DRUK GREEN POWER CORPORATION LIMITED

PROFILE

VISION

Promote, develop and manage renewable energy projects, particularly hydropower, in an efficient, responsible and sustainable manner, and to maximise wealth and revenues to the nation

MISSIONS

- Effectively and efficiently manage hydropower plants, and maximise returns to the shareholder
- Take a lead role in accelerating hydropower development in the Kingdom by developing new hydropower projects independently through joint ventures, or through any other arrangements with domestic and international partners
- Provide energy security for domestic consumption, fuel economic growth, and also explore other forms of renewable energy other than hydropower
- Build capacity in hydropower development and management through recruitment and training of professionals to meet the current human resources requirements of the company while at the same time ensuring a robust expansion and succession plan
- Be a responsible, proactive, and progressive company with a highly motivated and dedicated team of professionals

VALUES

- Organizational Ownership & Pride
- Mutual Respect & Trust
- Initiative & Timely Action
- Integrity
- Accountability
- Work Life Balance
- Social & Environmental Responsibility

COMPANY PROFILE

Druk Green Power Corporation Limited (DGPC), a subsidiary of Druk Holding and Investments Limited, is the only generation utility in Bhutan. It was formed in December 2007 to develop and manage Bhutan's hydropower resources and assets.

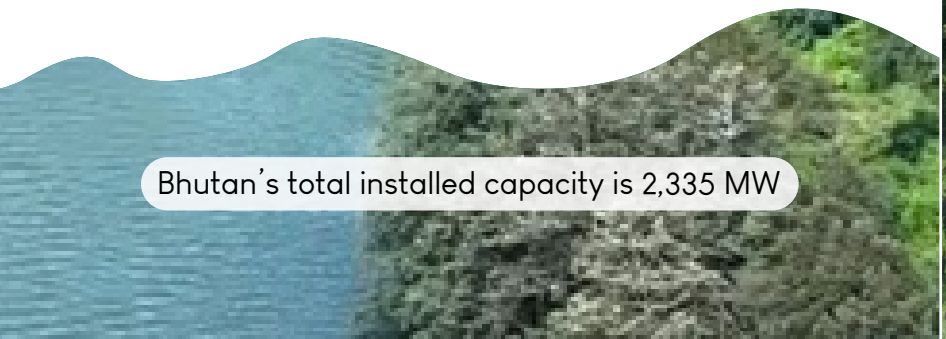
DGPC was established for the effective and optimal utilisation of the abundant water resources to develop water-to-wire expertise amongst the Bhutanese, and to lead in accelerating hydropower development in keeping with the 2021 Sustainable Hydropower Development Policy. Thus, DGPC has ventured into the construction of new hydropower projects, and the establishment of subsidiary companies to provide ancillary services to support its mandates.

As Bhutan progressed into the 21st century, the country undertook a restructuring of its power sector to accommodate the increasing number of projects and the expanding electricity grid that reached every corner of the nation. This restructuring was facilitated through the implementation of a number of new policies and legislative interventions.

The Electricity Regulatory Authority was established as the regulatory body.

In 2002, Bhutan Power Corporation Limited was established as the transmission and distribution utility catering to domestic demand and providing transmission access for the export of surplus generated power to India.

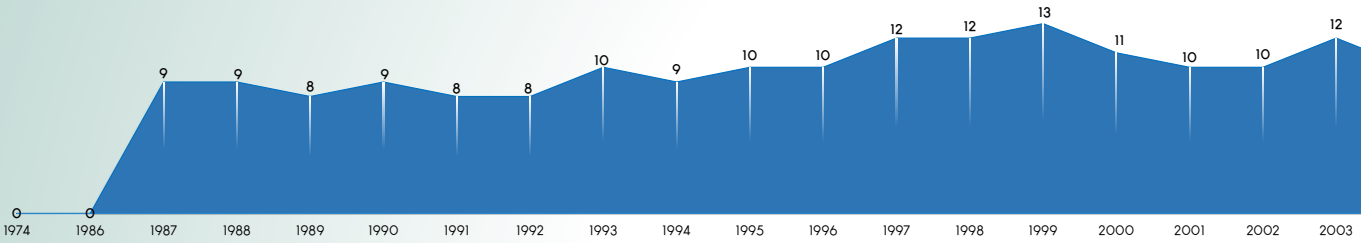
Today, over 99% of Bhutanese households have access to the grid electricity supply. Availability of reliable and cheap power has bolstered the growth of energy-intensive industries in Bhutan adding value to the electricity generated.



Bhutan's total installed capacity is 2,335 MW

CONTRIBUTION TO GDP

About 70% of the total energy generated is exported to India which constitutes at least 24% of direct revenues to the exchequer and offsets much of the balance of payments with India. Currently, the hydropower sector contributes to over 17% of the GDP.



1986 - 1988

336 MW Chhukha Hydroelectric Project commissioned

2002

60 MW Kurichhu Hydropower Project commissioned

2004

64 MW Basochhu Hydropower Project commissioned

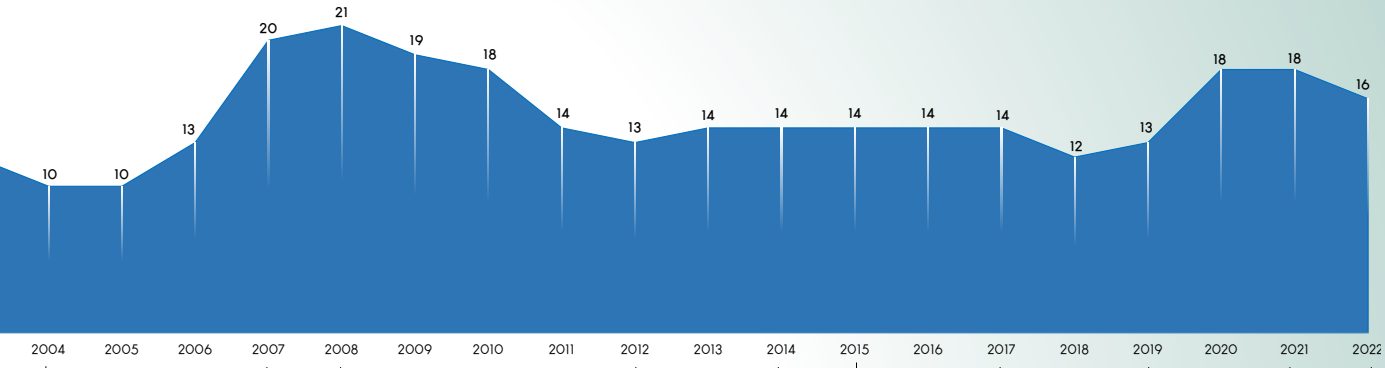
2006 - 2007

1,020 MW Tala Hydropower Project commissioned

2014

Tangsibji Hydro Energy Limited incorporated

Bhutan's economic development is inexplicably linked with the growth of the hydropower sector and hydropower is considered the cornerstone of the Bhutanese economy



2008

DGPC incorporated

2012

Dagachhu Hydropower Project commissioned

2015

Kholongchhu Hydro Energy Limited incorporated.

2019

Mangdechhu hydropower project commissioned

2014

Bhutan Hydropower Services Limited commissioned

2017

Bhutan Automation & Engineering Limited incorporated

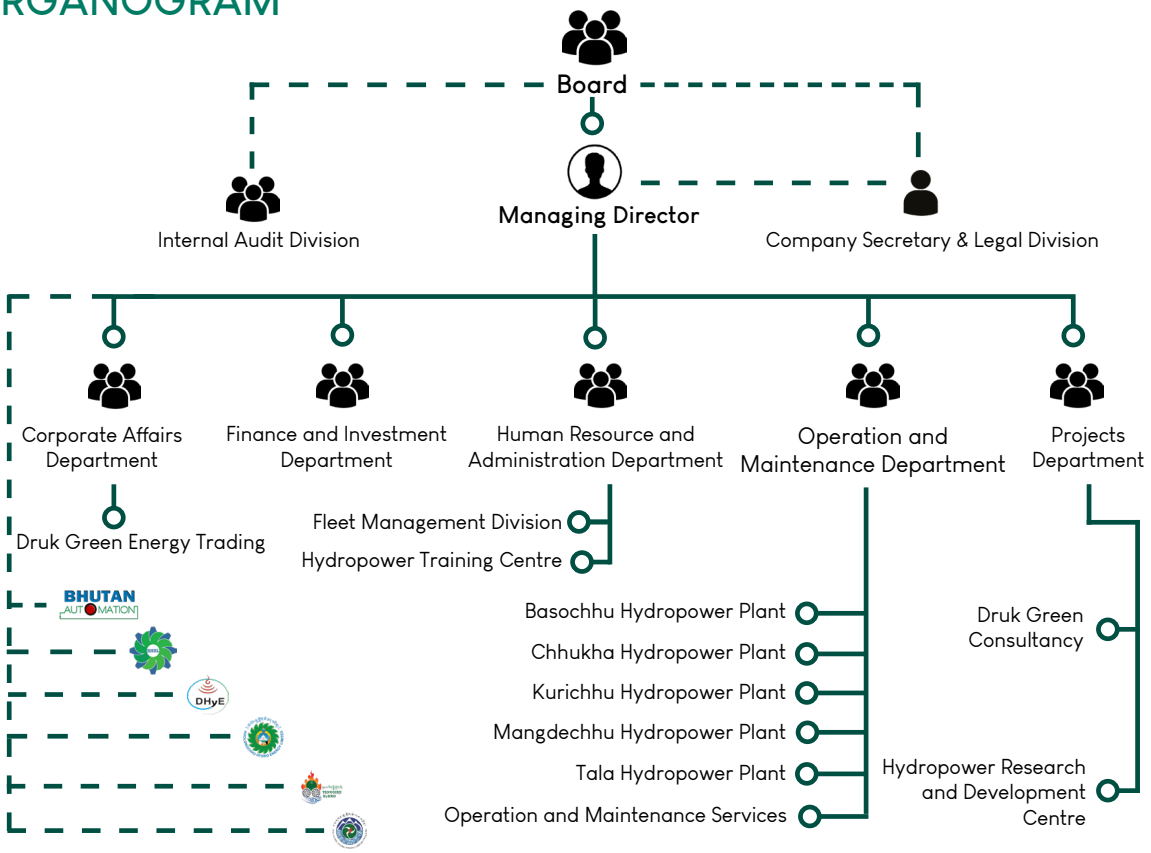
2021

Druk Hydro Energy Limited incorporated

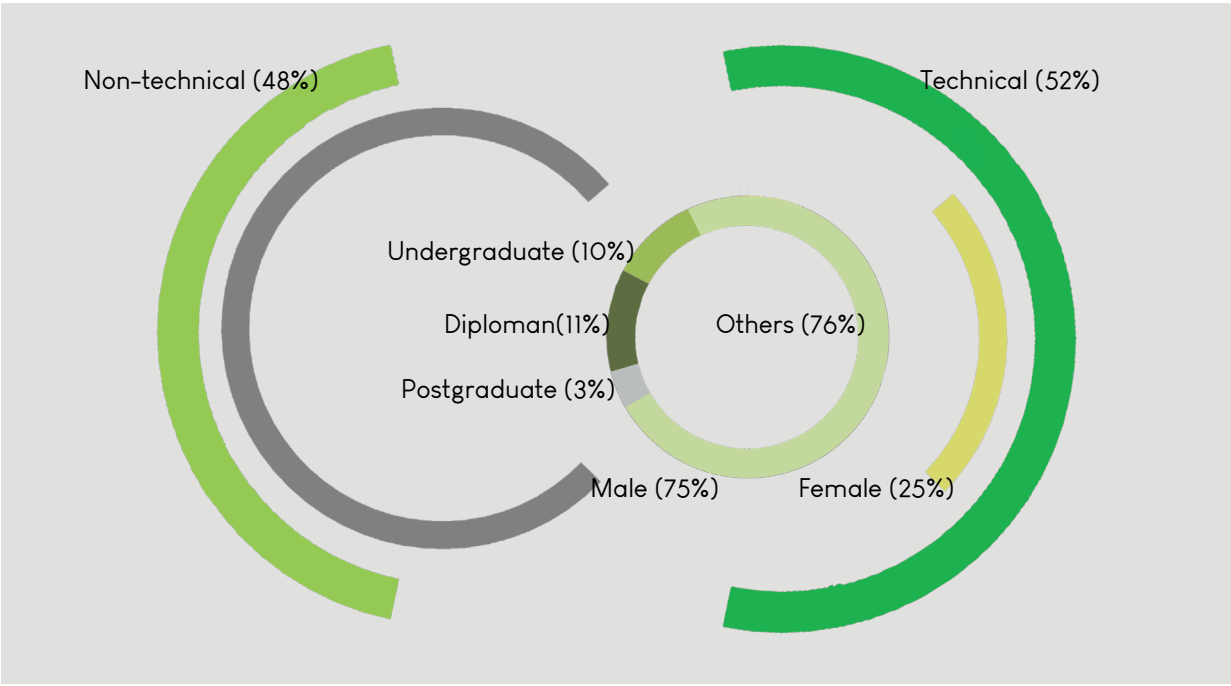
2022

Embedded Generation taken over

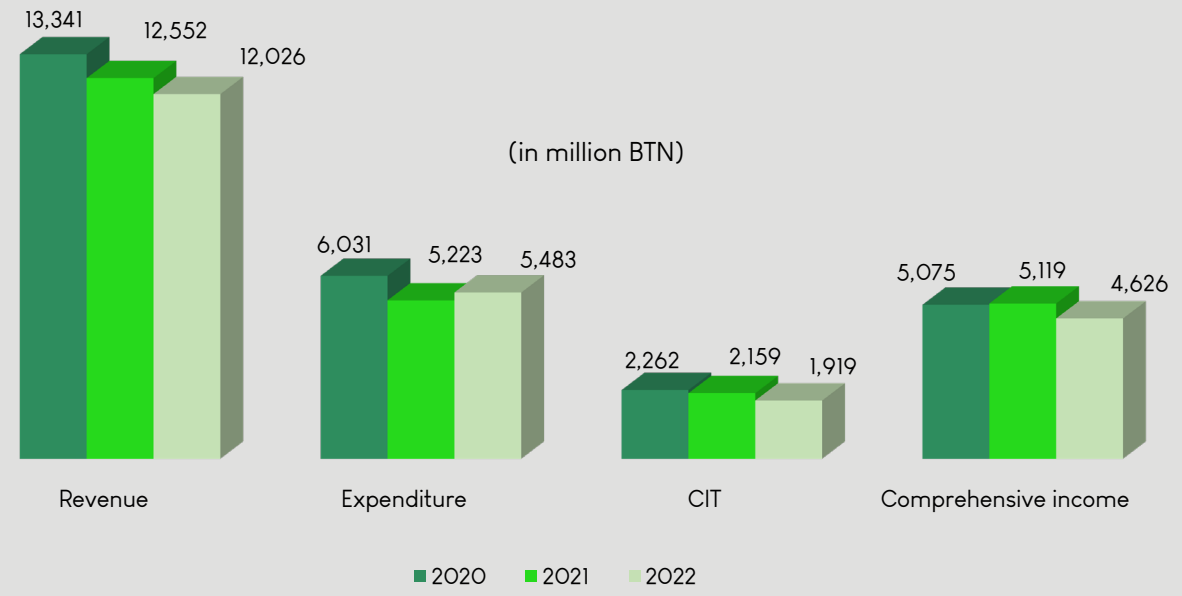
ORGANOGRAM



OUR TEAM

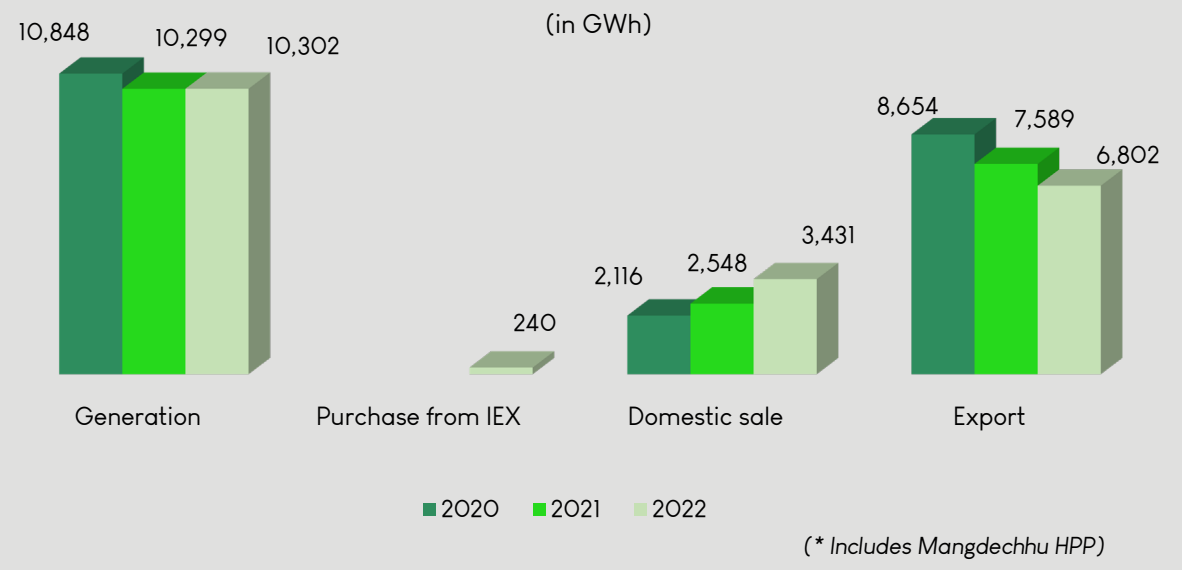


FINANCIAL HIGHLIGHTS



Note: MHP accounts will be incorporated with DGPC from 2024

OPERATIONAL HIGHLIGHTS



Note: O&M of MHP taken over by DGPC from 2023

GENERATING PLANTS

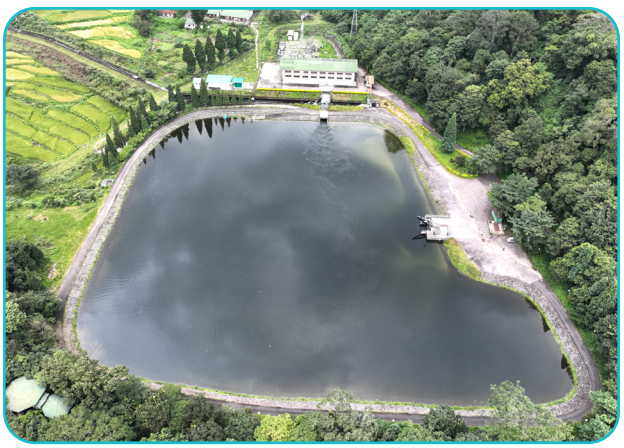
336 MW CHHUKHA HYDROPOWER PLANT

Installed capacity:	4 x 84 MW
Design energy:	1,800 GWh
Project commissioning:	1986 - 1988

60 MW KURICHHU HYDROPOWER PLANT

Installed capacity:	4 x 15 MW
Design energy:	400 GWh
Project commissioning:	2002

64 MW BASOCHHU HYDROPOWER PLANT



	UPPER STAGE	LOWER STAGE
Installed capacity:	2 x 12 MW	2 x 20 MW
Design energy:	105 GWh	186 GWh
Project commissioning:	2001	2004

1,020 MW TALA HYDROPOWER PLANT

Installed capacity:	6 x 170 MW
Design energy:	3,962 GWh
Project commissioning:	2006 - 2007

720 MW MANGDECHHU HYDROPOWER PLANT

Installed capacity:	4 x 180 MW
Design energy:	2,925 GWh
Project commissioning:	2019

9 MW EMBEDDED GENERATION

Installed capacity:	9 MW mini/micro hydropower plants, wind and solar plants

SUBSIDIARY/JOINT VENTURE COMPANIES

BHUTAN HYDROPOWER SERVICES LIMITED

Business scope:	State-of-the art, repair and manufacturing of hydro turbine runners and associated components
Project cost:	Nu. 1,137 million
Incorporation:	October 23, 2012
COD:	September 30, 2014
Shareholding:	DGPC (100%)

TANGSIBJI HYDRO ENERGY LIMITED

Installed capacity:	2 x 59 MW
Design energy:	420 GWh
Project estimated cost:	Nu. 14 billion
Incorporation:	April 25, 2014
Shareholding:	DGPC (100%)

KHOLONGCHHU HYDRO ENERGY LIMITED

Installed capacity:	4x 150 MW
Design energy:	2,569 GWh
Project estimated cost:	Nu. 54 billion
Incorporation:	June 12, 2015
Shareholding:	DGPC (100%)

DRUK HYDRO ENERGY LIMITED

Business Scope:	To construct and commission small and medium hydropower projects
Incorporation:	December 16, 2021
Shareholding:	DGPC (100%)

DAGACHHU HYDRO POWER CORPORATION LIMITED

Installed capacity:	2 x 63 MW
Design energy:	515 GWh
Project cost:	Nu. 13 billion
Incorporation:	May 13, 2008
COD:	February 2015
Shareholdings:	DGPC (59%), Tata Power (26%), NPPF (15%)

BHUTAN AUTOMATION & ENGINEERING LIMITED

Business scope:	Manufacturing of automation systems for hydropower plants
Project cost:	Nu. 60 million
Incorporation:	November 8, 2017
Shareholdings:	DGPC (51%), Andritz Hydro (49%)

DELIVERING VALUE

DGPC has more than 50 years of experience in the construction, operation and maintenance of hydropower plants starting with the experience gained from the Chhukha hydropower plant and embedded generation. To become a leading hydropower company in the region, DGPC has established a number of centres of excellence (CoE) under the hydropower research and development centre (HRDC). DGPC intends to expand the scope of HRDC to include civil structures and geotechnical engineering, automation, hydraulic studies and efficiency improvements.

Building on its matured experience in operation and maintenance, and with the intent to provide a complete range of water-to-wire services in hydropower, DGPC is consistently focusing and prioritising to develop its competencies in hydropower projects investigation, design and engineering, tendering and contracting, and construction management.

DGPC strives to deliver value to its shareholders by diversifying its business in hydropower and allied services. With the growing portfolio of hydropower plants, consolidation of its ventures into hydropower investigation, design and engineering, and construction, DGPC has built up a dedicated team of professionals at various levels in diverse fields.

PROJECTS STUDIED/UNDERTAKEN

2011

Pre-feasibility study of 1,125 Dorjilung hydroelectric project

2009 – 2013

Pre-feasibility study and feasibility/detailed project study for 118 MW Nikachhu hydroelectric project

2014

Pre-feasibility study of 442 MW (125 + 317) Nyera Amari I and II integrated hydroelectric projects

2015

Detailed project study of 1,125 Dorjilung (formerly Kuri-I) hydroelectric project

2015

Detailed project KHP augmentat

2019

Detailed project study of 500 kW Lunana mini hydropower project

2020

Inception study on the alternative sites for the barrage/weir option for Punatsangchhu-I hydroelectric project

2020

Desktop study of 1,100 MW Panbang storage hydropower project

2021

Feasibility study of 54 MW Burgangchhu, 32 MW Yungichhu and 18 MW Suchhu small hydropower projects

2021

Pre-feasibility st 22 MW Burichhu hydropower pro

DRUK GREEN CONSULTANCY SERVICES (DGC)

- Engineering & design
- Environmental, social & cdm studies
- Detailed survey & investigation
- Geological & geotechnical investigation
- River basin studies
- Cost engineering & financial analysis
- Equipment planning & management
- Renovation, modernisation & uprating of hydropower plants
- Dam safety

study for
ion

2016
Pre-feasibility study of 85 MW Jhomori (Dhansari) hydroelectric project

2016
Detailed project study of 26 MW (18 + 8) Druk Bindu Stage I and II small hydroelectric projects

2015 - 2018
Detailed project study of 442 MW Nyera Amari I and II hydropower projects

2018
Detailed project study of 300 kW Singye dzong micro hydropower project

udy of
small
ject

2022
Detailed project study of Puna I barrage/weir option

2022
Updating of detailed project report of 404 MW Nyera Amari I and II hydropower projects

2022
Updating of Detailed Project Report of Druk Bindu I & II Small Hydropower Project

2023
Feasibility Study of 90 MW Jomori Hydropower Project

ONGOING PROJECT INVESTIGATIONS

2022

Consultancy services for the implementation of 54 MW Burgangchhu, 32 MW Yungichhu and 18 MW Suchhu small hydropower projects

2023

Feasibility Study of 740 MW Gongri Reservoir Hydropower Project

2023

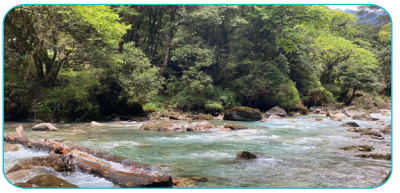
Feasibility Study of 1800 MW Jerichhu Pump Storage Hydropower Project

2023

Updating of Detailed Project Report of 1125 MW Dorjilung Hydropower Project

2023

Feasibility Study of 45 MW Gamri-I Hydropower Project



2023

Feasibility Study of 20 MW Begana Integrated Small Hydropower Project

HYDROPOWER RESEARCH & DEVELOPMENT CENTRE (HRDC)

- Centre of Excellence for Condition Based Monitoring (CoECBM)
  - Chemical Testing & Analysis (CTA)
  - Condition Based Mechanical Assessment (CBMA)
- Centre of Excellence for Automation, Control and Protection (CoEACaP)
- Centre of Excellence for Civil and Geotechnical Engineering (CoECGE)

HYDROPOWER ANCILLARY SERVICES

The ancillary hydropower services are key to supporting the main hydropower business. With the establishment of BHSL, and consolidation of CoEs to a research and development function, DGPC is in a position to offer a critical portfolio in a wide range of specialised services.

BHUTAN HYDROPOWER SERVICES LIMITED

BHSL operates a state-of-art Hydropower Service Center for reclamation and manufacturing of hydro runners and allied underwater components. Some of the specialisation includes:

- Manufacture of runners
- Repair of runners and other underwater components
- Manufacture of Hydro-Mechanical components and penstocks

BHUTAN AUTOMATION & ENGINEERING LIMITED (BHUTAN AUTOMATION)

BHUTAN AUTOMATION specialises in the design, engineering, manufacturing and implementation of state-of-the-art automation systems and other secondary equipment for industrial applications. The main services provided by BHUTAN AUTOMATION include:

- Design and engineering of Industrial Automation Systems
- Erection, Testing and Commissioning of automation works

HYDROPOWER DEVELOPMENT

DGPC has gained expertise and competency in the development and implementation of hydropower projects with its first major project – the 126 MW Dagachhu hydropower project – which was fully managed by a Bhutanese team of experts.

Building upon this experience, the construction of the 118 MW Nikachhu hydropower project was initiated and is scheduled for commissioning by December 2023. The project infrastructure works of the 600 MW Kholongchhu hydropower project are nearing completion and the construction of the major components of the project is planned to be started from 2024.

NEW PROJECTS

Recognising the need for domestic energy security through facilitation of self-contained supply flexibility for each dzongkhag to meet the domestic demand and to ensure essential services in times of exigencies, DGPC is also undertaking strategic planning and implementation of a backup power supply system through construction of small and medium sized hydropower projects and more recently the implementation of solar PV projects.

DGPC is constructing three hydropower projects of total capacity of 104 MW through its subsidiary company Druk Hydro Energy Limited under the Phase I projects. The construction of these projects – 54 MW Burgangchhu in Zhemgang, 32 MW Yungichhu in Lhuentse and 18 MW Suchhu in Haa, started in 2022 and is expected to commission by 2024 - 2025.

Under Phase II of the program, the feasibility studies of four hydropower projects of total capacity of 195 MW, namely the 26 MW Druk Bindu I & II, 54 MW Gamri I, 90 MW Jomori and 25 MW Begana Integrated projects have been completed. The infrastructure works of Jomori and Druk Bindu I & II projects have been initiated. The Phase II projects are expected to be commissioned between 2026 and 2028.

Under other renewables, Bhutan has started the implementation of a 17 MW solar farm.

PROJECTS UNDER CONSIDERATION

Under Phase III, DGPC is considering developing four much larger hydropower projects – 85 MW Gamri II, 363 MW Khomachhu, 170 MW Dangchhu and 900 MW Wangchhu Storage.

Further, DGPC is exploring more climate resilient and sustainable hydropower schemes such as pumped storage and seasonal storage hydropower schemes. The update of the detailed project reports for several large hydropower projects such as the 1,125 MW Dorjilung project, 180 MW Bunakha project, and the 404 MW Nyera Amari I & II are being taken up. DGPC is also preparing the detailed project report for the integrated 740 MW Gongri Reservoir and 1,800 MW Jerrichhu Pump Storage scheme.

DEVELOPMENT OF OTHER RENEWABLES

To supplement the winter energy deficits, the feasibility studies of solar projects have been initiated. with a target to implement 1,000 MW solar photovoltaics projects by 2030. 500 MW solar photovoltaic projects are expected to be commissioned by 2026 and the balance 500 MW by 2030.

DGPC is committed to developing renewable energy projects sustainably in line with the international best practices on environmental and social standards and safeguard policies.

DGPC supports social and community vitality through various initiatives of its own and also in collaboration with other partners. DGPC recognises the importance of the protection of catchments as it provides steady precipitation – a perennial source of water for the river system. Further, preservation of the catchments reduces soil erosion, which would otherwise decrease the life of underwater equipment of DGPC plants.

Access to reliable and affordable hydropower has stimulated growth in other sectors of the Bhutanese economy such as the growth of the domestic industries in the country.

Development of communities through road connectivity, health and educational institutions, search and rescue mission

Contribution to annual religious activities

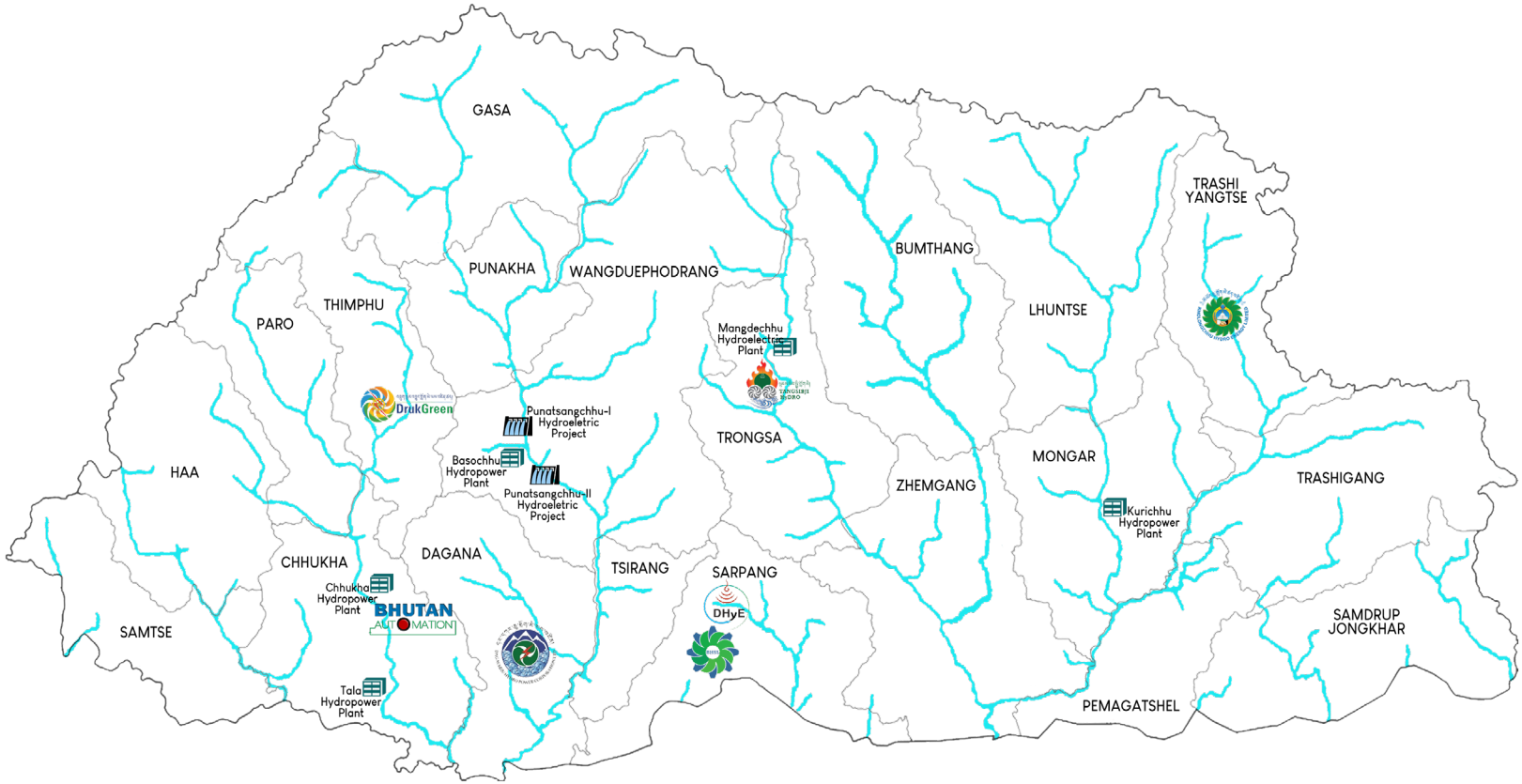
Preservation of environment

CORPORATE SOCIAL RESPONSIBILITY

Employee contribution to CSR fund

Render financial support to school and college students

BHUTAN (HYDROPOWER) MAP



To achieve Bhutan's vision of hydropower development, huge investments of over USD 8 billion will be required over the next decade considering present construction cost estimates.

GENERATING POWER PLANTS

Basochhu Hydropower Plant
Wangduephodrang
Tel: +975 2 471021

Chhukha Hydropower Plant
Chhukha
Tel: +975 5 290060

Kurichhu Hydropower Plant
Mongar
Tel: +975 4 744100

Mangdechhu Hydropower Plant
Trongsa
Tel: +975 3 528031

Tala Hydropower Plant
Gedu
Tel: +975 77182006

SUBSIDIARY AND JV COMPANIES

Dagachhu Hydro Power Corporation Limited
Dagana
Tel: +975 17116167
www.dagachhu.com

Tangsibji Hydro Energy Limited
Trongsa
Tel: +975 3 521653/54
www.thye.bt

Bhutan Hydropower Services Limited
Jigmeling
Tel: +975 6 252777
www.bhsl.bt

Kholongchhu Hydro Energy Limited
Trashiyangtse
Tel: +975 8 781139/44
www.khepbhutan.com

Bhutan Automation & Engineering Limited
Chhukha
Tel: +975 5 290026
www.bhutanautomation.com

Druk Hydro Energy Limited
Sarpang
email: info.dhye@dhye.bt
http://dhye.drukgreen.bt

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DrukGreen

(a dhi company)

Company Profile

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