Report on the Webinar on “Discussion on Indicative Generation Capacity Expansion Plan (IGCEP) 2047 between different stakeholders”

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1. Background and Introduction

Ever since its release in April 2020, The Indicative Generation Capacity Expansion Plan (IGCEP) 2047 has sparked a lot of debate on various aspects of the plan. The contentious plan is under fire from over two dozen stakeholders which submitted their reservations to National Electric Power Regulatory Authority (NEPRA)\(^1\). Upon receipt of such intensive feedback NEPRA decided to hold a public hearing on July 15\(^{th}\) 2020 to address these comments. The Public hearing too received heavy attendance and the same concerns were reiterated by stakeholders. Khyber Pakhtunkhwa and Azad Jammu and Kashmir had major reservations against hydro power projects being pushed far into the future despite this source of generation being known for its cost-effectiveness. The province of Punjab had concerns about neglect of demand side management-based approaches such as net metering and the government of Sindh alleged that many of the projects submitted by the province had not been considered in the plan. Other stakeholders questioned the methodology of the demand forecast being used by the report and expressed misgivings about the strange neglect of renewable energy beyond 2030\(^2\).

Many civil society organizations, too, have been critical of the plan due to its heavy dependence on Thar coal and the social, economic and environmental impacts that would result due to energy generation through this resource. The American think tank Institute for Energy Economics and Financial Analysis has also published an in-depth study on how the IGCEP 2047 in its present states risks ‘locking in long-term over capacity and expensive power’.

In view of this criticism, NEPRA concluded to formulate a committee of experts to review the inputs to the IGCEP process and officially returned the report to NTDC with a list of directives to be met in the revised version. In contrast to some of the objections raised in the letter that was issued to NTDC, NEPRA also gave a list of about two dozen power plants to be included as committed projects in the revised plan which do not fit the least-cost criterion of the IGCEP’s mandate\(^3\). NTDC in return has challenged as well as tried to address some of the directives issued by NEPRA and revised the long-term capacity addition plan.

Therefore, it becomes imperative that these issues be discussed between all stakeholders at a single platform and collective efforts be made to make this version of the IGCEP as well as the ones to come in future transparent, inclusive and technically sound. Hence, with the support from the Institute of Policy Studies (IPS), the Rural Development Policy Institute (RDPI), the World Wind Energy Association (WWEA), and World Wide Fund for Nature


Pakistan (WWF-Pakistan), SDPI brought together a dialogue between relevant stakeholders and experts from the government, academia, civil society organizations and international analysts and experts to discuss the aforementioned issues and provide recommendations for the IGCEP plan.

2. Scope and objectives
The specific objectives are:

- To highlight the civil society's concerns about Pakistan long-term power plan, Integrated Generation Capacity Enhancement Plan-2047 (IGCEP-2047), both with the decision-making authorities and media persons
- To gain insights and comments on IGCEP 2047 plan by different stakeholders, and their recommendations to be incorporated in the upcoming version.
- To persuade the decision-making authorities like NTDC and NEPRA to incorporate civil society's recommendations in IGCEP-2047
- To build linkages and foster engagement with the decision-making authorities for lobbying on promotion of renewable energy in future

3. Public-private dialogue/webinar
The dialogue was based on the questions below:

- On a brief background on the IGCEP, 2047, and the discussions that went into drafting the same, and the type of feedback received launched in April. What specific aspects of the IGCEP were highlighted to be revised?
- What were NEPRA’s initial comments on the IGCEP? What were some directives which are needed to be addressed? In a letter issued by NEPRA to NTDC, there are a list of projects, namely solar, wind and hydro projects, which NEPRA wants to be considered as committed projects, but which do not fulfil the least-cost criterion set by the IGCEP. What has been the progress on the review received by NEPRA?
- How cognizant is the IGCEP plan with the ground realities of the generation mix it proposes? Since coal is associated with serious environmental degradation, what could be the alternate optimal fuel for providing spinning reserves for reliable operation of the grid in Pakistan?
- In a report authored by Simon Nicholas, it was revealed that Pakistan is at risk of locking in long term over capacity if it follows the output of the IGCEP as it stands now. What does it mean for affordability of electricity for the masses and the circular debt situation in the country? What impacts would the first draft of IGCEP would have on RE investments in the country? And How the IGCEP could overcome some of the limitations highlighted in the report.

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4 See Appendix: Speakers profile
Related to 30% RE target by 2030, how can Pakistan cost-effectively deal with the intermittency challenges?

4. Key points of the discussion
The discussion started from a representative from NTDC, explaining the detailed methodology, development, key parameters, and assumptions considered in the IGCEP plan with key insights as:

   1. Planning and Forecasting of Energy demand is the main driving parameter and prerequisite behind such plans.
   2. The plan is based on different scenarios of GDP growth rates and electricity sales, and is an indicative plan that will be updated every year. Different government policies and the constraints of government were also incorporated in the plan.
   3. Availability, affordability, and reliability of any plant are the key considerations for selecting an energy source or a plant, and that must be incorporated in the model.

Mr. Simon Nicholas, being an energy analyst shared his views and concerns about the plan as:

   1. Mr Simon discussed that although the plan takes into account both energy and economic impacts, there is a risk in both and there are chances that plan could be unsustainable in both energy and economics. Concerns were raised against GDP projections as well.
   2. The major risk in IGCEP is the locking of too much power that will cause a huge economic loss. Locking too much power that is dependent on coal will further damage the environmental profile. An expensive and locked in power will lead to more capacity payment and hence higher tariffs.
   3. After China’s new initiative of net zero emission plan (which is unlikely a part of IGCEP), the IGCEP might have further reservations. Although, IGCEP indicates that emission intensity will be lowered, the total emission will be tripled at the end.
   4. Pakistan will be better-off by reducing the cost of generation.

Miss Haneea Isaad, being an environmental analyst discussed her views and concerns about the plan as mentioned below:

   1. The plan lacks an explanation in its least-cost analysis. Hydro power might not have been optimized and transmission cost does not appear to be a part of plan.
   2. Renewable target of achieving 30% by 2030 has been considered, but after 2030, a decrease in share of renewables is seen. Renewable share should be at least sustained (if not increased) in the future as well.
   3. Climate change considerations and NDC targets should be completely considered.
   4. It was pointed out that there is a chance that by following IGCEP, most plants will remain idle for a significant portion of time, and previously available thermal plants could be used as a backup.
Dr. Asif, being an energy expert in demand side management, highlighted major issues in political economy of energy and power sector in Pakistan:

1. Energy efficiency is an ignored aspect in Pakistan and annual impact of power sector alone is causing a loss of $8 Billion. Energy efficiency and management is a major prerequisite for any energy efficient outlook and those measures for demand side management and policies are missing from Pakistan’s plan of action.

2. For a better outlook, a pro-active energy management activity and diverse energy supplies should be prioritized.

5. Key messages and recommendations for IGCEP 2047

While it is highly appreciated that reports like the IGCEP 2047 are being prepared in Pakistan, there’s always room for feedback and improvement in a given iteration. NTDC was recently requested by NEPRA to revise the IGCEP 2047 based on a list of directives given by the regulator along with the request. Based on the discussion that took place through this webinar, here are some other recommendations that NTDC could take into account while formulating future versions of the report:

- Post-COVID projections for GDP growth to be used for forecasting annual electricity demand should be matched with those from a reliable resource such as the IMF or the World Economic Outlook
- Clear definitions are needed to ensure that the concept of least cost generation is understood well by the reader. In its current state it seems that the model prioritizes
technologies based on upfront capital costs, which could explain why coal receives preference over hydro. Ideally this methodology should mimic a levelized cost of electricity approach where lifetime generation costs are used as a metric for comparison.

- Social and environmental implications of power projects need to be incorporated into the decision making process for e.g. metrics for pollution could be developed and added into the technology selection model. ‘Least polluting sources’ as well as ‘Least cost generation technology’ should be made the deciding criterion.
- The addition of almost 32000 MW of coal fired generation capacity should be rethought, based the environmental, social and economic implications of developing coal fired power plants in the Thar region. The Thar region is one of the most economically impoverished, under developed and water scarce regions in the country. Coal power development on such a massive scale is more than likely to exacerbate these existing conditions.
- The addition of about 27,000 MW of LNG capacity as a back-up for renewable energy needs to be reconsidered, instead existing thermal power plants which may have reached the end of their Power Purchase Agreement period, could be utilized for this purpose. Hydro power plants could also serve as a back-up contingent upon the availability of hydrological resources year-round. The complementary nature of solar and wind energy could also take care of some of the intermittency issues.
- It was encouraging to hear that a study on storage options had been initiated by NTDC already, so further iterations of the report should take into account these options as back up as well.
- Academia and other relevant ministries such as the ministry of climate change seem to be missing from the planning process. Stakeholder consultations should expand to these sectors as well.
- Some model assumptions need to be corrected, for example learning rates for solar and wind are discontinued after 2030. This could lead to an inconsistent output.
- Demand side management and energy efficiency projections should also be taken into account while projecting future electricity demands.
- Auxiliary costs such as those of transmission and water supply schemes (in the case of Thar coal power plants) also need to be a part of the cost-benefit analysis while deciding upon the least cost generation option.
- Renewable energy power projects which have received their generation licenses but have not been added to the generation mix, need to be brought online according to their designated commercial operation dates, since not doing this would otherwise hurt investor confidence in the nascent renewable energy market in the country. To account for the fact that some of these might not be the least cost generation problem any more, perhaps revised tariffs that are more consistent with the current market trends could be issued by NEPRA for these power plants.
The economic feasibility of local coal (Thar) may also need to be reviewed. According to the tariff documents available online, fuel costs from Thar coal\(^5\) are higher than imported coal.

Considerations for the COVID-19 pandemic, such loss of large industrial load centers in the wake of a 2\(^{nd}\) or 3\(^{rd}\) wave could also be made to ensure that future demand projections are consistent with ground realities.

\(^5\) Comparison done for Fuel costs available for Port Qasim Electric Power Plant (Imported) and HubCo Power Plant (Imported) vs. Engro Power Generation Power Plant (Local/Thar)
Appendix

Invited Panelists

Mr. Tauseef ur Rehman have been working in the power system planning department of NTDC since the last nine years. His core expertise is in generation planning, load forecast and power system planning and was part of the team who developed first Indicative Generation Capacity Expansion Plan 2040 which was submitted to NEPRA. He is also the international resource person of SAARC Energy Centre (SEC) Energy Forecasting.

Miss Haneea Isaad is recent graduate from the Yale School of the Environment, where she was pursuing a Master’s in Environmental Management. She specializes in energy economics and climate change policy with a focus on the developing world and has experience of environmental consulting and corporate energy management through her previous work. An avid researcher and advocate for the development of renewable energy, Haneea has been working on creating awareness on the impact of fossil fuel fired energy development and hopes to lead Pakistan towards a greener development pathway through meaningful research and action. She’s currently working at the Rural Development Policy Institute as a Research Associate.

Mr. Simon Nicholas Nicholas is an Energy Finance Analyst with the Institute for Energy Economics and Financial Analysis (IEEFA). A fellow of the Institute of Chartered Accountants of England and Wales, Nicholas joined the IEEFA team in July 2016 after 16 years’ experience within the finance industry at ABN Amro, Macquarie Group and Commonwealth Bank of Australia in both Sydney and London. He is author of a Study on Pakistan’s IGCEP “Pakistan Risks Locking in Long Term Overcapacity and Expensive Power”.

Dr. Muhammad Asif is an Associate Professor at the Glasgow Caledonian University. He has PhD in Applied Energy Engineering. He is a Charted Engineer, Certified Energy Manager, Member of the Energy Institute, and Fellow of the Higher Education Academy. He sits on several international energy forums including the accreditation panel of the Energy Institute. His areas of research interests include energy management, renewable energy, energy policy, climate change, sustainable buildings, and life cycle assessment. He has authored over 100 research papers and four books including ‘Energy Crisis in Pakistan: Origins, Challenges and Sustainable Solutions’ published by Oxford University Press in 2011. He has advised or provided consultancy services to prominent international organizations like European Commission, Nor-Dan (Norway), BAE Systems (UK) and Grameen Shakti (Bangladesh), and public and private sector entities in Pakistan.

Dr. Hina Aslam is the Associate Research Fellow, taking a Lead in Energy and China Study Centre, at SDPI. Her areas of expertise include Natural resource management, ecosystem services assessment and valuations, Energy, Climate change, water resource management and governance, Public–private partnerships, greening China Pakistan Economic Corridor and Belt and Road (BRI), and Sustainable development Goals (SDGs).