



Pakistan Renewable Energy Coalition
Together for a Renewables Powered Pakistan

A briefing paper

NEGLECTED POTENTIAL

How the Latest IGCEP Fails
Renewable Energy Future in
Sindh and Balochistan



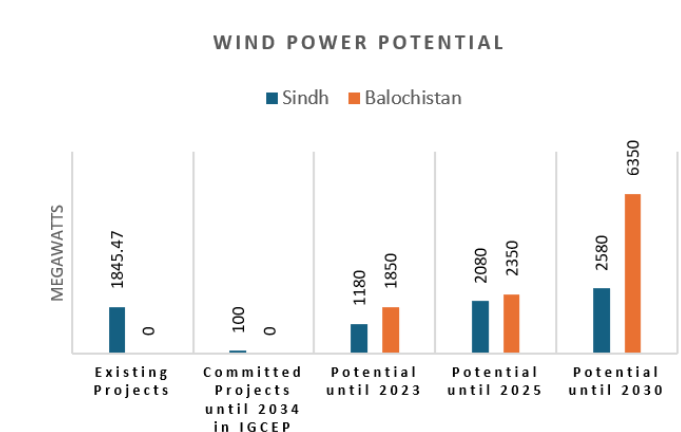
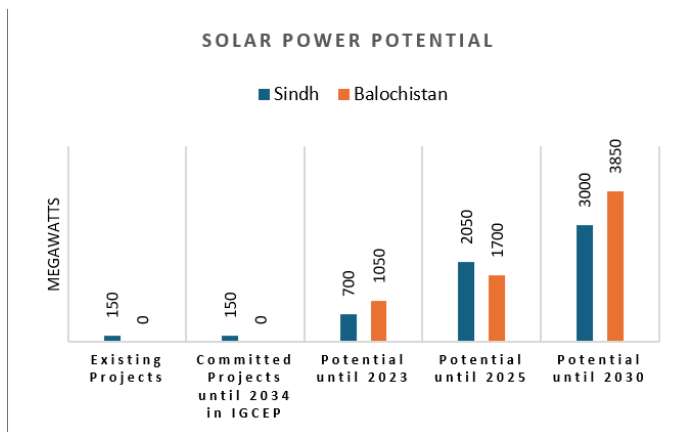
The Indicative Generation Capacity Expansion Plan (IGCEP) 2024-2034 outlines Pakistan's future energy generation strategy. While the IGCEP aims to ensure a reliable and sustainable energy supply, it disproportionately overlooks the renewable energy potential in Sindh and Balochistan. This neglect threatens to undermine the regions' economic development and the nation's commitment to renewable energy targets.

The exclusion of cost-effective Variable Renewable Energy (VRE) from the latest IGCEP contradicts the least-cost principle of the IGCEP model. The VRE share has been reduced to 13.3 per cent from the previously projected 29.6 per cent in IGCEP 2022-31. This reduction represents a substantial decrease in the planned contribution of wind, solar, and other VRE sources. Notably, the solar share, including net metering, is projected to drop to 10 per cent by 2034. This scenario contrasts sharply with the targets of the Alternate and Renewable Energy (ARE) Policy of 2019 of the government, which aimed for a VRE share of at least 30 per cent by 2030. The reduction in renewable energy targets directly impacts the provinces of Sindh and Balochistan, which possess immense potential for solar and wind energy.

With respect to solar power, so far only 150 megawatts (MW) have been installed in Sindh and only additional 150 MW is committed in the latest IGCEP. Whereas in contrast, the solar power integration potential in Sindh at interconnection ready sites requiring no grid upgrades stand at 700 MW, and with minimum grid investments it exceeds over 2050 MW, as per the World Bank's VRE Locational Study.

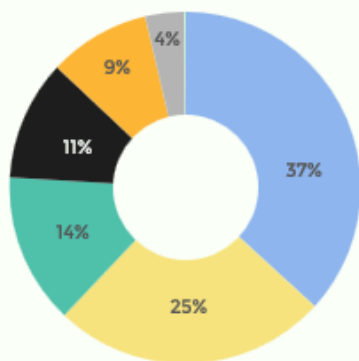
For Balochistan the situation is abysmal, as currently no solar or wind projects have been installed there, and despite the immense solar and wind integration potential of 1050 MW and 1850 MW respectively at interconnection ready sites requiring no grid strengthening, no capacity additions have been committed or optimized in the IGCEP in this region. However, according to VRE Locational Study, the realizable solar and wind potentials in Balochistan when grid strengthening measures in place could be as high as 3.5 gigawatts (GW) and 6 GW respectively by 2030.

The latest IGCEP also overlooks feeder-based distributed generation (DG), Battery Energy Storage Systems (BESS), hybrid renewable energy solutions, and quantum of net metering has also been reduced by respective DISCOs. IGCEP 2022 had indicated that hybrid RE technologies would be considered in future iterations based on their operational feasibility studies but they have not been considered at all.

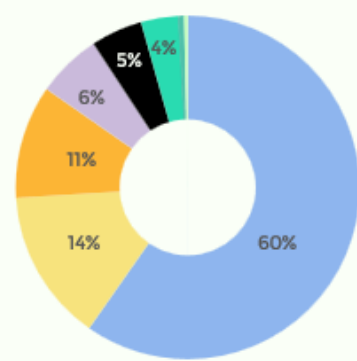


The latest IGCEP iteration also raises concerns with its overreliance on hydropower, where 70 per cent of the committed projects are hydro-based. By 2033-2034, the plan projects that 40 per cent of energy demand will be met by hydro, followed by 5 per cent solar, 3 per cent wind, and 2 per cent bagasse. The remaining 44 per cent will still rely on expensive conventional thermal sources. Hydropower and Thar Coal are favoured for generation expansion, cited for their potential to lower consumer costs and enhance energy security.

IGCEP 2022-31
NTDC's Projection for New Capacity Additions

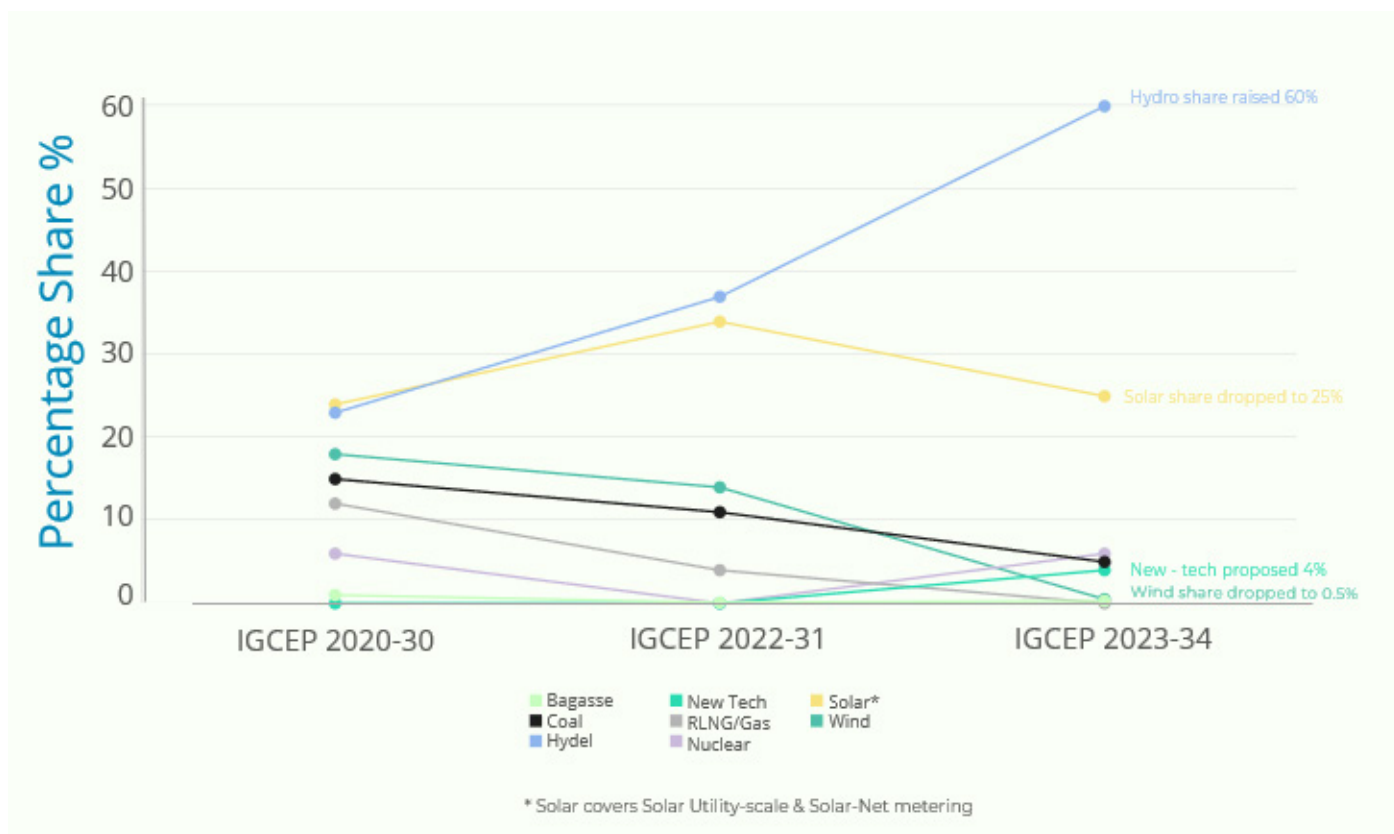


IGCEP 2023-34
NTDC's Projection for New Capacity Additions



Furthermore, the IGCEP includes many projects as strategic projects giving them the preferential treatment of committed projects. This leaves no room for true least cost optimization by the 'expensively procured' PLEXOS software and thus fails the very objective of this planning exercise. Although the National Electricity Plan 2023-27 (NEP) defines criteria for selection of projects as strategic and then cost evaluation of those projects to bifurcate the cost impact that will be passed on to the end consumers based on least cost, and incremental costs to be borne by the sponsoring organizations/authorities. The IGCEP fails to provide such details of the strategic projects depicting that the process again has

been followed very subjectively ignoring the procedure defined in the NEP. The result of such neglect is that 19,138 MW (99.95 per cent) out of the planned capacity additions of 19,224 MW by 2034 is committed capacity. Only 87 MW (0.05 per cent) has been optimized by the PLEXOS software on least cost basis — and even this optimized 87 MW will originate from two hydropower projects.



Moreover, for all the committed hydropower projects, cost data has not been provided, which is also not available publicly on NEPRA or WAPDA websites. Only after rigorously going through websites of hydropower projects (where exist), or their sponsoring organizations' websites, or their environmental impact assessments (where available), total project costs number could be found for some of them. Higher shares of hydropower in the next 10 years, and lack of transparency in their cost data, all point towards a skewed hydropower focus. Despite the environmental and socioeconomic implications of hydropower projects, a history of cost and time overruns of hydropower projects, and frequent technical breakdowns in the existing hydropower projects, planners have chosen this direction which only burdens the end consumers instead of providing them relief. Neelum Jhelum Surcharge in our utility bills to cover cost overruns few years back is an example of this situation. The emphasis on hydropower and conventional power generation sources diminishes the renewable energy opportunities in Sindh and Balochistan, where wind and solar could play a transformative role in sustainable economic and social development.

By taking a hydropower intensive path, the IGCEP also neglects the potential of generation

options closer to the load centers. Concentrated power generation in the extreme north and south, with demand in the central regions has led to frequent blackouts due to frequency and voltage instability. Integrating generation in Balochistan and Sindh, where the solar and wind energy potential is significant, could address these issues effectively. Therefore, a re-evaluation of the IGCEP is essential to harness the full potential of Pakistan's renewable resources and ensure a balanced and inclusive approach to energy and economic development. This re-evaluation would enable Sindh and Balochistan to leverage their renewable energy potential, driving regional development and contributing significantly to Pakistan's overall energy landscape.