



**“Electricity Generation Planning in Bhutan and  
perspectives for clean energy transition and advancing  
Cross Border Energy Trade  
in South Asia”**

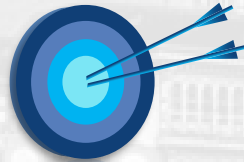
**Department of Energy  
Ministry of Energy and Natural Resources  
18 June 2023**

# 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

- Energy sector at a glance
- Institutional Arrangement
- Energy sector policies
- Projects under implementation
- Energy/Power Scenario and Forecast
- Challenges and solutions in developing Electricity Generation Plans



# Energy Sector at a glance

As per the master plans, the estimated renewable energy potentials are:

- ❑ 33,000 MW hydropower potential
- ❑ 12,000 MW solar potential
- ❑ 760MW of wind potential

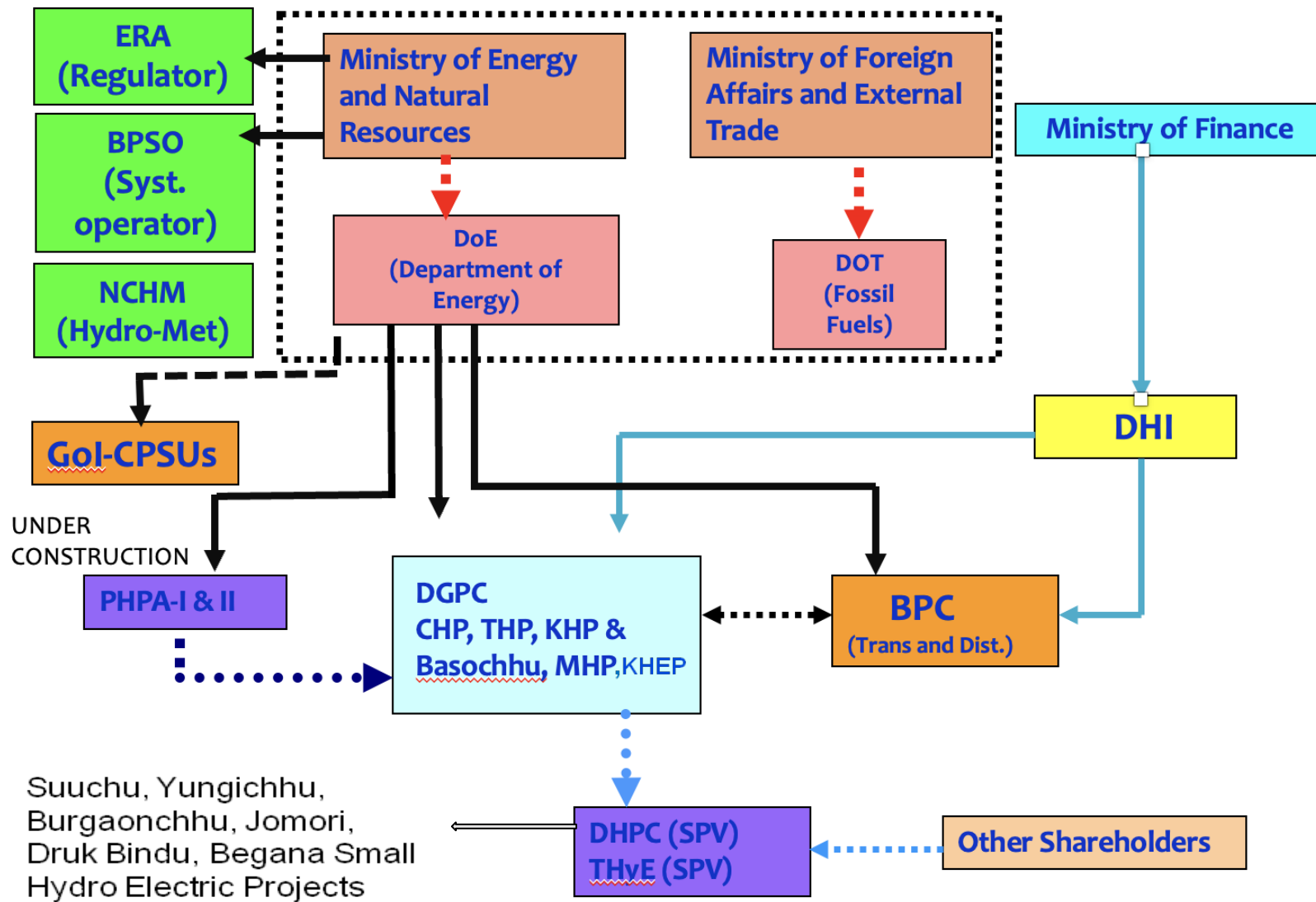
Total installed capacity – 2,343MW

- Large hydro – 2,326MW
- Mini/micro hydel – 8.1MW
- Solar – 0.26MW
- Wind – 0.60MW
- Diesel generators – 8.04MW

- ❑ Peak Demand (10 May 2023) – 767MW
- ❑ Electricity contribution to National Revenue (2021-22) – 21%
- ❑ Electricity contribution to GDP (2021) – 15%



# Institutional Arrangement



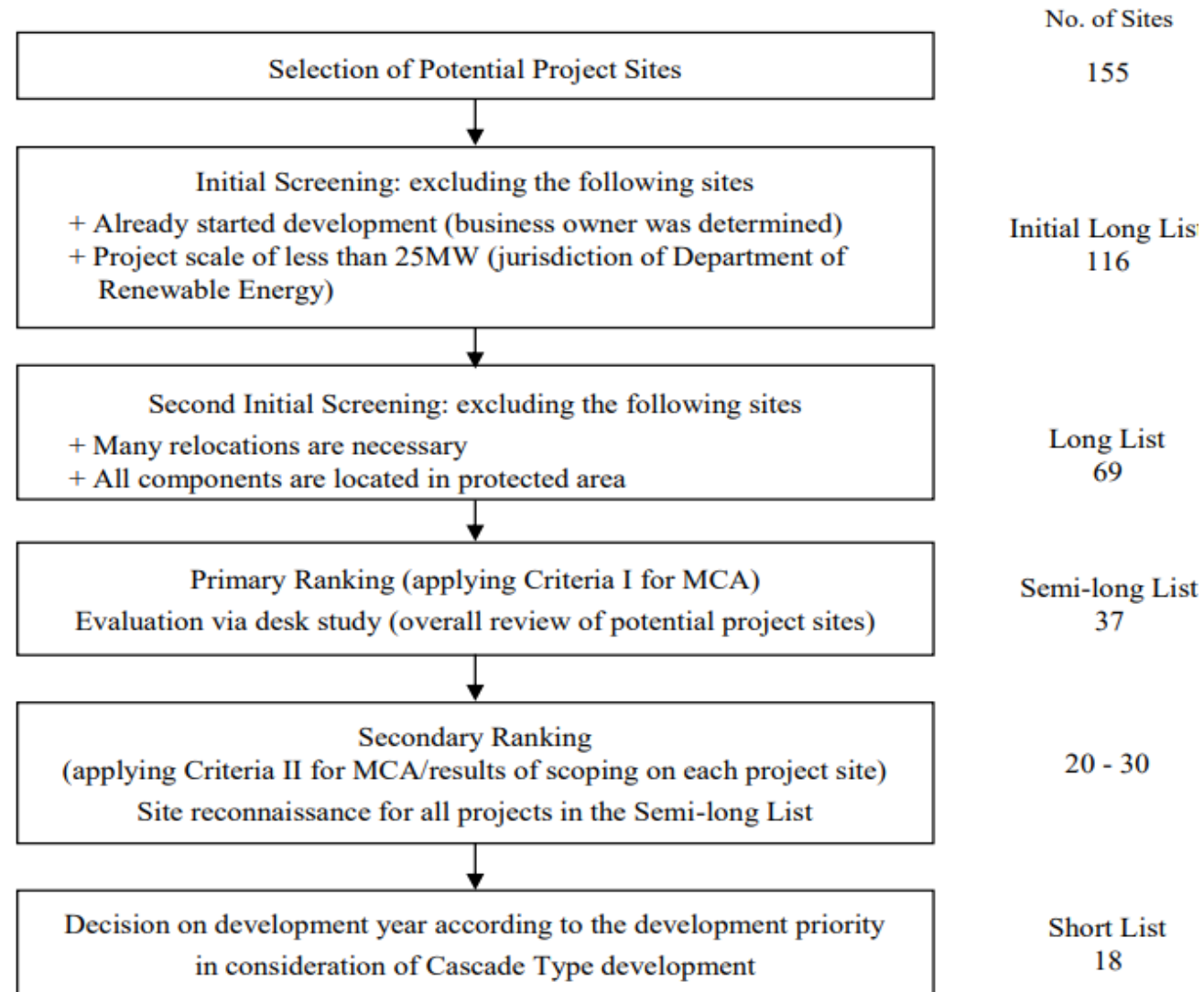
# Energy Sector Policies



- Sustainable Hydropower Development Policy 2021
- Alternate Renewable Energy Policy 2013
- Domestic Electricity Tariff Policy 2016
- National Energy Efficiency and Conservation Policy 2019
- Economic Development Policy 2017
  
- Power System Master Plan 2040
- National Transmission Grid Master Plan 2018
- Renewable Energy Master Plan 2017-2032
- Guidelines for Development of Hydropower Projects, 2018
- Grid Discipline Mechanism Guideline (Under preparation)



# Power System Master Plan 2040



# Projects under implementation



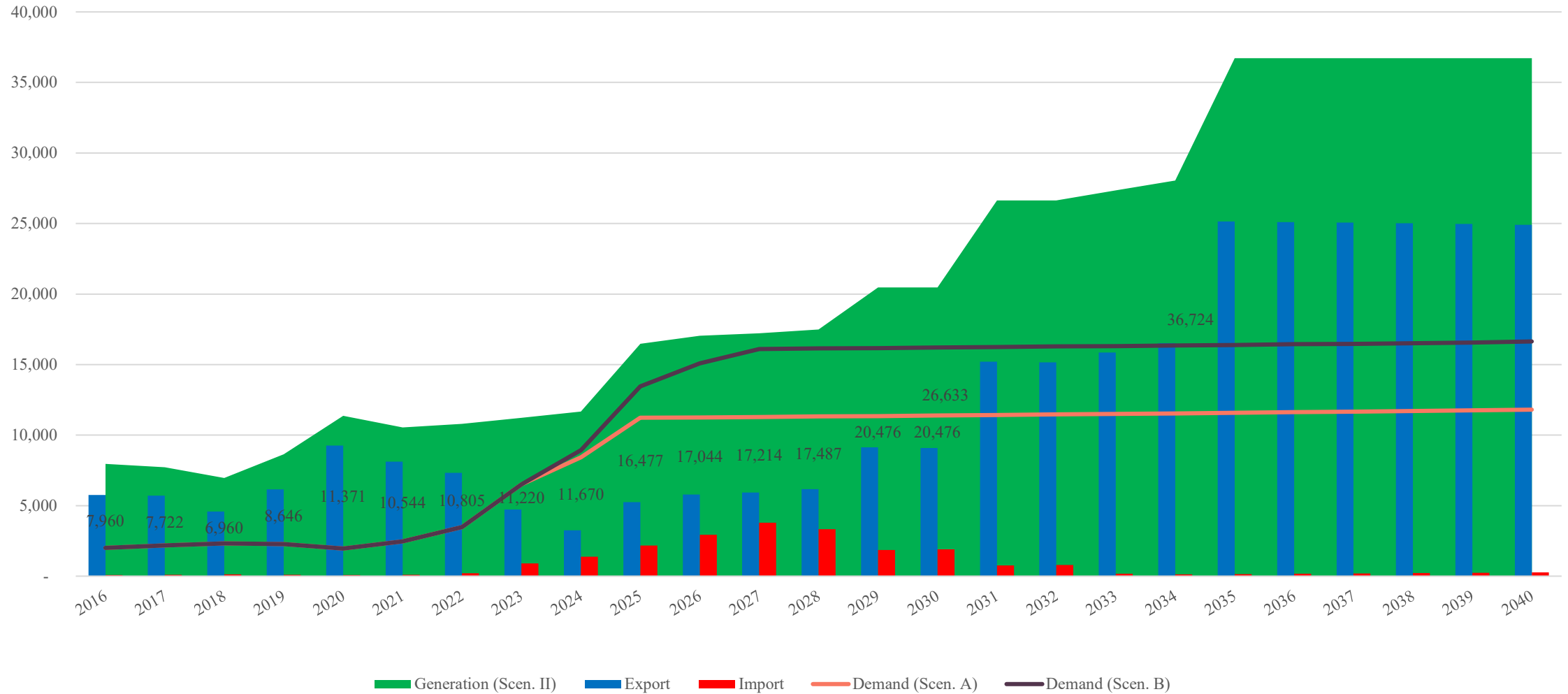
Sl. No.	Project	Capacity (MW)	Status
1	Punatsangchhu-I	1200	Under construction since Nov 2008.
2	Punatsangchhu-II	1020	Under construction since Dec 2010.
3	Nikachhu Hydroelectric Project (Tangsibji Hydro Energy Limited)	118	Under construction since April 2016.
4	Sephu Solar farm	17.38	Work awarded in June 2023
5	Solar Prosumer	900 kW	Pilot project with 304 rural households (solar rooftops). To be completed by June 2025.
6	Dorjilung HEP	1125	DPR being updated; World Bank leading the financial structuring





# Power Scenario and Forecast

Generation , Demand , Export and Import Projections





## Power Import Arrangements

- ❖ 2022: 240 MU (1st Jan to 16 March 2022)
- ❖ 2023: 367 MU (1st Jan to 30 April 2023)

## Power Trade Arrangement with Bangladesh

- ❖ MoU proposed (*expected in July 2023*)
  - Promoting and facilitating trade of minimum of 1500 MW of electricity from Bhutan to Bangladesh by the year 2030.
  - The Parties shall institute a Joint Steering Committee (JSC) co-chaired by Power Secretaries and a Joint Working Group (JWG) co-chaired by Additional Secretary/Joint Secretary/Director General of the concerned Ministries of the two countries to take forward the identified areas of cooperation in the energy sector.



# Challenges and Solutions in developing Electricity Generation Plans

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## Challenges

1. Financing and Investment
2. Market access for surplus power
3. Technical (geology and topography)
4. ES (Environmental and Social)

## Solutions

1. Greater integration of alternative renewable resources (Solar & Wind)
2. Accessing capital markets, sovereign funds, concessional loans, green bonds etc.
3. Building national capacity for providing goods and services
4. Building expertise through engaging experts and creating panel of experts etc

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

# Thank You

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