

Concept Paper
SAARC Webinar on “Demand Stimulation Techniques to Cater Likely Excess Electricity Generation in Nepal”
Monday, 28 th October 2024: 1000 – 1200 hrs Pakistan Standard Time (PKT)

Introduction

Electricity is a commodity, that should be consumed at the time of generation. When the generation exceeds the demand, some excess power generating units must be shut down. This idle sitting of large number of generators causes huge revenue loss and impact on investment. As a result, generation companies may not be able to repay their loans, which can eventually lead to bankruptcy of the project companies and may threaten the overall economy of the country into downturn.

Nepal is endowed with immense hydropower potential, estimated at nearly 83,000 MW, though less than 3% of this potential has been harnessed to date. To harness this vast potential, Nepal is currently developing hydropower with 255 projects under construction, totaling a capacity of 10,141MW, expected to come online soon. Additionally, 85 projects, with a combined capacity of 7,974 MW, are in the process of securing generation license¹. Hence, the total project capacity approaching the commercial operation date is found more than three times of current annual system peak demand (2467 MW on 15th July, 2024) and total project capacity at various stages of development has far exceeded the projected peak demand. Nepal has managed for limited export up to 690.5 MW of power from 16 hydropower projects to India². However, due to low electricity demand (around 1,500 MW) and high generation, Nepal was reported to have 500 MW of excess electricity being wasted in October 2023³. Surplus electricity is expected to rise significantly in the coming years, posing a challenge to maximizing its utilization⁴.

Given the limited development of cost-effective technology for large-scale electricity storage, two primary options can be explored for utilizing excess electricity. The first is to export the surplus to neighboring countries, while the second is to increase demand by expanding electrical utilities and boosting consumption through industrial establishments. Since cross-border infrastructure requires longer planning and construction time, the second option may offer a more effective solution for managing excess electricity in the short to medium term.

While a portion of the generated electricity may be absorbed by regular demand growth and increased exports, substantial market development to handle the imminent surplus of electricity in Nepal remains pending. Given the under construction projects come into online soon, generation companies may bear

¹ Department of Electricity Development Nepal, <http://www.doed.gov.np/license/66>, accessed on 15 September, 2024²
Nepal Electricity Authority Annual Report

² Nepal Electricity Authority Annual Report

³ Spotlight, (<https://www.spotlightnepal.com/2023/10/27/nea-awaits-approval-india-export-additional-500-mw-electricity/>)

⁴ Bhandari Ramchandra et.al, "Evaluation of surplus hydroelectricity potential in Nepal until 2040 and its use for hydrogen production via electrolysis" *Renewable Energy Journal*, Volume 212, August 2023, Pages 403-414, <https://doi.org/10.1016/j.renene.2023.05.062>.

irrecoverable losses of about USD 18 billion (9,000 MW at USD 2 million per MW) unless immediate action is taken to stimulate the demand.

In this context, the SEC is organizing a webinar titled “Demand Stimulation Techniques to Cater Likely Excess Electricity Generation in Nepal” on Monday, 28th October 2024, from 1000-1200 hrs Pakistan Standard Time (PKT). The Webinar shall feature presentations, and interactive discussion sessions led by resource person(s) engaged from regional/ international market.

Objectives

The objective of webinar is to discuss various options and techniques for electricity demand growth and optimally absorb future excess electricity generation besides looking at and recommending potential demand-side interventions for a sustainable power sector and socio-economic development.

Major Aspects to be covered during the Webinar

The Webinar is intended to mainly cover the following aspects/ topics:

- Overview and outlook of Nepal’s power sector in the light of projected short- and medium-term excess generation
- Identification of potential economic sectors for electrification, aligned with Nepal’s socioeconomic needs and resource availability
- Opportunities for electrification in areas such as electric vehicles, electric cooking, industrial development, and other easily decarbonized sectors
- Options and recommendations for demand stimulation techniques applicable to the short and medium term
- Strategy for implementing the recommended options and techniques.

Potential Professional Resource

During the Webinar, the experts/resource persons engaged for the purpose will deliver their presentations and respond to questions by the participants.

Venue of the Webinar

The webinar will be broadcasted from the office of SEC on Monday, 28th October 2024 from 1000 – 1200 hrs Pakistan Standard Time (PKT).