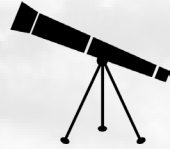




**“Electricity Transmission Planning in South Asian
Countries and
perspectives for clean energy transition and advancing
Cross Border Energy Trade
in South Asia”**

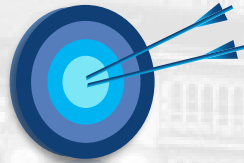
**Department of Energy
Ministry of Energy and Natural Resources
18 June 2023**

DEPARTMENT OF ENERGY



VISION

Energy security for economic prosperity, social progress and the wellbeing of Bhutanese.

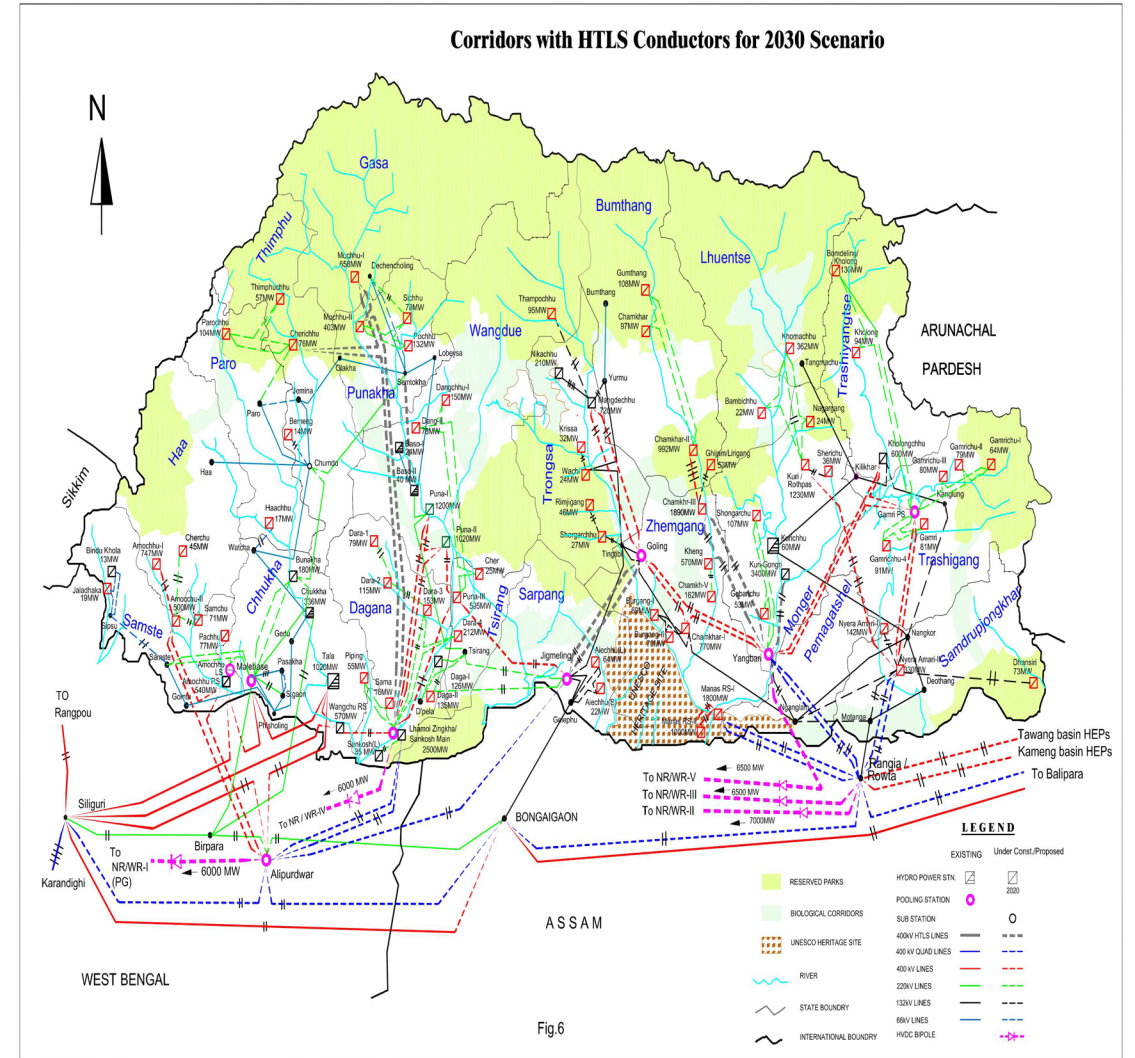
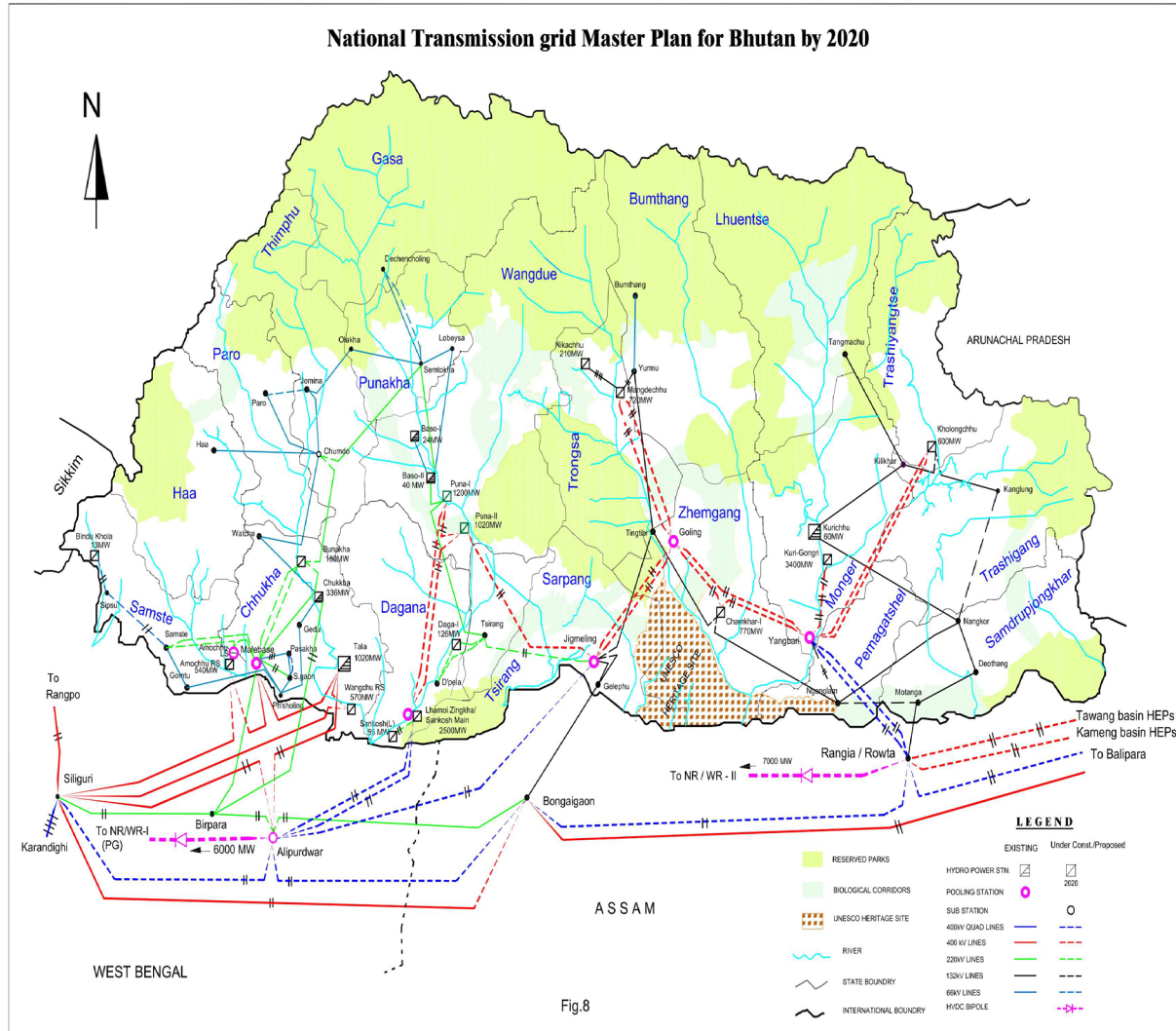


MISSION

Achieve energy security by harnessing green energy resources, and adoption of transformative and innovative technological solutions

- National Transmission Grid Master Plan
- Power System Master Plan
- Existing Transmission System
- Transmission System Constraints
- Need for Regional Connectivity
- Challenges and Solutions for Electricity Transmission Plans

- The transmission plan is as per the NTGMP.
- The NTGMP was formulated with the assistance of CEA, India in 2012 to support the accelerated hydropower development in Bhutan.
- NTGMP-2012 envisaged that around 10,000 MW would come by 2020 from 12 HEPs.
- All the feasible hydropower sites was considered in 2030 scenario





NTGMP-2018

- The NGTMP 2012 was updated in 2018 in-house due to following reasons:
 - ✓ The projects couldn't materialize as expected in NTGMP-2012
 - ✓ Out of 12, the construction of only 5 HEPs could be started.
 - ✓ The 10,000 MW target was not possible in 2020.

- Therefore, NTGMP 2012 was updated with the realistic timeframe.



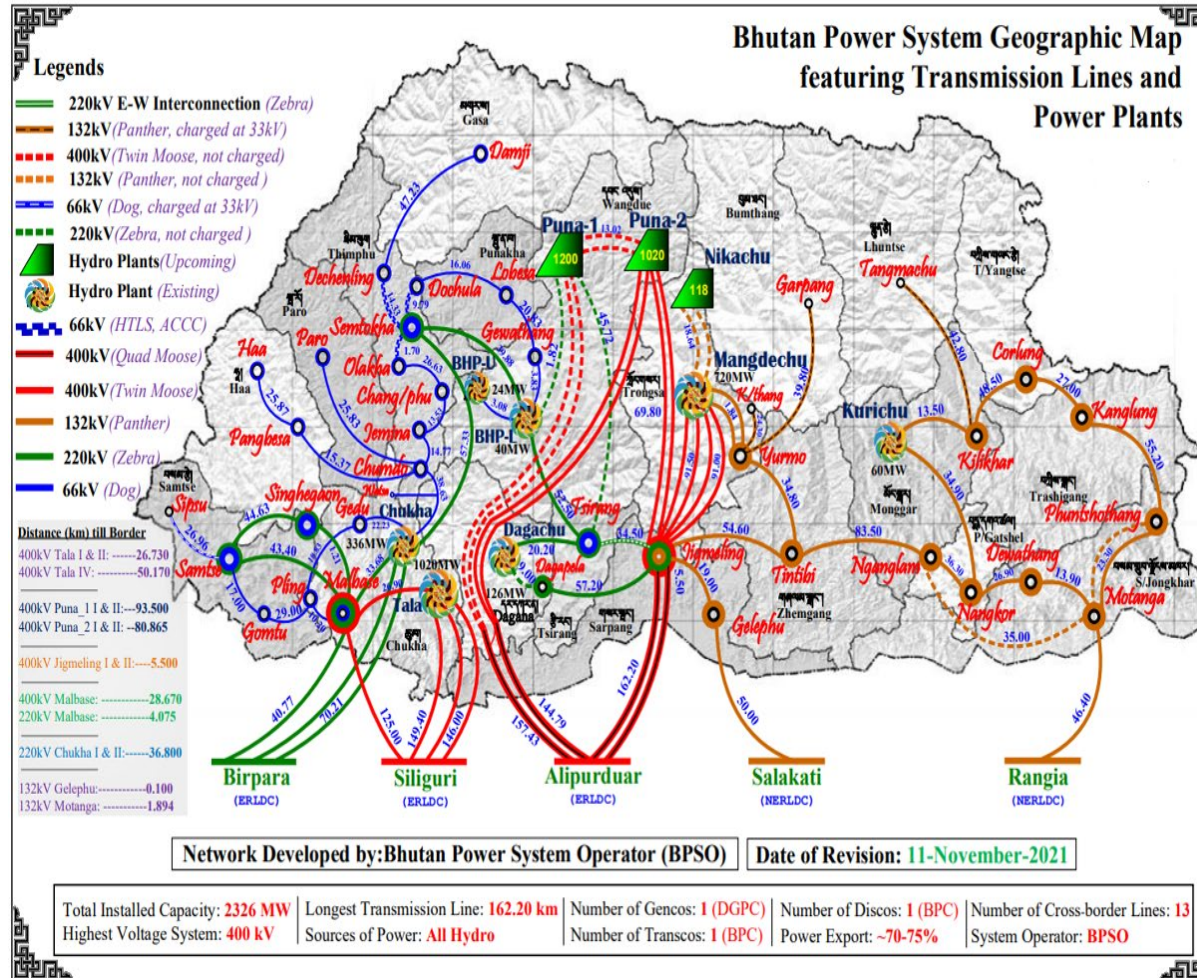
Need to Update the NTGMP

- There is a need for a update of NTGMP again to:
 - ✓ Plan the transmission line as per updated Power System Master Plan
 - ✓ Plan the cross-border transmission line requirement as per the power projects under priority list.
 - ✓ Optimize planning for long term plan for greater regional interconnection.

- Request to update cross-border transmission interconnection has been made to CEA, GoI as part of updating the NTGMP.



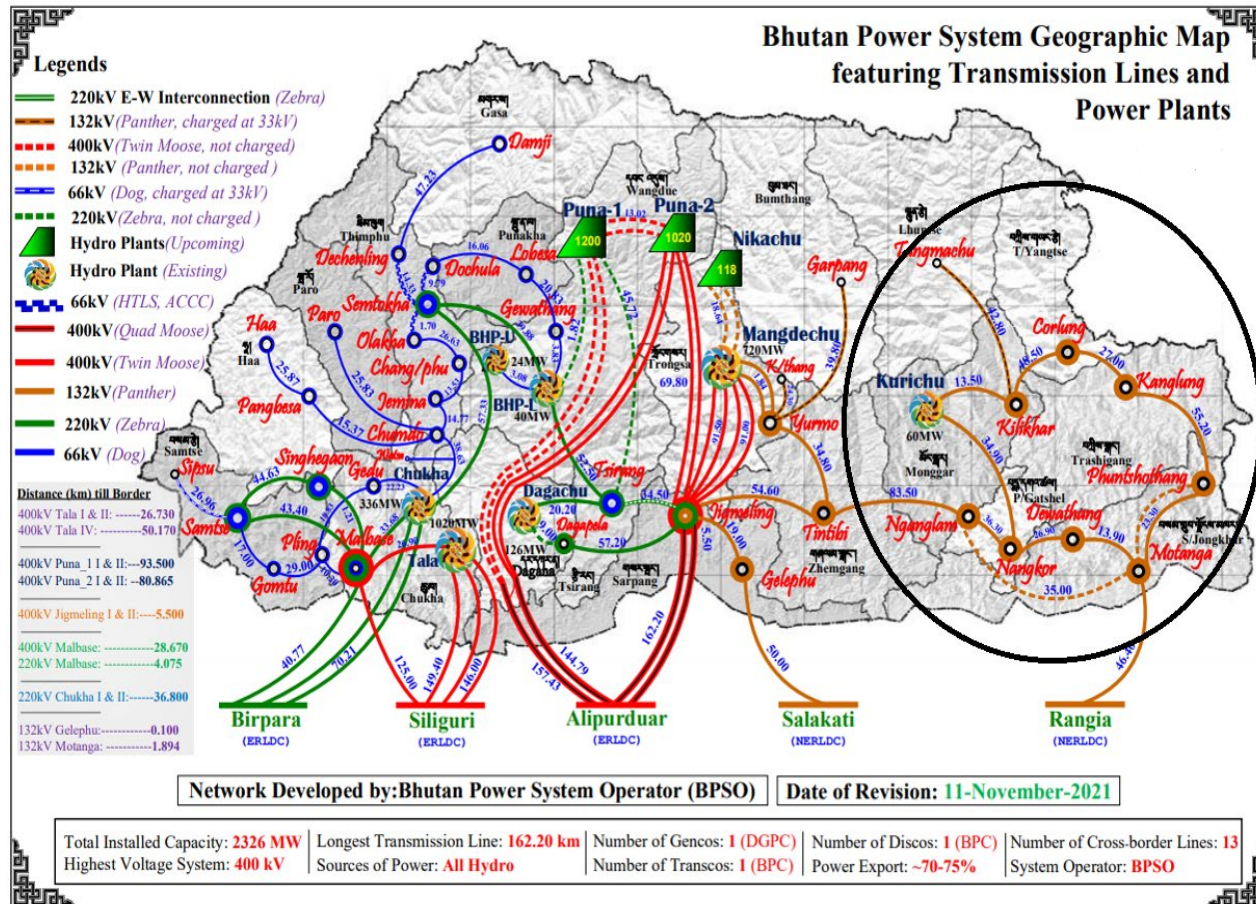
Existing transmission network



- Transmission network in Bhutan consist of 66kV, 132kV, 220kV, and 400kV
- There are 13 export feeders as follows:
 - 132kV, Panther, S/C from Motanga- Rangia
 - 132kV, Panther, S/C from Gelephu-Salakati
 - 220kV, Zebra D/C from Chukha-Birpara
 - 220kV S/C from Malbase-Birpara
 - 400kV, Twin Moose, 2xD/C from Tala-Siliguri with one ckt LILOed to Malbase
 - 400kV, Quad Moose, D/C from Lhamozingkha-Alipurduar
 - 400kV, Quad Moose, D/C from Jigmeling to Rangia.



Transmission system constraints



- Our Eastern Grid is very weak with only 132kV systems
- There is Plan to strengthen the East-West link through 400kV lines.
- There is immediate need of 400kV interconnecting feeders with India from Eastern Bhutan, in addition to existing 132kV line.

Need for a Regional Inter-Connectivity



- There is a tremendous growth in energy consumption in South Asia, and it is met from fossil fuel which had serious environmental & climate change impacts.
- Countries within region are endowed with wide variety of resources:
 - ✓ Hydropower: Bhutan, Nepal, India, Myanmar
 - ✓ Gas: Bangladesh and Myanmar
 - ✓ Wind and Solar: India and Srilanka
 - ✓ Coal : India
- There is a huge scope for energy cooperation and therefore due importance and urgency needs to be provided.
- Sharing of Renewable Energy Resources, which are geographically concentrated and not uniformly distributed across countries

Challenges and Solutions



- Some countries have to provide open access by being energy connector and facilitate multi-lateral energy trade.
 - ✓ Example: Thailand serves as a energy connector country facilitating export of electricity from Laos to Malaysia and Singapore.
- Therefore, we must collectively formulate a necessary Vision to achieve inter-connectivity and pursue actions on the ground.
- High-level engagements in the pursuit of realizing regional electricity connectivity.

SOLAR
RELIABLE HYDROPOWER
SECURITY SOCIO-ENVIRONMENT SUSTAINABLE
CLEAN ENERGY AFFORDABLE WIND
PEOPLE PROSPERITY GREEN HYDROGEN
INNOVATION PROGRESS

Thank You

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