertook a number of supportive measures in order to promote ARE technologies and to attract private sector investments. Some of the supportive measures taken by AEDB are as follows:

i. AEDB proactively facilitated the RE power projects in achieving their project milestones and resolution of issues and impediments faced by the project sponsors from different public sector entities.

ii. Assisted World Bank in study for analyzing the integration of variable renewable energy in the national grid with the objective of increasing the share of renewable energy in the energy mix of the country.

iii. Assisted World Bank in carrying out the Pakistan Renewable Energy Locational Study that has the objective to identify the most suitable locations for ARE deployment in Pakistan to enable an informed strategic planning process of the imminent capacity ramp-up.

iv. AEDB proactively engaged with World Bank for carrying out the Pakistan Renewable Energy Competitive Bidding Study that will provide strategic analysis and advice to the AEDB and other relevant sector agencies on the implementation of competitive bidding for the contracting of Renewable Energy (RE) capacity to achieve the 2025 and 2030 targets in line with the Alternative Renewable Energy (ARE) Policy 2019.

v. Initiated the process of revision of AEDB (Certification) Regulations 2018 with the aim to simplify the procedures laid therein in order to ensure the implementation

of the present Government's policy of Ease of Doing Business. The revised regulations would be placed for approval of the AEDB Board soon.

vi. Developed the RFP package after stakeholder consultation for carrying out competitive bidding amongst pipeline wind and solar projects are per the decisions of the Cabinet Committee on Energy (CCoE).

vii. Assisted NTDC in carrying out the feasibility study of solar water pumping in Balochistan.

viii. Supported Government of Balochistan in preparation of PC-IIs for renewable energy based off-grid electrification projects in districts of southern Balochistan.

List of Operational Wind Power Projects

Sr. #	Name of Project	Capacity (MW)	Location	COD
1	FFC Energy Limited	49.5	Jhampir, Dist. Thatta	16 May, 2013
2	Zorlu Enerji Pakistan (Pvt.) Ltd	56.4	Jhampir, Dist. Thatta	26 Jul, 2013
3	Three Gorges First Wind Farm Pakistan (Pvt.) Limited	49.5	Jhampir, Dist. Thatta	25 Nov, 2014
4	Foundation Wind Energy – II Ltd.	50	Gharo, Dist. Thatta	10 Dec, 2014
5	Foundation Wind Energy – I Ltd.	50	Gharo, Dist. Thatta	11 Apr, 2015
6	Sapphire Wind Power Company Ltd	52.8	Jhampir, Dist. Thatta	22 Nov, 2015
7	Yunus Energy Ltd.	50	Jhampir, Dist. Thatta	16 Sep, 2016
8	Metro Power Company Ltd.	50	Jhampir, Dist. Thatta	16 Sep, 2016
9	Tapal Wind Energy Pvt. Ltd.	30	Jhampir, Dist. Thatta	7 Oct, 2016
10	Tenaga Generasi Ltd.	49.5	Gharo, Dist. Thatta	11Oct, 2016
11	Master Wind Energy Pvt. Ltd.	52.8	Jhampir, Dist. Thatta	14 Oct, 2016
12	Gul Wind Energy Ltd	50	Jhampir, Dist. Thatta	18 Oct, 2016
13	Hydro China Dawood Power Pvt. Ltd. ***(CPEC)***	49.5	Gharo, Dist. Thatta	5 Apr, 2017

14	Sachal Energy Development Pvt. Ltd. ***(CPEC)***	49.5	Jhampir, Dist. Thatta	18 Apr, 2017
15	United Energy Pakistan Pvt. Ltd ***(CPEC)***	99	Jhampir, Dist. Thatta	16 Jun, 2017
16	Hawa Energy Pvt. Limited	49.735	Jhampir, Dist. Thatta	15 Mar, 2018
17	Jhampir Wind Power Limited	49.735	Jhampir, Dist. Thatta	16 Mar, 2018
18	Artistic Energy Pvt. Ltd. (formerly Hartford Energy Pvt. Limited)	49.3	Jhampir, Dist. Thatta	16 Mar, 2018
19	Three Gorges Second Wind Farm Pvt. Ltd. ***(CPEC)***	49.5	Jhampir, Dist. Thatta	30th Jun, 2018
20	Three Gorges Third Wind Farm Pvt. Ltd. ***(CPEC)***	49.5	Jhampir, Dist. Thatta	9th Jul, 2018
21	Tricon Boston Consulting Corporation Pvt. Limited (A)	49.6	Jhampir, Dist. Thatta	16 Aug, 2018
22	Tricon Boston Consulting Corporation Pvt. Limited (B)	49.6	Jhampir, Dist. Thatta	14 Sep, 2018
23	Tricon Boston Consulting Corporation Pvt. Limited (C)	49.6	Jhampir, Dist. Thatta	11 Sep, 2018
24	Zephyr Power (Pvt.) Ltd	48.3	Gharo, Dist. Thatta	27 Mar, 2019

List of Operational Solar Power Projects

Sr. #	Name of Project	Capacity (MW)	Location	Date of Completion
1	M/s QA Solar Pvt. Ltd.	100	Quaid e Azam Solar Park, Bahawalpur	15 Jul, 2015
2	M/s Appolo Solar Pakistan Ltd. ***(CPEC)***	100	Quaid-e-Azam Solar Park, Bahawalpur	31 May, 2016
3	M/s Crest Energy Pakistan Ltd. ***(CPEC)***	100	Quaid-e-Azam Solar Park, Bahawalpur	31 Jul, 2016
4	M/s Best Green Energy Pakistan Ltd. ***(CPEC)***	100	Quaid-e-Azam Solar Park,	31 Jul, 2016

			Bahawalpur	
5	Harappa Solar Pvt. Ltd	18	Sahiwal	14 Oct, 2017
6	AJ Power Pvt. Ltd.	12	Pind Dadan Khan	13 Dec, 2017

List of Operational Bagasse Power Projects

Sr. #	Name of Project	Capacity (MW)	Location	Date of Completion
1	JDW Sugar Mills (Unit-II)	26.35	Rahim Yar Khan	12 Jun 2014
2	JDW Sugar Mills (Unit-III)	26.35	Ghotiki	3 Oct 2014
3	RYK Mills Limited	30	Rahim Yar Khan	24 Mar 2015
4	Chiniot Power Ltd.	62.4	Chiniot	28 Nov 2015
5	Hamza Sugar Mill Limited.	15	Rahim Yar Khan	10 Mar 2017
6	Layyah Sugar Mills	41	District Layyah	1 Dec 2017
7	Almoiz Industries Ltd.	36	District Mianwali	4 Jan, 2019
8	Chanar Energy Limited	22	Faisalabad	15 Feb, 2019

List of Under-Construction Projects

S#	Name	Capacity (MW)	Location	Expected COD
Wind Power Projects				
1	Master Green Energy Ltd.	50	Jhampir, Dist. Thatta	Jul, 2021
2	Tricom Wind Power Pvt. Ltd	50	Jhampir, Dist. Thatta	Jul, 2021
3	Lakeside Energy Pvt. Ltd	50	Jhampir, Dist. Thatta	Dec, 2021
4	Artistic Wind Power Pvt. Ltd.	50	Jhampir, Dist. Thatta	Dec, 2021
5	Liberty Wind Power 1 Pvt. Ltd	50	Jhampir, Dist. Thatta	Dec, 2021
6	Indus Wind Energy Ltd	50	Jhampir, Dist. Thatta	Dec, 2021
7	ACT2 Wind Pvt. Ltd	50	Jhampir, Dist. Thatta	Dec, 2021
8	Liberty Wind Power 2 Pvt. Ltd	50	Jhampir, Dist. Thatta	Dec, 2021
9	Metro Wind Power Ltd.	60	Jhampir, Dist. Thatta	Dec, 2021
10	Nasda Green Energy Pvt. Ltd	50	Jhampir, Dist. Thatta	Dec, 2021
11	DIN Energy Ltd	50	Jhampir, Dist. Thatta	Dec, 2021
12	Gul Ahmed Electric Ltd	50	Jhampir, Dist. Thatta	Dec, 2021

Solar Power Projects				
1	Zhenfa Energy	100	Layyah	Dec, 2021
2	Helios Power (Pvt.) Ltd.	50	Sukkur	Mar, 2022
3	HNDS Energy (Pvt.) Ltd.	50	Sukkur	Mar, 2022
4	Meridian Energy (Pvt.) Ltd.	50	Sukkur	Mar, 2022