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SOUTH ASIA REGIONAL INITIATIVE FOR ENERGY INTEGRATION (SARI/EI)

STRATEGY PAPER FOR CREATION OF SOUTH ASIA FORUM ON ENERGY INVESTMENT (SAFEI) FOR PROMOTING REGIONAL ENERGY INVESTMENT

SEPTEMBER 2022

SOUTH ASIA REGIONAL INITIATIVE FOR ENERGY INTEGRATION (SARI/EI)

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INTEGRATED RESEARCH AND ACTION FOR DEVELOPMENT (IRADE)

SEPTEMBER 2022

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Contents

List of Figures

List of Tables

Preface

We are pleased to present our study report on 'Strategy paper for creation of South Asia Forum on Energy Investment (SAFEI) for promoting Regional Energy Investment' developed under the South Asia Regional Initiative for Energy Integration (SARI/EI) project supported by USAID.

The objective of the study is to plan for the creation of a platform which can render assistance, to determine the needs and exploring opportunities for regional energy investments in South Asia. Further, the forum is expected to support such regional energy investments and facilitate sharing of benefits of the investments in an equitable and impartial manner among the regional project participants.

This strategy paper of SARI/EI discusses the creation of a regional platform – "South Asia Forum on Energy Investment (SAFEI)", which highlights the need and the prospects for creation of regional energy infrastructure by leveraging the diverse energy resources and facilitate in establishing an enabling and supporting environment to bring out such regional projects in an expeditious manner. Considering key policies and regulatory requirements, the present study discusses in detail the need and way forward for creation of an ecosystem for investment in the region for enhanced viability and de-risking of energy projects.

The strategy paper is expected to encourage involvement and active support of the respective governments, financing institutions, and developers towards mobilizing and bringing investment in the region through grants, sovereign loan, low interest loans, bonds, investment through investment trust and private equity. I hope that this study will provide adequate guidance material for the investors, investment promotion agencies, policymakers and utilities in South Asia who work towards enhancement of regional energy investments.

I am grateful to USAID for supporting the study. I also take this opportunity to thank the Technical team at SARI/EI Secretariat /IRADe, and Deloitte Touche Tohmatsu India LLP who have worked diligently and enthusiastically to complete this study.

Jyoti Parikh

Dr. Jyoti Parikh

Executive Director, IRADe

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We express our firm gratitude to the following persons and their organisations, for providing us adequate time for discussions, particularly during the roundtable on 26th September, 2022:

Sl no.	Name	Designation	Organization
1.	Mr. Mohammad Hossain	Director General	Power Cell, Govt. of Bangladesh
2.	Mr. Sugath Dharmakeerthi	Addl. Secretary	Min. of Power, Govt. of Sri Lanka
3.	Mr. Michael Scott Jackson	Dy. Director - Development Partnerships & Innovation Office	United States Agency for International Development (USAID)/India
4.	Mr. P K Sinha	ED (Projects - NR, New Business & Lending Policy Unit)	Power Finance Corporation (PFC)
5.	Mr. Dilip N Rozekar	Chief General Manager	Power Grid Corporation of India Limited (PGCIL)
6.	Mr. Manoj Agarwal	Chief General Manager	Power System Operation Corporation Limited (POSOCO)
7.	Mr. Jambayl Lendup	Chief Engineer	MoEA, Govt. of Bhutan
8.	Mr. Kuberalingam Ramjee	Chief Engineer	Ceylon Electricity Board
9.	Mr. Sagar Raj Goutam	Senior Divisional Engineer	Investment Board of Nepal
10.	Mr. Amit Manohar	Senior Manager	Invest India (National Investment Promotion and Facilitation Agency)
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19.	Mr. Ajit Pandit	Co-founder & Director	Idam Infra Advisory Private Limited
20.	Mr. Arpan Gupta	Addl. Director	Federation of Indian Chambers of Commerce & Industry (FICCI)
21.	Ms. Archana Sinha	Head- Biofuels & Railways	Confederation of Indian Industry (CII)
22.	Mr. Srinagesh Ramabhotla	Ex- Project Finance Head	Azure Power
23.	Mr. Ketan Patil	General Manager	Lalitpur Power Generation Company Limited/Bajaj Energy
24.	Ms. Anjali Lathigara	Market Intelligence Expert	Global Wind Energy Council
25.	Mr. Kalyan Verma	Senior Assistant Director (Power & Coal)	Federation of Indian Chambers of Commerce & Industry (FICCI)
26.	Mr. Pramod Thakur	AVP, PTC team	South Asia Regional Energy Partnership (SAREP)
27.	Mr. Mayank Bhardwaj	Lead (Procurement and Private sector)	South Asia Regional Energy Partnership (SAREP)
28.	Mr. Dheeraj Jain	Regional Lead	GE International

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Technical Team

SARI/EI Project Secretariat

1 Executive Summary

1.1 Introduction

One of the challenges faced by countries in South Asia is mobilizing investments at an affordable cost required for building the generation capacities and regional transmission network in the region because hydro and thermal power projects (which form bulk of the regional power trade in Bangladesh-Bhutan-India-Nepal region) and regional transmission networks are both capital and time intensive in nature. This requires involvement of private sector and multi-lateral development financing agencies at a larger scale in addition to public sector involvement to contribute immensely to meeting some of the challenges and accelerate the whole process of energy investment in the region.

'South Asia Forum on Energy Investment (SAFEI)' is an initiative taken by USAID's South Asia Regional Initiative for Energy Integration (SARI/EI) program, that aims to create a platform that facilitates, supports and promotes regional energy investments. The proposed forum will strive towards the development of a conducive environment for regional energy investments, facilitate mobilization of funds, support private sector participation, provide a platform for discussions and deliberations, and undertake various other objectives to support regional energy investments in South Asia.

This strategy paper discusses the creation of a regional platform – "South Asia Forum on Energy Investment (SAFEI)". The paper highlights the need and the prospects for creation of regional energy infrastructure by leveraging the diverse energy resources and facilitate in establishing an enabling and supporting environment to bring out such regional projects in an expeditious manner. Considering key policies and regulatory requirements, the present study discusses in detail the need and way forward for creation of an ecosystem for investment in the region for enhanced viability and de-risking of the energy projects.

1.2 Regional energy infrastructure projects in South Asia

Regional energy projects are the projects wherein the beneficiaries of the project are located in more than one country in the region. This could also include the investment of one country made on energy infrastructure projects in another country, and can also include transmission lines developed within a country that facilitates cross border electricity trade, such as the associated transmission system of the cross border lines.

In South Asia, there is already a substantial number of regional energy investment projects (both generation and transmission projects) which have either already been commissioned, or are under construction. This includes the multiple hydropower plants in Bhutan developed through financing support from Govt. of India, cross border interconnections between India-Nepal, India-Bhutan and India-Bangladesh, the 900 MW Arun-III HPP in Nepal, etc.

While many of these projects were developed by Governmental/Government controlled entities, there are examples of private investment also – the key example being the 1600 MW Godda thermal power plant in India to supply power to Bangladesh. Another project of interest is the 900 MW Upper Karnali hydropower project in Nepal, which is expected to supply 500 MW of hydropower to Bangladesh also, once it is commissioned. In the future, more such avenues for private sector investments are expected to open up.

A few of the potential regional generation projects in the longer timeframe are listed below:

- 2640 MW Kuri Gongri H.E. Project in Bhutan[1]
- 5040 MW Pancheshwar Multipurpose Project in Nepal[2]
- 3300 MW Sapta Kosi High Dam Multipurpose Project in Nepal[3]
- 536 MW Sun Koshi 3 hydro project in Nepal[4]

- 1125 MW Dorjilung Hydropower project in Bhutan[5]

In addition, there is investment potential in transmission lines such as the following:

- 765 kV Katihar (Bihar, India) – Parbotipur (Bangladesh) – Bornagar (Assam, India)[6]
- 400 kV Barapukuria (Bangladesh India border) – Bogura (Bangladesh) line[7]
- 400 kV Punatsangchu (Bhutan) – Lhamoizingkha (Bhutan India border) D/C line[8]
- 400 kV D/C Dododhara (Nepal) - Bareli (India)
- 400 kV D/C Attariya (Nepal) - Bareli (India)
- 400 kV D/C Phulbari (Nepal) - Lucknow (India)
- 400 kV D/C Inaruwa (Nepal) – Purnea (India)[9]
- India – Sri Lanka transmission interconnection, with initial power transfer capacity of 500 MW

There are also larger initiatives such as "One Sun, One World and One Grid" (OSOWOG)" which will result in a large scale-up of investment requirements. There are also evolving project investment opportunities such as on floating solar PV, smart metering, smart grids, energy storage, green hydrogen etc. Another area which has an impact on the future scenario of CBET is the role played by renewable energy, including large intermittent/variable RE and Distributed Energy Resources (DER). These will also drive the investment opportunities in terms of network strengthening, storage technologies, etc.

1.3 International experience

As part of the study, various regional investment facilitating entities/forums were considered, such as the Project Advisory Unit in South African Power Pool, Central Asia Regional Economic Cooperation Energy Investment Forum (CAREC EIF), Connecting Europe Facility (CEF) in European Union (Projects of Common Interest), Sustainable Energy Investment Forum Europe, Heads of ASEAN Power Utilities/Authorities (HAPUA) in ASEAN, and the Regional Power Trade Coordination Committee (RPTCC) in Greater Mekong Sub-region.

From the review of the above forums, the following learnings were inferred for setting up SAFEI in South Asia:

1. Providing a forum for discussions and interactions regarding regional investments is a common activity among most of the identified regional energy investment forums/platforms. This also includes organizing annual and/or periodic investment forums/summits;
2. Many regional energy investment forums/platforms play an advisory/advocacy role, to support the development of conducive policy and regulatory framework for investments;
3. Many regional energy investment forums/platforms provide some kind of project preparatory assistance and overall analytical support to the members. This includes project preparatory studies, prefeasibility analysis, feasibility analysis, assistance in development of regional plans etc.;
4. Some of the regional energy investment forums/platforms have also been providing assistance and facilitation and coordination support to address financing issues for projects. This includes arranging grant support, liasoning with development partners to arrange concessional loans and guarantees etc.;
5. A few of the regional energy investment forums/platforms focus also on developing regional level plans and strategies, and on constituting a regional level investment fund;
6. Other key areas of focus for regional energy investment forums/platforms consist of assistance in financial closure, transaction support, project implementation support, and project monitoring support.

In addition to the review of regional investment facilitating entities/forums, a few key regional projects have been studied, focusing on their key characteristics, especially, the investment and development modalities. The projects covered include:

i. Nam Theun 2 hydroelectric project in Lao PDR, Ruzizi 3 HEP;

ii. Itaipu Dam;

iii. ZIZABONA Interconnector; and

iv. Central American Electrical Interconnection System.

Based on the review of identified regional energy projects, the following key learnings become apparent:

1. Regional energy projects are typically planned under a regional level umbrella agreement/organization. In the absence of such umbrella agreement/organization, the project will require bilateral/multilateral intergovernmental agreements;
2. Presence of regional energy investment forums/platforms greatly facilitates the development of regional energy investment projects. Nam Theun 2 HPP, ZIZABONA interconnector etc. are examples of the same;
3. Partial governmental ownership, or concessional loans from development financing institutions are a key feature of most of the regional energy projects; and
4. Regional energy projects developed under PPP structure, typically follow a BOOT model for project implementation.

1.4 Proposed vision and mission statement of SAFEI

Vision

To become the regional centre of excellence for creating an investor friendly ecosystem for the development of sustainable regional energy projects and advancing cross border energy trade in South Asia.

Mission

To facilitate, support and promote regional energy investments in South Asia in a sustainable and cost-effective manner.

1.5 Proposed objectives of SAFEI

The envisaged key objectives for SAFEI are listed below:

1. Facilitate the development of a conducive and investor friendly ecosystem for creating a sustainable market for energy investment.
2. Advocate for the development of coordinated and harmonious policy, investment and commercial framework across countries of South Asia for accelerating the investments in CBET and regional energy projects.
3. Facilitate the mobilisation of financing and investment avenues with increased private sector participation in regional energy projects.
4. Promote sustainable regional energy projects and the adoption of associated frontier technologies and best practices.
5. Act as a credible source of all investment related information in respect of regional energy projects and help dissemination of such information for investor community in taking prudent investment decision.
6. Undertake cross cutting analysis and research and commission regional studies on regional energy investment opportunities with special emphasis on international best practices.
7. Serve as a regional platform to facilitate networking, information and knowledge exchange, including stakeholders outreach.

These objectives are proposed to be achieved through undertaking of the following activities:

1. **Facilitate the development of a conducive and investor friendly ecosystem for creating a sustainable market for energy investment**

SAFEI would undertake various activities to facilitate the creation of a conducive and investor friendly ecosystem for regional energy investments, at both country and regional levels:

- Provide a credible platform and opportunities for interaction between Governmental stakeholders, investors and financing institutions;
- Undertake consultations on a regular basis to analyse and evaluate the key barriers to regional energy investments;
- Suggest innovative policy, fiscal and market instruments required to mobilize investments including specific financial instruments that can be adopted to address different risks associated with regional energy projects;
- Develop a clear risk sharing framework that indicates who bears what risks, roles and responsibilities of different stakeholders, the investors, the financial institutions, the government, and the power sector organizations vis-à-vis the particular business models concerning the regional energy projects;
- Identify potential options for design of risk assessment and management frameworks;
- Undertake proactive studies to identify solutions to problems faced by regional energy investment projects from their preparatory phases to financial closure;
- Provide platform and opportunities for interaction among Governmental stakeholders, investors and financial institutions; and
- Facilitate the identification of broad solutions for risk management and mitigation for regional energy investments, especially by coordinating with entities that offer risk mitigation instruments such as the Multilateral Investment Guarantee Agency (MIGA).

2. **Advocate for the development of coordinated and harmonious policy, investment and commercial framework**

- Analyse the need for changes in country level investment/finance related policy, regulatory, legal, investment and commercial framework, policies and regulatory provisions to make them conducive towards the deployment and growth of the investments, and undertake such analysis on a regular basis;
- Initiate dialogues with policy makers on potential solutions for removal of overall barriers to investment in regional energy projects;
- Facilitate the development of joint recommendations/requests of investors on potential changes to policy and regulatory frameworks to promote investments;
- Provide support to the effort of policy makers towards regional harmonization of policies and regulations, and adoption of international leading practices, to promote regional energy investments.

3. **Facilitate the mobilisation of financing with increased private sector participation**

SAFEI will facilitate the mobilization of financing, and private sector investment in regional energy projects, through consultation with financing institutions, investors, development partners, national electricity utilities, planning agencies, Governments and other key stakeholders. This would also involve tasks such as:

- Interaction with utilities and other key entities on identification of financing sources and regional energy investment opportunities;
- Identification of a list of regional energy investment projects based on the preferences of the countries and priorities of the region and formulation of pipeline of projects to explore opportunities of investment;
- Commissioning of studies and development of reports on potential investment opportunities;
- Facilitate initial interactions between multiple financing sources (both development and commercial institutions) and investors, by maintaining a strong connect with key financing institutions and sources, together with an in-depth knowledge and understanding of the financing products offered by them;
- Propose options to leverage the adoption of innovative financing instruments and business models; and
- Facilitate adoption of instruments such as partial risk guarantees, MIGA guarantees and sovereign guarantees to help mitigate expropriation and similar risks.

4. **Promote sustainable regional energy projects and the adoption of frontier technologies and best practices**

- SAFEI will promote the adoption of international best practices of environmental and social safeguards in development of sustainable energy infrastructure; and
- Considering the impact of new technologies such as energy storage, distributed renewables, blockchain etc. from the perspective of cross border trade of energy storage services and regional energy integration, SAFEI will facilitate adoption of such new technologies for regional energy investments, through undertaking studies, coordinating with entities that can implement pilot projects or project concepts etc.

5. **Act as a credible source for information dissemination and resources for investment facilitation**

- Through a mix of literature, media and workshops, the Forum will highlight the importance of regional projects, commercial aspects related to such projects and the advantages emerging out of these, to the stakeholders from different countries in the region;
- Develop an information repository covering new and proposed regional energy investments, project success stories, and other project related information; and
- Development of standard templates and quick reference guides by SAFEI which may be made available for the use of investors.

6. **Undertake cross-cutting analysis and research on regional energy investment opportunities**

SAFEI is expected to lead broader regional level analysis and research on investment opportunities and is also expected to play a supporting role in project preparatory phase, by providing limited assistance for some of the identified priority projects. The assistance could cover aspects such as:

- Undertake detailed analysis and research on broader regional energy investment project opportunities;
- Provide assistance for analysis of project opportunities by developing common toolkits and frameworks for initial analysis of project opportunities;

- Development and updating of investment templates, that provide a common template for initial discussion on project opportunities and regional investment tool kit for investors;
- Undertake project specific analysis in initial stages of project preparation, for a limited set of projects, if the concerned Governments express a desire for SAFEI to assist them in the same; and
- Prepare and publish a flagship annual/biennial publication on South Asia Regional Energy Investment Outlook.

7. Serve as a platform to facilitate networking, information dissemination, and stakeholder outreach

SAFEI would provide a platform for networking, knowledge exchange, capacity building and consultations among the policy makers, concerned statutory agencies and other related bodies, including business networks, such as chambers of commerce and industries, think-tanks, and thought leaders in the following way:

- Organise an annual "South Asia Regional Energy Investment Summit", bringing together the Governmental and private sector stakeholders, along with financing institutions under a common roof to discuss the priority issues, challenges and opportunities relating to regional energy investments;
- Conduct workshops and conferences at regular intervals for exchange of ideas, deliberating on possible financing mechanisms, removal of barriers to investment, risk mitigation etc.;
- Prepare and publish SAFEI Quarterly Newsletters on energy investment scenario and updates in the region;
- Organize high-level investment delegations, where key investors, policy makers and financing institutions interact;
- Undertake knowledge sharing and capacity building exercises related to various aspects of development of energy investment projects;
- Tie up with relevant international forums that may assist in knowledge exchange and sharing of leading practices relating to energy investments; and
- Coordinate with similar/relevant entities within and outside region, to enhance the value for members, and to utilize synergies in operation.

1.6 Proposed institutional framework for SAFEI

1.6.1 Membership

There are multiple stakeholders involved from each country's energy sector in the development of regional energy infrastructure projects. Therefore, in line with that, SAFEI intends to propagate that the following potential stakeholders can become members of the Forum on a voluntary basis. It is added that the list given below is only indicative and an open participation model may be followed, wherein any relevant organization that is willing to be part of SAFEI may be allowed to become the forum's member, subject to any administrative requirements such as agreeing to the charter of SAFEI, payment of any membership fees in the future etc.

- National Investment promotion bodies
- Industry associations/chambers of commerce and industries
- Government and privately owned banks and financial institutions
- National power utilities involved in cross border projects
- Private power companies involved/interested in cross border projects
- Energy departments or ministries

- National planning authorities
- Research institutions and think tanks
- Regional energy programs
- Development partners/donor/aid agencies
- Any other organization involved in energy or finance sectors

The membership will be for organization, rather than for individual members within the organization. Therefore, the head of organization will be able to decide whom to depute for the meetings of SAFEI, on a case by case basis also.

1.6.2 Setting up of SAFEI

Four different options can be explored to set up SAFEI:

1. Host the SAFEI under any of the existing regional intergovernmental Institutions such as SAARC

2. Incorporate as an independent platform (as an association/society of members with membership from relevant authorities and investment communities)

3. With technical and knowledge support from donor agencies/programs, SAFEI can be hosted jointly in partnership with single or multiple financing entities/industry bodies.

4. Hosted by one of the regional energy programs supported by development partners/donor agencies, as a transitional measure for initial period, say for first two to three years, till an independent forum can be established in a self-sustaining manner.

Considering the analysis of South Asian context, international experiences, and after considering the comments and suggestions received from the stakeholders during the stakeholder consultation workshop organized by SARI/EI on 26 September 2022, it is proposed that SAFEI may be set up under either of the following two models:

1. With technical and knowledge support from donor agencies/programs, SAFEI can be hosted jointly in partnership with single or multiple financing entities/industry bodies; or
2. Hosted by one of the regional energy programs supported by development partners/donor agencies, as a transitional measure for initial period say for first two to three years, till an independent forum can be established.

Key aspects to consider for setting up SAFEI

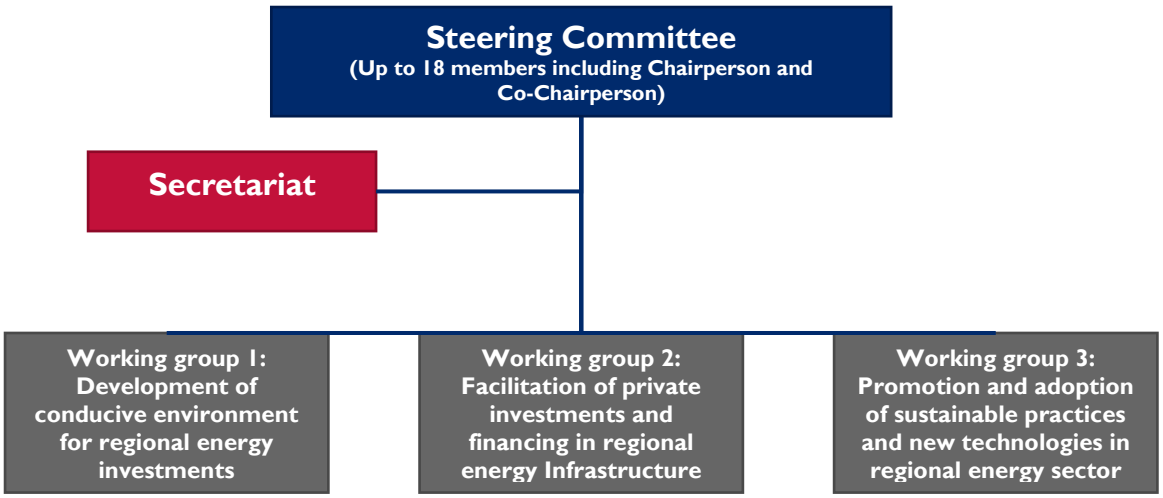
The following aspects may be considered while deciding on the mode under which SAFEI shall be set up:

a) Identification of one or more leading industry bodies/financing entities/ with regional operations/associations desirous to partner SAFEI within its structure?

b) Extent to which the development partners/donor agencies want to support the establishment of SAFEI directly, or through their regional energy programs.

1.6.3 Organizational structure

The proposed structure of the SAFEI is as illustrated below.



- **Steering Committee** members can be nominated by the member organizations. The Steering Committee would provide direction and oversight, supervise the working of secretariat and working groups and, be responsible for taking the key decisions related to SAFEI. The Secretariat and the Working Groups would report to the Steering Committee.

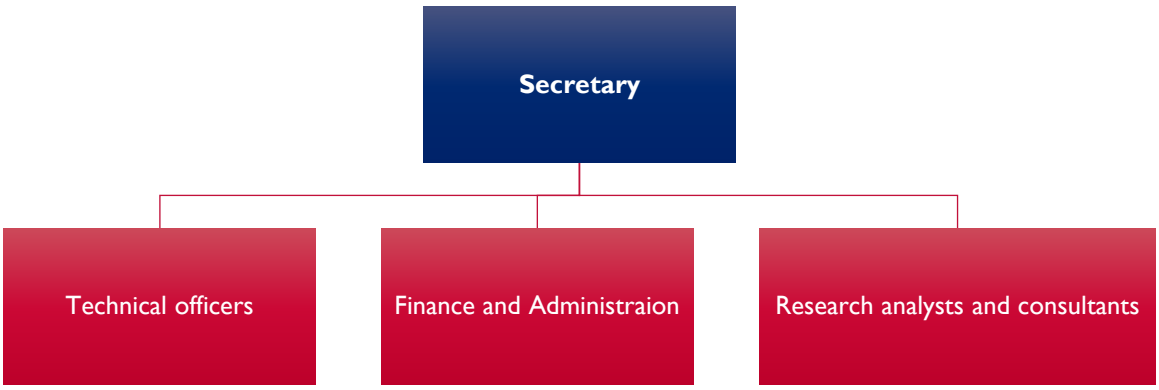
  The Steering Committee will have *up to 18 committee members*, who are selected through a nomination procedure in which the organizational members of SAFEI are allowed to propose/nominate such committee members. The Steering Committee membership will be for individuals, as compared to overall SAFEI membership, which is an organizational membership. While formulating the constitution of the Steering Committee, though any specific constitution/representation format is not being envisaged, it would however be endeavoured that to the extent possible, the Steering Committee may have representation / membership from the different BBINS countries as well as the stakeholders of regional energy sectors such as industry bodies, financial/banking sectors, power utilities and think-tanks/thought leaders etc.

  The Steering Committee members will select from among themselves, a *Chairperson* and *a Co-Chairperson*. It is recommended that the Chairperson and Co-chairperson be from separate countries. The Chairperson will head the meeting of Steering Committee. In the absence of Chairperson, Co-Chairperson will head the meeting of Steering Committee. The Steering Committee members will have a term of two years, and will be eligible for re-election. Similarly, the Chairperson and Co-Chairperson selections from among the Steering Committee members will also be initially for a term of two years, with eligibility for re-election. The Steering Committee will provide strategic guidance and direction to the SAFEI and members will act as a goodwill ambassador for promoting investment in regional energy projects, Cross Border Energy Trade, regional energy markets and integration.

- **Secretariat** will take care of the day to day operations and would be responsible to general administration of SAFEI. In line with the directions and advice by the Steering Committee, it would prioritize overall goals that need to be adopted, set timelines for such actions, and monitor their progress.

  In case SAFEI is hosted with the help of a regional energy project/program, it is expected that such regional project/program can also provide secretariat support. Consultants may be hired as required for short-term engagements or filling in any positions of the Secretariat in absence of regular officials. Sufficient administrative and IT support staff may also be provided through full-time or part-time

positions. A potential structure for Secretariat is provided below. The exact deployment of the positions will also be dependent on the available budget from the supporting institutions/agency.



In the above figure, other than Secretary, all other officers may either be dedicated full time for SAFEI, or may work on a part-time basis, as they may have other organizational or institutional responsibilities. Ideally, the Secretary shall work full time as part of SAFEI. If the supporting organizations of SAFEI do not have adequate manpower to serve these roles, persons/agency may be hired on contract as consultants.

- **Working Groups** – The objectives and tasks of SAFEI will be distributed among the three working groups:
    - Working group 1: Development of conducive environment for regional energy investments;
    - Working group 2: Facilitation of private investments and financing in regional energy infrastructure; and
    - Working group 3: Promotion and adoption of sustainable practices and new technologies in regional energy sector.

1.6.4 Financing

To expedite the process of establishment of SAFEI, in the initial years, it has been proposed that the forum can be housed within a regional program/project. During the roundtable discussions undertaken by SARI/EI on 26 September 2022, one of USAID's new programs, the South Asia Regional Energy Partnership (SAREP) expressed its willingness to provide support in the implementation of SAFEI.

Once the operations are stabilized during its initial years, a self-sustainable option of membership funding may be explored.

1.6.5 Way forward

Considering the discussions on various aspects detailed above, especially the legal status and institutional structure, and considering the geopolitical scenario in South Asia, the following activities form a potential roadmap for the establishment of SAFEI:

1. **Release of the SAFEI report-** Roundtables/Conference /or in Major investment related energy /power conferences to disseminate the findings of strategy paper and generate interest.
2. **Identification of Key donor institutions** – Discussion with donor agencies and development institutions to identify the key institution.
3. **Identification of Key partner institutions** – Discuss with the identified/perspective key institution which can provide the strategic support towards the programs/activities of SAFEI as partner institutions such as finance organization, industry bodies etc.

4. **MoU or Agreement –** MoU or Agreement with key donor and partner institutions such as industry bodies, finance organization.

5. **Finalization of the charter of SAFEI -** Finalization of a membership charter which the members can accept, describing the member responsibilities, modality of selection of Steering Committee members, modality of meetings etc. The charter will serve as the base document for formation of SAFEI and can be modified/fine-tuned from time to time based on requirement.

6. **Adding members to SAFEI**

a. Interacting with the potential organizations dealing in energy subjects and associated areas with some connection/relationship with regional/cross-border matters and highlighting the objectives of SAFEI and their possible association with this.

b. Sharing of membership charter to potential members inviting them to join as part of SAFEI, by agreeing to the charter.

7. **Initial preparatory meeting/interaction of institutional members to elect the Steering Committee and to discuss the work plan**

a. The Steering Committee members may be selected through a nomination process from the institutional members who are present.

b. During the initial meeting of the Steering Committee a discussion on workplan for the initial year may be made. Organize annual or biannual South Asia Regional Energy Investment Summit bringing both SAFEI members and other key stakeholders to a common platform, to deliberate on the most crucial regional energy investment and CBET related projects and related policy, investment, and finance aspects.

c. Organize Annual International Investment Delegation to Global/Major International Financing Centers Such as New York, London, Singapore, Hong Kong, Los Angeles and San Francisco. etc. to meet with leading financing institutions in these International Financing Centers for Mobilizing Investment.

8. **Networking and outreach -** Participation in the other power summits/conferences where the subjects related to energy investments are discussed and deliberated.

2 Introduction

2.1 Background

South Asian countries have vast untapped clean energy resources which could accelerate the sustainable growth and development of each country in South Asia as well as the entire region. It is estimated that the region has a combined hydro potential of 350 GW[10] and an enormous quantum of renewable energy sources like wind and solar power (approximately 1684 GW) [11]. While the region continues to make substantial progress in utilizing its energy potential, arranging adequate investment is expected to become a critical factor in the growth of regional energy cooperation.

A previous World Bank study on the benefits of regional energy cooperation in South Asia projected that US$ 1,390 billion of investments are required during the period 2015-2040 to add approximately 750 GW of electricity generation capacity (more than three times the installed capacity in the region as of 2015) to meet the rising national demands. [12]

One of the challenges faced by countries in South Asia is mobilizing the huge investments at an affordable cost required for building the generation capacities and regional transmission network in the region because hydro and thermal power projects (which form bulk of the regional power trade in Bangladesh-Bhutan-India-Nepal region) and regional transmission networks are both capital and time intensive in nature. This requires involvement of private sector and multi-lateral development financing agencies at a larger scale in addition to public sector involvement to contribute immensely to meeting some of the challenges and accelerate the whole process of energy investment.

'South Asia Forum on Energy Investment (SAFEI)' is an initiative taken by USAID's South Asia Regional Initiative for Energy Integration (SARI/EI) program that aims to create a platform which can render assistance, to determine the needs and explore opportunities for regional investment right from the initial stage. Further, the forum is expected to support the whole value chain, which inter alia includes identification of the project, mobilizing of the funds, addressing the policy, legal, and regulatory gaps, wherever they persist, to successful completion of the project on the premise that each member nation/contributing partners may be able to share the benefits of the prospective investment in an equitable and impartial manner.

The present strategy paper of SARI/EI discusses the creation of a regional platform – "South Asia Forum on Energy Investment (SAFEI)", which highlights the need and the prospects for creation of regional energy infrastructure by leveraging the diverse energy resources and facilitate in establishing an enabling and supporting environment to bring out such regional projects in an expeditious manner. Considering key policies and regulatory requirements, the present study discusses in detail the need and way forward for creation of an ecosystem for investment in the region for enhanced viability and de-risking of energy projects.

The strategy paper is expected to encourage involvement and active support of the respective governments, financing institutions, Private Equity (PE) companies and developers towards mobilizing and bringing investment in the region through grants, sovereign loan, low interest loans, bonds, investment through investment trust and private equity.

2.2 Scope of work

The scope of work for the entire study is as follows.

1. Take into consideration the current and likely trends of power sector in the South Asia region for a period of next 20 years, ascertain the vision towards regional infrastructure projects, mainly in the area of electricity generation and transmission and the benefits which can be derived out of these. The relevant information about the following points must be taken care of:
    i. Present as well as future trends of the power sector,

ii. Demand-supply scenarios for each country and region,

iii. The level of diversity in respect of the demand and available resources,

iv. Prevailing prices, cross border exchanges and their likely trends in future,

v. Government policies and guidelines and any other conditions which can influence such transactions.

2. Give a brief overview of the regional infrastructure projects and associated investments that are in existence and operational, as well as the ones that are already approved and are in different stages of planning/development, and the progress in respect of each of such projects. The analysis should also include regional projects that are under consideration or discussion in South Asia.

3. Keeping in view the likely trends of the power sector, cross border electricity trade and the prospects for regional infrastructure projects, as described under 1. And 2. above, explore the opportunities and potential for long term energy investments in the region and elaborate on assumptions made during such an exercise as well as the challenges faced, if any. While working out the prospectus for such long-term investments, the need for deployment of advanced energy solutions and the likely renewable energy additions may be kept into consideration, in order to achieve energy sustainability, net zero emissions and low-carbon pathways. The investment opportunities must be linked with promoting clean energy solutions to achieve the individual nationally determined contributions (INDCs) of respective countries.

   Similarly, the potential for investments in sustainable energy infrastructure-based concepts, viz. "One Sun, One World and One Grid" (OSOWOG), floating solar PV, smart metering and energy storage for grid balancing and future areas like Green Hydrogen etc., may also be considered. In case of transmission, apart from the transmission assets to be added afresh, the investments on extension of existing network, if any, may also be deliberated.

4. Analyze all the existing policies, legal, regulatory, technical, operational and monetary frameworks that are strategically relevant towards the energy investment as projected above in 3., in each of the South Asian countries. While doing so, the work already done under the SARI/EI program needs to be taken into consideration. The analysis will also determine the extent to which the existing frameworks in the different disciplines, as mentioned above, facilitate or impede the mobilization of energy investment in the respective countries.

5. Considering that the South Asian countries are at different stages of power sector reforms, regulatory evolution and power market structure, it is necessary to carry out a SWOT and Gap analysis of each of these countries, across policy, legal, regulatory, technical, operational and monetary frameworks, in relation to energy investment. At the time of carrying out this, the already published works of the SARI/EI program, such as Regional Investment Framework and Guidelines for Promoting Investment in South Asian Power Sector and in Cross-Border Electricity Trade in South Asia may also be referred to.

6. Keeping into consideration the investment opportunities as enumerated above and the key challenges towards bringing out and implementing such energy investments as referred above, it is important to elaborate on how important the role of an energy investment forum in the region could be in tackling such challenges/obstacles and based on that, clearly define and substantiate the needs towards creating the stated forum - "South Asia Forum on Energy Investment (SAFEI)".

7. In order to gain from the experiences of similar institutions/forums operating internationally, we must undertake a comprehensive review and analysis of different successful models of the forums on energy investments, established in different regions across the globe. This may also include a comparative analysis of the different models with their pros and cons and relevance in the context of South Asia. The studies should clearly bring out the need for the evolution process towards the establishment of these forums, the role played by them in the complete value chain related to energy investment, right

from identifying the opportunities for investment up to the successful implementation of the same, the challenges faced towards facilitating the investments and the ways and means adopted to overcome such challenges. The case studies should also clearly show the institutional arrangement of the concerned forums, including the funding arrangement followed for their sustenance. The studies, to be carried out for a minimum of 4-5 such cases, should cover the varied aspects related to the investment forums, spread over wide ranging areas or regions. Furthermore, while selecting the case studies, the context of South Asia, in particular the environment related to investment and the objectives as elaborated earlier for the proposed forum for this region (SAFEI), and the modalities of development of cross border electricity projects or regional project, particularly involving the private sector, should be considered.

8. Review and analyze some of the existing forums, institutional mechanism, and industry associations, currently operating in the South Asian region and their roles, responsibilities, structure, functioning etc. from the perspective of the proposed forum SAFEI. Also, analyze and examine any linkage of the concerned forum(s) with the existing regional institutions in South Asia, such as SAARC, BIMSTEC, SAFIR, SASEC, etc. and the study should also look at the possibility of linking the proposed forum SAFEI with an existing institution in this region.

9. Based on the outcome of the study carried out so far in the earlier sections, clearly elaborate the objectives and functions that the proposed platform would fulfil in order to facilitate a supportive environment in the region towards attracting energy investment. Also, elaborate how these objectives and functions shall also be able to render support to the stakeholders towards tackling any issue(s) which may hamper the process of implementation of the investment.

10. While developing the strategy paper, it is to be taken into consideration that the roles to be played by the proposed forum "SAFEI", need to be in line with the objectives as earlier stated in this section. The strategy paper needs to clearly bring out the methodology and approach through which the forum would be able to justify to the stakeholders the importance of regional projects, particularly, the need to scale up deployment of advanced energy solutions and renewable energy investments. The paper should also elaborate on the way forward towards showcasing the pipeline of prospective projects in the region with the assigned priority and the approach to engage the private sector in energy investment. The strategy paper needs to highlight the manner in which the proposed forum should engage and gather support from policy makers, law making authorities, and other concerned entities/groups/stakeholders towards making the policies and regulatory provisions conducive towards the deployment and growth of investments, thereby enhancing the viability and de-risking of energy projects.

11. The aspects related to the mobilizing of finance as well as safe and reasonable returns on it shall also be duly covered in the strategy paper and the paper shall suggest the approach to be followed by the proposed forum towards underlining this point to the stakeholders. The paper shall also highlight how the forum shall disseminate to the stakeholders the details related to exploration and use of suitable/sustainable investment models based on international best practices, the cost-benefit analysis of the regional projects and options with regard to the payback period. In order to support investors towards financial closure of the projects, the forum shall try to attract the involvement and active support of the financing institutions towards mobilizing/bringing investment, viability gap funding in the region and shall also help to determine the likely sources of investment, whether these are expected to come from the respective governments, multilateral funding agencies, the private sector, or a combination of these. At the same time, the forum shall also clearly enumerate all possible challenges and risks to the investors, including political and country risk, construction/operational risk, policy and regulatory risk and off-taker risk (including payment risk) and their mitigation. The complete details of this aspect will be covered in the forum's operating framework.

12. Based on the review and analysis as deliberated above, the following specific frameworks shall be included as a part of the strategic paper:

    i. A suitable 'Institutional Mechanism' for the proposed forum "SAFEI" was found after analysing the various options. The mechanism should cover all the aspects related to the constitution and operation of the proposed forum, including its needs as well as objectives and functions, organizational structure including the membership criteria, institutional/legal framework, governance and operating mechanism, funding arrangement and any other support required towards its smooth functioning and self-sustenance. While proposing the institutional mechanism, the possibility of different options in respect of institutional, operating and financial arrangements may be explored and analysed along with their pros and cons, and the reason for the recommended option may clearly be underlined.

    ii. 'Model Investment Templates' for two of the regional energy investment opportunities as identified under para 2 and 3 above, of which one can be in the field of generation and other in the field of transmission. The templates should contain all the details relevant to the mobilization and reasonable return on the said investments, which are incidental to the identified objectives and functions of the proposed forum "SAFEI". The details shall include the process towards identification of the likely investment and the potential investors, the key policy, regulatory and technical requirements which shall have a bearing on the implementation of the proposed investments, the likely challenges and barriers which can be experienced while implementing the same, and the way forward towards their mitigation. The templates, as stated above, need to duly cover all the aspects related to finance, including identification of the likely sources for mobilization of the investment, safe and reasonable return on investment, options for payback, all the possible challenges and risks to the investors and the safeguards to be adopted towards de-risking the same. Basically, the objective of the templates is to provide comprehensive information to the prospective investors regarding the prevailing socio-economic environment, the opportunities and the likely challenges and the risks while venturing into such investments keeping the cost benefit analysis in view.

13. To come up with the draft strategy paper in a highly consultative and participative manner, in addition to the secondary research, interactions with relevant stakeholders across the region shall also be carried out, which shall include obtaining the views of the stakeholders through a multi-choice questionnaire and two roundtable discussions, to be followed by a regional conference towards the end of the exercise. The roundtable discussions and regional conference shall preferably be held in the different countries in the BBIN sub-region, in order to cover a wide range of participants.. During the roundtable discussions, key stakeholders from the government, industries, banking sector, business network, multilateral agencies, and any other relevant sectors will be invited to share their perspectives on the draft paper, including preliminary frameworks for the 'institutional mechanism' and 'model investment templates.'

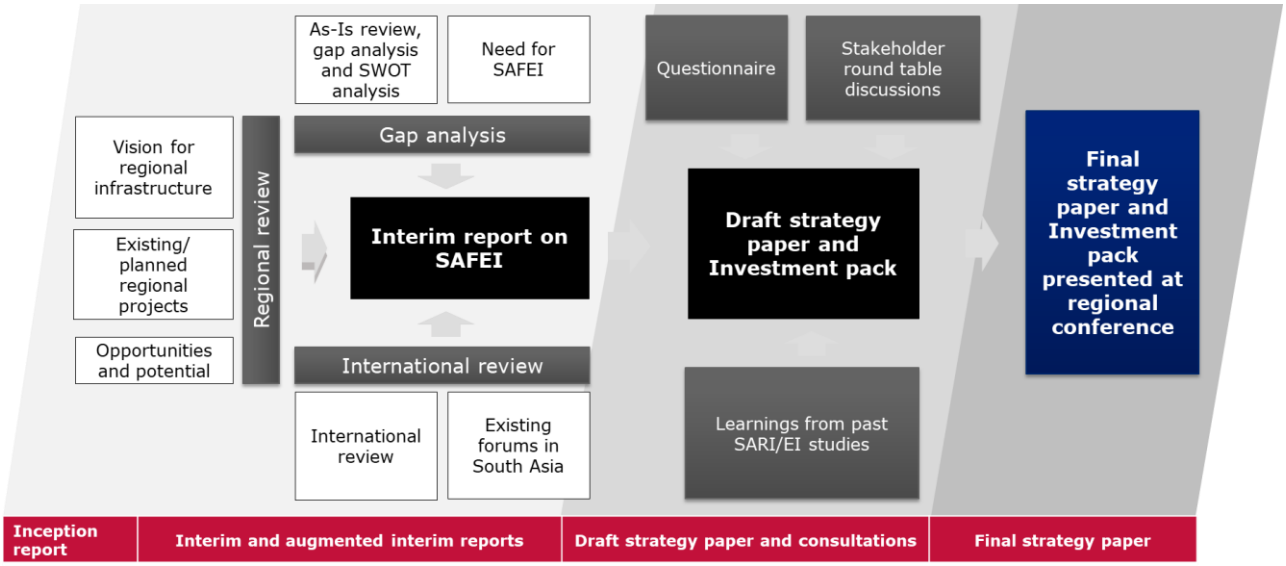
14. Based on the inputs received during the roundtables, the draft paper shall be revised and the finalized version of the strategy paper shall reflect the nuances, opinions and suggestions of the concerned parties/stakeholders on the proposed institutional mechanism for "South Asia Forum on Energy Investment (SAFEI)", as well as any feedback on the 'model investment templates'. The finalized version of the strategy paper along with the recommendations towards creating the institutional mechanism "South Asia Forum on Energy Investment (SAFEI)" and the updated 'model investment templates' shall be presented during the regional conference (referenced in para 13 above), involving all concerned stakeholders.

2.3 Approach for undertaking the study

The primary objective of this study is to enable the formation of a regional platform in the form of a forum for understanding the needs prospects and commercial aspects of various regional projects that would lead to equitable benefits for the member countries, investing partners and other stakeholders. Institutional mechanisms and model investment templates have been built based on the detailed analysis of various options that would provide comprehensive information to prospective investors with regard to the prevailing energy environment, the opportunities, policy and regulatory framework, likely challenges and the risks, including the mitigation measures that may facilitate such investments.

Considering the multi-stakeholder nature of the engagement, a collaborative and consultative approach is adopted, which is depicted below.

Figure 1: Detailed approach for undertaking the study



The study covers a detailed as-is review of the current demand-supply, generation and transmission infrastructure, and prevailing policies and regulations in the countries of South Asia. Cross border trade, upcoming generation plants and associated prices are also reviewed. In addition, future opportunities for sustainable solutions are also explored to meet the demand.

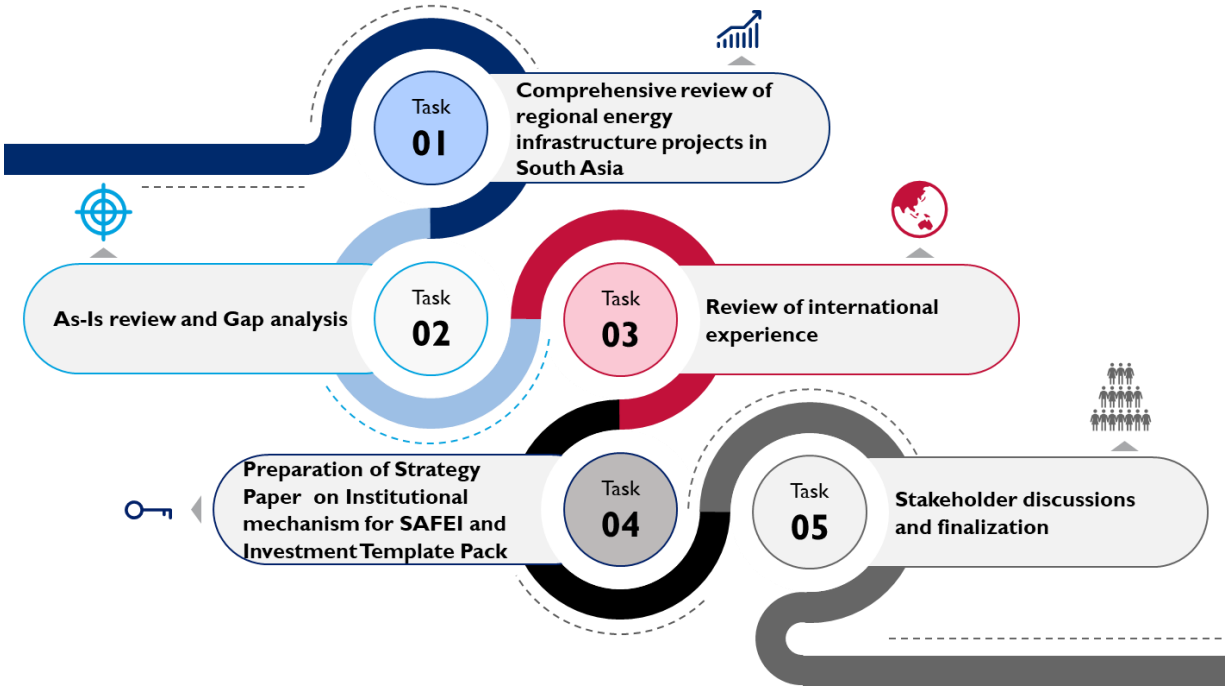
Thereafter, an international review is undertaken to identify key learnings and best practices from across the globe and Asia in particular. The study also covers SWOT and gap analysis for each of the South Asian countries. This was followed by a review of successful models to demonstrate as to how energy investment forums have been established across the globe.

Finally, in accordance with the key objectives of the study, an institutional mechanism for the South Asia Forum on Energy Investment(SAFEI) and a model investment pack consisting of country profiles and investment templates (separate for transmission and generation) are created.

2.4 Methodology adopted

Based on the approach mentioned earlier, the following key tasks are identified to be undertaken.

Figure 2: Key tasks for undertaking the assignment



The initial task (Task 1) relates to a comprehensive review of regional energy infrastructure projects in South Asia. Under this task, the focus was to review the potential regional energy infrastructure project opportunities and associated investments, considering the current and likely trends of power sector in the South Asian region, and to explore the potential for long term energy investments in the region. The findings of this task further enable to focus on the kind of projects to be considered and customized for the development of investment template under task 4.

Task 2 deals with as-is review and gap analysis of existing policy, legal, regulatory, technical, operational and monetary frameworks that are strategically relevant towards the energy investment in each of the South Asian countries, after undertaking a SWOT analysis. The analysis further builds the case for the potential need and benefits of having a South Asian Forum for Energy Investment (SAFEI).

Thereafter, task 3 deals with the review of international experience in regional infrastructure projects and regional investment forums. The objective of this task is to derive key learning from international experience that will be helpful in the development of the strategy paper and investment pack/template under task 4.

Based on the inputs and understanding gained in tasks 1 to 3, the study proceeds with the 'development of country profiles and investment template pack' followed by 'stakeholder consultations', which are tasks 4 and 5 respectively.

3 Review of regional energy infrastructure projects in South Asia

3.1 Introduction

A review of the opportunities and associated investment potential for regional energy infrastructure project are undertaken under this section. The analysis takes into account the current and likely trends of power sector in the South Asian region, and explores the potential for long term energy investments in the region. The analysis has been undertaken through four sub-tasks as explained below:

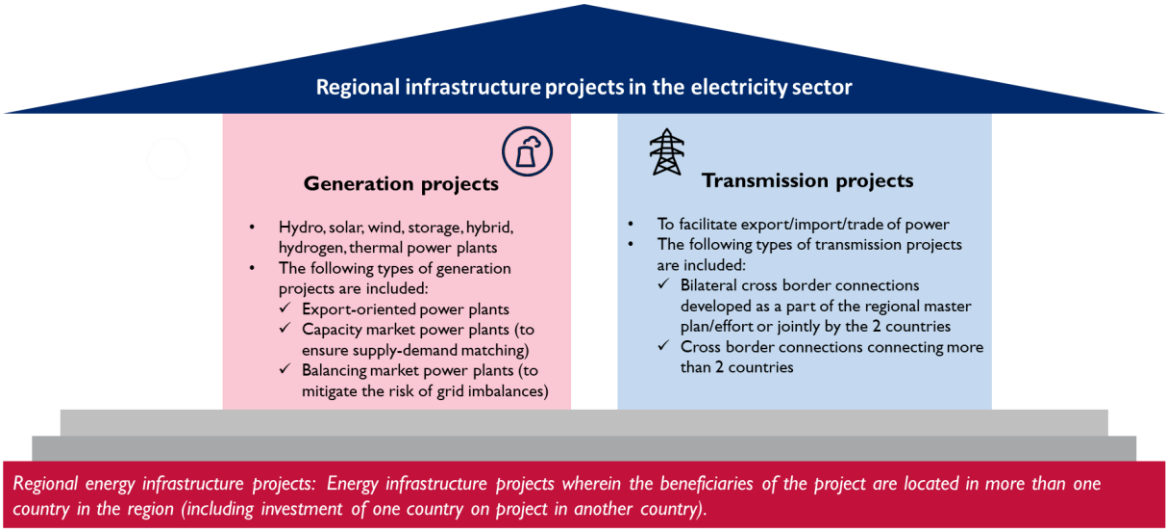
1. South Asia's vision for regional projects – Based on the review of regional agreements such as SAARC Framework Agreement of Energy Cooperation (Electricity)
2. Study of a country-level scenario of the power sector with respect to cross border trade. As part of the same, the following aspects have been studied:

Present as well as future trends of power sector	Electricity Demand-supply scenario . (for BBINS)	Prevailing prices, cross border exchanges	Government policies and guidelines	Diversity in demand and available resources

3. Existing and planned regional projects – Analysis of existing and planned regional energy projects, based on review of existing projects, signed project level agreements, national master plans covering regional projects, regional studies such as SAARC Energy Ring, and regional projects such as One Sun, One World, One Grid (OSOWOG).
4. Potential future opportunities for regional projects – Analysis of potential regional energy project opportunities, based on serial no. 1, 2 and 3 mentioned above, and review of potential regional cooperation opportunities, not tapped currently. This would also consider adoption of advanced energy technologies, supporting energy transition and reduction of emissions.

As a lot of focus in this section is dedicated to regional energy infrastructure projects, it becomes important to define such projects. For the purpose of this study, we may define the term "regional energy infrastructure project" as ***energy infrastructure projects wherein the beneficiaries of the project are located in more than one country in the region***. This could also include the investment of one country made on energy infrastructure projects in another country, and can also include transmission lines developed within a country that facilitates cross border electricity trade, such as the associated transmission system of the cross border lines.

Figure 3: Defining regional energy infrastructure projects



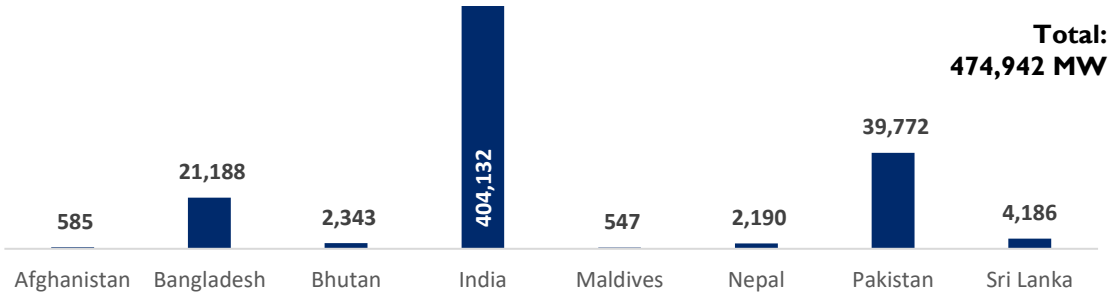
3.2 Power sector scenario in South Asia

The countries in South Asia vary substantially in their power system size, generation mix and demand profile. A combination of synergies created by the variations in overall resource mix, together with seasonal variations both in resource availability and demand, creates the enabling conditions for energy cooperation between the countries in the region, subject to their political and strategic priorities. While the regional energy trade in this region has been going on for the past several decades, the trend is expected to change further in future, with a substantial increase in regional energy trade. These aspects, along with their associated commercial considerations and the relevant policy environment, are explored in detail in this section.

3.2.1 Historical trend of power sector in SA region

The total installed capacity of electricity generation in the region is nearly 475 GW as of 2022. The three largest power systems in terms of installed capacity are India, Pakistan and Bangladesh respectively which constitute nearly 98% of the total installed capacity of the region.

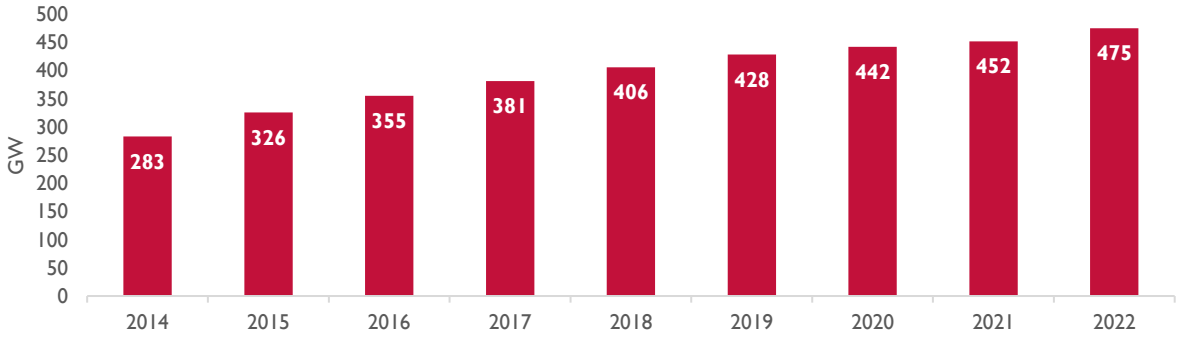
Figure 4: South Asia - installed capacity of Electricity Generation (2022)



* *India's capacity is not shown to scale. Information relates to FY22 for India, Nepal, and Bangladesh, FY21 for Pakistan and Sri Lanka and FY20 for Bhutan, Maldives and Afghanistan. In case of Bangladesh, there is an additional 3.2 GW of off-grid power generation capacity also. Also, 1.16 GW import capacity in Bangladesh is excluded to avoid double counting, as the same is already considered in India's capacity.*
Source: Statistical departments / utilities of respective countries. [13]

The installed electricity generation capacity in the region has seen a remarkable improvement, increasing from 283 GW in 2014 to 475 GW in 2022. The country wise details are provided in annexure.

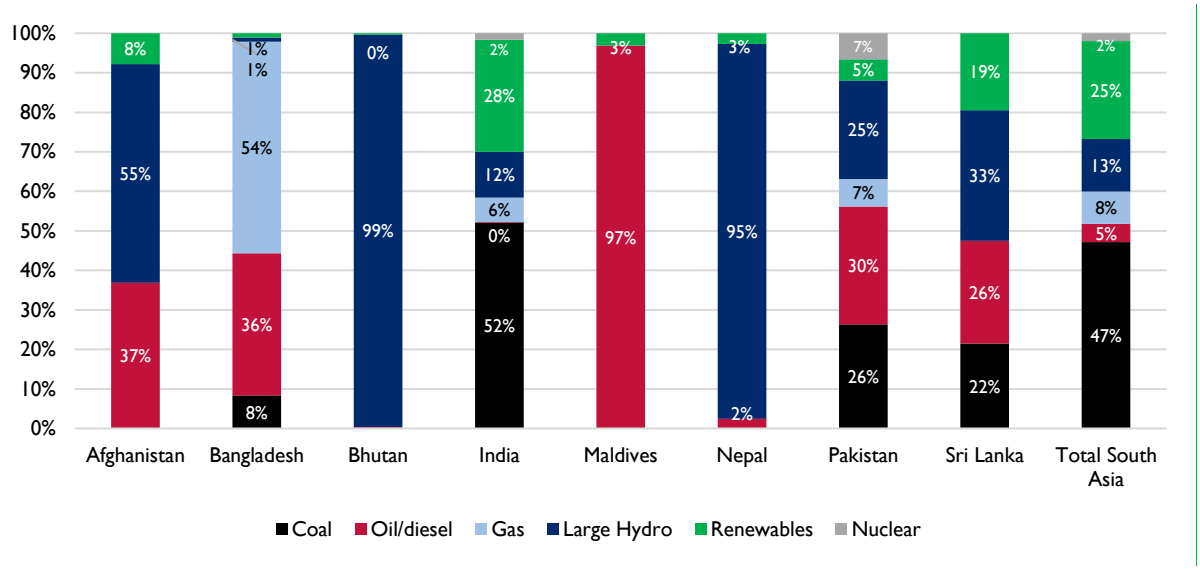
Figure 5: Trend of electricity generation capacity in South Asia



Source: Statistical departments / utilities of respective countries. [14]

Individual countries vary substantially in terms of their fuel mix. While Bhutan and Nepal are almost entirely dependent on hydropower, Maldives is predominantly a liquid fuel-based power generation system. Dependence on gas is highest in the case of Bangladesh, whereas dependence on coal is highest in the case of India. Despite these variations, due to India's large capacity, the overall fuel mix of South Asian electricity generation capacity closely tracks that of India.

Figure 6: South Asia - Electricity fuel mix of installed capacity (2022)



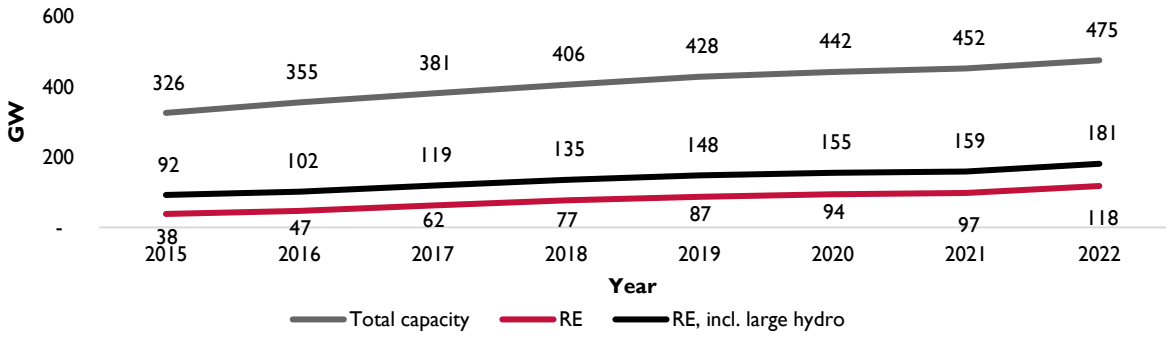
* *For Pakistan, most gas plants are dual fuel enabled, and therefore distinction of gas and oil plants may not be reflective of actual fuel use scenario*
Information relates to FY22 for India, Nepal, and Bangladesh, FY21 for Pakistan and Sri Lanka and FY20 for Bhutan, Maldives and Afghanistan.

In case of Bangladesh, there is an additional 3.2 GW of off-grid power generation capacity also. Also, 1.16 GW import capacity in Bangladesh is excluded to avoid double counting, as the same is already considered in India's capacity.

Source: Statistical departments / utilities of respective countries. [15]

The region has come a long way in improving the installed capacity of renewable energy power plants. Between FY15 and FY22, while total installed capacity has increased at a CAGR of 5.5% in the region, the CAGR of renewable energy capacity was 17.4% (10.1% when large hydro is also included). This, in a way, indicates the accelerated efforts of the South Asian countries to improve the share of sustainable energy in their respective electricity generation capacity mix.

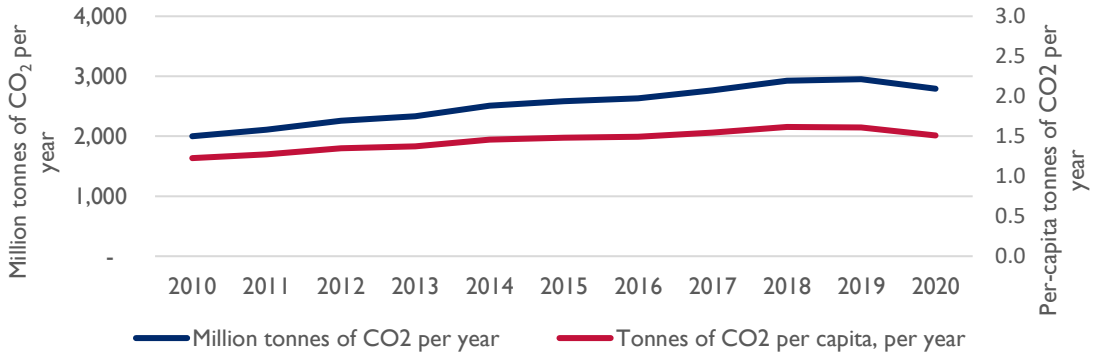
Figure 7: Growth of RE capacity vis-a-vis total installed capacity in South Asia



Information related to latest available data. Wherever data for FY/CY22 was not available (Afghanistan, Bhutan, Maldives, Pakistan and Sri Lanka), previous year's data has been continued.
Source: Statistical departments / utilities of respective countries[16]

The region's carbon emissions have been continuing to increase both in terms of total CO_2 emissions and per-capita emissions. Between 2010 and 2019, emissions have increased at a CAGR of 4.1% and per-capita emissions have increased at a CAGR of 2.9%. Even though the per-capita emission is still lower than developed countries by scales of magnitude (USA – 15.5, UK – 5.5 as compared to 1.6 in South Asia), the gradual year on year increase may still be a point to be tackled through appropriate the policy decisions. It is a welcome trend that emissions have decreased in 2020 as compared to 2019 levels as shown at Figure 8 (page 22). Whether this is an exception due to the pandemic or a sustaining trend will be answered in the future years.

Figure 8: Total and per-capita carbon emissions in the region



Per-capita emissions of the region derived from the country wise total and per-capita emissions of the countries in the region.

Source: European Commission's Emissions Database for Global Atmospheric Research (EDGAR)[17]

Of the total emissions in the region, the majority (44% in 2020) is from power sector.[18] Thus, it is imperative that any policy initiative for reduction in emissions will have the power sector as one of the key areas of focus.

The South Asian countries have adopted targets under their Nationally Determined Contribution (NDC) under the UN Framework Convention for Climate Change (UNFCC) in terms of per-capita reduction, or reduction linked to economic activity. The NDC targets of South Asian countries are summarized below.

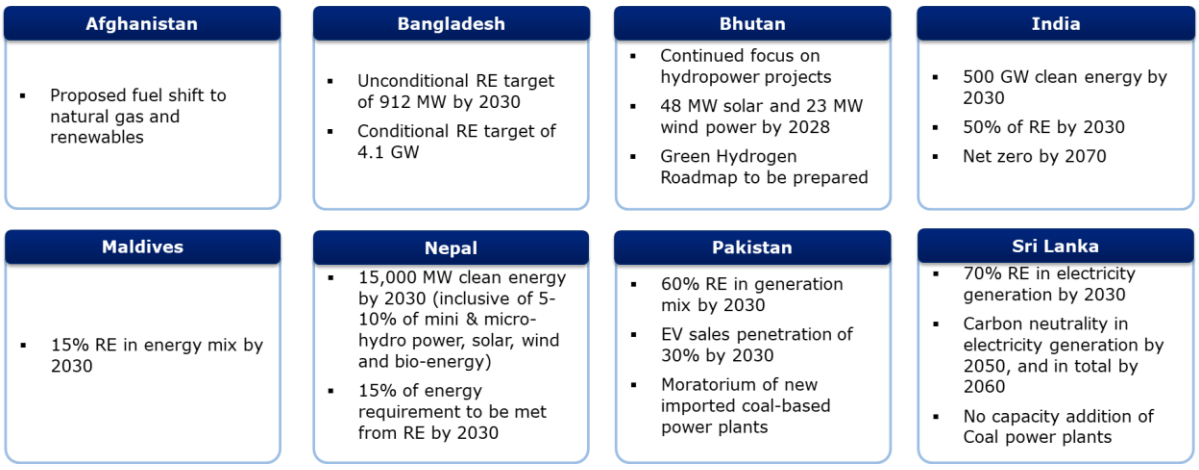
Table 1: Country wise NDC targets

Country	NDC target
Afghanistan	13.6% reduction in GHG emissions by 2030 compared to a business as usual (BAU) 2030 scenario, conditional on external support
Bangladesh	GHG reduction target of 15% (Unconditional – 10%, conditional upon external support – 5%) from a Business as Usual (BAU) level by 2030
Bhutan	Targets to remain carbon neutral where emission of greenhouse gases will not exceed carbon sequestration by the forests, which is estimated at 6.3 million tons of CO_2
India	Reduce the emissions intensity of its GDP by 33 to 35 per cent by 2030 from 2005 level
Maldives	Reduce unconditionally 10% of its Greenhouse Gases (below BAU) for the year 2030, which could be even 24% with external support
Pakistan	Reduce up to 20% of its 2030 projected GHG emissions subject to availability of international grants to meet the total abatement cost
Nepal	15% energy of energy supplied from clean energy sources. 5000 MW unconditional and 15000 MW conditional clean energy generation target for 2030.
Sri Lanka	Reduce the GHG emissions against BAU scenario by 20% in the energy sector (4% unconditionally and 16% conditionally) and by 10% in other sectors (transport, industry, forests and waste) by 3% unconditionally and 7% conditionally by 2030

Source: NDC of respective countries[19]

The NDCs also result in corresponding commitments with respect to power sector. In addition to the NDC, some countries adopted revised targets for energy sector decarbonisation at the recent COP26 summit. A summary of the energy transition plans adopted by the South Asian countries is provided below.

Figure 9: Energy transition plans based on NDC and COP26 commitments of South Asian countries



Source: *NDC and COP26 commitments*[20]

3.2.2 Future trend and demand-supply scenario in BBINS

The countries of the South Asian region had a peak electricity demand varying from 435 MW in Bhutan to 190,198 MW in India in the year 2021. The estimated future demand and energy requirements of countries in the Bangladesh-Bhutan-India-Nepal-Sri Lanka (BBINS) sub-region are summarized below, based on the official country plans / reports.

- Bangladesh had a peak demand of 14,500 MW and an energy requirement of 80,062 MU in 2021 as per the BPDB annual report.[21] Revised PSMP 2016 report projects that Bangladesh will have 37,024 MW of demand in 2030 which is 2.5 times the demand in 2021.This further increases to around 5 times in 2040 with a peak demand of 68,708 MW.[22]
- Bhutan had a peak demand of 435 MW in 2021 and as per projections made in the National Transmission Grid Master Plan 2018, the peak demand in 2030 will be 880 MW and in 2040 it will be 1,150 MW which are double and 2.5 times the peak demand in 2021 respectively.[23]
- India had a peak demand of 1,90,198 MW in 2021 with an energy requirement of 1,399,360 MU. Considering the CAGR from the 19th Electric Power Survey (EPS) Report, it is estimated that India will have a peak demand of 3,39,925 MW in 2030 and 4,93,866 MW in 2040.[24]
- Nepal had a peak demand of 1,482 MW in 2021 with an energy requirement of 8,960 MU. As per NEA, it is projected that by 2030 the peak demand would reach 6,848 MW and further it will increase to 18,137 MW in 2040. [25]
- Sri Lanka had a peak demand of 2802 MW in 2021.[26] As per the CEB Long Term Generation Plan 2022-2041, published in Oct 2021, it is estimated that Sri Lanka's peak demand would reach 4,282 MW in 2030 and 7,287 MW by 2040 with an annual energy requirement of 26,035 MU and 42,046 MU respectively.[27]

Table 2: Electricity demand and energy requirement trend of BBINS countries

Peak Demand (MW)					
Year	Bangladesh	Bhutan	India	Nepal	Sri Lanka
2021	14,500	435	190,198	1,482	2802
2030	37,024	880	339,925	6,848	4,282
2040	68,708	1,150	493,866	18,137	7,287
Installed Capacity (MW)					

Year	Bangladesh	Bhutan	India	Nepal	Sri Lanka	**Total**
2021	22,031	2343	382,151	1333	4217	412,075
2030	53,262	9378	817,243	11508	9784	901.175
2040	77,488	16,607	NA	NA	16,521	NA
Energy Requirement (MU)						
Year	Bangladesh	Bhutan	India	Nepal	Sri Lanka	Total
2021	80,062	2,894	1,399,360	8,960	16,716	1,508,992
2030	209,570	5,276	2,324,936	31,196	26,035	2,597,013
2040	395,221	6,405	3,358,983	82,621	42,046	3,885,276

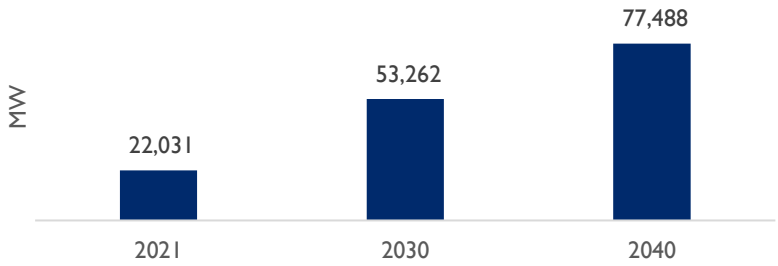
* NA – Not Available.

Considering the above, the BBINS countries would require total energy of 2,597,013 MUs in 2030 and 3,885,276 MUs in 2040.

The supply scenario and supply mix vary significantly among the South Asian countries. The estimated future supply capacities of countries in the Bangladesh-Bhutan-India-Nepal-Sri Lanka (BBINS) sub-region are summarized below, based on the official country plans and reports.

- As per Bangladesh's 'Revisiting Power System Master Plan (PSMP) 2016' the generation capacity has been estimated to be 53,262 MW and 77,488 MW in 2030 and 2040 respectively, which indicates an increase of ~2.4 and 3.5 times respectively from 2021 as shown below.

Figure 10: Generation capacity forecasts of Bangladesh

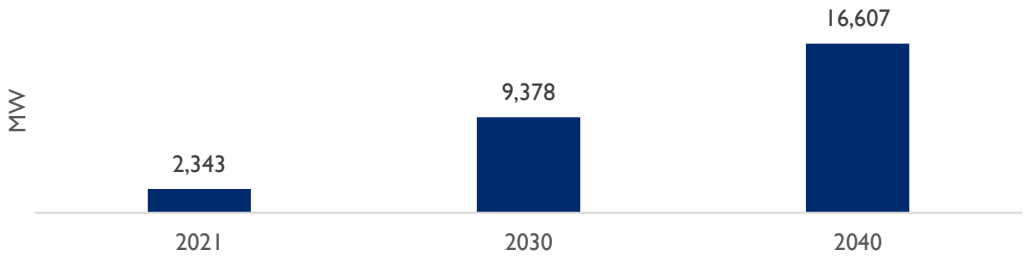


** This is inclusive of imports. Source: BDPB Annual Report FY 2021, 'Revisiting Power System Master Plan (PSMP) 2016'(2018)*

Generation from liquid fuel is expected to decrease in the future and imports are expected to increase. Some of the power requirements are being met through power imports from India. With a growing economy and rising population, the need for more power will only increase. The country also intends to import hydropower from its neighbouring countries to meet its energy transition goals[28].

- Bhutan's generation is primarily from hydropower plants. Its installed capacity in 2021 was 2,343 MW.[29] As per the National Transmission Grid Master Plan 2018, the generation capacity has been estimated to reach 16,607 MW by 2040 as shown below. In comparison, peak demand is projected to be only 1150 MW, which is only 7% of the total installed capacity. Thus, Bhutan has planned its system to rely heavily on power exports, utilizing its hydropower capacity.[30]

Figure 11: Generation capacity forecasts of Bhutan



Source: National Transmission Grid Master Plan 2018[31]

In the 2030 time frame, three Hydro Electric Plants (HEP) (Sankosh, Dorjilung, Nyera Amari I&II (integrated) have been considered. In the 2035 scenario, four HEPs (Bunakha, Wangchhu, Chamkharchhu-I and Kurigongri) are expected to be added. In the 2040 timeframe, five HEPs (Gongri, Khomachhu, Panbang, Chamkharchhu II & IV) are envisaged to be added. For 2040 and beyond, all the techno-economically viable projects are considered, whereby the country will have a total installed capacity of 23,833 MW from 73 hydropower potential sites identified in different basins.

- India has ~404 GW of installed capacity in July 2022[32]. The Central Electricity Authority's (CEA's) report on the Optimal Generation Capacity Mix for 2029-30 estimates that the likely installed capacity by the end of 2029-30 will be 817 GW. Solar will be leading the way with a 34.28 per cent share, followed by coal plus lignite (32.66 per cent), wind (17 per cent), and hydro[1] (7.46 per cent).

Figure 12: Generation capacity forecasts for India

Source: Report on Optimal Generation Capacity Mix for 2029-30 (CEA)[33]

As per the projections, in year 2029-30, the peak demand is expected to be 340 GW which will be just 42% of the installed capacity.

- In 2022, the installed capacity of Nepal was ~2190 MW[34]. Hydropower accounted for 95 percent of total capacity, followed by solar (3 percent) and thermal (2 percent).[35] According to NEA's own analysis (2022), Nepal will not be required to import during any of the months from 2030 onwards. The figure below depicts installed capacity of Nepal in 2030, as estimated by NEA, compared to the capacity achieved in 2022. *(This is an evolving scenario. Possibility of zero imports in a year being met earlier than 2030, can also not be ruled out).*

[1] *Including hydro imports of 5,856 MW*

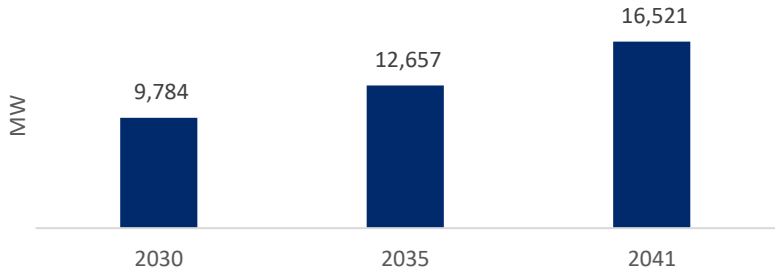
Figure 13: Generation capacity forecasts for Nepal

Source: NEA's presentation made to Development Partners (16th March 2022)

Survey and Construction Licenses have already been issued by Department of Electricity Development (DoED) for approximately 23,772 MW of generation projects, of which 4,903 MW are currently in the construction/pre-construction stage. Many of the projects have already exceeded their scheduled completion timeline, and this makes it difficult to accurately determine the future availability of power. A significant amount of the already licensed capacity (~10,398 MW) is not yet contracted for.[36]

- The total installed capacity in Sri Lanka was 4,186 MW in 2021, which consisted of 52 percent of hydro and renewable energy sources and 48 percent of fossil fuels.[37] Complying with the perceived government policy of achieving 70 percent low carbon energy mix by 2030 and improving upon it beyond 2030, the power generation capacity mix in 2041 has been estimated to be other renewable energy (i.e. except hydro)-40 percent, natural gas-34 percent, coal-16 percent, large hydro-10 percent. Total installed capacities projected for 2030, 2035 and 2041 are 9,784 MW, 12,657 MW and 16,521 MW respectively, as shown below. [38]

Figure 14: Generation capacity forecasts of Sri Lanka



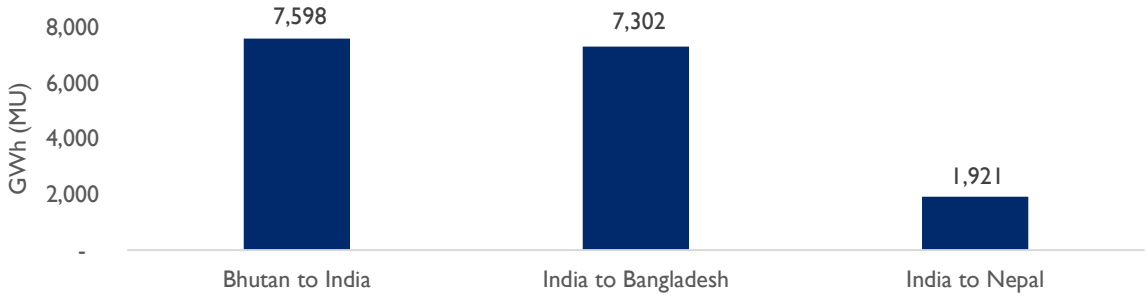
Source: Long Term Generation Expansion Plan (2022-2041) (Ceylon Electricity Board)[39]

Catering to such a large energy requirement across countries in BBINS will require regional projects and enhanced cross border trade, quantum of which will depend on the demand forecasting as also detailed analysis of load curve of each country. This also brings to focus, the aspect of potential synergies in demand and resource diversities that can be leveraged in the region.

3.2.3 Prevailing prices, cross border exchanges and their likely trends in future

South Asia has been exchanging power through bilateral trade with short, medium and long term power purchase agreements. Bilateral trade is based on MoUs, agreements and treaties amongst the SA countries. Recently, cross border trade between India-Nepal and India-Bhutan has also been facilitated through Indian power exchanges. Between April 2021 – March 2022, the net CBET among BBINS countries was 16,821 GWh.

Figure 15: Net cross border exchanges in BBINS, 2021



Source: POSOCO[40]

Currently maximum allocated interconnection capacity is between India and Bhutan (2,488 MW), followed by India – Bangladesh (1200 MW), and India - Nepal (1057 MW). [41]

India-Bangladesh

CBET between India and Bangladesh started under the Government to Government (G2G) mode, followed by competitive bidding undertaken by BPDB, in which suppliers such as Damodar Valley Corporation (DVC), Sembcorb, and Meenakshi Thermal Power Plant were selected.

Table 3: Details of India-Bangladesh CBET transactions

Sl no.	Transaction detail	Quantum (MW)	Model	Tariff range during 2018 – 2021 (INR)
1	NTPC TO BPDB	250	G2G	2-3
2	DVC TO BPDB	300	Tender	3-5
3	Sembcorp/Meenakshi to BPDB	200	Tender	4-7
4	Sembcorp to BPDB	250	Tender	4-7
5	Tripura State Electricity Corporation Limited (TSECL) to BPDB	160(+20%)	Bilateral	5-8

Source: SARI/EI[42]

As per BPDB's annual report for FY21, Bangladesh imported power from India at a price of 5.8 Tk/kWh in FY21 which is less than the price at which it imported from India in FY20 at 6.01 Tk/kWh.

India-Bhutan

India-Bhutan power trade is centred primarily around the export of power from HPPs in Bhutan, which is covered under various intergovernmental MoUs and agreements. PTC India acts as the trader in between, except in the case of the Dagachhu power plant, for which the corresponding trader is Tata Power Trading Company. The power trade is also under long term arrangements in case of HPPs other than Dagachhu HPP, which has a 5 year PPA with WBSEDCL. Bhutan has started to import power from the Indian Energy Exchange (IEX) from 2022 through PTC India.

In the case of trade between India and Bhutan, agreements are signed with long term and medium term PPAs with agreed tariffs or tariffs determined as per CERC norms. For example, as per an agreement made with PTC India and West Bengal State Electricity Distribution Company Ltd. (WBSEDCL), power is taken from Mangdechhu HEP for a tenure of 35 years starting from 2019 at a tariff of 4.12 INR/kWh for first 5 years, 4.54 INR/kWh for next 5 years, followed by 4.99 INR/kWh, 5.49 INR/kWh, 5.76 INR/kWh, 6.05 INR/kWh and 6.35 INR/kWh each for consecutive 5 years.[43] Another example is the PPA between WBSEDCL and Tata Power

Trading Company for supply of 126 MW power from Dagachhu HPP in Bhutan, for a period of five years, with a tariff starting at 3.4 INR/kWh in 2019, and reaching 3.8 INR/kWh in 2023.[44]

Table 4: Details of India-Bhutan CBET transactions

Sl no.	HPP	Tariff (INR/kWh)
1	Chukka	2.55
2	Kurichu	2.12
3	Tala	2.12
4	Mangdhechu	4.12 (initial 5 years)
5	Dagachhu HPP	3.4 (2019) to 3.8 (2023)

Source: CEA[45]

It may be noted that the first three projects above have a 60% grant component, and fourth project has a 30% grant component from Govt. of India, which also plays a key role in ensuring lower tariffs.

India-Nepal

Nepal transacts power from India through both bilateral and power exchange routes. The power exchange route is gaining momentum, considering the seasonal and demand variations across India and Nepal. The major generators of Nepal that sell power to India are Trishuli Hydropower Station (24 MW), and Devighat Hydropower Station (15 MW). NEA has been accorded approval of export of 363 MW power by the Designated Authority of India under DAM category of Power Exchange.

The larger volume of power trade occurring through 400 KV Dhalkebar-Muzzaffarpur line is through short term/medium term agreement with traders in India (PTC and NVVN). For example, an agreement was signed between India and Nepal for exchange of power trading through Muzaffarpur (Bihar), India – Dhalkebar (Nepal) at a tariff of 3.44 Rs/kWh.[46] [47] There are also bilateral price negotiation mechanisms for the power exchanged between Nepal and state utilities in India at the Bihar and Uttar Pradesh borders.

Table 5: Tariff for cross border energy exchange

Countries	Power plant / PPA	Tariff	Tariff in US$/kWh
India – Bangladesh	Average of all imports	5.8 Tk/kWh or 5.162 INR/kWh (Mix of G2G and bilateral PPAs, both medium term and long term)	0.067
Bhutan - India	Mangdhechu HPP	4.12 INR/kWh (For initial 5 years, as part of a 35 year PPA)	0.054
Bhutan – India	Dagachhu HPP	3.4 INR/kWh in 2019 to 3,8 INR/kWh in 2023 (Five year PPA)	0.044 – 0.049
India – Nepal	Multiple PPAs, including import from power exchange	4.16 to 12 INR/kWh[48]	0.054 – 0.156

Conversion factor for INR to USD used is 0.013

CBET in South Asia, outside BBIN countries

With Central Asia-South Asia (CASA) 1000 project Pakistan and Afghanistan will be interconnected with Central Asian countries. The $1.2 billion CASA-1000 project will bring 1300 megawatts (MW) of seasonal power from Tajikistan and the Kyrgyz Republic to Afghanistan and Pakistan. It will be a major new source of revenue in the regional electricity market, transmitting 4.6 billion kilowatt hours (kWh)/year.[49] The interconnection between India - Sri Lanka are yet to be established, though studies have been undertaken. Maldives would not be able to take part in cross border trading of electricity due to its geographical separation from other South Asian countries.

Likely trends in CBET

For the future, the following are the likely trends in CBET:

India – Bangladesh

The initial increase in CBET between India-Bangladesh from existing levels is linked to the anticipated commissioning and commercial operation commencement of Adani Power's 1600 MW Godda thermal power plant in Jharkhand. Bangladesh Power Development Board (BPDB) has already tied up 1496 MW of power from this plant, under a 25 year PPA, with power evacuation to Bangladesh border through a dedicated 400 kV Double Circuit (DC) transmission line.

Any further increase in CBET will also be dependent on commissioning of new cross border lines. With the anticipated signing of PPA of 500 MW between BPDB and GMR's Upper Karnali HPP, an additional increase in quantum of power exchange can be anticipated at India-Bangladesh interface, once the supply commences.

Nepal – India

The 900 MW Arun-III HPP in Nepal is expected to be commissioned in 2024, wherein at least 78.1% of the power will be exported to India, Once GMR's Upper Karnali HPP is constructed and commissioned, an additional 292 MW of power is expected to be exported to India (excluding the 500 MW to Bangladesh which will also be exported through India).

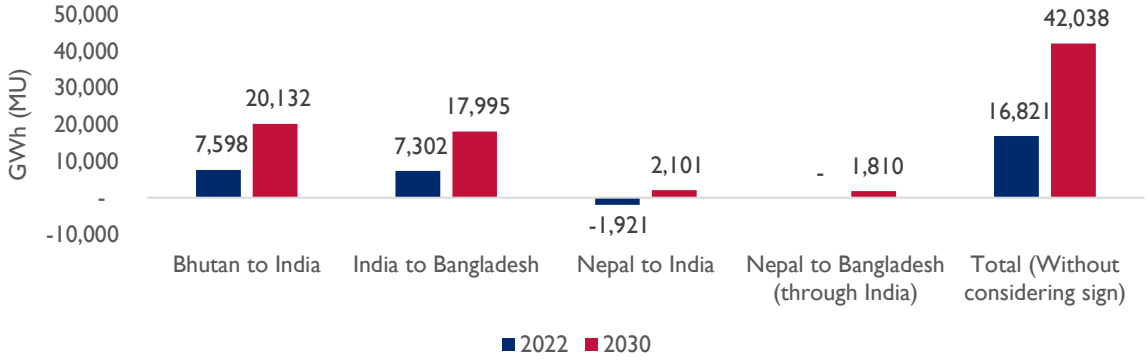
Nepal Electricity Authority (NEA) has projected itself to become a power surplus for round-the-year power by 2030.[50]Since NEA's own generation capacity is also expected to increase, there will be increase in the power exported from Nepal to India.

Nepal's Transmission System Development Plan has proposed a total of five new 400 KV cross border interconnections with India, to export Nepal's surplus hydropower capacity to India. These are Butwal-Gorakhpur, Attariya-Bareili, Dodoshara-Bareili, Phulbari-Lucknow or Inaurwa-Purnea.[51]

Bhutan - India

Punatsangchhu I and II (2220 MW) HEP transmission and associated infrastructure are now under construction, wherein the surplus power after meeting domestic demand will be exported to India. Another 600 MW Kholungchu HPP is also expected to start construction soon. The Umbrella Agreement agreed between Bhutan and India calls for the development of a 10,000 MW export capacity. The commissioning of these projects – 1496 MW Godda TPP, 900 MW Arun-III, 900 MW Upper Karnali, 2220 MW Punatsangchhu HPP and 600 MW Kholungchu HPP itself, if assumed to be completed by 2030, is expected to result in the following increase in CBET volumes, which is a 150% increase (16,821 MU to 42,038 MU).

Figure 16: Future trend estimate of CBET, 2030



Source: SARI/EI analysis considering the identified projects (1496 MW Godda TPP, 900 MW Arun-III, 900 MW Upper Karnali and 2220 MW Punatsangchhu HPP and 600 MW Kholungchu HPP), design energy, PPA allocations, and loss assumptions

It may be noted that even the above estimate is conservative as it does not consider NEA's own additional new surplus capacity, and potential India-Sri Lanka interconnection.

Government of Bhutan has planned for its transmission grid expansion leading up to 2040 and beyond as part of its National Transmission Grid Master Plan 2018. It is focused on facilitating the development of its rich hydro resources. The plan identified various additional transmission evacuation lines till 2035, such as:

- Two numbers of 400kV D/C transmission line from Punatsangchu HEP-I to Lhamoizingkha (Bhutan border);
- 400kV D/C Twin Moose PHEP-II –Lhamoizingkha (Bhutan border);
- 400kV, 1xD/C Quad Moose line, Yangbari – Rangia/Rowta (Bhutan portion); and
- 400kV, 1xD/C Quad Moose line, Jigmeling to Alipurduar.[52]

The future price of these CBET exchanges is difficult to estimate, as in many cases project cost, and PPA arrangements are not yet finalized. However, there are a few estimates that are available:

- For Kholungchu HPP, the estimated first year tariff at bus bar is 4.06 Nu/kWh[53]

3.2.4 Diversity in respect of the demand and available resources

Regional energy cooperation among South Asian countries would offer enhanced energy security and flexibility to the countries due to synergies on account of demand and resource diversities. Intra-day demand of the countries varies due to the difference in the time meridian and the overall monthly peak demand of countries will largely be dependent upon the seasonal variation. The demand variation can be leveraged by countries by supplying surplus available power from a country having low demand to a power deficit country having high demand at that point in time. Similarly, there is a diversity of generation sources observed from country to country. The diversity is due to the available vis-a-vis potential of resources in the respective countries. A country with an abundance of hydro or renewable sources could help in meeting the NDC targets of neighbouring countries by supplying surplus power from the sources, subject to cost economics.

Diversity in demand

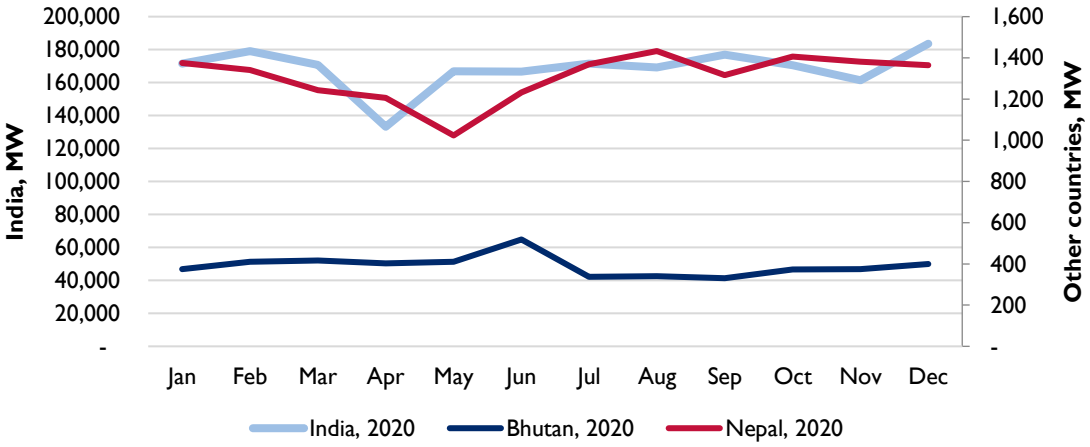
Diversity in demand occurs on account of both intra-day and seasonal variations. Daily demand variation in the countries would largely depend upon the difference in the time zones. The figure below shows the difference in time zones of South Asian countries. Thus, during the time of peak demand in one country in the region, it may not necessarily be the time of peak demand in some of the other countries in South Asia. This offers the possibility of meeting peak demand with less peak generation capacity coupled with CBET, instead of each country trying to meet peak demand entirely on its own.

Figure 17: Variation in time zones across South Asia

Pakistan	Maldives	Sri Lanka	India	Nepal	Bangladesh	Bhutan
GMT + 5:00	GMT + 5:00	GMT + 5:30	GMT + 5:30	GMT + 5:45	GMT + 6:00	GMT + 6:00

Seasonal variation in demand also plays an important role in determining the cross-border exchanges between the countries. However, the peak demand season in one country may not necessarily be the peak demand season in other countries in the region. The seasonal variation would supplement the need for regional infrastructure projects in order to ensure grid security.

Figure 18: Seasonal load variations



Note: Figure shown for Bhutan is sum of all substation loading. *Source: BPSO, CEA, NEA*[54]

Diversity in resource

It is in the interest of energy security, reliability and flexibility to have a country's power produced from multiple sources/fuels. The presence of an inter-country regional grid allows the countries to access power even from resources that it lacks domestically in an optimum manner

The South Asian region has abundant natural resources and provides a significant opportunity to benefit from regional energy cooperation for its countries. Bulk of the hydropower potential is in India, Pakistan, Nepal and Bhutan. India also has the highest coal reserves in the region, and the largest renewable energy (solar and wind) potential. India, Bangladesh and Pakistan have substantial gas reserves also. There is also the case of Sri Lanka, where exploration activities are underway for oil and gas fields, and therefore there could be discoveries of proven reserves in the future.

Table 6: Energy resource potential in South Asia

Resources / **Country**	**Coal** million Tonnes	**Oil** million Tonnes	**Gas** Trillion Cubic Feet	**Hydro** GW	**Renewable*** GW
Afghanistan	400	45	4	23	68
Bangladesh	3,089	8	12	-	4
Bhutan	1	-	-	41	13
India	372,256	619	49	145	1445
Maldives	-	-	-	-	#
Nepal	<1	-	-	83	5

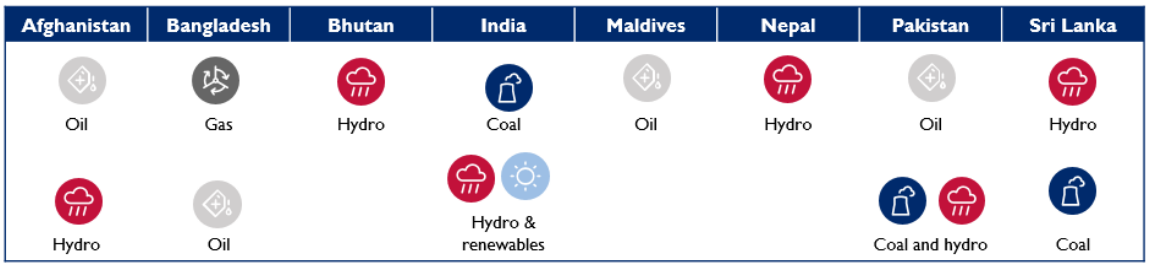
Resources / Country	Coal million Tonnes	Oil million Tonnes	Gas Trillion Cubic Feet	Hydro GW	Renewable* GW
Pakistan	185,175	2	14	42	340
Sri Lanka	-	-	-	2	42

*- Either resource is nil or value less than 0.5; # - No studies available on potential *Solar and Wind*
The information relates to multiple sources for the same country, which were not necessarily compiled in the same year

Source: BP Statistical Review, SAARC, Bangladesh Ministry of Petroleum, Investment Board of Nepal, Bhutan Statistical Bureau, Asian Development Bank, Central Electricity Authority, Bangladesh Power Division, Government of Myanmar, NIWE, India Ministry of Power, India Ministry of Statistics and Program Implementation [55]

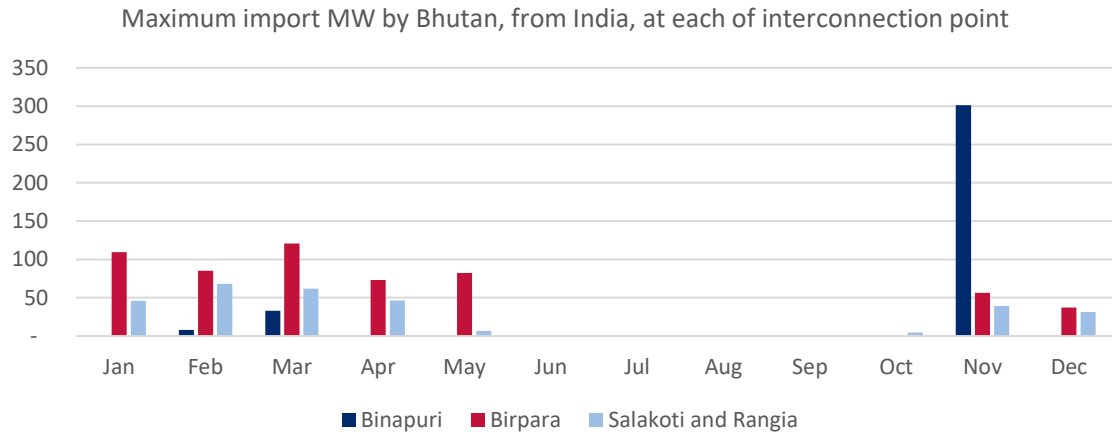
The following table describes the major generating sources in each country. It gives a clear picture of the diversity of generation sources used in the countries. A wide variety in resource mix can be seen, which is thereby assisting in regional energy trade such as the export of Bhutan's excess hydropower to India.

Figure 19: Diversity in resources



Regional energy cooperation also allows countries to tackle issues related to the seasonality of resource availability. For example, considering the case of Bhutan and India, it can be seen that though Bhutan is a net exporter of power to India, there is some import of power in the dry season, when many of the Himalayan fed rivers freeze, leading to a decrease in generation. This is illustrated in the following figure.

Figure 20: Case study on Energy exchange between India and Bhutan in 2020



Source BPSO[56]

3.2.5 Government policies and guidelines and other conditions with impact on CBET

South Asian countries have policies and laws that enable the environment for energy exchange with the neighbouring nations. Some of the key policies impacting CBET are summarized below.

Table 7: key policies and laws impacting CBET

Country	Act/Policy
Afghanistan	▪ **Power Services Regulation Act, 2016:** The Act was approved on 26th July 2015 by the Cabinet of Government of Afghanistan. It provides provision for issuance of license for production, import, export, transmission and distribution of electricity. The law regulates electricity affairs throughout the country
Bangladesh	▪ **Quick enhancement of Electricity and Energy supply (Special provisions) Act,2010:** The Act made special provisions for facilitating urgent measures to ensure the uninterrupted supply of electricity and energy to meet demand. The Act provides provision for import of electricity or energy from neighbouring countries or abroad and implementation of any transmission or distribution infrastructure required to support such imports.
Bhutan	▪ **Electricity Act, 2001 and BEA Guideline for processing Licenses, 2011**: The act and guidelines provide provision for export or import of electricity and describes procedure processing applications and granting licenses for the same. ▪ **2006 Agreement on Cooperation in Hydropower and the Protocol to the 2006 agreement signed in March 2009:** The cooperation signed between India and Bhutan to develop minimum of 10,000 MW of Hydropower and import the surplus electricity from this to India.
India	▪ **Procedure for approval and facilitating import/export (cross border) of electricity, 2021:** Detailed procedures relating to approval for import/export of electricity, and construction of cross border transmission lines. ▪ **Guidelines on Import/Export of Electricity, 2018 and Central Electricity Regulatory Commission (Cross Border Trade of Electricity) regulations, 2019:** The guidelines prescribed qualifying criteria, tariff, transmission systems, scheduling and accounting, grid operation, safety, and dispute resolution. The guidelines provided provisions for energy exchange through bilateral agreements and through power exchanges.
Maldives	No Act for regional cooperation exists due to geographical location which is a barrier to any transmission interconnection with other grids.
Nepal	As per Electricity Act, 1992, licensees can distribute electricity by importing power with prior approval of the Government of Nepal (GoN); and can export power, after entering into agreement with GoN. Hydropower Development Policy, 2001 encourages the export of electricity. As per the Policy, export-oriented projects shall be identified and private sector participation is recommended for such projects. Export of electricity will be permitted through an agreement with GoN. Bilateral agreements signed between Nepal and India from the basis of CBET in Nepal such as the Agreement on electric power trade, cross-border transmission interconnection and grid connectivity signed in October 2014. Nepal imports and exports power in various modes: ▪ River Treaties: Koshi Treaty, Gandak Treaty and Mahakali Treaty ▪ Border Town Exchange Program ▪ Commercial Power trading with PTC/ NVVN ▪ Trade through power exchanges in India
Pakistan	**NEPRA Import of power regulations, December 2017:** The regulation provides provision for import of power and describes the procedure for import power from foreign

Country	Act/Policy
	countries and from generation facilities located in Azad Jammu & Kashmir, Gilgit Baltistan and territories. It provides provision for determination of rate of import of power, execution of PPA and its amendment.
Sri Lanka	No Act for cross border electricity trade exists due to absence of transmission interconnection with grids of other country.

3.3 South Asia's vision towards regional energy infrastructure projects

In addition to bilateral energy cooperation among countries in the region, there have also been a few efforts towards multilateral regional energy cooperation. These were mostly undertaken under various activities of South Asian Association for Regional Energy Cooperation (SAARC).

SAARC's focus on the energy sector can be traced as far back as 2000, when a Technical Committee on Energy was set up. A focused effort on regional cooperation in energy sector was initiated with the Dhaka Declaration of the13th SAARC summit in 2005, which reaffirmed the commitment of SAARC Member States to regional cooperation and trade in energy. Another major development was the creation of an 'Expert Group' on electricity in 2009, which was later mandated to prepare the SAARC Inter-Governmental Framework Agreement on Energy Cooperation (Electricity). [57]

Ultimately, the SAARC Framework Agreement for Energy Cooperation (Electricity) was signed by the SAARC Member States in November 2014. The Framework Agreement lays down the guiding principles for enabling cross-border trade of electricity on a voluntary basis, between 'Buying and Selling Entities' of the SAARC Member States. As per the Framework Agreement, the "Member States may enable cross-border trade of electricity on voluntary basis subject to laws, rules and regulations of the respective Member States and based on bilateral/ trilateral/ mutual agreements between the concerned states". The development of Framework Agreement was aided by the activities of SAARC's Working Group on Energy, Expert Group on Electricity, meetings of SAARC Energy Ministers and by a series of SAARC summits.

SAARC also put forward the vision of a 'SAARC Energy Ring' consisting of interconnection that form SAARC power grid and SAARC gas grid, and a SAARC Market for Electricity (SAME).[58]

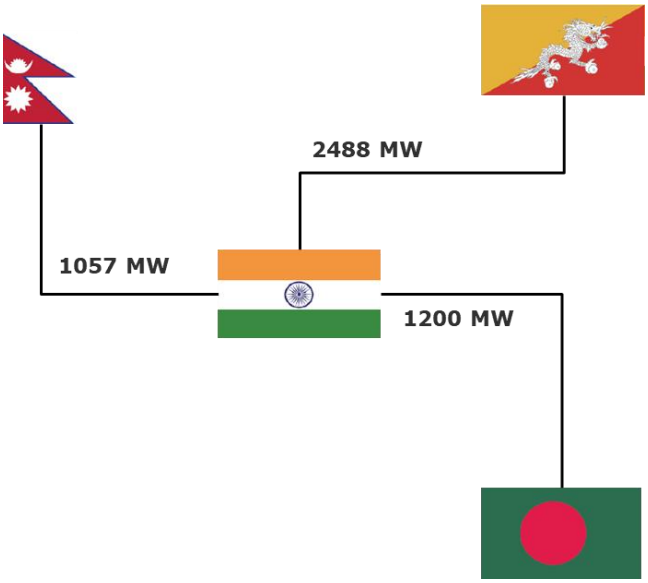
Another key initiative is under 'The Bay of Bengal Initiative' for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). It is a regional organization comprising seven member states lying in the littoral and adjacent areas of the Bay of Bengal constituting a contiguous regional unity. It constitutes seven Member States: five deriving from South Asia, including Bangladesh, Bhutan, India, Nepal, Sri Lanka, and two from Southeast Asia, including Myanmar and Thailand. The BIMSTEC countries have signed a Memorandum of Understanding (MoU) for establishment of BIMSTEC grid interconnection on 31 August 2018.[59] BIMSTEC had envisaged the creation of a BIMSTEC Grid Interconnection Coordination Committee (BGICC) to actively coordinate and represent parties involved in the regional energy trade. The MoU for establishment of BGICC was signed in August 2018.[60]

3.4 Review of existing and planned regional infrastructure projects

3.4.1 Existing/Operational regional Interconnection Projects

CBET occurs through the various power grid interconnections present between the trading countries.[61] The existing Available Transmission Capacity (ATC) between these countries is depicted below.

Figure 21: Available transmission capacity for CBET among BBINS countries



The current status of the cross border transmission interconnections is shown below:

Table 8: South Asian Power grid interconnections

Name of the Project	Physical Attributes	Financials	Project Award Methodology
India – Bangladesh[62]			
▪ Bheramara – Baharampur Phase I	▪ 500 MW, 27.3 km, 400kV D/C	▪ Total Project Cost: $183 million ▪ 60% Grant by ADB and 40% equity of Govt of BD	▪ Nomination by Govt.
▪ Bheramara – Baharampur Phase II	▪ 500 MW, 28 km, 400kV D/C	▪ Total Project Cost: $202.1 million ▪ 60% Grant by ADB and 40% equity	▪ Nomination by Govt.
▪ Surjyamaninagar - South Comilla	▪ 160-200 MW, 47 km, 400kV (operated at 132kV) D/C line	▪ Total Project Cost: $13.36 million ▪ Government funded	▪ Govt. to Govt.
India – Bhutan			
▪ Tala HEP - Siliguri	▪ 72 km, 400kV 2 D/C	▪ Part of the Tala Project ▪ Total project cost: INR 41.26 billion or USD 551.5 million	▪ Nomination by Govt.
▪ Malbase – Siliguri (LILO of one of the Tala – Siliguri lines)	▪ 400kV	▪ N/A	▪ Nomination by Govt.
▪ Jigmeling – Alipurduar	▪ 400kV D/C	▪ N/A	▪ Nomination by Govt.

Name of the Project	Physical Attributes	Financials	Project Award Methodology
▪ Mangdechhu HEP-Punatsanchu - Alipurdwar	▪ 400 kV D/C	▪ Part of the Mangdechhu HEP project ▪ Project Cost: INR 50.45 billion or USD 674.3 million	▪ Nomination by Govt.
▪ Chukha HEP – Birpara	▪ 220kV (3 circuits)	▪ Part of the Chukha HEP Project ▪ Total project cost: INR 2.46 billion	▪ Nomination by Govt.
▪ Malbase - Birpara	▪ 220kV	▪ N/A	▪ Nomination by Govt.
▪ Kurichu HEP - Geylephu – Salakati	▪ 132kV S/C	▪ Project Cost: Nu 64.15 million or USD 0.86 million	▪ Nomination by Govt.
▪ Deothang/Motanga – Rangia	▪ 132kV	▪ N/A	▪ Nomination by Govt.
India – Nepal[63]			
▪ Dhalkebar – Muzzafarpur	▪ 1,000 MW, 140 km, 400 kV D/C	▪ 70% debt and 30% equity	▪ PPP through JV
▪ Kataiya – Duhabi (Kusaha)	▪ 125 MW, 28 km, 132 kV S/C[64]	▪ N/A	▪ Nomination by Govt.
▪ Raxaul-Parwanipur	▪ 50 MW, 22km, 132 kV D/C	▪ Total Project Cost: USD 15 million ▪ GoN funded	▪ Nomination by Govt.
▪ Kataiya-Kushaha	▪ 50 MW, 16.5 km, 132 kV D/C	▪ Total Project Cost: USD 5.5 million ▪ GoN funded	▪ Nomination by Govt.
▪ Ramnagar – Gandak/Surajpura,	▪ 25 MW, 132 kV S/C	▪ N/A	▪ Nomination by Govt.
▪ Tanakpur – Mahendranagar	▪ 40 MW, 189 km, 132 kV	▪ US$ 26.7 million and jointly funded ▪ by GoN, NEA and ADB.	▪ Nomination by Govt.

India – Bangladesh operational transmission interconnections

Bangladesh Power Development Board (BPDB) imports power from India through the Indian trading entities PTC India and NTPC Vidyut Vyapar Nigam Ltd. (NVVN). On 5th October 2013 Bangladesh and India connected their grids with the commencement of Bheramara (Bangladesh)–Baharampur (India) 400 kV back to back HVDC transmission link with a capacity of 500 MW, which was later enhanced to 1,000 MW.

The total cost of the transmission line both on the India and Bangladesh sides for 1,000 MW is nearly 313 million USD. Of the 1,000 MW transmission line including back-to-back HVDC link, the first phase (500 MW) in Bangladesh side was commissioned in 2003 at a cost of 183 million USD. This first phase consisted of

i. 27.3 kilometres (km) of 400 kV, double circuit overhead transmission line;

ii. one 500 MW high-voltage direct current back-to-back station at Bheramara; and

iii. 4.5 km of 230-kilovolt Double Circuit line in line out overhead transmission line at Ishurdi Khulna.

Out of this, 111 million USD was provided by ADB as a loan, and remaining amount was arranged by the Govt. of Bangladesh/PGCB through sources including additional borrowing. As per ADB's estimate, the project has an equity IRR of 26.9%, and financial IRR of 4.7%. [65]

The second phase consisted of 28 kilometres (km) of 400 kV, double circuit transmission line, adding a capacity of 500 MW was commissioned in 2018.[66] The doubling of capacity of the cross-border power transmission link to 1,000 MW, at Bangladesh side was funded by ADB (60%), the Government of Bangladesh and PGCB (40%), at a cost of 202.1 million USD. As per ADB's estimate, the combined project (1,000 MW) has an equity IRR of 30.7%, and financial IRR of 4.3%.[67] Indian portion of this line (1,000 MW, 17 KM) was financed by Power Grid Corporation of India Limited (PGCIL) at a total cost of INR 1,984.8 million.[68]

There is also a 400 kV line (operated at 132 kV) from Tripura in Suryamaninagar, India to South Comilla in Bangladesh commissioned in 2016, through which nearly 160 MW of power is imported by Bangladesh. The Indian portion of the 400kV Double Circuit line (Twin ACSR Moose Conductor) line length is 18 km and Bangladesh portion 400kV Double Circuit line length is 47 km and has HVDC back-to-back station. The total project cost at Bangladesh side was BDT 1,717.474 million or USD 20.08 million, of which BDT 1,573 million was financed by the Government of Bangladesh and BDT 143.81 million by PGCB. [69] Indian portion of this line was financed by PGCIL India at a total cost of INR 1 billion or USD 13.36 million. The total project cost is around USD 33.45 million. [70]

Bhutan – India operational transmission interconnections

India and Bhutan are connected through various 400 kV, 220 kV and 132 kV lines to evacuate over 2,000 MW of power from Bhutan's hydro generating stations developed under inter-governmental arrangements with India. Tala HEP - Siliguri 400 kV three D/C transmission lines of 72 km line length from Chukha HEP in Bhutan to Birpara in West Bengal, India. [71] LILO from Tala to Silliguri connects Malbase – Siliguri with 400 kV transmission line. Other lines connecting HEPs from Bhutan to India include: 220 kV Chukha HEP – Birpara, 400 kV Jigmeling – Alipurduar, 400 kV Punatsanchu - Alipurdwar D/C, 220 kV Malbase – Birpara, 132 kV Geylephu – Salakati, 132 kV Motanga – Rangia.

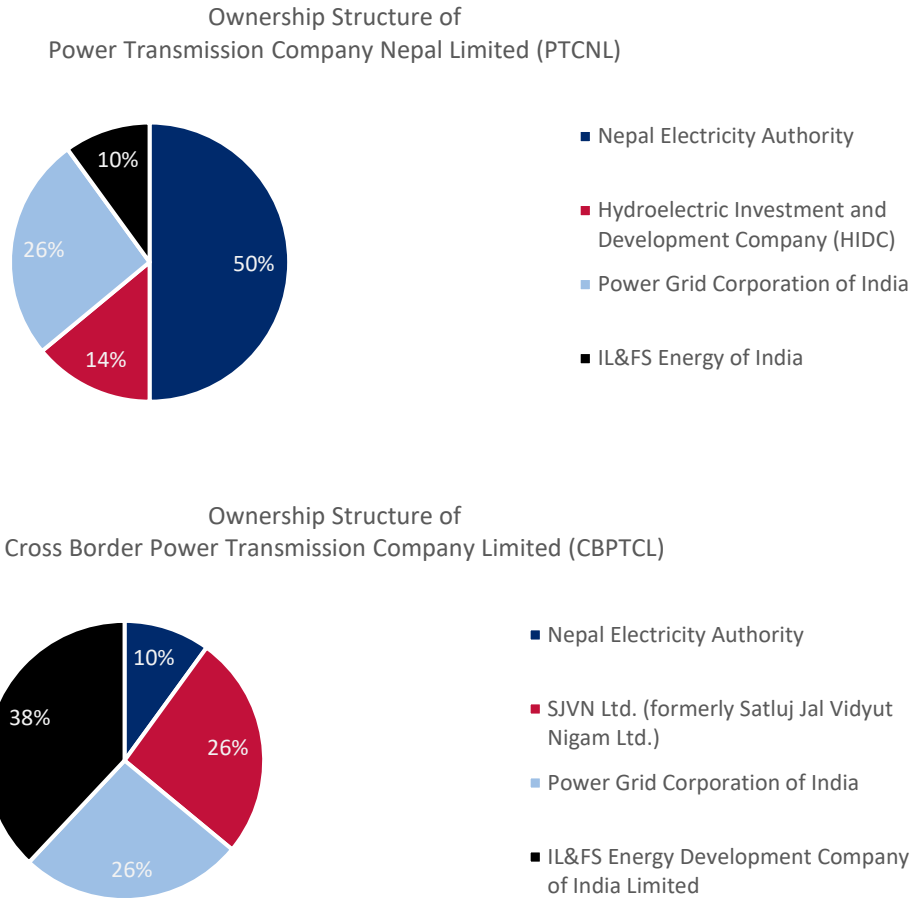
Bhutan has also sourced power through power exchange in Jan-Mar'22.

India – Nepal operational transmission interconnections

Power exchange between India and Nepal began in 1971 with an exchange of 5 MW of power, which mainly catered to the needs of isolated pockets on either side of the border. In February 2016, the 400 kV Dhalkebar (Nepal) - Muzaffarpur (India) was commissioned.

Out of 140 km of line length, 40 km of the line is in Nepal while 100 km is in India. Power Transmission Company Nepal Limited (PTCNL) was established for the operation of line on the Nepal side. The Nepal Electricity Authority (NEA) owns 50 percent of the PTCNL, while Nepal's Hydroelectric Investment and Development Company (HIDC) owns 14 percent. Two Indian companies Power Grid Corporation and IL&FS Energy of India have 26 and 10 percent stake in the company respectively. The audited final executed project cost of the Nepal portion is NPR 1.54 billion and the project has been implemented on a 70:30 debt:equity ratio. A parallel company, Cross-Border Power Transmission Company Limited (CPTCL) was set up in India to develop the transmission line in the Indian portion.[72] [73]

Figure 22: Ownership structure of transmission line JVs for Dhalkebar Muzaffarpur line



Source: PTCN, CPTC [74] [75]

There are also multiple 132 kV cross border lines. The import of power by Nepal from India takes place through bilateral treaties/contracts under Government-to-Government mode, and a few commercial PPAs through Indian power traders.

Between India and Nepal, power exchange transactions (both import and export by Nepal) also started since 2021 (export to India through power exchange from 2022).

3.4.2 Existing/Operational regional generation projects

The current status of the regional generation projects is shown below:

Table 9: South Asian Existing Regional Generation Projects

Name of the Project	Physical Attributes	Financials	Project Award Methodology
		India – Bhutan	
▪ Tala HEP	▪ 1,020 MW	▪ Project Cost: INR 41.26 billion or USD 551.5 million ▪ 60 per cent grant and 40 per cent loan provided by India	▪ Govt. to Govt.
▪ Chukha HEP	▪ 336 MW	▪ Project Cost: INR 2.46 billion or USD 32.8 million	▪ Govt. to Govt.[76]

Name of the Project	Physical Attributes	Financials	Project Award Methodology
		▪ 60 per cent grant and 40 per cent loan provided by India	
▪ Mangdechu HEP	▪ 720 MW	▪ Project Cost: INR 50.45 billion or USD 674.3 million ▪ 30% grant and 70% cent loan provided by India	▪ Govt. to Govt.
▪ Dagachhu HEP	▪ 126 MW	▪ Total project cost: $200 million ▪ $80 million loan granted by ADB	▪ PPP through JV
▪ Kurichu HEP	▪ 60 MW	▪ Project Cost: INR 5.55 billion or USD 74.1 million ▪ 60 per cent grant and 40 per cent loan provided by India	▪ Govt. to Govt.

Bhutan – India regional generation projects

Bhutan's hydro generating stations developed under inter-governmental arrangements with India include:

- Tala HEP (1,020 MW): It is the largest functional hydropower project in Bhutan. Work on this project began in 1998 and it was commissioned in 2008 with a project cost of INR 41.26 billion or USD 551.5 million. India's assistance for Tala came in the form of 60 per cent grant and 40 per cent loan at an interest rate of nine per cent per annum.
- Chukha HEP: In 1974, India and Bhutan signed an agreement on Chukha HEP. This 336 MW power project was fully funded by the government of India with a cost of INR 2.46 billion with a 60 per cent grant and a 40 per cent loan at five per cent interest payable over a period of 15 years.
- Kurichu HEP is a 60 MW power project that costed INR 5.55 billion. The project was fully funded by the government of India with a 60 per cent grant and a 40 per cent loan.
- Mangdechu HEP (This 720 MW power project was fully funded by the government of India with a 30 per cent grant and a 70 per cent loan. It cost INR 50.45 billion).[77]
- Dagachhu HEP (126 MW) in Bhutan was developed under PPP with private investment from one of India's private sector generation companies.

3.4.3 Planned regional interconnection projects

New regional projects have been proposed to enhance the power trade between the nations. Following are the salient features of the proposed CBET interconnections that are expected to be developed:

Table 10: South Asian Power grid planned interconnections

Name of the Project	Physical Attributes	Financials
	India – Bangladesh	
▪ Barapukuria - Bogura	▪ 120 km, 400 kV D/C	▪ Total Project Cost: INR 9 billion or USD 120 million ▪ Debt funding from EXIM Bank

Name of the Project	Physical Attributes	Financials
▪ Katihar (Bihar) – Parbotipur (Bangladesh) – Bornagar (Assam)	▪ 765 kV (1000 MW)	▪ N/A
	India – Bhutan	
▪ Punatsangchu - Lhamoizingkha	▪ 400 kV 2 D/C	▪ Total project cost: Nu 32.41 billion
	India – Nepal	
▪ New Butwal – Gorakhpur	▪ 140 km, 400 kV D/C	▪ Total project cost: INR 7.217 billion or USD 96.4 million ▪ 71% Indian Equity and 29% MCC Grant
▪ Sitamarhi (POWERGRID) – Dhalkebar (Nepal)	▪ 400 kV D/C	▪ Total project cost: INR 1.79 billion or USD 24 million
	Afghanistan – Pakistan	
▪ Kabul (Afghanistan) to Peshawar (Pakistan) (CASA-1000)	▪ 1,300 MW, 50km, 500 kV HVDC	▪ Total project cost: USD 1126.5 million

1 India – Bhutan planned interconnection projects

- 400 kV Punatsangchu - Lhamoizingkha 2xD/C line. Estimated cost for 400 kV lines evacuation system for HEPs is Nu 32.41 billion. [78]

2 India – Nepal Planned Transmission Projects

- The New Butwal – Gorakhpur 400 kV D/C Quad Moose cross border transmission line is one of the major new cross border interconnections planned between India and Nepal. The line will cover 120 km in India and 20 km in Nepal. As per Joint Technical Committee (JTT), the estimated cost of project is INR 7217 million, out of which INR 5,153 million is in Indian portion and remaining in Nepal.[79] Nepal side of project is covered under grant support from Millennium Challenge Corporation.

  The line is expected to be completed by 2025. Nepal shall pay transmission service charge for 25 years to avail the entire capacity of the Indian portion of the transmission line. A joint venture of NEA and PGCIL, Butwal Gorakhpur Transmission Company Limited (BGCTCL), will develop the Indian portion of the line. The estimated cost as on 2020 was INR 7,217 million, out of which INR 5,152 million is for line in Indian portion (120 km out of 140 km), and remaining for line in Nepal.[80]

- The 400 kV D/C (Quad Moose) Sitamarhi (POWERGRID) – Dhalkebar (Nepal) Transmission Line (Indian Portion) is part of the transmission system on the Indian side of border, for power evacuation from Arun-3 (900MW) HEP, Nepal. The estimated project cost is INR 1.79 billion. The line is scheduled for commissioning in 2023.[81]

3 India – Bangladesh planned interconnection projects

- 400 kV dedicated evacuation line from Godda thermal power plant to Bangladesh border will also be a part of the Godda project. [82] 400 kV D/C 120 km transmission line associated with the plant will also be constructed from the Bangladesh border, (Barapukuria to Bogura) to evacuate power from the interconnection of dedicated transmission line of Godda thermal power plant to evacuate power within Bangladesh. The project cost for line at the Bangladesh end, being constructed by

Power Grid Company of Bangladesh Limited (PGCB). is estimated to be ~INR 9 billion (USD 120 million). Debt funding is taken from EXIM Bank India under the Indian Line of Credit.[83]

- 765 kV Katihar (Bihar) – Parbotipur (Bangladesh) – Bornagar (Assam)with a total capacity of 1000 MW. Initially operated at 400kV with a capacity of 500 MW.[84]

4 Pakistan – Afghanistan planned interconnection projects

Central Asia South Asia Electricity Transmission and Trade Project (CASA-1000) plans to connect 500 kV line of capacity 1,300 MW from Tajikistan and Kyrgyzstan to Pakistan, through Afghanistan. The CASA-1000 acts as a step toward realizing the planned Central Asia-South Asia Regional Electricity Market (CASAREM). It will connect Sangtuda to Kabul (Afghanistan) and Peshawar (Pakistan) with a 50 km High Voltage DC line.

The total estimated project cost for CASA-1000 is USD 1126.5 million, out of which USD 368.25 million is provided by International Development Agency (IDA) as a grant.

Table 11: CASA 1000 financing plan

Financier	Commitments (USD million)
Afghanistan Reconstruction Trust Fund	40.00
Borrower/Recipient	109.00
UK: British Department For International Development (DFID)	31.00
Islamic Development Bank	155.00
IDA Credit	158.25
Govt. of USA	15.00
European Investment Bank	140.00
European Bank For Reconstruction And Development	110.00
IDA Grant	368.25
Total	**1126.5**

Source: The World Bank[85]

3.4.4 Planned generation projects

New regional projects have been proposed to enhance the power trade between the nations. Following are the salient features of the proposed regional generation projects that are expected to be developed:

Table 12: South Asian Power grid planned interconnections

Name of the Project	Physical Attributes	Financials
	India – Bhutan	
▪ Punatsangchhu-I	▪ 1,200 MW	▪ Total project cost: INR 93.76 billion ▪ 40% grant and 60% loan
▪ Punatsangchhu-II	▪ 1,020 MW	▪ Total Project Cost: INR 7.01 billion ▪ 30% grant and 70% loan
▪ Kholongchhu HEP	▪ 600 MW	▪ Total project cost: INR 49.7 billion ▪ equity ratio of 70:30
▪ Nikacchu HPP	▪ 118 MW	▪ Total project cost: USD 200 million ▪ ADB funding: 120 million with 65% debt and 35% equity
▪ Bunakha HEP	▪ 180 MW	▪ Total project cost: INR 26.85 billion

Name of the Project	Physical Attributes	Financials
	India – Nepal	
▪ Arun III HEP	▪ 900 MW	▪ Total project cost: INR 115 billion (includes INR 11 billion for transmission line) ▪ INR 63.33 billion loan from various banks
▪ GMR's Upper Karnali HEP	▪ 900 MW	▪ Total project cost: USD 1.5 billion
▪ Arun 4	▪ 490 MW	▪ Total project cost: INR 49 billion
▪ West Seti HEP and Seti River 6 HEP	▪ 1,200 MW	▪ Total project cost: INR 65 billion
	India – Bangladesh	
▪ Godda coal-based Power plant	▪ 1,600 MW	▪ Total project cost: USD1.97 billion or INR 140 billion ▪ 80% Debt and 20% Equity
▪ Pumped storage power plant ***(One of the candidate power plants considered in Bangladesh's PSMP, located in North-East India)***	▪ 1,000 MW	▪ N/A

1 India – Bhutan planned regional generation projects

- Two Inter-Governmental (IG) model HPPs – 1,200 MW Punatsangchhu-I and 1,020 MW Punatsangchhu-II are under implementation in Bhutan and are expected to be commissioned by 2024-25. With the commissioning of these HEPs the power transfer between Bhutan and India would be enhanced to about 4,200 MW.
    - Punatsangchhu-I project is being constructed with a 40% grant and 60% loan at 10% annual interest from Government of India (GoI). The loan is repayable in 30 equated semi-annual instalments commencing one year after the mean date of operation.[86] The project will have a capacity of 1,200 (6x200) MW and design energy of 5,543.54 MU. Total cost of the project is estimated to be INR 93.76 billion (hard cost, 2013 price level). The expected 1st year tariff is 5.14 INR/kWh, while the expected levelized tariff is 4.86 INR/kWh. It is expected to be commissioned in the year 2024-25.[87]
    - Punatsangchhu-II project is being constructed with Govt. of India funding, with- 30% grant and 70% loan at the rate of 10% annual interest, repayable in 30 equated semi-annual instalments commencing one year after the mean date of operation.[88] The project will have a capacity of 1,020 (6x170) MW and design energy of 4,244.75 MU. Total cost of the project is estimated to be INR 7.01 billion (hard cost, 2015 price level). The expected levelized tariff is INR 2.29 INR/kWh. It is expected to be commissioned in the year 2023. [89]
- 600 MW Kholongchhu HEP by SJVN is another large regional project for which construction is estimated to start soon. The estimated total project hard cost, at 2019 price level is INR 49.7 billion. Power Finance Corporation (PFC) along with Rural Electrification Corporation (REC) signed a

Memorandum of Understanding (MoU) in March 2021 with Kholongchhu Hydro Energy Ltd (KHEL) for extending a term loan of INR 40.58 billion. The project is proposed to be funded at a debt-equity ratio of 70:30 and the term loan of INR 40.58 billion shall be shared by PFC and REC in equal proportion. Apart from PFC and REC, INR 4 billion is proposed to be arranged from the Bank of Bhutan (INR 2 billion) and National Pension and Provident Fund (NPPF), Bhutan (INR 2 billion). [90] The project is proposed to have equal equity share of SJVN and Druk Green Power Corporation (DGPC). However, the Government of India (GoI) will provide DGPC's share of equity in the joint venture company as grants.[91]

- 118 MW Nikacchu HPP - The Asian Development Bank will fund USD 120 million (both loan and equity) towards the hydropower project, whose total estimated cost is USD 200 million. It is modelled on public-private partnership (PPP) lines, with Druk Green Power Corporation (DGPC), and the debt to equity ratio of 65:35. ADB will provide 95 million dollars of the total USD 130 million debt portion and 25 million dollars of the equity portion (USD 70 million). The remaining amount is to be raised from other investors, including DGPC. [92]
- 180 MW Bunakha HEP (with 230 MW downstream benefit from Tala, Chukha and Wangchu HEPs). DPR has been completed. An implementation agreement has also been signed between GoI and GoB and following discussions at various levels at MoP and MEA, GoI is being held for implementation (currently in permitting stage) and expected to be commissioned in 2023. It is being developed at a total cost of INR 26.85 billion. [93] [94]

2 India – Nepal planned regional generation projects

- The 400 KV D/C (Quad Moose) Sitamarhi (POWERGRID) – Dhalkebar (Nepal) Transmission Line (Indian Portion) is part of the transmission system on the Indian side of border, for power evacuation from Arun-3 (900MW) HEP, Nepal. The estimated project cost is INR 1.79 billion. The line is scheduled for commissioning in 2023.[95]
- 900 MW Arun III HEP is planned to be commissioned in 2025. 21.9% of free energy will be provided to Nepal. The rest of the energy will be used by India. Satluj Jal Vidyut Nigam Ltd (SJVN) has arranged INR 63.33 billion loan from a consortium of banks from India and Nepal for funding the project. The consortium is led by SBI India and PNB, has Exim Bank, Canara UBI & Everest Bank, Nepal & Nabil Bank, Nepal as consortium members. [96] Upfront equity was provided by SJVN, which utilized the same to commence the project construction.
- GMR's Upper Karnali HEP of 900 MW is under advanced stage of development which is an export-oriented project to supply power to India and Bangladesh. Bangladesh will be importing 500 MW of electricity. It is expected that Bangladesh will enter into a power purchase agreement for purchase of the electricity at the rate of 7.712 cents per unit for a period of 25 years.[97] The cost of the project is estimated to be around USD 1.5 billion and it is expected that 20 percent of the funds will come from Nepali banks. The Nepal Electricity Authority will hold 27 per cent free equity stake in the project including all project royalties and the 100 per cent ownership of the project will be transferred to the Government of Nepal, at the end of the 25-year concession period. [98]
- In 2022, MoU for development of Arun-4 by SJVN was also signed. It will be developed as a joint venture by SJVN and NEA, wherein the former will have the majority stake. The estimated developmental cost of the project situated in Sankhuwasabha District Province-1 of Nepal, is INR 49 billion. [99]
- In Aug 2022, MoU was signed between Investment Board of Nepal (IBN) and NHPC, India regarding the development of West Seti HEP and Seti River-6 HEP, with a combined capacity of 1200 MW. While the project is primarily for export market, with 21.9% free power to Govt. of Nepal, there is also provision for Govt. of Nepal to request additional power for domestic market.

Based on the MoU, NHPC is required to initiate a survey license application and undertake project studies and DPR preparation.

3 **India – Bangladesh planned regional generation projects**

- Godda coal-based Power plant of capacity 1,600 MW in Jharkhand (India) is being constructed to supply 1,496 MW to Bangladesh Power Development Board. The expected commissioning was in June, 2022 but it has been delayed due to impact of COVID-19. Estimated project cost of the Godda project is nearly USD1.97 billion (which is nearly INR 140 billion).[100] [101] The project has achieved financial closure with a debt-equity ratio of 68:32. The equity requirement is met through promoter funds in the form of unsecured loans and equity like instruments. [102]
- As per Bangladesh's PSMP, by 2030, Bangladesh will import 1,000 MW of power from one of India's Pumped Storage Power Plant (PSPP) in Meghalaya. The PSPP is a very effective tool for stabilizing the system and improving the power quality and reliability.[103]

3.4.5 Typical financing structures and award methods for large energy projects in South Asia

Typical financing structures for existing large energy projects in South Asia

While the financing structures for a few regional projects were analysed in the previous section, further analysis is done in this section to obtain further insights.

In the case of India-Bhutan projects, the financing has historically been provided by Govt. of India through a combination of loans and grants.

Table 13: Financing of India-Bhutan hydro projects

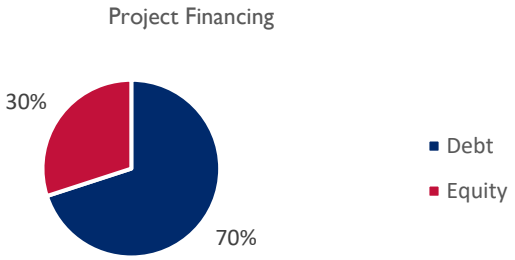
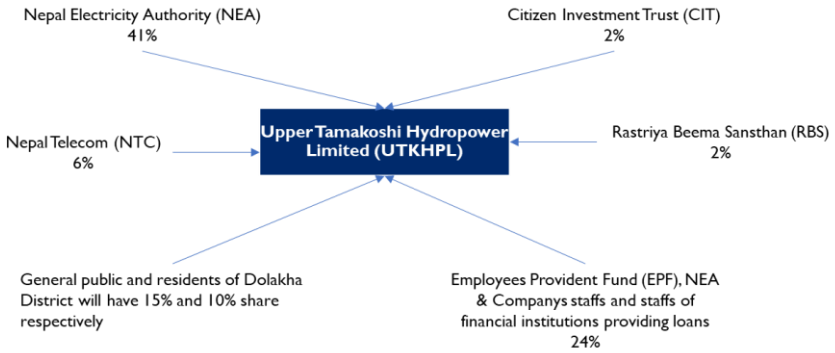
Sl. No.	Name of the project	Installed Capacity (MW)	Total Cost (INR Million)	Funding pattern (INR Million / %)		Year of Commissioning
				Loan	Grant	
1	Chukha	336 (4x84)	2460.0	984.0 (40%)	1476.0 (60%)	1986-88
2	Kurichu	60 (4x15)	5550.0	2220.0 (40%)	3330.0 (60%)	2001-02
3	Tala	1020 (6x170)	41,258.5	16503.4 (40%)	24755.1 (60%)	2006-07
4	Mangdechhu	720 (4x180)	50,448.9	35314.2 (70%)	15134.7 (30%)	2019-20
	Total	**2136**				

Source: CEA[104]

An analysis of some of the large energy projects, though not necessarily regional, has also been undertaken. The table below depicts financing of a few of the major power generation projects in South Asian countries:

Table 14: Financing of major generation projects (existing)

Country	
Bangladesh	▪ Payra power station – It is a 1,320-megawatt (MW) coal-fired power plant in Patuakhali, Bangladesh. In 2016, the government approved a USD 1.9 billion loan from the Export-Import Bank of China for the project, maintaining a debt to equity ratio of 70:30. The equity investment from Bangladesh-China Power Company Limited (BCPCL) on this was USD 815 million.[105]

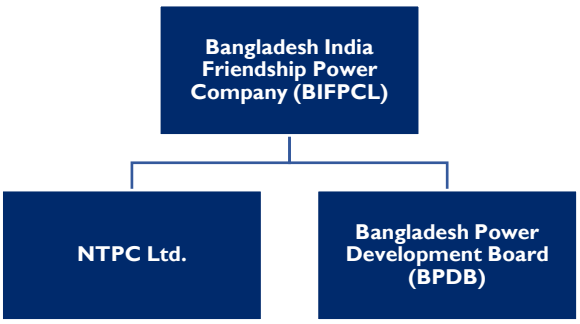
Country	
	
India	▪ Sasan Ultra Mega Power Project - In 2009, a financing agreement for the project was closed where USD 2,922.82 million in loans were provided by several banks. USD 977.63 million in equity was provided by Reliance Power. Further at later stages of the project, loans have been issued from various agencies as per requirement. [106] ▪ Tiroda Thermal Power Project is a 3,300-megawatt (MW) coal plant in Maharashtra, India. In January 2009, a financing agreement for phase I was closed where USD1.05 billion in loans were provided by several banks. In September 2009, a financing agreement for phase II was closed where USD 451 million in loans was issued from banks. In 2013, a financing agreement for phase III was closed where China Development Bank, Industrial and Commercial Bank of China, and Standard Chartered Bank each provided USD 160 million in loans. Adani Power invested USD 85 million in the project. .[107]
Nepal	▪ Upper Tamakoshi Hydroelectric Project is a 456 MW peaking run-of-the-river hydroelectric project in Nepal. Nepal Electricity Authority (NEA) established an autonomous company named Upper Tamakoshi Hydropower Limited (UTKHPL) in March 2007 as an executing agency for the implementation of the project. The majority share (51%) of the company is held by four public entities, namely, Nepal Electricity Authority (NEA), Nepal Telecom (NTC), Citizen Investment Trust (CIT) and Rastriya Beema Sansthan (RBS).[108]  ▪ Kali Gandaki Hydroelectric Project is situated near Mirmi of Syangja district in Nepal. The total project cost is USD 354.8 million. The Asian Development Bank financed USD 137.9 million and USD 98.9 million was financed by Japan Bank for International Cooperation of the total implementation cost.[109]

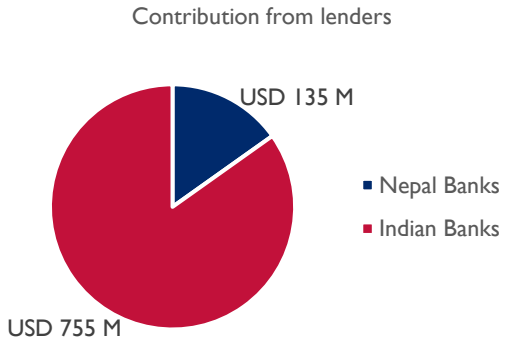
Country	
Sri Lanka	▪ Lakvijaya Power Plant is a 900-megawatt (MW) coal-fired power station in the Puttalam district of the north-western province in Sri Lanka. The Sri Lankan Ministry of Power and Energy stated that for the first 300 MW unit, the Export-Import Bank of China provided a USD 450 million loan of which USD 300 million was at 2% interest and USD 150 million was at 6% interest. The Sri Lankan government contributed 5300 million Sri Lanka Rupees as its contribution to the project. The Ministry had stated that the second stage of the project has been funded by a soft loan of USD 891 million by EXIM Bank of China and Sri Lankan Government invested SLR 11,000 million.[110] ▪ Kelanitissa Power Station is located on the south bank of the Kelani river in the northern part of the city of Colombo, Sri Lanka. In 2000, the Board of Directors of the Asian Development Bank (ADB) approved a direct loan of USD 25.93 million and a partial risk guarantee (PRG) of USD 52.00 million for the project.[111]

Typical financing structures for planned/under construction large energy projects in South Asia

Financing of some of the upcoming future projects (all of them are not necessarily regional projects) has been summarized below:

Table 15: Financing of future projects

Country	
Bangladesh	▪ Matarbari Coal Power Plant - Coal Power Generation Company Bangladesh Limited (CPGCBL) is executing the project worth BDT 518.55 billion (USD 5.4B). Japan International Co-operation Agency or JICA is investing around BDT 43.92 billion (USD 4.6 B) in financing the project, and the rest of the project will be funded by the government.[112] ▪ Rooppur Nuclear Power Plant - In 2015, Bangladesh and Russia signed a deal to build two units of 1200 MW each. Russia is financing 80 percent of the project worth USD 11.9 billion, and the remaining USD 2.3 billion is funded by the Bangladesh government. ▪ The Maitree Super Thermal Power Project is a 1,320MW coal-fired power station under construction in Rampal, Bangladesh. The power plant is being developed by Bangladesh India Friendship Power Company (BIFPCL), a 50:50 joint venture between India's state-run NTPC Ltd. and Bangladesh Power Development Board (BPDB).  The project is financed through a £1.3bn (USD 1.6 bn) loan from the Export-Import (EXIM) Bank of India. BIFPCL entered into a loan agreement with the EXIM Bank of India in March 2017.[113]

Country	
India	▪ Godda power station - In September 2019, financial closure was confirmed. Power Finance Corporation and Rural Electrification Corporation, both state-controlled financial institutions, are providing equal tranches of a USD 1.4 billion loan and the promoter Adani Power is providing USD 203 million in equity. [114] ▪ Satluj Jal Vidyut Nigam Limited (SJVN) awarded the contract to build a 1,000 MW solar power project in Bikaner, Rajasthan, to Tata Power Solar Systems Ltd. The composite cost for the construction & development of the project is INR 5,4.92 billion. The 1,000 MW solar power project was secured by SJVN through a competitive bidding process under the CPSE Scheme (central public sector enterprise) of Government of India.[115] ▪ Lower Subansiri Hydroelectric Power Project - The 2,000MW Lower Subansiri hydroelectric power project (LSHEP) is located on Subansiri River, which is on the border of India's two north-eastern states, Arunachal Pradesh and Assam. The cost was originally estimated to be INR 62.85 billion (USD 1.16bn) at 2002 price level but was since revised to INR106.6 billion (USD 1.97bn) at 2010 price level met through 70% equity and 30% debt financing by the provision of a term loan. The central government is providing budgetary support as part of the equity component.[116]
Nepal	▪ The Arun-III hydroelectric power plant is a 900MW run-of-the-river hydropower project under construction which is scheduled for commissioning by 2024. A group of seven banks from India and Nepal agreed to provide debt facilities worth approximately £684 (USD 890m) for the project in February 2020. Nepal-based banks Everest Bank and Nabil Bank will provide loans of approximately £104m (USD 135m), while Indian lenders including State Bank of India, Punjab National Bank, Canara Bank, Union Bank of India and Export-Import Bank of India have agreed to provide £580m (USD 755m).  SJVN Arun-III Power Development Company (SAPDC), a wholly owned subsidiary of India's SJVN is developing the project on a build-own-operate-transfer (BOOT) basis.[117] ▪ The Upper Karnali hydropower project is a run-of-the-river hydropower project being developed on Karnali River in Nepal is expected to be commissioned during the 2023-2024 financial year. The Government of Nepal awarded the project to GMR Upper Karnali Hydro Power Limited (GUKHL), a subsidiary of GMR Group India, under a memorandum of understanding (MoU) signed in January 2008. GMR is developing the project on a build-own-operate-transfer (BOOT) basis. The project is proposed to be funded by Asian Development Bank (ABD), Asian Infrastructure Investment Bank (AIIB), Japan International Cooperation Agency (JICA), Commonwealth Development Corporation (CDC), and Nepal Investment Bank (NIBL).

Country	
	GMR Group also signed a partnership agreement with International Finance Corporation (IFC), in December 2014, to assist the project in achieving financial closure.[118] ▪ SJVN will develop hydro power project Arun-4 worth INR 49 billion (USD 0.6 billion) in Nepal. A Memorandum of Understanding (MoU) for the development of the 490 MW project in Nepal has been signed in Lumbini, Nepal.[119] ▪ The Nepal government has approved a proposal for India's National Hydropower Corp (NHPC) to study and develop two hydroelectric projects that will have the combined potential to generate 1,200 megawatts of energy (West Seti and SR-6). The MoU has been signed between IBN and NHPC for the same. [120]
Sri Lanka	▪ India's Adani Group has signed a deal for two large power projects in Sri Lanka's Northern Province aimed at generating combined capacity of 500 MW, at a cost of USD 500 million.[121]

Typical project award methods for large energy projects in South Asia

Countries adopt different processes to award projects based on the nature of requirement. An overview of it related to power generation projects has been given below:

Table 16: Process of awarding generation projects

Country	Process of awarding generation projects
Bangladesh	▪ Competitive bidding process is adopted by agencies like Bangladesh Power Development Board to award power generation projects, either under EPC mode, or under IPP mode.[122] [123]
Bhutan	▪ Department of Hydropower and Power Systems, Royal Government of Bhutan has issued guidelines for bidding documents for hydropower projects as the country is solely dependent on it for generation.[124] However, the projects are mostly developed under GtG arrangements. Joint-Venture projects are also being implemented, where project is developed as a JV of DGPC (or its subsidiaries/associate companies) and the developer.
India	▪ Generation projects in India earlier used to be executed by signing MoUs, and tariffs were determined by regulators. However, this has changed to a competitive bidding regime, with the exception of large hydro projects.
Nepal	▪ Large regional projects in Nepal are awarded either through competitive bidding or through GtG arrangements.
Sri Lanka	▪ Competitive bidding is done to award projects. For example, for Kelanitissa Power Project, AES Kelanitissa Private Limited (AKL) was awarded the project after international competitive bidding process.[111]

3.5 Opportunities and potential for long term investments in the region

3.5.1 Potential Interconnections

1. **India - Sri Lanka:** A HVDC link is proposed between the two nations. A feasibility study was done by PGCIL considering a submarine cable of 50 kms between Rameswaram in Tamil Nadu and

Talaimannar in Mannar islands in Sri Lanka. However, due to high cost of the project it has not moved forward. The link was planned to have a capacity of 500 MW initially with scope to upgrade it to 1000 MW later. In 2019, the project was considered with overhead line of which 30km would be under the sea. The transmission link was to run from Madurai in Tamil Nadu to Anuradhapura in Sri Lanka's north-central province.[125]

The interconnection of India and Sri Lanka can serve as an opportunity for regional renewable generation plants to tap solar and offshore wind in Tamil Nadu and also facilitate CBET between India and Sri Lanka.

2 **India – Bangladesh:**

765 kV Bornagar (India NER) – Parbotipur (Bangladesh) – Katihar (India ER): The Katihar-Parbatipur-Bornagar transmission line is not specific to any hydropower project and no riparian issues are involved with the proposed transmission line. The transmission interconnection has been planned to connect Parbotipur in Bangladesh to Katihar in Eastern Region (ER) of India and Bornagar in Northeastern Region (NER) through 765 kV D/C line to be initially operated at 400kV for supply of 500 MW power to Bangladesh in Phase I. Bangladesh will draw the power from Parbotipur/Barapukuria through HVDC back to back for further dispersal of the same to their load centre. In Phase-II, this interconnection would be taken up for transfer of about 1,000 MW power to Bangladesh with upgradation of associated AC substations and upgradation of HVDC terminal at Parbotipur/Barapukuria from 500 MW to 1,000 MW. The project would enable Bangladesh to procure power generated from hydropower projects in India, Nepal and Bhutan at competitive price.

3 **India – Nepal:** Multiple 400 KV lines in planning stage –

- Dododhara to Bareli (India) two double circuit lines: This interconnection is especially dedicated to exporting the bulk power to India from export-oriented HPP in the Mahakali, Karnali and Seti corridors in Zone-1 area of Nepal. Two double circuit 400 kV quad Moose transmission lines of distance about 200 km are proposed. The subsequent power flows on these lines for wet peak scenarios by 2040 are as follows – 3,000 MW flow with a loading percent of 34.6%.[126] The total cost estimate of the project is USD 39.2. [127]
- Attariya to Bareli (India) double circuit: This interconnection is especially dedicated to export the bulk power to India from export-oriented HPP in the Mahakali, Karnali and Seti corridors in Zone-1 area of Nepal. A single line of double circuit 400kV quad Moose transmission line of about 140 km is proposed. The subsequent power flows on these lines for wet peak scenarios by 2040 are as follows – 700 MW flow with a loading percent of 16.3%.[128]
- Phulbari to Lucknow (India);This interconnection line is planned for evacuating power from Nalsyau Gad, Bheri Corridor in Zone-2 of Nepal to Lucknow, India by 2040. Two double circuit 400kV quad Moose transmission lines of distance about 200 km are proposed. The flow of power for wet peak scenario for 2040 is as follows – 2,500 MW flow with a loading percent of 28.8%.[127]
- 2 D/C 400 kV of length 110 km from Inaruwa – Purnea for evacuation of power from Arun and Koshi river basins.

4 **India – Bhutan:**

- 400kV, 2xD/C Quad Moose line, Yangbari – Rangia/Rowta
- 400kV, 1xD/C Twin Moose line, Phuntshothang – Rangia/Rowta[129]

3.5.2 Potential Regional Generation Projects

1 **India – Bhutan:** The list of future potential projects under Bhutan-India cooperation, their cost and implementation model are provided below.

Figure 23: Potential future projects under India-Bhutan cooperation

Project	Capacity MW	Implementation mode	Est. project cost INR billion	Project status
Bunakha H.E. Project	180 (3x60)	JV between Teri Hydro Development Corpn. (THDC) and DGPC.	26.85 (2016 level)	DPR prepared
Wangchhu H.E. Project	570 (4x142.5)	JV between SJVNL and DGPC.	32.91 (2014 level)	DPR prepared
Chamkharchhu-I (Digala)	770 (4x192.5)	JV between NHPC and DGPC.	50.58 (2014 level)	DPR prepared
Sankosh H.E. Project	2585 (8x312.5+3x28.33)	Authority model – THDC	123.82 (2014 level)	DPR prepared
Amochu Reservoir H.E. Project	540 (4x135)	GtG / JV model, involving NTPC as developer	37.38 (2011 level)	DPR prepared
Kuri Gongri H.E. Project	2640	-	-	Prefeasibility report prepared. DPR under preparation.

Source: CEA[130]

2 **India – Nepal:** The 5040 MW Pancheshwar Multipurpose Project is proposed on river Mahakali known as Sarda which forms international boundary between India and Nepal. Development of the project is covered under integrated Mahakali Treaty signed between HMG, Nepal and India in Feb., 1996. According to the draft final DPR, the project envisages construction of 311 m high rock fill dam (live storage-6038 Mm3) at Pancheshwar with two underground power houses (one on each bank), having a total installed capacity of 4800 MW (6 x 400 MW each on either side). In addition, a 95 m high concrete gravity dam has been envisaged at Rupaligad with two underground power stations, having a total installed capacity of 240 MW. The annual generation from combined Pancheshwar and Rupaligad has been estimated as 10055.6 MU in 90 % dependable year. The estimated cost for Pancheshwar and Rupaligad is INR 389billion and INR 328billion respectively at September, 2017 price level.

Sapta Kosi High Dam Multipurpose Project (3300 MW) and Sun Kosi Storage cum Diversion Scheme envisages a high dam on river Sapta Kosi at Barakshetra in Nepal. Based on the feasibility report for the project prepared by India in 1981, the project would afford irrigation and flood control benefits in Bihar and power generation (15730 MU) of which major portion would be available to India. In addition, development of Inland Waterways through Kosi and Ganga rivers is another important component of the project.[131]

3 **Potential regional generation projects enable Bangladesh to import from India, Nepal and Bhutan:** The following has been arrived at by analysing the plans provided in Bangladesh's PSMP.

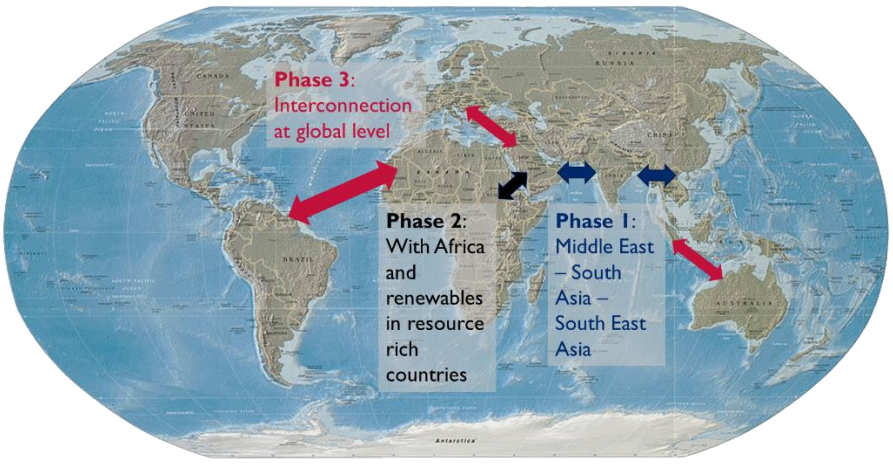
- Pumped storage power plant in Meghalaya, India, with an expected commissioning date of June 2032.
- Proposed hydro projects in Arunachal Pradesh (Kameng and Tawang basin). Kameng Hydro Power Station is a RoR plant of 600 MW, with commercial operation (COD) of the plant was declared on 12.2.2021. Tawang hydro project of 600 MW has been proposed, with an investment cost of ~USD 739.75 million.[132]

- Sun Koshi 3 hydro project (536 MW) in Nepal, which Bangladesh expressed willingness to import from during the Nepal-Bangladesh JWG in Sep. 2021. Expected commissioning date is December 2033.The project is estimated to cost USD 91 million..[133]
- Khimti Shivalaya Storage HPP (1,720 MW) in Nepal is another such project. The project is currently in announced stage. It will be developed in single phase. The project construction is likely to commence in 2027 and is expected to enter into commercial operation in 2031. The project cost is expected to be ~ USD 684.80 million.[134]
- Dholera solar farm in Gujarat (5 GW) in India, which is expected to be commissioned in 2030. At the 16th International Energy Forum in Delhi, 2018 the idea of exporting solar from this project was communicated to Bangladesh, which expressed interest in importing at least 2 GW of solar from India. This project will be developed with an investment of ~ USD 3.13 million.[135]
- Dorjilung Hydropower project (1125 MW) in Bhutan. The governments of Bangladesh, India and Bhutan have signed a MoU under which they will jointly participate in the construction of the 1,125 MW Dorjilung hydropower project in Bhutan's Lhuentse district. The driver behind the deal is to help the future export of electricity from Bhutan to Bangladesh and India. The project cost is expected to reach USD 1.25 billion, of which USD 1 billion will be provided by Bangladesh.[136]

4 One Sun, One World and One Grid (OSOWOG)

Govt. of India has advocated for the idea of "One Sun, One World, One Grid" (OSOWOG) — a trans-national electricity grid supplying solar power across the globe. The initiative is now being taken forward by the International Solar Alliance (ISA). The vision behind the OSOWOG mantra is 'The Sun Never Sets' and is a constant at some geographical location, globally, at any given point of time.

Figure 24: Plan for OSOWOG



Base image credit: http://maps.bpl.org, CC BY 2.0, via Wikimedia Commons

As a first step to implementing the OSOWOG initiative, a Memorandum of Understanding (MoU) was signed among the ISA, the Government of India and the World Bank at the First World Solar Technology Summit on September 8, 2020. As per the MOU, the ISA will act as the Nodal Agency for all activities, including implementation of the OSOWOG study for developing a long-term vision, implementation plan, road map and institutional framework for implementing the initiative. Activities for developing the vision, implementation plan, road map and institutional framework for implementing OSOWOG are also underway.

Meanwhile, taking the idea forward, the United Kingdom and the Government of India, International Solar Alliance with the support of The World Bank jointly launched the global "Green Grids Initiative – One Sun One World One Grid". [137]

5 Distributed Energy Resources and new technologies

In addition to the specific projects identified in the above subsections, there are also evolving project investment opportunities such as on floating solar PV, smart metering, smart grids, energy storage, green hydrogen etc.

Another area which has an impact on the future scenario of CBET is the role played by renewable energy, including large intermittent RE and distributed energy resources (DER). These will also drive the investment opportunities in terms of network strengthening storage technologies etc.

DERs require system operators to deploy other resources to serve load when the sun isn't shining or the wind blowing and to protect the grid against power quality issues that may arise from intermittent output. However, as DER volumes increase, it can be expected that utilities and grid operators will have need for more dispatchable and controllable generation resources, for which the most suited are energy storage, hydro power plants and gas power plants. In South Asian countries other than Bangladesh, availability of gas from domestic market is substantially limited. Battery energy storage continues to be costly. This leaves hydro as the most optimum balancing power source to handle RE intermittency in South Asia. At the same time, distribution of hydropower is not necessarily the same as distribution of DER in the region.

Therefore, proliferation of DERs are expected to create an additional case for more regional electricity trade, to handle scenarios such as use of hydropower in one country for balancing RE intermittency in another country.

A detailed assessment of investment potential under these opportunities can be one of the areas that SAFEI can undertake as part of its initial activities once it is operational.

4 Investment framework and governing policies in South Asian Countries

4.1 Introduction

Worldwide, various policies and regulations directly or indirectly influence the framework for investment. Suitable policies can invite many private investors to invest in large scale projects. Some of the key policies discussed about South Asian Countries (SAC) include policies on private investment, foreign investments, dispute resolution, foreign exchange including bi-lateral tax treaty, etc. The following sub-sections also cover regulations, incentives and institutions in the respective country that would determine the investment framework.

4.2 Afghanistan

Afghanistan's GDP increased from 18.03 billion USD in 2018 to 19.79 billion USD in 2020. The average GDP growth rate for past three years has been 1.07%. Foreign Direct Investment (FDI) has declined in the country from 0.66% of GDP in 2018 to 0.06% of GDP in 2020. Foreign exchange rate was the highest in 2019 at 77.80 AFs/USD. Generally, GDP and per capita energy consumption have a positive relationship meaning that as the country's GDP grows, the energy consumption per person tends to increase. However, it can be seen in the case of Afghanistan that there has been a drop in per capita energy consumption in 2019 compared to 2018. One reason could be because of unmet demand. Energy access is a major issue plaguing this sector and the concern is that the national grid, owing to its limited infrastructure will not be able to serve the entire population of the country in near future. The following table shows the macroeconomic trends of Afghanistan for three years starting from 2018 to 2020.

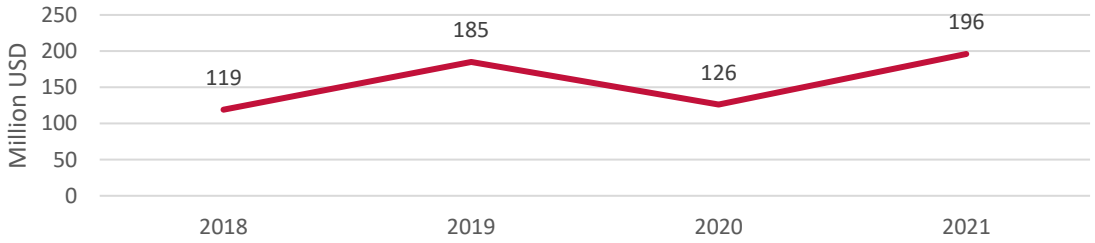
Table 17: Macroeconomic statistics of Afghanistan

Year	GDP (Billion US$)*	GDP per capita (US$)*	GDP growth (annual %)*	Foreign Exchange Rate (Afs/US$ average)*	Per capita energy consumption (MMBtu/person)#
2018	18.03	570.41	1.20	73.66	3.85
2019	18.89	586.63	3.90	77.80	3.23
2020	19.79	595.65	-1.90	76.81	-

*Source: *Statistical yearbook 2020[138], #US Energy Information Administration (EIA) database*

The trend of FDI into the country is shown below.

Figure 25: FDI inflows to Afghanistan



Source: UNCTAD[139]

As per DABS, in line with Afghanistan Power Sector Master Plan, the country will need a total investment of $10,096m, out of which, $7,330m for Generation sector development and network integration, $1,727m for major Transmission Projects and $1,040m for Transmission Network development within the provinces up to the year 2032.[140]

4.2.1 Current Framework for investment in Afghanistan

Policy and Legal Framework

- Law on Private Investment (also called *Law on Domestic and Foreign Private Investment)*, 2005: The legislation was adopted to encourage and protect investments by domestic and foreign private players. It aims to promote economic development, expand the labour market, increase production and export earnings, improve national prosperity and the standard of living of people. It restricts investment in nuclear power, casinos and similar establishments and narcotics. It provides provision to investors to lease land for 50 years and open bank accounts in Afghanistan in foreign currency. It also allows 100 percent ownership to approved enterprises.[141]
- Procurement Law, 2008 (amended in 2009): It aims to regulate public procurement of work by domestic and foreign entities ensuring transparency by providing an opportunity for participation through tender and bidding. It lays down the procedure for procurement along with eligibility criteria. It also mentions the threshold limits for award authority in various services.[142]
- Law on Land Acquisition, 2017: The acquisition of plot or part of it for public purposes is compensated at fair value based on current market rates which would be determined by a competent official.[143]
- Afghanistan Centre for Dispute Resolution: It provides alternate dispute resolution services to domestic and foreign business community in a fast, fair, cost effective and reliable professional mediation.[144]
- Commercial Arbitration Law, 2007: It provides provision for the parties to govern their contracts by foreign law and agree to resolve disputes through arbitration inside and outside of Afghanistan. Afghan courts would enforce the resulting award or agreement.[145]
- Dispute Resolution: As per Article 41 of the Power Services Regulation Act, 2016, disputes may be resolved through mutual negotiation between the parties or through the disputes resolving authority set forth in the license or contract. If authority is not specified in contract, then the dispute may be resolved by mediation of experts based on consent of parties through the Disputes Resolution Board of the Ministry of Energy and Water, Commercial Dispute Resolution Centre, Financial Disputes Resolution Commission, International Centre for Settlement of Investment Disputes (ICSID), The United Nations Commission for International Trade Rights Arbitration Law (UNCITRAL), or the competent court in Afghanistan.
- Income Tax Law, 2009: As per article 6, foreign nationals are exempted from tax if their nation exempts the tax of Afghan citizens. 2% business receipts tax is imposed on revenues. Net operational loss can be carried forward to next fiscal year as a deduction from taxable income. It provides provision for accelerated deduction for depreciation on capital assets.[146]

Regulatory Framework

- Power Service Regulation Act, 2016: The objective of the law is to regulate electricity sector so that people can have non-discriminatory access to electricity from natural resources and imports at fair price. The act provides provision for Energy Service Regulation Department within Ministry of Energy and water to act as Electricity regulatory authority. It mandates obtaining license for construction, installation, transmission, distribution and import/export of electricity power. The license will be given through competitive process for a limited duration. Tariff determination will be done by the department and same shall be imposed on the licensee.[147]
- Renewable Energy Policy, 2015: Renewable energy projects will be subsidized through upfront capital costs, preferential tariffs, performance-based incentives, or viability gap funding. . Other incentives offered to renewable projects include interest subsidies and soft loans, custom duty and sales tax exemption on import and sale of machinery, income tax exemption for first 5 years of commercial operation, land acquisition and security. Tariff for renewable projects would be as signed in PPA with escalations.[148]

Institutions:

- High Commission on Investment (HCI): It develops policy related to investments in Afghanistan with special consideration to power infrastructure, in consultation with the government ministry. HCI is the authority

to approve the registration of an enterprise to operate in Afghanistan. It has the authority to limit the share of foreign investments.[141]

- Da Afghanistan Breshna Sherkat (DABS): It controls and operates all power system activities throughout the country and has three departments namely Operations Department, Commercial Department and Finance Department.
- Afghanistan Investment Facilitation Unit (AIFU): It was established on 16th December 2019. AIFU acts as an institutional framework for investments. It provides compatible environment for investments to foreign and domestic investors. It assists in getting necessary approvals, promotes investment, solves issues for investors, and ensures timely implementation of investment programs.[149]
- National Procurement Authority: It is involved in reviewing and approving documents related to procurement of projects.[150]
- Central Public Private Partnership Authority (Central Partnership Authority): The authority works under the Ministry of Finance with the task of regulating policies and processes related to PPP. It provides technical advice to entities and develops policies with cooperation from other sectoral entities. It is also responsible for administering Viable Gap Fund or Project Development Fund.

Technical and Operational Framework

- Afghanistan is participating in Central Asia South Asia Electricity Transmission and Trade Project (CASA-1000).
- It is one of the signatories of SAARC Framework Agreement for Energy Cooperation (Electricity), signed among the South Asian countries in November 2014.
- It currently has arrangements to import power from Iran, Tajikistan, Uzbekistan and Turkmenistan.
- The electricity projects are owned by either the utility – Da Afghanistan Breshna Sherkat (DABS), or by Independent Power Producers (IPPs). In the past, there have been instances of Ministry of Energy and Water (MEW) issuing tenders for the development of power plants.

Foreign Direct Investment and Monetary Framework

- FDI: As described in the law on private investment of 2005, FDI is allowed up to 100% in these projects. The companies must get themselves registered and then can invest either with full ownership or in joint venture.
- Foreign Exchange: The limit for foreign exchange is set by Da Afghanistan bank so that total amount of its liabilities, which are payable in foreign currency, shall not exceed fifty per cent of the aggregate amount of the unimpaired capital and reserves of Da Afghanistan Bank.[151]
- Multilateral Funding Agencies: Ministry of Energy and water is supported by donor/multilateral funding agencies like World Bank, IDB, ADB and GIZ.[152]
- Public Private Partnership Law, 2016: This law aims to regulate the issues related to private-public partnership with transparency, open competition, and cost effectiveness. PPP in power sector is allowed in power generation only. It identifies the opportunities for PPP and encourages private participation by ensuring impunity of investors. It also guarantees protection of assets and the right of ownership to a private party. The government may provide financial assistance through the Project Development Fund or Viable Gap Funding (VGF) . It describes the dispute resolution mechanism through PPP contract.[153]
- Taxes & Incentives: Corporate Income Tax is a flat tax of 20 percent on the net taxable income. In 2002, Afghanistan granted a tax holiday but to limit lost revenues and encourage investment, the law was repealed and new measures such as competitive depreciation rules and loss carry-forwards were introduced.[154]

4.2.2 SWOT analysis for Investment Framework

Strengths	Weaknesses
• Afghanistan is a World Bank Group member and Multilateral Investment Guarantee Agency (MIGA) provides insurance against political risks such as transfer restriction, expropriation, war and civil disturbance and breach of contract by the host government in case of a few projects.[154] • Private investors can transfer capital and profits out of Afghanistan. • 100% foreign ownership is offered to approved entities	• Land can be leased for 50 years but cannot be purchased • Lack of clear land (due to large untitled/unregistered land) and property rights[189] • Lack of grid code • Weak dispute resolution mechanism and judicial system leading to out of court settlements.[189]
Opportunities	**Threats**
• Afghanistan is a central hub for electricity trade in Central and South Asia.	• Political instability.

Stage of power sector reform, regulatory evolution and power market structure

Power system infrastructure in Afghanistan is largely controlled by the government owned utility 'Da Afghanistan Breshna Shekat (DABS)'. Transmission and distribution of electricity is carried out by DABS. While majority of the generation project ownership is with DABS, there has been private sector ownership to some extent. The market is far less monopolistic in renewable sector where most of the projects are predominantly grant funded. The developers for the renewable projects have been directly contracted to private players or through the government.

4.2.3 Gap analysis for Investment Framework

Category	Parameter	Availability	
Electricity scenario	Whether there is adequate power availability	No.	✗
	Whether per-capita electricity consumption is in line with the overall region?	No, it is lower. 195 kWh for Afghanistan.[155]	✗
Policy and legal framework	Whether private investment allowed in power generation	Private investment is allowed in power generation as per PPP Law, 2016.[141]	✓
	Whether private investment allowed in transmission	Private investment is not allowed in power transmission as per PPP Law, 2016.[141]	✗
	Whether there is dispute resolution framework	Dispute resolution framework is provided in Commercial Arbitration Law, 2007 or as mentioned in Power service regulation act, 2016.[145] [147]	✓
	Whether alternate dispute resolution (ADR) mechanism allowed	ADR mechanism is allowed as per Commercial Arbitration Law, 2007.[145]	✓

Category	Parameter	Availability	
	Whether institutional framework for investments is properly defined	AIFU is the institutional framework for investments.	✓
	Whether there is legal framework for protection of foreign investments	Foreign investments are protected by giving right of ownership under commercial arbitration act, 2007	✓
	Whether there are clear guidelines for land acquisition and compensation	Guidelines for land acquisition and compensation are provided in Law on Land Acquisition, 2017.[143]	✓
Regulatory framework	Whether there is an independent regulatory commission	Energy Service Regulation Department is the independent regulatory commission created as per Power Services Regulation Act, 2016.[147]	✓
	Whether there is a regulatory framework for tariff determination or adoption for G&T	Tariff is determined by Energy Service Regulation Department without any discrimination.[147]	✓
	Whether there are guidelines for competitive procurement of projects	Guidelines for competitive procurement have been specified in Procurement Law, 2008.[142]	✓
	Whether there is an approved grid code	There is no approved grid code.	✗
Technical and operational framework	Whether there is open access to transmission lines	Afghanistan offers non-discriminatory access to electricity under article 32 of Power Services Regulation Act, 2016.[147]	✓
	Whether there is licensing process specified	Licensing process is specified in article 10 of Power Services Regulation Act, 2016.[147]	✓
	Pipeline of regional infrastructure projects already in execution	Afghanistan currently imports power from Iran, Tajikistan, Uzbekistan and Turkmenistan	✓
Financial and monetary framework	Whether there is USD indexed tariffs for Generation	USD indexed tariff for generation is allowed.[156]	✓
	Whether profits can be repatriated in foreign currency	Foreign investors are provided right to freely transfer profits/ capital investment in foreign currency at prevailing exchange rate outside Afghanistan as per law on private investment, 2005.[141]	✓
	Whether there are Incentives	Provision for competitive depreciation and carry forward of loss	✓
	Whether there is tax holidays and tax exemptions	No tax holidays are provided after 2002. Tax exemptions is offered to only few foreign nationals.	✓

✓ *Available* 🗘 *Partially Available* ✗ *Not Available*

4.2.4 Impact of existing framework on mobilization of energy investment

Afghanistan provides protection to investors with ownership up to 100%. Certain foreign nationals are also exempted from tax. Afghanistan offers carry forward loss and accelerated depreciation. Tax holidays were removed in 2002 and land can only be leased for 50 years. Even though political instability may pose a political risk, however, insurance by MIGA may attract investors.

4.3 Bangladesh

Bangladesh had a GDP of 323 Billion USD in 2020. It has a growing GDP with a five-year (2016-2020) average growth rate of 6.78%. Per capita energy consumption has been increasing with rapid economic growth. The following table shows macroeconomic trend of Bangladesh for five years starting from 2016 to 2020.

Table 18: Macroeconomic statistics of Bangladesh

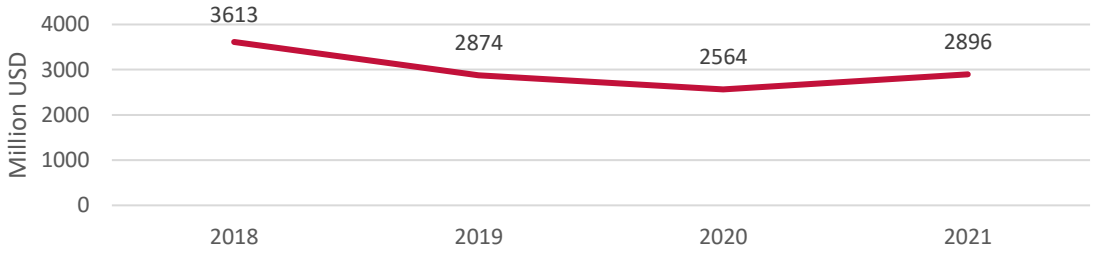
Year	GDP (Billion US$)*	GDP per capita (US$)*	GDP growth (annual %)*	Foreign Exchange Rate (Tk/US$ average)	Per capita energy consumption (MMBtu/person)#	Per capita electricity consumption (kWh/person)
2016	221.45	1,385	7.11	79.11	8.97	281
2017	249.74	1,544	7.28	82.10	9.14	308
2018	274.11	1,675	7.86	83.99	9.61	336
2019	302.71	1,828	8.15	84.77	9.92	375
2020	323.14	1,930	3.51	84.81	-	378

Source: *Bangladesh Economic review 2021[157], and #US Energy Information Administration (EIA) database

The annual investment requirement for electricity is provided in the Revisiting PSMP 2016 report. The report envisages 104,300 million USD of investment between 2021 and 2035, for a total generation capacity augmentation of 57,276 MW.[158]

The trend of FDI into the country is shown below.

Figure 26: FDI inflows to Bangladesh



Source: UNCTAD[159]

4.3.1 Current Framework for investment in Bangladesh

Policy and Legal Framework

- Private Sector Power Generation Policy (PSPGP), 1996 (Revised in 2004): This policy aims to increase private sector participation in the power generation sector. It specifies minimum 20% equity as minimum requirement for investment in the projects. Power Cell facilitates the development of private sector power projects. Competitive bidding is done to award projects.[160]
- Procurement Guidelines for PPP projects, 2018: These guidelines describe the various stages of PPP procurement projects. It describes four phases of project which are identification phase, development phase,

bidding phase and approval and award phase. The bidding process can either be a single-stage bidding process or a two-stage bidding process.[161]

- National Energy Policy, 1996: This policy aims to promote public and private participation in the energy sector and to develop a regional energy market. It also promotes the use of renewable energy generation sources.[162]
- Bangladesh Renewable Energy Policy, 2008: This policy aims to scale up renewable energy on the grid.[163]
- Policy Guidelines for Enhancement of Private Participation in Power Sector, 2008: These guidelines promote private sector participation through competition and ensure conservation of natural gas and development of new power plants. It provides provision for private sector investors to supply power at mutually negotiated tariffs.[164]
- Quick Enhancement of Electricity and Energy Supply (Special Provisions) Act, 2010 (Amended in 2016): It provides provision to government to implement power sector projects and expedite the energy sector contracts to be obtained without tendering. It also provides provisions for quick development of plans for the import energy from other nations and implement infrastructure required for such arrangement to ensure uninterrupted supply of power in Bangladesh.[165]
- The Acquisition and Requisition of immovable property ordinance, 2017: The acquisition of property for public use or public interest (except graveyard, place of worship, or cremation ground) can be done by providing fair compensations.[166]
- The Arbitration Act, 2001: It provides provision for settlement of disputes in a third country forum. The legislature has adopted the United Nations International Trade (UNCITRAL) Model Law. Section 22 of this act specifies the resolution of a dispute by mutual agreement or mediation.[167]
- Foreign Private Investment (Promotion and Protection) Act, 1980: This act aims to provide equal and fair treatment to foreign private investors. Foreign private investment is protected against expropriation or nationalisation except for a public purpose in which case adequate compensation will be given as per the market value.[168]

Regulatory Framework

- Bangladesh Electricity Regulatory Commission Act, 2003 (Amended in 2005): This act aimed to establish an independent regulatory commission to encourage competition and transparency in the energy sector. It led to the establishment of Bangladesh Electricity Regulatory Commission (BERC) in 2004. It mandates license for involvement in activities like generation, transmission, distribution, energy supply and energy storage. It mentions that if the tariff is not as per the mutual agreement between government and the licensee, then the tariff would be determined by the commission as per the methodology set. No provisions for power trade have been specified yet.[169]
- BERC (Electricity Grid Code), 2019: It specifies that the frequency of the transmission be in the range of 49.5 Hz to 50.5 Hz. It mandates regular planning of transmission systems, security standards, voltage and frequency management. It aims to provide transmission access without any discrimination.[170] [171]

Institutions:

- Sustainable and Renewable Energy Development Agency (SREDA): It is responsible for strengthening the infrastructure for development of renewable energy and energy efficiency measures as per the Sustainable and Renewable Energy Development Authority Act, 2012.[172]
- Bangladesh Energy Regulatory Commission (BERC): It was established in 2004 as per the BERC act of 2003. It regulates the tariff for all generation stations including renewables. The commission prepared guidelines to improved power tariff setting mechanism.[173]

- Bangladesh Investment Development Authority (BIDA): It was established as per the BIDA Act, 2016. It is responsible for screening and reviewing the FDIs in Bangladesh.[174]
- Public Private Partnership (PPP) Authority: It aims to promote PPP by assisting and developing guidelines for PPP projects. It guides through various government policies and guidelines like Policy for Implementing PPP Projects through Government to Government (G2G) Partnership, 2017 (Amendment), Rules for Public-Private Partnership Technical Assistance Financing, 2018, Rules for Viability Gap Financing (VGF) for Public-Private Partnership Projects, 2018, PPP law, etc. [175]
- The Board of Investment (BOI): It was established in 1989 by the Investment Board Act to encourage investment in private sector, to identify the hindrance to investment and provide necessary facilities and assistance in the establishment of industries.

Technical and Operational Framework

- The Electricity Act, 2018: It lays down guidelines for the supply of electricity. It describes the procedures for supply of electricity, licenses, arbitration, etc. License for supply of electricity can only be obtained after getting necessary approval from the Commission on application by the investor.[176]
- Remote Area Power Supply System (RAPSS) Guidelines, 2007: Private players are given a provision to build and operate generation and distribution system up to 20 years on given area which may be on-grid or off-grid. [177]
- Memorandum of Understanding (MoU) has been signed between Bangladesh and India under medium and long term Power Purchase Agreements (PPAs) for power import from India. MoU for renewable energy cooperation between the two nations was signed in 2011. Nepal and Bangladesh have signed an MoU for regional cooperation. Bangladesh plans to import 500 MW from GMR's Upper Karnali 900 MW plant in Nepal. [178] [179] [180]
- BPDB typically adopts a tendering process for selecting IPP developers. There are also JVs of BPDB such as Bangladesh-China Power Company (Pvt) Limited (BCPCL) and Bangladesh-India Friendship Power Company (Pvt.) Ltd.

Foreign Direct Investment and Monetary Framework

- Foreign Direct Investment: Foreign investors can make investments in Bangladesh except for few reserved areas (defence, nuclear, security printing and forestry) and can have complete or partial ownership. No permission is required to set enterprise if their own funding is used. Foreign loans can be taken post approval from Board of Investment and the loan can be repaid through authorized dealers without prior Bangladesh Bank approval.[181]
- Incentives for investment in Bangladesh include tax holiday for 5 or 7 years, tax exemptions, accelerated depreciation, concessionary duty on imported machinery, 100% foreign equity and other special measures. Full repatriation of capital invested from foreign sources and profits and dividends accruing to foreign investment are allowed.[182] Private sector power generation companies are exempted from tax up to 31st Dec 2034 given that their operation starts between 1st Jan 2020 and 31st Dec 2022 (personal income tax of foreign nationals exempted for 3 years). Power generating companies can raise funds for developing projects by issuing corporate bonds with consent of securities and exchange commission. Renewable projects are exempted from some taxes for 10 years.[183]
- Foreign Exchange: To encourage interbank cross currency transactions, Bangladesh bank has allowed sales and purchases with only US Dollar with a transaction threshold of US$ 50,000. Foreign exchange limit has been abolished by Bangladesh Bank but within the open position limits to mitigate exchange rate fluctuation risk.[181]

- Foreign Exchange Act, 1947: It is an act made to regulate certain payments, dealings in foreign exchange and securities and the import and export of currency.[184]
- Policy on Public-Private Partnerships, 2010 (amended in 2015): This policy aims at encouraging PPP by providing incentives (e.g., 100% business income tax exemption for 10 years for local investors, 50% tax exemption for 3 years for foreign technicians, accelerated depreciation, reduced import duties on capital machinery and spare parts, etc) and streamlining the execution of PPP projects. It provides provisions for government financing through technical assistance financing, viability gap financing, financing against equity and loans, financing against linked components, and financing against activities determined by the PPP authority.[185]
- Private Sector Infrastructure Guidelines (PSIG), 2004: It provides procedure to private sector and government with an aim to encourage private partnerships. It also lays down provisions for general incentives as stated by the Private Infrastructure Committee (PICOM) and special incentives as determined by the Major Terms and Conditions Committee. As per the policy, the tariff will be determined through competitive bidding process.[186]
- International Investment Treaties: Bangladesh has signed investment treaties with various nations. For example, Bangladesh Trade and Investment Cooperation Forum Agreement (TICFA), 2013 provided regular discussion and investment from the US.[187]
- Multilateral Agencies: Public Private Sector Infrastructure Development Facility (PPIDF) established by ADB for debt funding of infrastructure projects in Bangladesh. Multilateral investment guarantee Agency (MIGA) is a world bank agency that provides security against loss to foreign investors from non-commercial risks and thus encourages FDI. [188] [189]

Past trend in project award for large electricity sector projects

- The 1320 MW Maitree STPP is being developed under an MoU between BPDB and India's NTPC. BPDB and the NTPC agreed to implement the project on a 50:50 equity basis
- The 1320 MW Payra power plant, which is another large project, is being developed under an MoU between China National Machinery Import and Export (CMC) and Bangladesh's state-owned North-West Power Generation Company (NWPGCL), signed in March 2014. The plant is being developed by Bangladesh China Power Company (BCPCL), a 50:50 joint venture between CMC and NWPGCL.
- The 1320 MW Chattogram power plant is being developed by a JV of S. Alam Group (holding 70% of the equity), SEPCOIII Electric Power Construction Corporation, China and HTG Development Group Co. Ltd., China. There was no competitive bidding for the power plant, and PPA was directly negotiated between the developer and BPDB.
- Summit and GE Power are co-developing Summit Meghnaghat II, a 583 MW combined cycle gas power plant at Meghnaghat, near Dhaka, Bangladesh. A 22-year Power Purchase Agreement (PPA) was signed between Summit Meghnaghat II Power Company Limited (SMIIPCL), a subsidiary of Summit Group, and the Bangladesh Power Development Board (BPDB).

4.3.2 SWOT analysis for Investment Framework

Strengths	Weaknesses
• Incentives are given to investors like tax exemptions, 100% foreign ownership, reduced import duties on capital machinery and spare parts, etc. Provision of tax rebate to foreign investors.[188]	• Legal system is considered weak to enforce the contracts and no penalty is imposed for delayed proceedings.[188]

- Uniform investment incentives are offered to public and private investors as stated in Bangladesh Investment Handbook. Renewable energy projects are exempted from some taxes for 10 years.[190]
- Private players can set up commercial power plants and supply power to industries at mutually agreed tariffs.
- Private sector power generation companies are exempted from tax up to 31st Dec 2034 given that their operation starts between 1st Jan 2020 and 31st Dec 2022 (personal income tax of foreign nationals is exempted for 3 years).
- Power generating companies can raise funds for developing projects by issuing corporate bonds with consent of securities and exchange commission.
- Performance of fuel supplier is guaranteed by GOB under the terms of Fuel Supply Agreement.
- Government provides protection against force majeure risk and against changes in certain taxes and duties to private players. Tax is exempted on royalties.[161]

Opportunities	Threats
• Potential trade with Myanmar and multilateral trading with Bhutan and Nepal by wheeling power through India. • Presence of multiple cross border interconnections. • In the past, many of the projects were developed under MoU route with Government. However, in recent years, several projects were also awarded under competitive bidding, such as the PPA with Sembcorp for 250 MW.	• Bangladesh is ranked among the top ten countries in the world most affected by extreme weather events (Global Climate Risk Index 2000-2019). Such events could have an adverse impact on the economic growth, and some of the project investments also.[191]

Stage of power sector reform, regulatory evolution and power market structure

Bangladesh has an unbundled power sector, where generation, transmission and distribution of electricity is undertaken by different entities. The Bangladesh Power Development Board (BPDB) is responsible for power generation infrastructure development. The Power Grid Company of Bangladesh (PGCB) undertakes transmission of electricity, while a National Load Despatch Centre operated by it undertakes system operation.

4.3.3 Gap analysis for Investment Framework

Category	Parameter	Availability	
Electricity scenario	Whether there is adequate power availability	No. Over 1100 MW of power is imported.	✗
	Whether per-capita electricity consumption is in line with the overall region?	No. Per-capita electricity consumption of 422 in 2021.[192]	✗
Policy and legal framework	Whether private investment allowed in power generation	Private investment is allowed in power generation as per BERC Act, 2003[169]	✓
	Whether private investment allowed in transmission	Private investment is allowed in power transmission as per BERC (Not implemented in practice, so far) [169]	✓
	Whether there is dispute resolution framework	Dispute resolution framework is given under Arbitration act, 2001[167]	✓
	Whether alternate dispute resolution (ADR) mechanism allowed	Alternative dispute resolution (ADR) mechanism is allowed as per section 22 of Arbitration Act, 2001[167]	✓
	Whether institutional framework for investments is properly defined	BIDA defines institutional framework for investments .[174]	✓
	Whether there is legal framework for protection of foreign investments	Legal framework for protection of foreign investment is present as per the Foreign Private Investment (Promotion and Protection) Act, 1980[168]	✓
	Whether there are clear guidelines for land acquisition and compensation	The Acquisition and Requisition of immovable property ordinance, 2017 provides clear guidelines for land acquisition and compensation[166]	✓
Regulatory framework	Whether there is an independent regulatory commission	BERC is the independent regulatory commission.[173]	✓
	Whether there is a regulatory framework for tariff determination or adoption for G&T	There is a regulatory framework for tariff determination as given in the Bangladesh Electricity Regulatory Commission Act, 2003 (Amended in 2005)[169]	✓
	Whether there are guidelines for competitive procurement of projects	There are guidelines for competitive procurement of projects as per the PSPGP and procurement guidelines for PPP projects, 2018[160]	✓
	Whether there is an approved grid code	BERC (Electricity Grid Code), 2019 is an approved grid code[170]	✓
Technical and operational framework	Whether there is open access to transmission lines	Open access to transmission lines is stated in Electricity grid code[170]	✓
	Whether there is licensing process specified	Licensing process is specified in BERC Act, 2003 (amended in 2005)[169]	✓

Category	Parameter	Availability	
	Pipeline of regional infrastructure projects already in execution	Bangladesh imports power from India.[178]	✓
Financial and monetary framework	Whether there is USD indexed tariffs for Generation	USD indexed tariff for generation is mentioned in Private Sector Power Generation Policy (PSPGP), 1996 (Revised in 2004) point 4.2 but the payment will be in Taka.[160]	✓
	Whether profits can be repatriated in foreign currency	Full repatriation of capital investment from foreign sources is allowed as per Bangladesh Bank[182]	✓
	Whether there are Incentives	Incentives are offered by govt. as financial aid for development of project and reduced duty on imports of machinery and accelerated depreciation as specified by Bangladesh Bank.[182]	✓
	Whether there is tax holidays and tax exemptions	Tax holidays and tax exemptions are specified by National Board of Revenue (NBR)[182]	✓

✓ *Available* 〰 *Partially Available* ✗ *Not Available*

4.3.4 Impact of existing framework on mobilization of energy investment

The above gap analysis suggests that the existing framework can facilitate mobilization of energy investment in Bangladesh. Provisions like generation tariff indexation allowed in US dollars, full repatriation of capital investment, incentives (like tax exemptions, 100% foreign ownership, reduced import duties on capital machinery and spare parts, etc.), and support from MIGA and PPIDF would act as a catalyst in attracting investors to Bangladesh.

4.4 Bhutan

Bhutan has an average GDP of 2.3 billion US$ with highest being in the year 2019 at 2.53 billion USD. Year 2020 recorded a decline in GDP by around 10%. The foreign direct investment as a percentage of GDP has been fluctuating. When GDP was at its highest in 2017 and 2019, FDI net inflow as percentage of GDP varied between -0.68% and 0.55%. Bhutan's per capita energy consumption saw decline in the two years 2017 and 2018, however, it increased in 2019. Foreign exchange shows an increasing trend from 2017 to 2020. Table below shows the macro-economic parameters of Bhutan from 2016 to 2020.

Table 19: Macroeconomic statistics of Bhutan

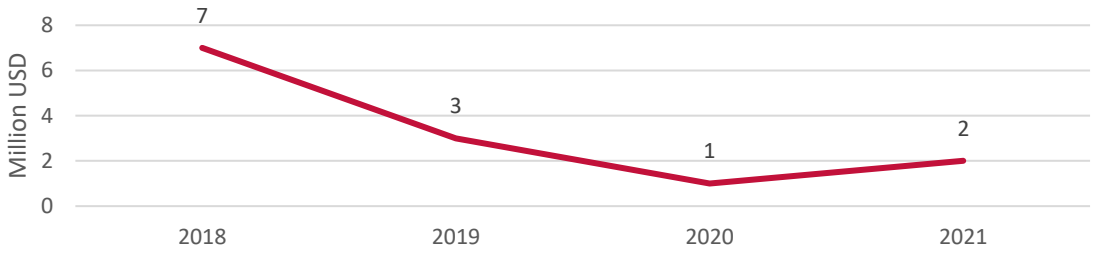
Year	GDP (Billion US$)*	GDP per capita (US$)*	GDP growth (annual %)*	Foreign Exchange Rate (Nu/US$ average)*	Per capita energy consumption (MMBtu/ person)#	Per capital electricity consumption (kWh/perso n)
2016	2.16	2971.6	8.13	67.19	85.76	2673
2017	2.45	3332.56	4.65	65.10	84.21	3085
2018	2.45	3331.4	3.06	68.40	79.80	3264
2019	2.53	3418.8	5.76	70.42	100.14	3162
2020	2.34	3129.9	-10.08	73.20		2708

*Source: *National Accounts Statistics[193], #US Energy Information Administration (EIA) database*

As per Bhutan's Transmission Grid Plan, the transmission system alone will require Nu 5,2.12 billion till 2035.

The trend of FDI into the country is shown below.

Figure 27: Bhutan – FDI inflows



Source: UNCTAD[194]

4.4.1 Current Framework for Investment in Bhutan

Policy and Legal Framework

- Bhutan Sustainable Hydropower Development Policy, 2020: This policy aims to accelerate the development of hydropower projects. Provisions are made for development of bilateral arrangements between governments, multilateral arrangements between countries in the region, joint venture bilateral arrangement, public – public arrangement and public – private arrangement. Investors under BOOT (build own operate and transfer) model have a concession period of 30 years. Public Private partnership on the hydro projects shall be commenced by PSUs and the investor is selected through open and transparent process. Investors can have maximum of 26% equity in the project.[195]
- Alternate Renewable Energy Policy, 2013: Renewable Energy Policy 2013: It allows FDI in RE projects except for mini and micro hydro projects. It encourages private participation in RE projects and provides financial assistance for development of RE projects.[196]
- Bhutan's Procurement Rules and regulations, 2019: According to this act, competitive bidding and procurement are done for national as well as international vendors. The rules enlist the following methods used for the open tender/bidding, limited tender/bidding, limited enquiry, direct contracting, framework contracting, electronic reverse auction(e-auction).[197]
- Various agreements signed by Bhutan with India include:
    - Treaty of Friendship and Cooperation,1949 (revised in 2007)
    - Agreement on Cooperation in Hydropower, 2006 (revised in 2009) (export of minimum 10,000 MW hydropower to India)
    - Inter-Governmental Agreements, 2014: It involves development of four HPPs of 2,120 MW.[198]
- Land Act, 2007: It provides provision for acquisition, compensation, registration etc. of land for building generation projects.[199]
- Economic Development Policy (EDP), 2016: This policy encourages private sector participation and promotes ease of doing business. It aims to be within top 50 nations in ease of doing matrix.[200]
- Alternate Dispute Resolution Act of Bhutan, 2013: It provides an option of resolving the dispute between investor and government through alternate dispute settlement mechanism.[201]
- The dispute between a joint venture participant or FDI company and the government may also be resolved amicably through arbitration as agreed mutually or by adjudicating the dispute before Royal Court of Justice or in a manner by special procedure under the law of the land.[201]

Regulatory Framework

- Bhutan's Grid code, 2008: It specifies the principles, procedures and criteria for the planning and development of the transmission system and promotes coordination among all licensees. Bhutan's Grid

Code sets the acceptable limit for frequency within 49.5 Hz to 50.5 Hz. It specifies the operational roles and responsibilities of various bodies. It plans transmission system for export of power to the neighbouring nations.[202]

- Simplified Procurement Rules and Regulation (SPRR) 2020: As per the act, four ways of procuring projects are mentioned namely direct contracting method, community contracting, limited enquiry method, and open tender method.[203]
- BEA Tariff Determination Regulation, 2016: It is primarily for domestic electricity tariff. However, it provides supporting regulatory framework for CBET. Return and loss allowances for the consumer categories including export wheeling have been specified. The cost of equity is 15 percent. Technical loss of up to 2 percent are allowed. Allocation factors (for generation and transmission assets for export, HV, MV, LV customers) have been provided for various parameters – asset related, O&M costs, inventories and fees and levies.[204]

Institutions

- Department of Hydropower and Power Systems (DHPS): It is responsible for developing long term policies and plans for energy and power sector.
- Bhutan Electricity Authority (BEA): It regulates the electricity sector. It has a tariff division that manages and prepares economic regulations and evaluate tariffs for each licensee. It also evaluates PPP between Bhutanese and licensees.[205]

Technical and operational framework

- The Electricity Act, 2001: It describes licensing and system operations of power system assets (generation, transmission and distribution). Provision for regulation of tariffs by authority has been made under this act which may regulate tariffs for generation that are not regulated by PPA, transmission, distribution and retail sales. An exemption from obtaining a license is given to investors generating electricity below 500 kW. As per clause 11.2 of the act, BEA aims to ensure non-discriminatory open access to the transmission and distribution system.[206]
- Most power projects are developed by DGPC or its subsidiary/associate companies under GtG or JV models. Negotiations are typically the mode adopted for awarding projects instead of competitive bidding.

Foreign Direct Investment and Monetary Framework

- Foreign Direct Investment Policy, 2019: This policy mandates FDI company to retain 100 percent of foreign equity for a minimum lock in period of three year from date of commencement of operations with investment being made in convertible currency.[201]
- FDI for infrastructure facilities on PPP model can obtain equity up to 100 percent and no minimum project cost has been specified. FDI in production and manufacturing of renewable energy shall be of minimum project cost NU 20 million and equity will be as given in Alternate Renewable Energy Policy, 2013.[201]
- Foreign Exchange: Foreign investors need to invest in convertible currency except for Indian investors who are permitted to invest in Indian Rupees.[201]
- Public Private Partnership Policy, March 2016: The policy entitles the sponsors, lenders and contractors to the concessions under the Foreign Direct Investment Policy, the Economic Development Policy, the Fiscal Incentives and any related rules or regulations. Financial assistance would also be provided to PPP projects.[207]
- Multilateral Agencies: RGoB may seek a line of credit from multilateral institutions, which may be extended to banks within Bhutan for onward lending to onwards to projects. RGoB may also initiate a partnership with ADB or the World Bank to enable them to offer Credit Enhancement Products (CEPs) are risk-sharing and mitigation instruments.

- Fiscal Incentives Act of Bhutan, 2021: It provides provision for exemption of tax for qualifying period not exceeding 10 years in energy, excluding hydro-electric projects. Various direct and indirect tax incentives have been laid down to stimulate economic growth, private sector development and employment generation. The provisions for tax holidays as mentioned in the Fiscal Incentives Act of Bhutan, 2017 are continued.[208]
- Foreign investors shall have the right to repatriate their invested capital and any capital gains secured, in the currency of investment as per the Foreign Direct Investment Policy, 2019. [201]

Past trend in project award for large electricity sector projects

- In Bhutan, all large hydropower generation projects historically have a substantial Govt. ownership, directly, or through DGPC or its subsidiaries or associate companies. Even in Dagachu HPP which is a PPP project, private sector ownership is only 26%.

4.4.2 SWOT analysis for Investment Framework

Strengths	Weaknesses
• PPP projects will be provided with subsidies or viable gap funding.[207] • Bhutan has developed mechanisms for sharing the benefits of power export in a mutual manner which allows lower retail tariffs for residential consumers. Hence power export projects receive public support. • Bhutan has strong strategic cooperation agreements with India for development of trade oriented hydropower projects. • Long history and experience on CBET with India. • Compensation is given by RGoB in occurrence of Bhutan sovereign event impacting operation or continuity of hydro project. • Import tax is exempted on the construction material for hydro plant and no export duty is charged on export of electricity from hydro plants. • Bhutan is signatory to the Convention on Recognition and Enforcement of Foreign Arbitral Awards (New York Convention).[200] • FDI businesses and downstream projects are required to obtain necessary approval and a business license to commence the project.[201] • The Renewable Energy Development Fund (REDF) is provided by the government to provide financial assistance in developing RE projects.[201]	• 100% shareholding of FDI or private sector in energy infrastructure is not explicitly allowed. • The projects are mostly awarded through negotiations with the Government.
Opportunities	**Threats**
• With a clearly identified pipeline of ongoing and planned projects, it is easier for Bhutan to proceed with its plans for export-oriented projects,	• FDI has to be made at freely convertible currency which can lead to currency risk during repayment of debt and equity as it is

including potential projects for export to Bangladesh. • Hydropower potential of Bhutan is 30 GW which can be leveraged for various opportunities.	subjected to sufficient foreign exchange availability.

Stage of power sector reform, regulatory evolution and power market structure

Bhutan's power sector is mostly a monopoly, where only entities which are either fully or partly owned by the Government (RGoB) undertake large generation projects, transmission and distribution of electricity. Bhutan Power Corporation (BPC) is responsible for development and operation of transmission and distribution system and Druk Green Power Corporation (DGPC) manages hydropower plants fully owned by the Royal government. The power sector is regulated by Bhutan Electricity Authority. Bhutan Power System Operator (BPSO), which works under BPC coordinates and regulates power system operation.

4.4.3 Gap analysis for Investment Framework

Category	Parameter	Availability	
Electricity scenario	Whether there is adequate power availability	Yes. Domestic demand is less than 30% of installed generation capacity.	✓
	Whether per-capita electricity consumption is in line with the overall region?	Yes. In fact, it has one of the highest per-capita electricity consumption in the region, of 2708 kWh.[209]	✓
Policy and legal framework	Whether private investment allowed in power generation	Private investment is allowed in hydro projects as per the Sustainable Hydropower Development Act, 2013 with equity limited to 26%.[195]	✓
	Whether private investment allowed in transmission	Private investment is not allowed in transmission, which is government owned.[210]	✗
	Whether there is dispute resolution framework	As per the Economic Development Policy (EDP), 2016, dispute may be resolved through Royal Court of Justice or amicably.[200]	✓
	Whether alternate dispute resolution (ADR) mechanism allowed	Alternate dispute resolution mechanism is allowed as per the Alternate Dispute Resolution Act of Bhutan, 2013[201]	✓
	Whether institutional framework for investments is properly defined	Bhutan lacks a dedicated investment forum.	✗
	Whether there is legal framework for protection of foreign investments	Bhutan is a party to the MIGA that protects the FDI from political risks.[211]	✓
	Whether there are clear guidelines for land acquisition and compensation	Clear guidelines for land acquisition is given under the Land Act, 2007[199]	✓
Regulatory framework	Whether there is an independent regulatory commission	Bhutan Electricity Authority (BEA) manages the operations and tariffs.	✓

Category	Parameter	Availability	
	Whether there is a regulatory framework for tariff determination or adoption for G&T	Tariff division in BEA determines tariff by reviewing and monitoring various parameters, benchmarking it and evaluating PPAs for G&T.[205]	✓
	Whether there are guidelines for competitive procurement of projects	Bhutan's Procurement Rules and Regulations, 2019 clearly define the guidelines for procurement and competitive bidding	✓
	Whether there is an approved grid code	Bhutan Grid Code, 2008 is an approved grid code.[198]	✓
Technical and operational framework	Whether there is open access to transmission lines	Open access to transmission lines is given as a provision in the Electricity act, 2001[206]	✓
	Whether there is licensing process specified	Licensing process is specified in electricity act where license is given to investor generating electricity below 500 kW.[206]	✓
	Pipeline of regional infrastructure projects already in execution	India-Bhutan lead Joint venture built the Dagachhu Hydropower Project. Tala Transmission line between Bhutan-India. Chukha, Kurichhu, Tala & Dagachhu plants are exporting power to India.	✓
Financial and monetary framework	Whether there is USD indexed tariffs for Generation	USD indexed tariffs for generation are not allowed. Investments in Bhutan are to be made in Indian Rs or Bhutanese Nu only.[212]	✗
	Whether profits can be repatriated in foreign currency	As per the FDI policy, 2019, Bhutan allows repatriation of profits in foreign currency.[201]	✓
	Whether there are Incentives	Various direct and indirect tax incentives are there in place as per the Fiscal Incentives Act of Bhutan, 2021. [208]	✓
	Whether there is tax holidays and tax exemptions	Provision of tax holiday and tax exemptions are provided under the Fiscal Incentives Act of Bhutan, 2021.[208]	✓

✓ *Available* ◐ *Partially Available* ✗ *Not Available*

4.4.4 Impact of existing framework on mobilization of energy investment

Bhutan provides various incentives, tax holidays and exemptions under its Fiscal Incentives Act, 2021. With FDI policy highly favourable to foreign investors allowing 100% equity would help in mobilization of energy investments. In Bhutan, the presence of an investment forum that could assist the investors with investment procedures is felt necessary. Also, investors may need debt protection from multilateral agencies, in which case the forum could play an important role. .

4.5 India

Over the last five years, India has experienced an average annual growth rate of 6.72 percent. . Foreign direct investment holds a substantial share of GDP. Foreign exchange is fluctuating with an average of 67.5 Rs/USD. Per capita energy consumption in India has been on the rise owing to rapid urbanization and growth in GDP, along with a significant improvement in energy access by providing electrical connections to households. Table below shows the macroeconomic parameters for India from 2016 to 2020.

Table 20: Macroeconomic statistics of India

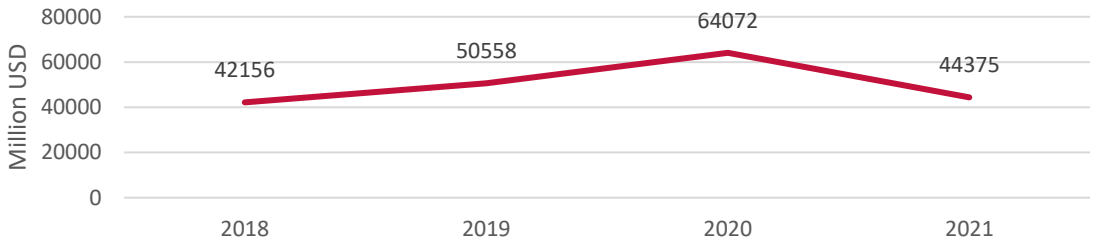
Year	GDP (Billion US$)***	GDP per capita (US$)***	GDP growth (annual %)***	Foreign Exchange Rate (Rs/US$ average)**	Per capita energy consumption (MMBtu/ person)#	Per capital electricity consumption (kWh/person)
2016	1736.60	1640	8.0	65.47	20.97	1075
2017	1835.13	1767	8.3	67.07	21.74	1122
2018	2039.34	2018	6.8	64.45	22.77	1149
2019	2002.76	2036	6.5	69.92	22.96	1181
2020	2055.19	2141	4.0	70.89	-	1208

Source: *Indian Economic Survey 2021[213], , #US Energy Information Administration (EIA) database

It is estimated that the Foreign Direct Investment (FDI) in the power sector reached US$ 15.89 billion between April 2000 - March 2022 accounting for 2.77% of the total FDI inflow in India. It is forecasted to attract investment worth Rs. 9-9.5 trillion (US$ 128.24 - 135.37 billion) between FY19-FY23.[214]

The trend of overall FDI into the country is shown below.

Figure 28: India - FDI inflows



Source: UNCTAD[215]

4.5.1 Current Framework of Investment in India

Policy and Legal Framework

- Electricity Act, 2003; The umbrella act covering the legal system for entire electricity value chain in India, including private sector participation, open access and captive power plants. This act encourages competition along with regulatory interventions that would yield efficiency gains and availability of quality supply at competitive prices. It provides a framework that would accelerate and lead to efficient development of the power sector. It delicensed power generation and a license is only required in case of transmission, distribution, and power trading. Provisions for tariff determination (by bidding or regulated tariff) and tariff regulations are made.[216] [217]
- National offshore wind energy policy, 2015: It aims to promote wind energy development and investment in energy infrastructure by introducing incentives, allowing PPP, FDI and international collaboration, accelerated depreciation and national clean energy fund. Provisions is made for assistance in getting clearances by National Institute of Wind Energy (NIWE) [218]
- Various MoUs and inter-governmental agreements have been signed for cross border trading of energy between India and its neighbouring nations like Bangladesh, Nepal, and Bhutan, such as:
    - India-Bangladesh: MoU for Cooperation in Power sector, January 2010.
    - India-Bhutan: Agreement on Cooperation in Hydropower, July 2006 and Framework Inter-Governmental Agreement for Joint Venture Hydropower Projects, April 2014.
    - India-Nepal: Agreement on electric power trade, cross-border transmission interconnection and grid connectivity, October 2014.

- India is a signatory of SAARC Framework Agreement for Energy Cooperation (Electricity), and has signed MoU for establishment of the BIMSTEC Grid Interconnection.[171]
- Consolidated FDI Policy, 2020: It comprises of the eligibility criteria for investments in India along with sectors prohibited from FDI like chit funds, lottery, gambling, betting, real estate or construction, Nidhi company, atomic energy, railway operation or manufacturing of tobacco related goods.[219]
- Commercial Courts Act, 2015: India provides for the resolution of disputes through courts, specialised tribunals who deal with recovery of debt by banks, or through mutual resolution/ mediation and conciliation. As per sections 3, 4 and 2(i), courts at a district level will a commercial division and high courts will have commercial appellate divisions for the adjudication and quick resolution of commercial disputes of a value greater than 10 million rupees.[220]
- The Arbitration and Conciliation Act, 1996: The act also provides provisions for enforcement of certain foreign awards like New York convention awards and Geneva convention awards. It also provides provision for conciliation. India is a signatory to New York convention of 1958. [221]
- The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013: It ensures transparent process for acquiring land by providing fair compensation for industrialisation, development of essential infrastructural facilities and urbanisation.[222]

Regulatory Framework

- The Indian Electricity Grid Code, 2010: It lays down the standards and guidelines for participants involved in power system operations, planning, developing, and maintenance. According to the grid code, frequency of the grid must be within 49.5 Hz to 50.2 Hz. As per section 3.1, the Central Transmission Utility (CTU) shall provide non-discriminatory open access to its transmission infrastructure. It provides provision for planning of transmission infrastructure for renewable capacity additions.[223] [224]
- Guidelines on cross border trade of electricity, 2016, subsequently replaced by Guidelines for import/export of electricity 2018: It provides framework for cross border energy exchange between India and its neighbours through bilateral agreements. It also provides provision for trade through power exchange.[225]
- Central Electricity Regulatory Commission (Cross Border Trade of Electricity) Regulations, 2019: It allows cross border electricity trade between India and its neighbours through bilateral agreements, bidding or mutual agreement between the entities in the countries. Tariff determination for import/export would be done through competitive bidding or mutual agreement.[226]

Institutions

- Central Electricity Authority (CEA): It is responsible for advising government bodies and planning the power system of India along with energy exchange with neighbouring nations.
- Central Electricity Regulatory Commission (CERC): It regulates centrally owned generating stations as well as generating stations which have a composite scheme of power generation in more than one state and inter-state transmission system. It was formed under Electricity Regulatory Commissions Act, 1998.

Technical and Operational Framework

- Procedure for approval and facilitating import/export (cross border) of electricity, 2021: It lays down the procedure for interconnecting national grids safely, securely and with coordinated operation. It also lays down the procedure for approval of grant to Indian generating station being built exclusively to supply power to neighbouring nations. It also enables provisions for trade of power through power exchanges of India[227]
- Deviation settlement mechanism: India has a frequency linked deviation settlement mechanism.
- Power Market Regulations 2021: Terms and conditions for operation of power exchanges.

- In India, the power projects are mostly awarded through competitive bidding route. However, large hydro projects, and specific cases of transmission projects are awarded through Memorandum of Understanding/nomination route.

Foreign Direct Investment and Monetary Framework

- Foreign Exchange Management Act, 1999 provides regulations and rules for management of foreign exchange in India.[228]
- FDI up to 100% is permitted under the automatic route for the following segments of power sector in India[281]:
    - Generation and transmission of electric energy produced in hydro-electric, coal/lignite-based thermal, oil- and gas-based thermal power plants
    - Non-conventional energy generation
    - Under the power sector investment policy, 49% FDI & FII are permissible for power exchanges. FDI is subject to government approval.
- The other conditions which need to be satisfied include:
    - Foreign investment in infrastructure companies is also allowed through securities market (stock exchanges, depositories and clearing corporations) wherein the investment would be subject to a total investment cap of 49% with separate FDI limit of 26% and FII limit of 23% of the paid-up capital.[229]
    - FII investments would be permitted under the automatic route and FDI would be permitted under the government approval route.
- Sector wise FDI policy in India:[188]
    - Thermal: 100% FDI is allowed under the automatic route in the power sector (except atomic energy), subject to all the applicable regulations and laws.
    - Oil & Gas: 100% FDI is allowed under the automatic route for exploration activities of oil and natural gas fields, infrastructure related to marketing of petroleum products and natural gas, petroleum products' pipelines, natural gas pipelines, LNG regasification infrastructure, market study, formulation and petroleum refining in private sector, subject to the existing sectoral policy and regulatory framework in the oil marketing sector and the policy of the government or private participation in exploration of oil and the discovered fields of natural oil companies.
    - Renewable energy: FDI up to 100% is permitted under the automatic route for renewable energy generation and distribution projects subject to provisions of the Electricity Act, 2003.
    - Electrical Machinery: 100% FDI is allowed under the automatic route in the electrical machinery sector, subject to all applicable regulations and laws.

4.5.2 SWOT Analysis for Investment Framework

Strengths	Weaknesses
• Clear definition of policy, institutional and regulatory framework for CBET • Presence of three power exchanges. • Presence of multiple power trading licensees • Robust national grid • Well defined technical, commercial and operational framework for power trade • India has delicensed setting up of new power plant. • Power procurement is permitted through transparent bidding process.	• Private sector face issues with getting clearances like right of way • Legal proceedings take substantial time

• In January 2000, guidelines were issued by central government allowing investment in transmission project via 100 percent ownership of via joint venture with 26 percent equity of central or state utilities. • 100% FDI allowed as per FDI policy	
Opportunities	**Threats**
• Facilitate CBET through power exchanges (already started with Nepal and Bhutan) • Setting up a South Asia Regional Power Exchange • Tripartite trade which allows wheeling through Indian grid	• While there are no threats in the short term, in the long term, aspects such as exchange rate variation, global economic outlook etc. has potential to threaten viability of at least some of the investment.

Stage of power sector reform, regulatory evolution and power market structure

The Indian power system is an unbundled system with competition in generation, transmission and in some cities, also in distribution. Central Transmission Utility (CTU) and State Transmission Utilities (STUs) are responsible for transmission of power within the nation. India promotes competitive power markets through bid process and open access to get reliable power at a low cost.

4.5.3 Gap analysis for Investment Framework

Category	Parameter	Availability	
Electricity scenario	Whether there is adequate power availability	Yes. However seasonal/climatic challenges remain	✓
	Whether per-capita electricity consumption is in line with the overall region?	Yes. 1255 kWh in 2022.[230]	✓
Policy and legal framework	Whether private investment allowed in power generation	Provision for private investment in power generation is provided as per the Electricity Act, 2003	✓
	Whether private investment allowed in transmission	Provision for private investment in power generation is provided as per the Electricity Act, 2003	✓
	Whether there is dispute resolution framework	Commercial court act, 2005 and the Arbitration and Conciliation Act, 1996 provides the framework for resolution of disputes.[220]	✓
	Whether alternate dispute resolution (ADR) mechanism allowed	Commercial court Act, 2005 provides provision for ADR. [220]	✓
	Whether institutional framework for investments is properly defined	Institutional framework for investment is defined by the Consolidated FDI Policy, 2020[219]	✓

Category	Parameter	Availability	
	Whether there is legal framework for protection of foreign investments	The Arbitration and Conciliation Act, 1996 provides provision for conciliation to foreign investors. There is also provision of 'full protection and security' in many investment treaties (such as BITs and FTAs).[231] [221]	✓
	Whether there are clear guidelines for land acquisition and compensation	Guidelines for land acquisition and compensation has been specified in the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013[222]	✓
Regulatory framework	Whether there is an independent regulatory commission	CERC is the independent regulatory commission.	✓
	Whether there is a regulatory framework for tariff determination or adoption for G&T	There is a regulatory framework for tariff determination or adoption for G&T as stated in Electricity Act, 2003	✓
	Whether there are guidelines for competitive procurement of projects	There are guidelines for competitive procurement of power projects as given in the Electricity Act, 2003.	✓
	Whether there is an approved grid code	IEGC 2010 is an approved grid code [223]	✓
Technical and operational framework	Whether there is open access to transmission lines	Provision for open access as per the Electricity Act, 2003 and CERC's Connectivity and Open Access regulations.	✓
	Whether there is licensing process specified	Licensing process is specified in the Electricity Act, 2003.	✓
	Pipeline of regional infrastructure projects already in execution	It exports power to Nepal, Bangladesh & Myanmar and, imports from Bhutan.	✓
Financial and monetary framework	Whether there is USD indexed tariffs for Generation	Only in case of some competitive tariff frameworks where multiple indexations form part of the tariff calculations	〰
	Whether profits can be repatriated in foreign currency	All foreign investments are repatriable (net of applicable taxes) except in cases where the investment is made or held on non-repatriation basis. [232]	〰
	Whether there are Incentives	Provision for incentives is not present as per the Consolidated FDI Policy, 2020.[219]	✗
	Whether there is tax holidays and tax exemptions	No provision for tax holidays or exceptions as per the Consolidated FDI Policy, 2020.	✗

✓ *Available* 〰 *Partially Available* ✗ *Not Available*

4.5.4 Impact of existing framework on mobilization of energy investment

There is an enabling framework, though explicit concessions/incentives have not been provided at the central level. However, the existing framework has historically proven adequate to attract foreign investment.

4.6 Nepal

Nepal had a GDP of 33.6 Billion US$ in year 2020 compared to 34.19 billion US$ in 2019. GDP growth rate is fluctuating and average growth rate for 5 years is 4.3%. FDI as a percentage of GDP is an average of 0.45%. Foreign exchange is not seen to be fluctuating and is at its maximum for the year 2020 at 116.31 Rs/US$. Nepal's per capita energy consumption increased steadily with an increase in GDP between 2016 and 2018, before taking a dip in 2019. The following table shows the macroeconomic parameters of Nepal from 2016 to 2020.

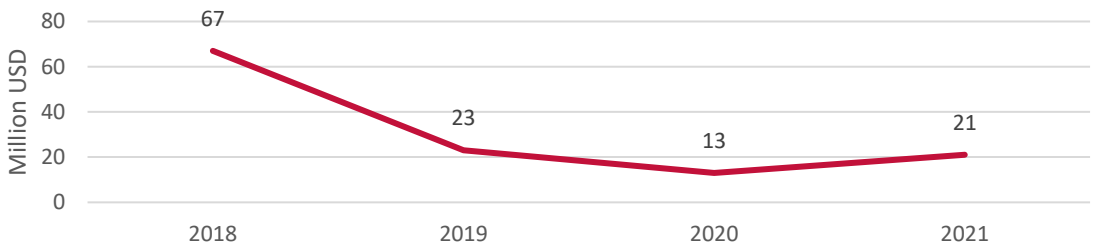
Table 21: Macroeconomic statistics of Nepal

Year	GDP (Billion US$)	GDP per capita (US$)	GDP growth (annual %) *	Foreign Exchange Rate (Rs/US$ average) *	Per capita energy consumption (MMBtu/ person)#	Per capital electricity consumption (kWh/person)
2016	24.52	866	0.43	106.35	4.97	
2017	28.97	1008.96	8.98	106.21	5.60	
2018	33.11	1137.78	7.62	104.37	6.06	
2019	34.19	1159.06	6.66	112.88	5.22	
2020	33.66	1125.92	-2.09	116.31	-	260

Source: *CBS 2021, Nepal[233], ,#US Energy Information Administration (EIA) database

The trend of FDI into the country is shown below.

Figure 29: Nepal - FDI inflows



Source: UNCTAD[234]

4.6.1 Current Framework for Investment in Nepal

Policy and Legal Framework

- For cooperation in power sector, Nepal has signed agreements with India and Bangladesh -
    - In October 2014, India and Nepal signed an agreement on electric power trade, cross-border transmission interconnection and grid connectivity.[235]
    - In August 2018, Nepal and Bangladesh signed an MoU for cooperation in power sector.
- Nepal allows 100% foreign ownership in projects that are in non-restricted sectors (like power).[236]
- Nepal's Electricity Act has a dedicated section covering electricity trade.[237]
    - After obtaining the approval of Government of Nepal, licensees can import electricity.

  - The licensee desiring to export electricity generated by itself to a foreign country may do so only post entering into an agreement with Government of Nepal.

- Hydropower Development Policy, 2001: It aims to generate electricity at a lower cost by the utilisation of water resources available in the country and to develop hydropower as an exportable commodity. The policy enlists various steps that the Nepalese government may take for ease of investment. [238]
- White paper issued in 2018 by the Government of Nepal's has set a target of developing 5000 MW of export oriented capacity in ten years.[239]
- The Electricity Regulatory Commission Act, 2017 envisages establishment of wholesale market and open access to electricity system.[240]
- Nepal is a party to MIGA that protects the FDI from political risks.
- Industrial Enterprises Act, 2020: It provides guarantee against expropriation.[241]
- Land Acquisition, Resettlement and Rehabilitation Policy, 2015: Investor is free to acquire land on its own. Investors can also request the Government of Nepal for help in land acquisition. If the industry requires, public land shall be given on long-term lease basis.[242]
- Private Financing in Build & Operation of Infrastructures, 2006: If Nepal Government considers it appropriate to implement any project with a cost of more than twenty million rupees, it may invite an expression of interest in accordance with this act by setting out the prescribed matters therein and publishing a notice publicly.[248]
- Nepal is a signatory to the New York Convention of 1958[243] on the Recognition and Enforcement of Foreign Arbitral Awards. Furthermore, Nepal has also updated its own legislation on dispute settlement to bring Nepalese laws in line with the requirements of the convention. The Arbitration Act of 1999 is based on Model UNCITRAL Commercial Arbitration Act (1985). It allows the enforcement of foreign arbitral awards. It also limits the conditions under which these awards can be challenged. Nepal is also a party to the ICSID Convention (1969)[244].

Regulatory Framework

- An independent electricity regulatory commission started functioning in Nepal from May 2019. The regulatory framework is in its initial stages, and therefore regulatory framework for CBET remains to be developed.
- Foreign Exchange (Regulation) Act, 1963: It specifies procedure and rules to regulate the exchange rate.
- Hydropower policy, 2001: it suggests that the tariff fixation policy be transparent such that the electricity is supplied at a reasonable price.[238]
- Nepal Electricity Act, 1992:[245]
  - Licensee would have to enter into an agreement with the Government of Nepal to export power to a foreign country and would have to pay export duty on that.
  - The licensee shall have to pay royalty to the Nepalese government at a rate of Nepalese Rupee 100 per installed kilowatt of electricity per year.
  - Furthermore, the licensee also needs to pay 2 percent of the average tariff per unit (kilowatt hour) for a term of up to fifteen years from the date of generation of electricity for commercial purpose.
  - Post the term specified above, the licensee shall have to pay royalty to the Nepalese Government at a rate of Nepalese Rupee 1000 for each installed kilowatt of electricity per year plus 10 percent of the average tariff per unit (kilowatt hour).

Institutions

- Industrial Promotion Board (IPB): It is chaired by the Minister of Industry and entrusted with coordinating economic policies, establishing investment guidelines, approving foreign investment proposals, etc.
- Investment Board of Nepal (IBN), 2011: The government has created this entity to serve as a "single window" facility for investors pursuing projects worth more than USD 100 million or large scale projects in priority sectors such as civil aviation, tourism and hydroelectricity.[246]

Technical, commercial and operational framework

- Transmission System Development Plan of Nepal, 2018[247] includes six Nepal-India cross-border connection points in the Terai region and two Nepal-China cross-border connection points in the Himalayan region.
- Monthly forecasts of energy are required to be provided by the hydropower plants. Penalties are then imposed for any shortfall in the actual energy delivery.
- Nepal has a weak distribution network which encourages off-grid solutions. These solutions are heavily subsidised by the government of Nepal.
- In Nepal, almost all large generation projects are awarded through competitive bidding, except for a few projects which Government has identified for development through itself, or its own utility company. In the transmission sector, projects are owned by Nepal Electricity Authority. New transmission projects will also be owned either by NEA or by Rastriya Prasaran Grid Company Ltd. (RPGCL), which is also Government owned.

Foreign Direct Investment and Monetary Policy

- As early as 1992, Nepal adopted the Build, Own, Operate and Transfer (BOOT) model[248] for infrastructure development in its planning documents.
- PPP legislation of Nepal first came into operation in August 2003. It was ratified as an act in December 2006.[248]
- The Foreign Investments and Technology Transfer Act, 2019 (FITTA): The law was developed in order to make national economy competitive, strong and employment-oriented through mobilization to the maximum extent of the available means and resources for economic prosperity of the country, and to achieve sustainable economic growth through industrialization. It provides the procedure for foreign investments, and the manner in which foreign investment will be regulated.
- Private Investments in Infrastructures Act, 2006: It promotes private sector participation by laying out the rules for awarding infrastructure projects.
- Investors shall be provided with exchange facilities for energy infrastructure projects constructed by private participants, wherein they can repatriate the currency from Nepal at the prevailing exchange rate for the following:
    - Amount for repayment of principal and interest of a loan borrowed in foreign currency for the project.
    - Amount earned as profit or dividend in lieu of the foreign investment will be allowed if the electricity has been sold within Nepal.
    - For an export-oriented power project, 100 percent of the payment of principal and interest on the loan, profit and dividend can be repatriated in the currency in which the income has been received in Nepal by selling electricity.
    - Amount received from the sale of share of foreign investment may be repatriated in the same currency in which the share has been sold. The foreign exchange is limited to 75% if the share has been sold in Nepalese currency.

- Nepal provides incentives for private investment as mentioned below:
    - Electricity Act, 1992: Government of Nepal may enter into an agreement with the licensee for bulk purchase of electricity, guarantee for capital or other financial and technical matters.
    - Hydropower Policy, 2001: Government of Nepal lays emphasis on mobilization of internal capital market for investment in power sector. It is also mandated to develop Financial institutions, bonds as well as other financial instruments as required for such purposes.

Stage of power sector reform, regulatory evolution and power market structure

- Nepal has a mostly bundled power sector structure, and the private sector's involvement is limited to power generation. Part of the power generation, and almost the entire distribution and transmission of electricity is undertaken by the government owned entity - Nepal Electricity Authority (NEA). NEA also acts as the single buyer for all PPAs.
- The licensing is undertaken by the Department of Electricity Development (DOED) while the sector is regulated by Electricity Regulatory Commission (ERC).
- Presently, a department within NEA is the custodian of all power trading related activities in Nepal. A dedicated entity - Nepal Power Trading Company Limited (NPTC) was incorporated in March 2017, (Here, NEA is the major shareholder at 51 percent).

Past trend in project award for large electricity sector projects

- Nepal adopts a mix of first come first serve and competitive bidding approaches for large hydro projects. Hydro projects up to 100 MW has a predetermined posted-rate tariff, due to which a first come first serve approached followed by negotiations with NEA is adopted (as NEA can impose preference on peaking RoR vis-à-vis pure ROR projects etc.). However, developers for larger projects such as the 900 MW Arun III and 900 MW Upper Karnali projects were selected through a competitive bidding. At the same time, in recent years, MoU route has also been adopted, such as in the case of Arun IV HPP and West Seti HPP between Govt. of Nepal, and Indian state owned companies.

4.6.2 SWOT Analysis for Investment Framework

Strengths	Weaknesses
• High level of cooperation with India on energy trade. • Proximity to high demand centres and operational transmission links. Nepal has already identified a few new cross border lines with India and China, as part of the transmission system master plan. • Has considerable experience in competitive procurement of projects • Started participation in undertaking CBET through IEX - India's power exchange. • Guarantee against expropriation (Industrial Enterprises Act) • Guarantee for repatriation of FDI (FITTA). • Nepal is a party to MIGA that protects the FDI from political risks. • Nepal is a signatory to and adheres to the New York Convention of 1958 • In non-restricted sectors (like power) foreign ownership can go up to 100 percent.	• Ambiguities in institutional framework for licensing and CBET. • Weak distribution network encourages off-grid solutions. These solutions are heavily subsidised. • NEA prepares the grid code, though, it has not been separately reviewed and approved by regulator yet.

- The foreign investor can dispose off the investments at any time and no minimum threshold for foreign investment is to be maintained.
- It allows a deduction of up to 50 percent from taxable income for the investment made on process or equipment for non-pollution.
- If a force majeure event occurs, there is a provision to extend the term of the generation license up to a maximum period of five years. [238]

Opportunities	Threats
• Energy banking agreement with India[249] • Trilateral arrangements with Bangladesh and India can set the foundation for future trade in the region. • The ERC act has enabling provisions for open access and wholesale markets.	• If concessional financing or grants are not available for projects, there are concerns on cost competitiveness of hydropower in Nepal.

4.6.3 Gap analysis for Investment Framework

Category	Parameter	Availability	
Electricity scenario	Whether there is adequate power availability	No.	✗
	Whether per-capita electricity consumption is in line with the overall region?	No. 260 kWh in 2021.[250]	✗
Policy and legal framework	Whether private investment allowed in power generation	Private sector involvement is allowed in power generation.[251]	✓
	Whether private investment allowed in transmission	Government owned entity - Nepal Electricity Authority (NEA) plays a major role in distribution and transmission of electricity.[251] However, theoretically, there is no bar on private participation.	✗
	Whether there is dispute resolution framework	Nepal is a signatory to the New York Convention of 1958 on the Recognition and Enforcement of Foreign Arbitral Awards.	✓
	Whether alternate dispute resolution (ADR) mechanism allowed	The Arbitration Act of 1999 is based on the Model UNCITRAL Commercial Arbitration Act (1985). Nepal is also a party to the ICSID Convention (1969).	✓
	Whether institutional framework for investments is properly defined	Nepal has created the Industrial Promotion Board (IPB) and the Investment Board of Nepal (IBN) to facilitate foreign investment in the country.	✓

Category	Parameter	Availability	
	Whether there is legal framework for protection of foreign investments	Nepal's Industrial Enterprises Act gives guarantee against expropriation of investments. Nepal's FITTA act gives guarantee for repatriation of FDI. Nepal is a party to the MIGA that protects FDI from political risks.	✓
	Whether there are clear guidelines for land acquisition and compensation	Land Acquisition, Resettlement and Rehabilitation Policy of Nepal, 2015 gives clear guidelines for land acquisition and compensation.[242]	✓
Regulatory framework	Whether there is an independent regulatory commission	Nepal recently (May 2019) created its electricity regulatory commission.	✓
	Whether there is a regulatory framework for tariff determination or adoption for Generation &Transmission	Electricity Regulatory Commission Act 2017 states that the commission determines the tariff based on various indicators.	✓
	Whether there are guidelines for competitive procurement of projects	Private Financing in Build & Operation of Infrastructures, 2006 provides the guidelines for competitive procurement of projects.[248]	✓
	Whether there is an approved grid code	Nepal has a grid code prepared by NEA, but it has not yet been approved by the regulator which was established in 2019.	✓
Technical and operational framework	Whether there is open access to transmission lines	Electricity Regulatory Commission Act 2017 - Open access to transmission lines is partially available in Nepal.	✓
	Whether there is licensing process specified	License provisions are defined in the Electricity act 1992 and in Hydropower policy 2001.	✓
	Pipeline of regional infrastructure projects already in execution	In 2021, Nepal started trading power through the Indian Energy Exchange (IEX) portal. 400 kV Dhalkebar - Muzzaffarpur, Upper Karnali Hydropower project are some key regional projects in Nepal.[251]	✓
Financial and monetary framework	Whether there is USD indexed tariffs for Generation	For RoR, PRoR and storage projects have foreign currency USD based tariff with annual escalation.[252]	✓
	Whether profits can be repatriated in foreign currency	Hydropower Policy of Nepal, 2001 indicates that the repatriation of investment and profits in foreign currency is allowed. But it is limited to 75%, if the share has been sold in Nepalese currency.	~
	Whether there are Incentives	Nepal provides incentives for private investment as per the Electricity Act, 1992 and Hydropower Policy, 2001.	✓

Category	Parameter	Availability	
	Whether there is tax holidays and tax exemptions	Government of Nepal gives full income tax remission for a period of 10 years and 50% tax remission for additional 5 years for green energy projects which will begin generating electricity by April 2024.[253]	✓

✓ *Available* ✓ *Partially Available* ✗ *Not Available*

4.6.4 Impact of existing framework on mobilization of energy investment

Nepal allows USD linked tariff from generating stations in case of specific projects and full repatriation in foreign currency, making it attractive for foreign investors. With tax exemption benefits and incentives being offered on hydro projects, it acts as a catalyst for mobilization of investment in the country. BOOT policy in Nepal allows the investors to transfer the project to government.

4.7 Pakistan

GDP of Pakistan increased from 278.66 US$ in 2016 to 314.57 US$ in 2018 and thereafter it decreased to 262.61 US$ in 2020. It has an average per capita GDP of 1358.6 US$. FDI is around 0.8% of GDP in Pakistan. Per capita energy consumption decreased slightly in 2019, with decrease in GDP. The table below shows some of the key macroeconomic parameters for the country.

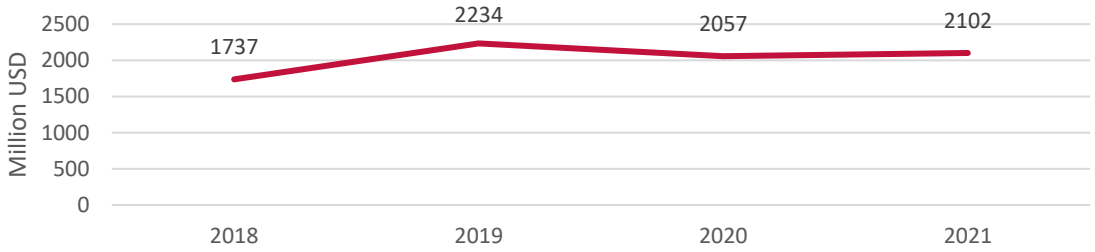
Table 22: Macroeconomic statistics of Pakistan

Year	GDP (Billion US$)*	GDP per capita (US$) *	GDP growth (annual %) *	Foreign Exchange Rate (PKR/US$ average) *	Per capita energy consumption (MMBtu/ person)#	Per capital electricity consumption (kWh/person)
2016	278.66	1368.43	5.53	104.77	15.03	457
2017	304.57	1464.93	5.55	105.46	15.69	475
2018	314.57	1482.21	5.84	121.82	15.60	526
2019	279.06	1288.56	1.15	150.04	15.38	529
2020	262.61	1188.86	-0.94	161.84	-	516

*Source: *World Bank Database, #US Energy Information Administration (EIA) database*

The trend of FDI into the country is shown below.

Figure 30: Pakistan - FDI Inflows



Source: UNCTAD[254]

4.7.1 Current Framework for Investment in Pakistan

Policy and legal framework

- Pakistan's legal system is influenced by British common laws from its colonial past and by Islamic Sharia law for domestic and personal matters.
- Pakistan currently has arrangements to import power from Iran.

- National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000: It provides rules and guidelines for obtaining the license for transmission, distribution, and generation of electricity.[255]
- Pakistan allows private investment in generation of electricity. Various independent power producers operate in Pakistan.[256]
- National Power Policy, 2013: It states that the private sector will be provided with incentives to build and strengthen the transmission infrastructure.[257] However, currently most of the project licences have been granted to government owned entities.[258]
- NEPRA Act, 1997: Every person, who has constructed a captive generating plant and maintains and operates such plant, shall have the right to open access for the purposes of carrying electricity from his captive generating plant to the destination of his use.[259]
- Land Acquisition Act (LAA) of 1894: It regulates the land acquisition process and lays down the approach for acquisition and compensation of land and other properties for development projects. However, land disputes in Pakistan are seldom resolved and are often stuck in years-long legal hearings in a defunct judicial system.[260]
- Pakistan is a member of the International Centre for the Settlement of Investment Disputes (ICSID).[261]
- Arbitration Act of 1940: It provides guidance for arbitration in disputes.[262]
- Pakistan is also a member state of the New York convention for enforcement of foreign Arbitral awards, 1958. [263]

Regulatory Framework

- National Electric Power Regulatory Authority's (NEPRA) Import of power regulations of December 2017 lay down principles of power import and cover rate of import, and execution of PPA etc.
- National Electric Power Regulatory Authority Upfront Tariff (Approval & Procedure) Regulations, 2011: It empowers NEPRA to define tariffs.[264]
- A licensee shall supply power to its consumers within the frequency range of 50(+1%) Hz.[265]

Technical, commercial and operational framework

- NEPRA's 'Wheeling of Electric Power' Regulations of 2016: It requires transmission licensees and distribution companies to offer non-discriminatory open access to their networks.
- The Private Power and Infrastructure Board (PPIB) acts as a one-window facilitator to promote, encourage and safeguard investment in the power sector. It approves and facilitates the development and implementation of power projects and related infrastructure in private sector, public-private partnerships and specified public sector projects. PPIB has commissioned forty independent power projects (IPPs) totalling 17,551 MW with a cumulative investment outlay of around US$ 20 billion of which nine IPPs of more than 8,500 MW have been commissioned within a short period of three years i.e., during 2017-2020.[266]

Monetary Policy

- Board of Investment Pakistan acts as a forum for investment in Pakistan.
- Pakistani government gives the same treatment and legal protection to both foreign and domestic investments in all sectors except defence and broadcasting.
- Investment policy 2013 allows profit repatriation in foreign currency.
- Foreign Private Investment Promotion and Protection Act, 1976states that foreign investments will not be subject to higher income tax levels than similar investments made by Pakistani citizens.

- Economic Reforms Act, and the Investment Plan deal with the rights of foreign investors.
- The Government of Pakistan launched its PPP program in the early 1990s and more than twenty IPP deals have been signed since then. The Private Power and Infrastructure Board (PPIB) manages the government's IPP program.
- Recently the government of Pakistan has setup an Alternate Energy Development Board (AEDB) to promote IPPs in the renewable energy sector. Several renewable power projects have been started since then.
- Pakistan is a party to MIGA , which protects FDI from political risks.[267]
- Pakistan is a regular feature in FATF grey list raising questions over its utilisation of money. Questions have also been raised over its expropriation of funds.
- Alternative Renewable Energy Policy, 2019: As per this policy, the following incentives are given to Renewable Energy projects:
    - Exemption from corporate income tax
    - Exemption from import duties
    - Repatriation of dividends and disinvestment proceeds
    - 100% foreign equity is permitted
    - Foreign currency accounts are permitted
    - Protection against change in law
    - Robust market-tested contractual framework
    - Protection against expropriation
    - International dispute resolution
    - Project land made available by the provinces
    - As per the Policy, foreign bidders for RE projects may bid with indexation to a foreign currency (USD, GBP, JYP, Euro etc.).
- NEPRA Competitive Bidding Tariff Regulations 2008 lay down the procedure for approval of tariffs determined through competitive bidding.[268]

Stage of power sector reform

- Pakistan has taken steps towards unbundling, privatization, and regulation of the power sector, as well as allowing entry of private sector into the generation sector.
- Single Buyer arrangement defines the current structure of Pakistan wholesale electric market. Central Power Purchasing Agency (CPPA) is the single buyer.
- Transmission is undertaken by a separate entity – the National Transmission Dispatch Company (NTDC). The sector is regulated by NEPRA.

Past trend in project award for large electricity sector projects

- Most large projects are awarded through a competitive bidding undertaken by Private Power & Infrastructure Board (PPIB) or through direct negotiations by PPIB. For example, various large projects under China Pakistan Economic Corridor (CPEC) were undertaken after direct award by PPIB. These are being developed under the Power Policy 2002 on a build-own-operate-transfer basis, with an expected concession period of about 35 years, which includes the construction period of five years and the operation period of 30 years.

4.7.2 SWOT Analysis for Investment Framework

Strengths	Weaknesses
• Relatively large power market • Domestic and foreign investors are provided similar incentives. • It is a MIGA member state • Detailed regulatory framework for grid code, transmission pricing, wheeling of power etc. • Experience in undertaking CBET with Iran.	• There is no government level guidelines / policy for CBET.
Opportunities	**Threats**
• Competitive market operation is planned to commence shortly • Pakistan plays a key role in linking South Asia and Central Asia for energy cooperation.	• Having Iran as a key partner for CBET makes it subject to potential future international sanctions on Iran. • High political risk. • Constant terror threat • FATF grey list for terror funding

4.7.3 Gap analysis for Investment Framework

Category	Parameter	Availability	
Electricity scenario	Whether there is adequate power availability	No.	✗
	Whether per-capita electricity consumption is in line with the overall region?	No. 584 kWh in 2021.[269]	✗
Policy and legal framework	Whether private investment allowed in power generation	Private investment is allowed in generation[255]	✓
	Whether private investment allowed in transmission	Private investment is allowed in transmission, but is dominated by government players[255]	○
	Whether there is dispute resolution framework	Dispute resolution frameworks exist. Pakistan has its own Arbitration act.[262]	✓
	Whether alternate dispute resolution (ADR) mechanism allowed	Pakistan is a party to the New York convention 1958 and ICSID.[263] [261]	✓
	Whether institutional framework for investments is properly defined	Board of Investment Pakistan is a forum for easing investment in Pakistan	✓
	Whether there is legal framework for protection of foreign investments	Pakistanis a party to the MIGA that protects FDI from political risks.[270] Pakistan is in FATF grey list.[271]	○
	Whether there are clear guidelines for land acquisition and compensation	Land Acquisition Act (LAA) of 1894 clearly defines the guidelines however, owing to a	✓

Category	Parameter	Availability	
		defunct judicial system, disputes resolution takes time.[260]	
Regulatory framework	Whether there is an independent regulatory commission	Pakistan has an independent national regulatory commission (NEPRA)[272]	✓
	Whether there is a regulatory framework for tariff determination or adoption for G&T	National Electric Power Regulatory Authority Upfront Tariff (Approval & Procedure) Regulations, 2011: Empowers NEPRA to define tariffs.[259]	✓
	Whether there are guidelines for competitive procurement of projects	NEPRA Competitive Bidding Tariff Regulations 2008 lays down the procedure for approval of tariff determined through competitive bidding.[259]	✓
	Whether there is an approved grid code	A Licensee shall supply power to its consumer within the frequency range of 50(+1%) Hz.[273]	✓
Technical and operational framework	Whether there is open access to transmission lines	NEPRA Act, 1997 allows open access.[274]	✓
	Whether there is licensing process specified	National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 provide the licensing process guidelines.[264]	✓
	Pipeline of regional infrastructure projects already in execution	Pakistan has been importing electricity from Iran since October 2022. 132 KvSistan Baluchistan (Iran) – mend 20kV Mir Jawa – Saravan – 2 Lines	✓
Financial and monetary framework	Whether there is USD indexed tariffs for Generation	Alternative Renewable Energy Policy, 2019 states that USD index tariffs may be allowed for foreign investors.[272]	〰
	Whether profits can be repatriated in foreign currency	Investment policy 2013 allows profit repatriation in foreign currency.	✓
	Whether there are Incentives	Alternative Renewable Energy Policy, 2019 enlists various incentives for renewable energy investments.[272]	✓
	Whether there is tax holidays and tax exemptions	Alternative Renewable Energy Policy, 2019 enlists various exemptions for renewable energy investments. Tax holidays are available for manufacturing only. [272]	〰

✓ *Available* 〰 *Partially Available* ✗ *Not Available*

4.7.4 Impact of existing framework on mobilization of energy investment

Pakistan provides tax exemptions and tax holidays to only few sectors. Incentives are majorly given to renewable sector.

4.8 Sri Lanka

Sri Lanka is located off the southern coast of India in South Asia. It had an economy of 80 Billion in 2020. It has a growing GDP with a five-year average growth rate of 2.52%. Foreign Direct Investments have declined in the country from 1.44% of GDP to 0.83% of GDP. Foreign exchange rate shows an increasing pattern. Per capita energy consumption in Sri Lanka has been fluctuating between 2016 and 2019. The table below shows macroeconomic trend of Sri Lanka for five years.

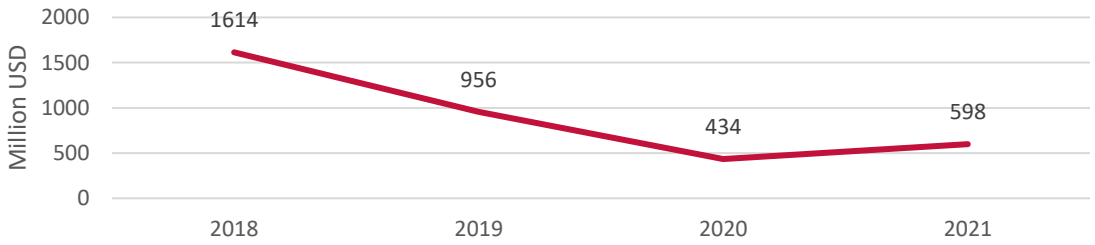
Table 23: Macroeconomic statistics of Sri Lanka

Year	GDP (current Billion US$)**	GDP per capita (current US$)**	GDP growth (annual %)	Foreign Exchange Rate (LKR/US$ Average)*	Per capita energy consumption (MMBtu/ person)#	Per capital electricity consumption (kWh/person)
2016	82.4	3886	4.5	145.6	17.04	603
2017	86.9	4077	3.6	153.3	16.89	626
2018	88.6	4057	3.3	161.3	17.36	650
2019	84.2	3852	2.3	178.2	17.27	670
2020	80.8	3682	-3.6	185.3	-	652

*Source: *Central Bank of Sri Lanka[275], **Department of Census and Statistics[276]*

The trend of FDI into the country is shown below.

Figure 31: Sri Lanka - FDI Inflows



Source: UNCTAD[277]

In Sri Lanka, the generation expansion for 2022-2041 considers investment of 6499 million USD in thermal and hydro power plants, and 6727 million USD in solar and wind projects.[278]

As part of the transmission development plan, CEB has planned the following for the power sector up to 2027, at a cost of LKR 279 billion (USD 1,811 million):[279]

4.8.1 Current Framework for investment in Sri Lanka

Policy and legal framework

- Guidelines on Government Tender Procedure Part II (1998): These were put in place to make the process transparent and clear for private infrastructure projects. The Bureau of Investment in Infrastructure, an administrative structure was also set up to operate within these guidelines and to facilitate private sector participation in infrastructure.[280]
- Strategic Development Project Act of 2008 (SDPA): It provides tax incentives for large projects that are likely to bring economic and social benefit to the country that the cabinet identifies as Strategic Development Projects.[281]
- Securities and Exchange Commission of Sri Lanka Act, No. 19 of 2021: It is an act to provide the establishment of the securities and exchange commission of Sri Lanka for the purpose of regulating the securities market.[282]

- Takeovers and Mergers Code of 1995 (amended in 2003): It applies to takeovers and mergers where the offeree is a listed public company. The code seeks to ensure equal treatment of all shareholders of the same class in the company seeking to be taken over.[283]
- The Companies Act (No. 7 of 2007): It contains the rules, procedures, accounting, and reporting requirements for companies incorporated or registered in Sri Lanka. The registration of companies, filing of accounts and annual returns are done with the Registrar of Companies.[284]
- The Article 157 of the country's constitution guarantees the safety of investment treaties and agreements approved by the parliament by a two-thirds majority. Sri Lanka is a founding member of MIGA (Multilateral investment Guarantee Agency) which provides a safeguard against expropriation and non-commercial risks.[188]
- All commercial matters, including Intellectual property claims, exceeding the value of LKR 3 million (approximately USD 23,000) fall within the jurisdiction of the Commercial High Court of Colombo.[188]
- Land Act (Law applicable for instruments executed after 1st of April 2018) - Foreign investors are permitted to acquire land on lease-hold basis, subject to a maximum tenure of 99 years, with no lease taxes charged. Outright transfer of ownership is permitted when the foreign shareholding of a company is less than 50%. [285]

Regulatory Framework

- The grid code of Sri Lanka, 2014: It lays down rules for transmission planning, system modelling and operation, generation planning, grid connection, etc. Nominal frequency of the Sri Lanka power system is 50 Hz and the statutory limits for variations shall be within ±1% as given in the grid planning and operating standards. Under emergency conditions, frequency may vary between a high of 52.5 Hz and a low of 47.5 Hz. [286]
- Tariff Methodology, PUCSL (2015): It is approved in terms of Section 30 of the Sri Lanka Electricity Act, No. 20 of 2009. The components are grouped as bulk supply tariffs, distribution tariff and retail supply tariff.
- Procurement Guidelines, 2006 - These are issued with the approval of the Cabinet of Ministers to enhance the transparency of Government procurement process and to minimize delays and obtain financially the most advantageous and qualitatively best services and supplies for the nation. It has been drafted in association with the major funding agencies such as the World Bank, the Asian Development Bank and the Japan Bank for International Cooperation, to ensure harmonization in order to use it for the foreign funded projects as well.

Institutions:

- PUCSL was established by the government in 2002 as the regulator for energy and water sectors under the PUCSL Act 2002. Parliament approved the Sri Lanka Electricity Act in March 2009, empowering PUCSL to regulate the electricity supply industry from April 2009.[287]
- Independent multi-sector regulator based on the PUCSL Act 2002 was set up with the authority to step into certain infrastructure sectors by changing the appropriate sector legislation.
- Competition laws are enacted by the Consumer Affairs Authority. However, there are no provisions to deal with monopolies, mergers and acquisitions, or dominant positions.[188]

Technical and Operational Framework

- Based on the prices established in the PPAs and the quantities generated by each generator arising from the economic dispatch performed by the system operator, the single buyer shall determine the generation costs that shall be used to calculate the bulk supply tariffs. The economic dispatch performed by the system operator shall be subject to the merit order dispatch methodology established by the commission.[288]

- Sri Lanka Electricity Act, 2009: It lays down guidelines for supply of electricity. The licenses and exemptions are offered based on the licensing application regulations. [289]

Financial and Monetary framework

- Inland Revenue Act No. 24 of 2017, as amended by Act No. 10 of 2021 - This legislation simplified the taxation law in Sri Lanka while introducing a new incentive regime for investors. This act maintains the standard corporate income tax rate at 24%, but gives specific sectors a lower rate of 14%.[290]
- Foreign Exchange Act No. 12 of 2017 – It repealed the Exchange Control Act (Chapter 423) introducing a liberal exchange regime for Sri Lanka. Foreign exchange controls have been greatly liberalized and investors can directly deal with the banks for their transactions unless Central Bank approval is specifically needed. Free flow of transfers is allowed through inward investment accounts and outward investment accounts.[291]
- The primary government authority responsible for investments is Bureau of Investments (BOI) which is an autonomous statutory agency. It is intended to provide one-stop service to foreign investors, with duties including approving projects, granting incentives, and arranging utility services.
- The BOI Act is the principal law governing foreign investment, as amended in 1980, 1983, and 1992, along with implementing regulations established under the act. BOI is empowered to recommend concessions to companies and investment approvals to operate under laws of the country.[188]
- Foreign investors receive national treatment and may benefit from the wide range of incentives provided by the BOI or by the treasury in areas where foreign investment is permitted.
- A higher percentage of foreign investments in the areas listed will be approved only up to 40% of the stated capital of such company or if a special approval has been granted by the Board of Investment of Sri Lanka for a higher percentage. [285]

Past trend in project award for large electricity sector projects

- Sri Lanka mostly followed a competitive procurement mechanism for selection of developers for IPP projects. In 2022, an amendment of Electricity Act was undertaken, that will allow Government to award projects directly also.[292]

4.8.2 SWOT analysis for Investment Framework

Strengths	Weaknesses
• Sri Lanka has signed bilateral Investment Protection Agreements with 28 countries and has bilateral Double Tax Avoidance Agreements (DTAA) with 38 countries. • It is a member state in Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) Free Trade Area.[293] • It has successfully harnessed PPPs for creating and improving infrastructure in several sectors including ports, power, and telecom. • Foreign investors can purchase up to 100 percent of equity in Sri Lankan companies in numerous permitted sectors. • Foreign investors can access credit in the local market and are free to raise foreign currency loans.	• Sri Lanka's record in handling investment disputes is problematic. The courts have a mixed record regarding upholding the sanctity of contracts and the legal procedures can take long time. • Foreigners are prohibited from the purchase of lands, and lease transfers to foreigners are taxed. • Consumer Affairs Authority's provisions for competition are weak because there are no provisions to deal with monopolies, mergers and acquisitions, or dominant positions. • The power and petroleum sectors are particularly challenging, as decision-making authority is highly fragmented, and the capital investments required are substantial.

• No barriers exist, legal or otherwise, to the expeditious remittance of corporate profits and dividends for foreign enterprises doing business in Sri Lanka.	
Opportunities	**Threats**
• Pre-feasibility studies for Sri Lanka India HVDC transformation link have already been done in collaboration with power grid India and CEB.[294] • Presence of an established competitive bidding framework will provide comfort to develoepers.	• Unstable economic environment.

Stage of power sector reform, regulatory evolution and power market structure

The Public Utilities Commission of Sri Lanka (PUCSL) regulates the energy sector, while larger policy decisions are undertaken by the Ministry of Power and Energy. The Ceylon Electricity Board (CEB), which is a legacy vertically integrated utility, acts as the single buyer, procuring power from all generating stations, for supply to distribution companies.

4.8.3 Gap analysis for investment framework

Category	Parameter	Availability	
Electricity scenario	Whether there is adequate power availability	No.	✗
	Whether per-capita electricity consumption is in line with the overall region?	No. 687 kWh in 2021.[295]	✗
Policy and legal framework	Whether private investment allowed in power generation	Private investment is allowed in power generation. Sri Lanka Sustainable Energy Authority (SLSEA) is established to promote the development of renewable energy projects through private investment. [296]	✓
	Whether private investment allowed in transmission	Private sector participation is not allowed in transmission. It is only limited to power generation.	✗
	Whether there is dispute resolution framework	It is a member state to the International Centre for the Settlement of Investment Disputes (ICSID).[297]	○
	Whether alternate Dispute Resolution (ADR) mechanism allowed	Alternate dispute resolution (ADR) mechanism has been developed. [298]	✓
	Whether institutional framework for investments is properly defined	Institutional framework for investments is properly defined.	✓
	Whether there is legal framework for protection of foreign investments	Legal framework for protection of foreign investments - It has entered into 28 Bilateral Investment Promotion and Protection Treaties (BITs) for providing a protection to foreign investments within the country.[299]	○

Category	Parameter	Availability	
	Whether there are clear guidelines for land acquisition and compensation	Land Acquisition act makes provision for acquisition of land.[300]	✓
Regulatory framework	Whether there is an independent regulatory commission	Independent regulatory commission – The PUCSL is the economic, technical and safety regulator of electricity industry in Sri Lanka.[301]	✓
	Whether there is a regulatory framework for tariff determination or adoption for G&T	Tariff Methodology (PUSCL – November 2015) lays down framework for tariff determination.[302]	✓
	Whether there are guidelines for competitive procurement of projects	Guidelines for competitive procurement of projects - Procurement Guidelines, 2006[303]	✓
	Whether there is an approved grid code	The Grid Code of Sri Lanka [286]	✓
Technical and operational framework	Whether there is open access to transmission lines	No provision for open access to transmission lines.	✗
	Whether there is licensing process specified	Licensing process is specified.[289]	✓
	Pipeline of regional infrastructure projects already in execution	Pre-feasibility studies for Sri Lanka India HVDC transformation link has been done.	↻
Financial and monetary framework	Whether there is USD indexed tariffs for Generation	There is no USD indexed tariff for Generation.	✗
	Whether profits can be repatriated in foreign currency	Profits can be repatriated in foreign currency.	✓
	Whether there are Incentives	Provision for incentives in place for investment.[304]	✓
	Whether there is tax holidays and tax exemptions	Tax exemptions as per the Inland Revenue Act. [290]	✓

✓ *Available* ↻ *Partially Available* ✗ *Not Available*

4.8.4 Impact of existing framework on mobilization of energy investment

Sri Lanka is currently not interconnected with any nation, although it plans for an overhead interconnection with India. Sri Lanka offers tax exemptions and incentives for investments and full repatriation of foreign currency. BOI act provides provisions in favour of investors.

5 Role of Investment forum in Regional energy Infrastructure projects

As discussed in previous chapters, there are a significant amount of regional investment opportunities in energy cooperation in South Asia, which thereby raises the question of corresponding investment from various sources. The high quantum of investment requirements precludes the possibility of Government playing the sole role in arranging such investments. At least a part of those investments has to come from private sector, either on a purely commercial basis, or with support from international or multilateral financing institutions.

At the same time, it was also discussed earlier that different countries have different frameworks to deal with investments, different investment protection mechanisms, project award mechanisms etc. Though regional project investments will require regional level forums for discussions, such platforms/forums are not readily available in South Asia outside intergovernmental mechanisms.

South Asian regional energy projects would require an investment forum to facilitate the mitigation of risks associated with project implementation. A few of the risks for which an Energy Investment forum in the region can help in mitigation are discussed below. At the same time, it may be noted that such risk mitigation is not the only role played by the investment forum. The proposed SAFEI is also intended to be a platform to facilitate discussions and undertakings relating to regional energy investments,

Table 24: Potential risk mitigation by regional forum for energy investments

Risk Type	Risk Description	Risk Mitigation by Regional Forum
Geopolitical Risk	It is related to uncertainties and mistrust between sovereign nations introduced by government actions.	The Regional forum can act to reduce the mistrust between sovereign nations making regional projects viable.
Breach of contract	This refers to the case where host government or its entities do not perform as per the contractual agreement.	A regional forum provides a platform where concerns on proper implementation of contracts and MoUs in letter and spirit can be raised and discussed by the relevant parties
Expropriation Risk	Refers to the case when Government of host country takes away private property through nationalization, seizure of assets etc. without consent or without proper payment to the owner/ investor.	The forum may help mitigate expropriation and similar risks through facilitation of adoption of instruments such as partial risk guarantees, MIGA guarantees and sovereign guarantees.
Bureaucratic Risks	It includes risks like inability / delay to get licenses, complicated land acquisition process, timely clearances etc.	The forum can provide a platform to raise concerns regarding undue delays in consents and approvals.
Commercial Risks	These risks impact the economic viability of the investment. E.g.: Inability to generate revenue.	The forum may act as a regional coordinator and help in planning and selecting regional projects with the consent of most member countries. This may reduce the revenue risk of the project. A credit rating framework at the regional level for utilities could be considered in the region to provide guidance to international investors.

Risk Type	Risk Description	Risk Mitigation by Regional Forum
Legal Risks	Refers to non-independent or weak legal institutions in the country. This may arise due to political interventions or biased decision making by the courts	These risks are addressed through the establishment of a regional body for aligning the investments in the region, provisions for dispute resolution through arbitration in a neutral third-country or agreed arbitration mechanisms, etc.
Currency Risk	Currency risks arise due to difference in currencies in the investor and investee countries. These risks could be related to sudden devaluation in one currency, change in regulation and convertibility or acceptance etc.	A regional energy investment forum could help mitigate such risks by pushing forth for dollar denominated power purchase agreements,
Project Financing Risks (Developers Risk)	Weak capital markets and banking system can impede the project finances and the capital required may not be easily available.	An energy forum can help mitigate these risks by aiding sovereign governments in development of debt markets for CBET (Green Bonds), and promoting long term debt financing, upfront tariff for hydropower projects to minimize risk of lenders, or debt risk coverage from multi-lateral agencies etc.
Lack of Regulatory coordination	Refers to various sovereign norms and policies which make it difficult to have regional infrastructure projects.	An investment forum can work with similar regional institutions in creating a common template for sharing data, norms, transmission pricing, wheeling charges etc. It may push for development of common acceptable regulations. The forum can facilitate in development of regional master plan for south Asian interconnection and assessing the expected investment.
Off-take Risk	Refers to risk when off-take of power is not possible due to various reasons such as non-connectivity to the generation plant, buyer defaulting on PPA due to other cheaper options etc.	This risk could be mitigated by standardizing the PPAs, ensuring payment security guarantee. The Forum can help in integrated planning, harmonization of grid codes, technical standards etc. for regional infrastructure project development and operation

A South Asian regional investment forum will play a vital role in facilitation of mitigation of various risks mentioned above and in coordinating the activities during the development of regional infrastructure in a timely manner.

However, to explore this aspect further, it is important to analyse international experience in regional energy investment forums and regional energy investment projects. These aspects will be dealt with in detail in the following chapter.

6 International Experience

6.1 Introduction

A comprehensive review and analysis of different successful models of the forums on energy investments, established in different regions across the globe is covered in this section. The analysis aims to learn from the experiences of similar institutions/forums operating internationally. Specifically, the analysis seeks to understand the way similar forums/institutions/platforms work, and the role played by them in facilitating regional energy investments. In addition, a few key regional energy investment projects have also been analysed, to derive learning from them. The international examples have been chosen considering the following aspects:

- Representing examples in diverse regions across the globe;
- Showcasing examples of forums similar to what SAFEI has been envisaged such as Central Asia Energy Investment Forum;
- Including regional projects of significance such as the Nam Theun 2 hydroelectric project; and
- Enabling study of investment models for financing regional level projects such as the Itaipu dam, etc.

6.2 International experience on regional energy investment forums/ platforms/ institutions

There are international platforms/forums/institutions working for their region to assist the development of regional energy projects (Generation and transmission). The learning from these projects and institutions/forums would facilitate the smooth and systematic development of an ideal investment forum for South Asia.

Some of the key examples are discussed below, which highlight the nature of the institutions, their, institutional arrangements and roles and responsibilities among other aspects. Key learnings from each of the institutions have been identified. The institutions/forums reviewed as a part of this analysis are:

1. Project Advisory Unit (PAU) in Southern African Power Pool (SAPP)
2. Central Asia Regional Economic Cooperation Energy Investment Forum (CAREC EIF)
3. Connecting Europe Facility (CEF) in European Union (Projects of Common Interest)
4. Sustainable Energy Investment Forum Europe
5. Heads of ASEAN Power Utilities/Authorities (HAPUA) in ASEAN
6. Regional Power Trade Coordination Committee (RPTCC) in Greater Mekong Sub region (GMS)

The understanding of the above institutions would play a vital role in determining the design to be adopted for development of SAFEI. SAPP is one of the most advanced power pools in Africa and has a good organizational structure. With Project Advisory Unit already supporting the financing and implementation of project, they are also coming up with a Regional Transmission Investment Financing Facility (RTIFF), which is its nascent stage, and this will support the transmission projects in their financial models. ASEAN, CAREC and GMS are working in proximity of South Asia and thus, would contain the structure and functions that could be easily adopted in South Asia. CAREC organises energy investment forums where all the stakeholders meet and take major decisions. Connecting Europe Facility describes the selection process and then funds the project if it meets the criteria of being "Projects of Common Interest". Sustainable Energy Investment Forum organizes various meetings and discussions on energy investment and related priorities of the region. ASEAN and GMS have a dedicated working group for financing of the projects.

6.2.1 Project Advisory Unit in South African Power Pool

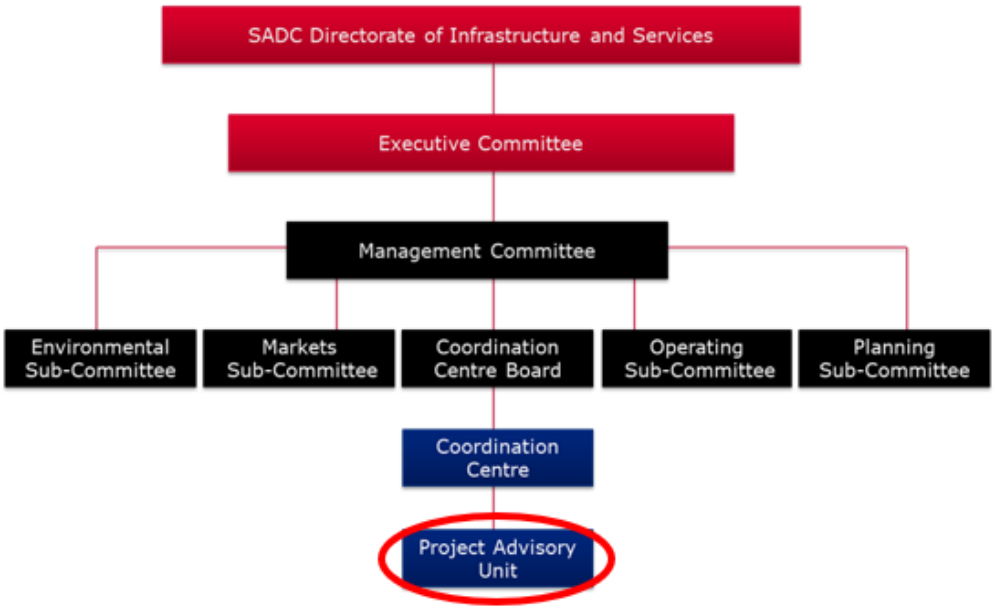
The Southern African Power Pool was established in August 1995 and comprises of 12 member countries (Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe). SAPP is the most advanced power pool in African continent.[305]

SAPP facilitates cooperation among seventeen national electric power utilities belonging to the member countries. Twelve of these are from the national power utilities, two members are independent transmission companies, and the rest are independent power producers. [306] SAPP aims to provide an integrated plan and smooth operation of the interconnected transmission system. [307]

6.2.1.1 Project Advisory Unit

The organisational structure of the SAPP is as illustrated below. SAPP has four working sub-committees: Environmental Sub-Committee, Markets Sub-Committee, Operating Sub-Committee and Planning Sub-Committee under a common Management Committee. The Management Committee reports to the Executive Committee, which is under the SADC Directorate of Infrastructure and Services. Besides the four working committees/sub-committees, in April 2007 the Coordination Centre Board was created to govern the activities of the SAPP Coordination Centre.[305]

Figure 32: SAPP structure



Under the coordination centre, a **Project Advisory Unit (PAU)** was formed with the aim of assisting in operationalizing the selected priority projects in SAPP participating countries. The responsibilities of the SAPP-PAU Centre include the following:

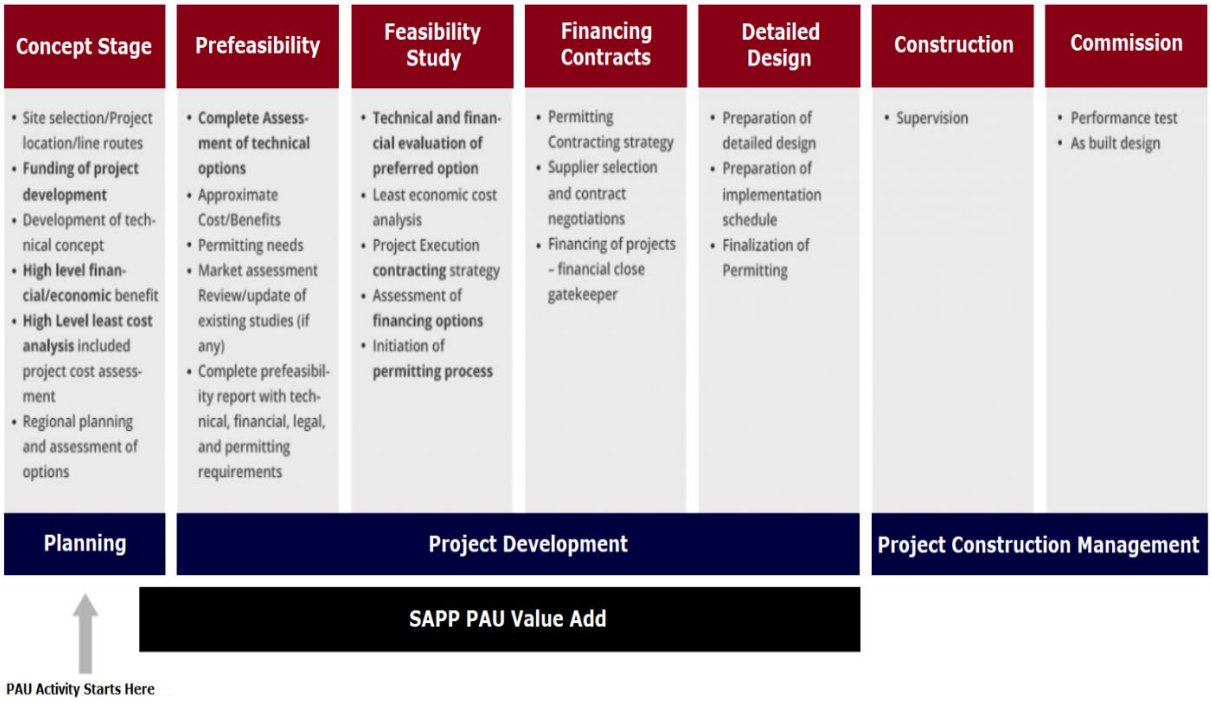
- Conduct regional analytical work;
- Use the grant funding received by the SAPP Coordination Centre to screen, select, prepare and monitor the implementation of regional priority projects; and
- Play an advisory role to SADC governments and utilities.

The objective of PAU is "to be accountable for the preparation and implementation of selected and agreed priority regional electricity projects in the Southern African Power Pool region". The PAU assists in the development of regional projects, right from the concept stage till commencement of construction. Role of PAU with respect to the type of projects is listed below:

1) **Early-stage projects (Greenfields)**: PAU does the studies to get the project to a bankable state (structuring, legal, technical, economic, financial, environmental, social etc.)

2) **Advanced Projects (Brownfields)**: Complete the outstanding studies, conclude negotiations, and packaging for bankability, attract financing.

Figure 33: SAPP-PAU role in project development cycle



The Programme Management Unit (PAU) of SAPP is led by a Programme Manager. The Programme Manager is helped by experts in projects, procurement, environmental and social issues, as well as by finance and administration officers.[308] The PAU was initially set up through grant funding of USD 7 million from International Development Agency ("IDA"), coupled with a project preparation fund of USD 10 million and analytical support worth USD 3 million, also from IDA. It was initially set up in a temporary office in Johannesburg, South Africa, and was later shifted to SAPP Coordination Center office in Harare, Zimbabwe.

6.2.1.2 PAU process for obtaining project support

There are six steps for securing project support from PAU, as described below[309]:

1) **Identification and selection of projects**: Identification of projects is done either by project sponsors/Utilities or PAU or concerned governments. Projects may also be selected from a list of projects submitted.

2) **Project screening**: Projects are screened as per SAPP selection criteria (PDRA) and if the projects are already on the priority list, then they are supported by PAU. International Development Association (IDA) eligibility criteria are checked.

3) **Authorisation:** SAPP Committee's and the SADC Secretariat are informed about the projects screened and then SADC secretariat would bring them to the notice of SADC Energy Ministers. Intergovernmental Memorandum of Understanding (IGMOU) and consent letters are required from them.

4) **Donors No objection Required**: PAU requires Donors no-objection (initially IDA) to start activities.

5) **Agreement on terms on which funds will be provided:** PAU will negotiate and agree on terms of its service. A letter will be sent to sponsors detailing preparatory support, outputs, and timeline.

6) Implementation of project preparation

6.2.1.3 Projects Supported

One of the key projects supported by SAPP's PAU is the Mozambique-Zambia 400KV power interconnection project. The project would connect Cahora Bassa Hydroelectric Power Station at Songo in Mozambique with the power system of Zambia. The total line length is estimated at 286 km of which 77 km is in Zambia and the rest in Mozambique. The objective of the project is to enable the evacuation of power from Cahora Bassa Hydro Power Station in Mozambique through Zambia to the Southern African electricity market. Technical studies for the project are completed. As of May 2022, efforts were on to secure funding for the preparation of specifications and tender documents for the project.

Another project under PAU's support portfolio is the Kolwezi (Democratic Republic of Congo)-Solwezi (Zambia) 330 kV Power Interconnector. The principal objectives of this project are to improve the security and reliability of power supply and also foster economic development and regional integration through enhanced cross-border electricity trade.

SAPP PAU's role on both of these projects includes the following:

- Serve as an implementing agent for procurement
- Project Management
- Legal structuring
- Financial Structuring
- Serve as Transaction Advisor

Other projects being supported by PAU include:

- 190 KM, 400 KV Inga (Democratic Republic of Congo)-Soyo (Angola) Transmission Interconnector Project: Feasibility study; and
- Baynes HPP Transmission Lines Project for the integration of the proposed 600MW Baynes hydropower plant to the Angola and Namibia transmission networks: technical support and procurement services.

6.2.1.4 Regional Transmission Infrastructure Financing Facility (RTIFF)

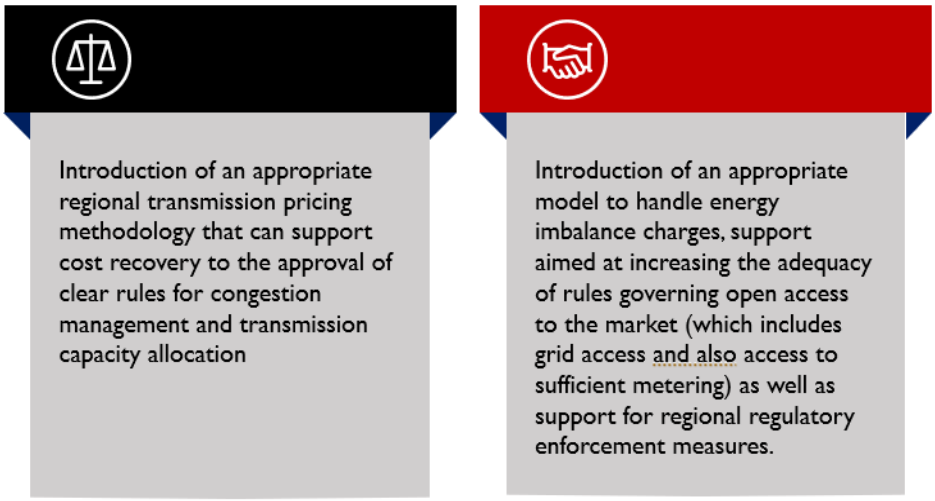
In year 2017, SAPP proposed and initiated the establishment of Transmission Infrastructure Financing Facility (TIFF) to promote transmission investments by supporting cash flow repayments. The major challenge faced by SAPP in implementing transmission projects is difficulty in securing long term bilateral power purchase agreements (PPAs) that would be committed to fund transmission project cashflow repayments. SAPP cooperating partners have been supporting the projects through grant funding by mainly targeting project packaging. Most of the transmission projects funded have not been able to reach financial closure due to lack of bankability and PPAs (necessary to guarantee loan cash repayments). Although there have been significant transactions in SAPP market, it has not been used to anchor new transmission investments because they are short term and not easily predictable.

The ultimate objective of RTIFF is to develop a financing mechanism for transmission projects that utilize long term power purchase agreements and competitive markets. The facility would facilitate increasing trade volumes, decreasing congestion on the existing network, improving reliability, and creating adequate redundancy in the regional system.[310]

RTIFF is in its nascent stage and joint meetings are held between SAPP, the World Bank, and the consulting team to discuss additional funding and financing partners. Consultations from Gridworks, the Norwegian Ministry of Foreign Affairs, UK FCDO, and AfDB have been taken. For the convergence on the desired model, an initial blueprint for RTIFF and associated project level financial structures were discussed with SAPP.[305]

As per the Final Report for Phase I of the RTIFF assignment, and stakeholder consultations, certain "enabling factors" have been identified that would support the establishment and success of RTIFF as stated below:

Figure 34: Examples of enabling factors



Expected functions of RTIFF:

- Develop and finance priority regional transmission projects (both interconnectors and national transmission lines) through regional planning and prioritization, agreeing on common operating rules, and pooling financial resources
- Determine strategies for increasing investment in transmission infrastructure
- Addressing financing issues
- Serve to support the operationalization of the SADC Regional Development Fund

6.2.1.5 Funding of the RTIFF and SAPP projects

The development of RTIFF is financed by the World Bank, the Government of Norway and the Swedish International Development Cooperation Agency (SIDA). SAPP gets its finances from Members' contributions, administration fees from market trading platform and external grants. The Members' contribution has a uniform base contribution, and then varying levels of fee based on energy share, demand share etc. The members of SAPP fund the activities of the coordination center through an annual subscription. The coordination center prepares a budget, which is presented to the coordination centre board for approval. Transmission projects are funded by SAPP cooperating members with grant funding.[311]

6.2.1.6 Dispute Resolution

As per article 10.10.6 of SAPP MoU, the dispute between operating members in SAPP would be resolved through arbitration in accordance with the operating agreement unless a procedure is agreed by the members.[312]

6.2.2 Central Asia Regional Economic Cooperation Energy Investment Forum (CAREC EIF)

CAREC EIF aims to provide reliable, sustainable, resilient, and reformed energy market by 2030 to its member countries (Afghanistan, Azerbaijan, the PRC, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan). The program aims to improve energy security of the region by enhancing regional interconnectivity, promoting sustainability and scaling up investments in energy sector by attracting private sector investments across the energy value chain.

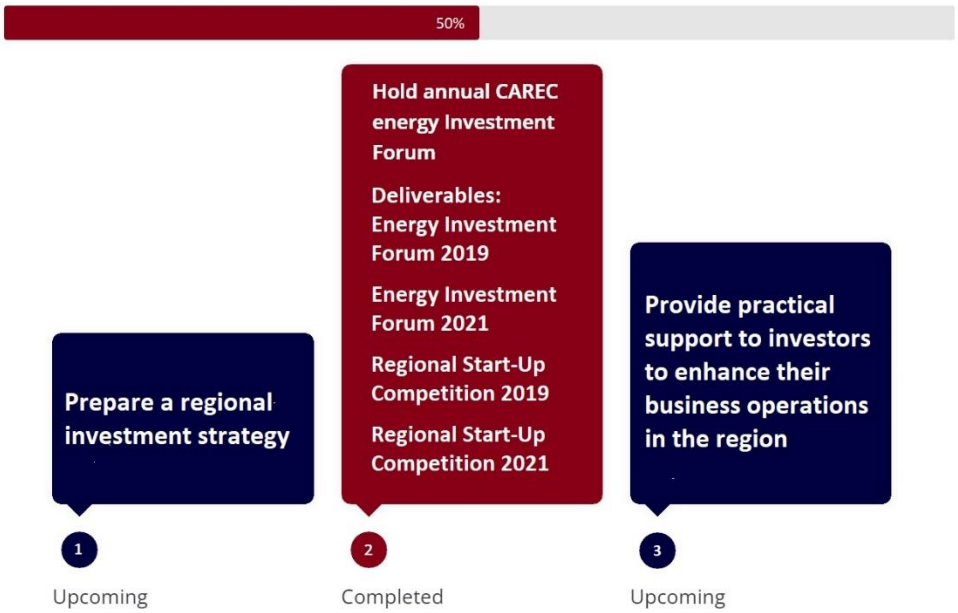
It is estimated that investment of $400 billion would be required in 2020-2030. The present investment is estimated to be a quarter of expected level and around two thirds of investments are from public sector. CAREC

Energy Strategy 2030 aims to create an enabling environment for private and commercial capital, to relieve the growing pressure on government budgets.

Under CAREC EIF, a regional investment strategy is being prepared with suitable partner organizations to guide policy makers in creating enabling conditions for private investment. The strategy would provide recommendations for a robust and harmonized regulatory framework across neighbouring countries. The framework would facilitate mechanisms for public–private partnerships and the possible establishment of a Central Asia Business Advisory Council to improve the climate for business and strengthen confidence-building measures for investors.

The CAREC program's Energy Investment Forum would be a flagship platform aimed at promote business–to–business (B2B) exchanges, encouraging start-ups, and drawing in entrepreneurs that would bring new and innovative business ideas into the energy sector.[313]

Figure 35: CAREC Progress on Investment Mechanism



6.2.2.1 History of CAREC – Energy Investment Forums

Challenge faced by CAREC countries is that they are slow in adopting new technologies because of both supply and demand constraints. Technology credibility was increased by providing support. The first CAREC investment forum was organized in October 2016 in Islamabad, Pakistan. The forum encouraged suppliers of new technologies by creating a single market which would familiarize them with the countries considering that some of the countries are relatively poor and difficult to access. This forum also provided several technical assistances on demand side to develop technical capacity and understand the government officials and institutions. The CAREC Energy Investment Forum held three sessions where senior energy government officials highlighted the incentives offered by their government to attract investors, private entities shared their experiences on successful investments and a panel highlighted the things financiers seek in the projects to be financed. [314] [315]

The second CAREC EIF session took place in Astana, Kazakhstan in July 2017. The forum aimed to increase investment in clean energy in Central Asia and to attract private sector financing for energy projects. The forum invited project developers/sponsors, financiers, equipment/technology suppliers, and EPC contractors. Representatives from export-import banks, export credit agencies, multilateral development banks and insurance providers were invited. It also invited high-level government ministers and officials from 11 CAREC member countries. There were 5 sessions which described the potential investment projects and the investment requirements in CAREC. It included the initiatives by multi donors and role of innovative financing for clean

energy. A round table was organised to discuss the benefits of working with the Export Credit Agencies /Export-Import (ECAs/EXIM) Banks.[314] [316]

The third CAREC EIF was organised in Batumi, Georgia in September 2018 with the aim of attracting investments to CAREC as $1.15 trillion was identified as the funding requirement for CAREC region's energy infrastructure investment between 2016–2030. Private sector participation was essential as public funds were not sufficient to cover the requirements. The forum presented success stories and had in-depth discussions on solar power, electric vehicles, energy efficiency and energy storage, and discussed relevant policy reforms. Potential investors were introduced to investment opportunities in CAREC countries. [317] [318]

The fourth CAREC EIF was organised in September 2019 in Tashkent, Uzbekistan and was titled "Breaking the Investment Barrier in Central Asia – Bringing Business to Energy Markets in Transition". Its aim was to help investors understand the existing and envisaged energy market reforms in the region. The forum had 300 participants from inside and outside the CAREC region, including investors, financiers, policymakers and other stakeholders. The Forum offered a B-2-B platform for participants to find potential business partners. CAREC Energy Ministers signed a historic declaration committing to doubling regional energy efficiency levels by 2030. The forum also organised a start-up competition which was won by participant from Azerbaijan with its decorative home solar panels able to store energy accumulated during the day to be used during periods of insufficient sunshine.[319] [320] [321]

In December 2020, 5th CAREC EIF was organised and in December 2021, 6th CAREC EIF was organised. The forums aimed to promote energy efficiency as a potent tool to decarbonize the energy sector and discussed business opportunities in this field. It discussed on the low regional energy efficiency due to aging infrastructure, low energy pricing, and lack of policy and regulatory support. It focussed the importance of low cost acceleration of energy efficiency in creating a high impact for increasing economic competitiveness and reducing carbon emission in an interconnected regional market. The sessions included the role of the utilities in energy efficiency initiatives, suitable business models and innovative financing approaches, latest energy efficiency technologies and appliances. It aimed to increase private participation by arranging start up competitions and B2B meetings.[322] [323]

6.2.2.2 Dispute Resolution

Disputes would be resolved in accordance with International Law, adhering to UN international conventions like the United Nations Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York Convention) and Convention on the Settlement of Investment Disputes between States and Nationals of Other States. CAREC countries recognize bilateral and multi-nation dialogues to solve disputes. MIGA (Multilateral Investment Guarantee Agency) and IFI safeguard policies to avoid the occurrence of disputes and grievances to cover financial and commercial risks.[324]

6.2.2.3 Funding of the Forum

The forum works from funds obtained from the Asian Development Bank, which acts as a secretariat to CAREC. It takes the lead in all the institutional events. The Asian Development Bank is a multilateral development finance institution owned by 67 countries - 48 members from Asia and the Pacific region and 19 non-regional members.[325]

6.2.2.4 Project Supported

On 8th November 2018, project for building 1100 km of new 110 kV, 220 kV, and 500 kV transmission lines, along with construction of four new substations, and expansion of three existing substations covering four of the five regions of Turkmenistan was approved by CAREC. The project will help in establishing an interconnected national transmission grid to improve reliability and energy efficiency of the network. The project is expected to maximize regional cooperation and power export opportunities. The project is anticipated to be commissioned on 30th June 2024 with USD 675 million out of which ADB will provide a loan of USD 500 million and rest of USD 175 million would come from govt. of Turkmenistan.[326]

6.2.3 Connecting Europe Facility (CEF) in European Union (Projects of Common Interest)

Projects of Common Interest (PCIs) aim to support EU to achieve its energy policy and climate objectives - affordable, secure, and sustainable energy for all citizens, and the long-term decarbonisation of the economy. These are the key cross border infrastructure projects that link the energy systems of EU countries. Projects of common interest can take funding from the Connecting Europe Facility (CEF), the EU fund for boosting energy, transport, and digital infrastructure.

For a transmission and/or storage project to be eligible as a PCI, it must be included in the Ten-Year Network Development Plan (TYNDP) drawn up by ENTSO-E. This list of PCIs is reviewed every two years, through a consultative process of European Commission, followed by a review by the European Parliament and European Council. Some of the examples of PCI projects are COBRA cable, Estonia-Latvia third electricity interconnector, the Biscay Gulf Interconnector etc.[327] [328]

6.2.3.1 History of CEF

The CEF started in 2014 and works on three sectors - energy, telecom, and transport. It benefits people across all member states by making their travel easier and more sustainable, enhancing Europe's energy security with more renewable integration, and facilitating cross-border interaction between public administrations, businesses, and citizens.

Various functions of CEF are as follows:

Figure 36: Functions of CEF

6.2.3.2 Funding of CEF

The CEF is a programme started by European Commission. Its operations are managed by the commission.[329]

6.2.3.3 Projects Supported

CEF allocated a total budget of €5.35 billion for energy infrastructure projects for the 2014-2020 period, of which €4.6 in the form of grants managed by INEA (Innovation and Networks Executive Agency).[330] The budget was used to fund 22 interconnection projects out of which 20 projects have been funded. One of the projects was 600 MW of transmission capacity added at the border between Estonia and Latvia with the completion of the Estonia- Latvia third electricity interconnection, [331]The new CEF programme for 2021-2027 allocates a total budget of €5.8 billion to the energy sector. In addition to projects of common interest (PCI), it includes a new section to support cross-border projects for renewable energy.[332]

6.2.3.4 Project Financing Process

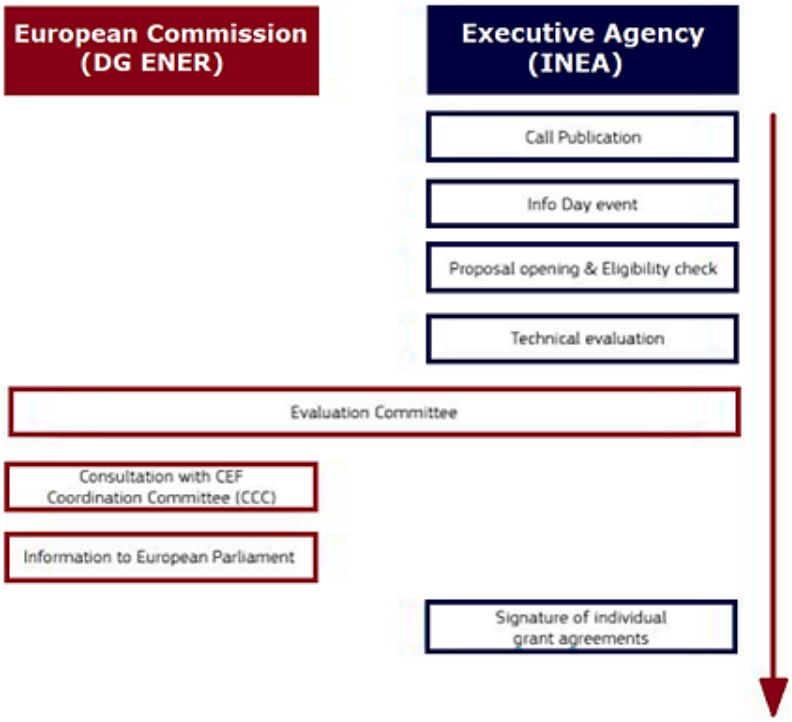
The application process for getting funds from CEF involves the following steps:[333]

- Identify the relevant call
- Read the call documentation and prepare your documents
- Submit your application online
- You will be informed of the outcome of the evaluation in due time

- Applying for funding

The project must be identified as a Projects of Common Interest (PCI) to be eligible for financial support under the CEF. The submitted proposals are evaluated by the Commission, with the assistance of the Agency and technical experts. High-quality proposals which best meet the award criteria as described in the relevant work programme and call text are selected for funding. The evaluation criteria cover maturity, quality, cross-border dimension, positive externalities, the need to overcome financial obstacles, stimulating effect of the CEF financial assistance, priority and urgency, and complementarity with other actions financed by the CEF. A list of proposals recommended for funding is prepared and selected applicants are invited to prepare and sign individual grant agreements.

Figure 37: Call Process



6.2.4 Sustainable Energy Investment Forum Europe

The Sustainable Energy Investment Forums initiative was launched by the European Commission in 2017. It is managed by the European Climate, Infrastructure and Environment Executive Agency (CINEA). More than 40 events in 25 Member States were organised with the aim of facilitating dialogue between relevant stakeholders for the purpose of activating private-sector investments in sustainable energy, enhancing access to finance for energy efficiency projects and helping to replicate and scale up best practices of investment programmes in energy efficiency and small-scale renewables.

6.2.4.1 History of Sustainable Energy Investment Forum (SEIF) Europe

Sustainable Investment Forum Europe 2018 titled "Financing Innovation for a Low Carbon Future" was the first investment forum held on 13th March 2018 in Paris, France organised by Climate Action Partnership. The aim of the investment forum is to discuss on the solutions for challenges faced by European and global climate finance markets by inviting decision makers from investment community, European governments and think tanks. The forum discussed climate risks, opportunities, appropriate governance for sustainable investment, defining a European and global green finance lexicon, efficient use of information to scale-up low-carbon investment, financing the transition to a low-carbon economy, financing the Sustainable Development Goals, technology for sustainable investment, setting up an efficient carbon pricing system, policy, and regulatory updates: the examples are France and the EU.[334] [335]

On 12th March 2019, The Sustainable Investment Forum Europe 2019 titled 'Financing Innovation for a Low Carbon Future' was held in Paris, France and was hosted by Climate Action in partnership with the UN Environment Programme Finance Initiative (UNEP FI). The Forum aimed to mobilize US$100 billion per year by 2020 by bringing together over 300 investment professionals and helping the EU scale up its international climate finance contribution towards the goal of industrialized countries.[336]

Sustainable Investment Forum Europe 2020 titled "Mobilizing sustainable investment towards a 1.5°C world" was held virtually in September 2020 in official partnership with UNEP-FI. It provided an online environment for 1,000 attendees to engage with sustainable finance community by enabling debate, encouraging dialogue and collaboration to lay the foundations for sustainable finance.[337]

In April 2021, the Sustainable Investment Forum 2021, was again held virtually in April 2021 organized by Climate Action in partnership with UNEP FI. The topic of the forum was "Growth in Europe can be driven by Europe". The forum included asset owners and managers, rating agencies, banks, UN and Government policymakers, investors, development banks, think tanks, and NGOs committed to driving forward the sustainable finance agenda. The aim of the forum was to align strategies with UN SDGs and ensure a fair and equitable global society through virtual debates, building relations with key industry players in the global sustainable investor market.[338]

Sustainable Investment Forum Europe 2022 was organized by partnership of UNEP FI and Climate Action for its 5th annual edition in London during April and May 2022. The forum aimed to bring investors together to achieve a net zero economy. The forum discussed pathways for investors to actively participate in achieving the sustainable development goals (SDGs) as determined by COP26. The forum also discussed the need for flexible global fiscal policies that facilitate structural change, address inequality, and facilitate a just transition to a net zero future. Sustainable Investment Forum Europe 2022 explored the need for central governments to direct capital towards a greener, inclusive recovery and redirect fiscal policy towards resilient, sustainable growth.[339]

6.2.4.2 Funding of the Forum

The Sustainable Energy Investment Forums initiative was launched by the European Commission in 2017 and is funded under Horizon 2020. Horizon 2020 was the EU's research and innovation funding programme from 2014-2020 with a budget of nearly €80 billion. The programme has been succeeded by Horizon Europe.

SEIF is managed by the European Climate, Infrastructure and Environment Executive Agency (CINEA). More than 40 events in 25 Member States were organised with the aim of facilitating dialogue between relevant stakeholders for the purpose of activating private-sector investments in sustainable energy, enhancing access to finance for energy efficiency projects and helping to replicate and scale up best practices of investment programmes in energy efficiency and small-scale renewables.

6.2.4.3 Project Supported

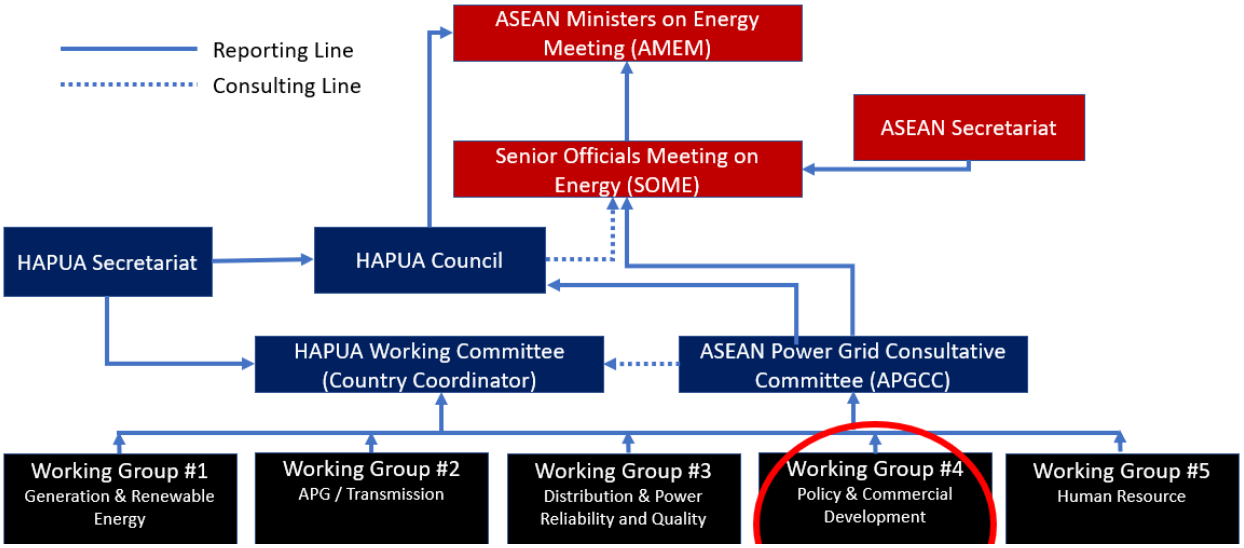
Sustainable energy investment forum facilitated the implementation of the Belgian Recovery and Resilience Plan for investments in buildings and infrastructure. The Belgian federal government intends to use Public-Private Partnerships (PPPs) and Energy Performance Contracts (EPCs) for the renovation of public buildings, as they allow private investors to finance investments, which are paid back through energy savings. [340]

6.2.5 Heads of ASEAN Power Utilities/Authorities (HAPUA) in ASEAN

Heads of ASEAN Power Utilities/Authorities (HAPUA) established in year 1981, by 5 (five) member countries namely: Indonesia, Malaysia, Philippines, Singapore and Thailand. In 1996, Brunei Darussalam and Vietnam also became members. Its main objective is to promote cooperation among the members of ASEAN to strengthen regional energy security through interconnection development, enhancing private sector participation, encouraging standardization of equipment, promoting joint project development, cooperation in human resources, research & development, and to enhancing the quality & reliability of electricity supply system.[341]

The MoU of HAPUA and the new structure of HAPUA organization was signed by all member countries in the 20th meeting of the HAPUA held in May 2004 in Cambodia. The Working Groups were restructured during the 28th HAPUA Council Meeting in June 2012 in Brunei Darussalam. The current structure is as below:

Figure 38: HAPUA structure



As per the organisation structure, HAPUA Secretariat reports to both HAPUA Council and HAPUA Working Committee.

On 24 June 1986, an agreement on ASEAN Energy Cooperation was signed by ASEAN member states. Under this, an ASEAN Plan of Action for Energy Cooperation (APAEC) was prepared, that works on 7 programme areas, of which one area is ASEAN Power Grid (APG). ASEAN Power Grid cooperation was initiated in 1997 to establish cross-border electricity interconnections. APG prepares master plans with projects aimed to meet the rising electricity demand and improving the access to energy services in the region. APG is listed as the top project program in APAEC 2016-2025 as it is the most important element of energy connectivity. **Laos-Thailand-Malaysia-Singapore Power Integration Project (LTMS PIP)** was placed as prioritized pilot project for APG.[342] [343] [344]

ASEAN Power Grid Consultative Committee (APGCC) is an organisation body, established in 2007, under HAPUA. Its focus is to enhance cooperation to execute the development of 16 interconnection projects with 27 links. The role of APGCC is to facilitate and assist the HAPUA Council in the implementation of Memorandum of Understanding on the ASEAN Power Grid.

APGCC is composed of a Chairman, a Vice chairman, members (governments and utilities representative), alternate members, and chairman of HAPUA Working Group No. 1, 2, 4, and 5. The expenses incurred by the members of the APGCC in carrying out the tasks are to be borne by the respective countries.[345]

There are five working groups assisting the operations of HAPUA, namely working group 1: Generation and Renewable Energy, working group 2: Transmission / ASEAN Power Grid (APG), working group 3: Distribution and Power Reliability & Quality, working group 4: Policy Studies and Commercial Development, and working group 5: Human Resources. **The Working Group (WG-4)holds an important role in identifying regional projects and recommending financing modalities for realising the ASEAN Power Grid**.

6.2.5.1 Responsibilities of the Working Group 4

WG-4 is chaired by Philippines, and co-chaired by Cambodia. The objectives of WG-4 are:

- Study on (harmonization of) the limitations and propose solutions on legal and regulatory framework for bilateral and cross border power interconnection and trade and formulation of institutional and

contractual arrangements for cross border electricity trade to include Taxation, Tariff and Third Party Access (Wheeling Charge);

- Study Identify and recommend Financing Modalities for realizing the APG; and
- Project Development for ASEAN resources participation to develop the generation, transmission and distribution within the region.

Some of the recent activities of HAPUA's WG-4 include a study on Public Private Partnership among ASEAN Power Utilities and working on contractual arrangements for ASEAN Power Grid Multilateral Trade.

6.2.5.2 Dispute Resolution

As per article 11 of the agreement on ASEAN Energy Cooperation in Manila, Philippines, 22 May 1998, disputes shall be settled amicably through consultations or negotiations among the member countries of ASEAN, in accordance with the ASEAN Protocol on Dispute Settlement Mechanism signed in Manila, Philippines on 20 November 1996.[346]

6.2.6 Regional Power Trade Coordination Committee in Greater Mekong Subregion

The Greater Mekong Sub-region (GMS) is formed by the member countries: Cambodia, the People's Republic of China (PRC), Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, and Vietnam. The six countries entered into the program in 1992 with assistance from the Asian Development Bank (ADB) for subregional economic cooperation.[347]

Electric Power Forum (EPF) was formed in April 1995 as part of the institutional framework for sustaining energy cooperation in the GMS. EPF was held annually and provided a framework for subregional power sector coordination. EPF is also advisory to GMS ministerial meetings on sub regional power issues. As per the terms of reference, one of the objectives is to promote financing by government, utilities, donors and the private sector of priority projects related to the development of sub regional power systems. Each GMS country is represented by two members on the EPF. One member would be a senior official from the ministry or government agency responsible for power sector policy and planning and the other member would be senior manager from the key power utility of the member country.

The first GMS summit took place in Phnom Penh in November 2002 and Inter-Governmental Agreement (IGA) was signed. Seven GMS summits were held generally every three years with 7th GMS summit held in September 2021. The summit is considered the highest forum where leaders from six nations review and assess the progress made under the program and renew their commitment to sub regional cooperation. ADB is the secretariat for the GMS Program that assists in coordination with national secretariats. At the 4th GMS summit, Regional Power Trade Coordination Committee (RPTCC) was created to provide strategic direction and management. At the same summit work to develop Regional Investment Framework (RIF) was also considered.[348] [349] [350]

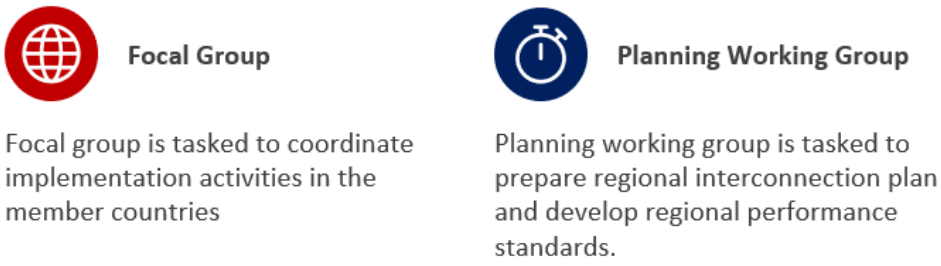
Figure 39: EPF structure

6.2.6.1 Institutional arrangement of RPTCC

The RPTCC operates through Greater Mekong Sub-region Secretariat which is supported by the Asian Development Bank. The secretariat is provided by the host country for each meeting and the Asian Development Bank (ADB). Member countries elect a chairperson and vice chairperson for RPTCC. The ADB manages several consultancy projects providing support to the RPTCC. RPTCC prepared GMS Grid Code/Regional Power Trading Operating Agreement (RPTOA).

RPTCC is supported by two working groups - Focal Group and Planning Working group as described below:

Figure 40: Functions of Working Groups under RPTCC



6.2.6.2 Dispute Resolution

As per article 14 of the MoU, disputes should be settled amicably, by negotiation and consultation, by the board of RPTCC.[351]

6.2.6.3 Regional investment framework

In 4th GMS summit in Nay Pyi Taw, Myanmar in December 2011, Greater Mekong Subregion Economic Program Strategic Framework, 2012–2022 was approved and the **Regional Investment Framework, 2013-2022** was introduced to put into operation the pipeline of projects. Under the framework, potential investment and technical assistance projects were identified at 19th Ministerial Conference in Vientiane, Lao PDR, on 11 December 2013. The framework covers a wide range of sectors like transport, energy, agriculture, environment, human resource development, urban development, tourism, transport and trade facilitation, information and communication technology, and other multisector/cross-border economic zones. Investment conclave was proposed to be set up to enhance private participation in the investments.[352]

In addition, the GMS Business Opportunities Forum acted as a regional market event to:[353]

Showcase the RIF results to development partners, the private sector, and other stakeholders, especially on the new generation of multi-sector projects identified under the RIF process.

Create general awareness and generate broad interest about the RIF pipeline among development partners, the private sector, and other stakeholders, and on potential areas for cooperative partnerships and business opportunities for financing and providing technical/knowledge support for selected high-priority projects.

Provide a platform for development partners, the private sector, and other stakeholders to share their respective program priorities and experiences on the indicative RIF priority areas/projects, and to exchange ideas on suitable modalities and approaches for effectively harnessing external resources into the financing of GMS projects under the RIF. Increased awareness among development partners, the private sector, and other stakeholders of the new RIF pipeline, especially the new generation multi-sector projects

Sharing of program priorities and indications of interest for cooperative partnerships and business opportunities in terms of potential support (i.e., financial, technical and knowledge) by the development partner community and the private sector in the priority areas of the RIF.

Sharing of ideas on GMS-appropriate approaches and modalities for generating and harnessing external resources to finance second generation GMS projects and support capacity building and knowledge-based activities.

RIF has been revised as the Regional Investment Framework 2022 (RIF 2022), which is prepared by consolidation of Regional Investment Framework 2013–2022 and the Revised Regional Investment Framework Implementation Plan 2014–2020. It continues to operationalize the strategy for medium-term pipeline of priority projects under the GMS Strategic Framework 2012–2022 and the Hanoi Action Plan 2018–2022. The RIF 2022 was adopted at the 6th GMS Summit of Leaders which was held on 31st March 2018 in Hanoi. The GMS leaders directed officials of the GMS Program to ensure that the Regional Investment Framework is monitored and updated regularly.[354]

6.2.6.4 Projects Supported

GMS helped in identifying some of the most important regional projects like Nam Theun project and Monsoon wind Project. In Nam Theun project, GMS helped in liasoning with bodies like MIGA, the World Bank in order to arrange finances and loan guarantees for the project. Monsoon project is 600 MW wind energy project that is considered to be the largest and first cross border wind plant in southeast Asia. PPA was signed between Viet Nam Electricity and Impact Energy Asia for 25 years to supply green energy from Sekong and Attapeu in southern Lao PDR to Central Vietnam through a 500 kV transmission line at a tariff of USD 69.5 (EUR 58.7) per MWh.[355] [356]

6.2.7 Summary of review of regional energy investment forums

6.2.7.1 Focus areas and level of intervention

The key areas in which the studied regional energy investment forums are involved in consists of project preparation (feasibility studies, studies on regional projects, studies on regional harmonization of investment policies etc.), assistance in achieving financial closure, transaction support/advisory, project implementation support, project monitoring support, development of regional investment strategy, implementation/operation of regional investment fund and, facilitating discussions and knowledge sharing.

Table 25: Mapping of Focus areas and Level of intervention

Institution / arrangement	Focus areas							
	Project preparation and analytical studies	Assistance in financial closure	Transaction support	Project implementation support	Project monitoring support	Regional investment strategy	Regional investment fund	Discussions, knowledge sharing
PAU in South African Power Pool (SAPP)	✓	✓	✓	✓	✓		✓	✓
CAREC Energy Investment Forum	✓					✓		✓
CEF in European Union							✓	
Sustainable Energy Investment Forum	✓							✓
Heads of ASEAN Power Utilities / Authorities (HAPUA) Working Group 4	✓					✓		✓

Institution / arrangement	Focus areas							
	Project preparation and analytical studies	Assistance in financial closure	Transaction support	Project implementation support	Project monitoring support	Regional investment strategy	Regional investment fund	Discussions, knowledge sharing
Regional Power Trade Coordination Committee (RPTCC) in Greater Mekong Sub region (GMS)	✓					✓		✓

From the above, the following can be inferred as learnings for SAFEI in South Asia:

1. Providing a forum for discussions and interactions regarding regional investments is a common activity among most of the identified regional energy investment forums/platforms. This also includes organizing annual and/or periodic investment forums/summits;
2. Many regional energy investment forums/platforms play an advisory/advocacy role, to support the development of conducive policy and regulatory framework for investments;
3. Many regional energy investment forums/platforms provide some kind of project preparatory assistance and overall analytical support to the members. This includes project preparatory studies, prefeasibility analysis, feasibility analysis, assistance in development of regional plans etc.;
4. The regional energy investment forums/platforms have also been providing assistance to address financing issues for projects. This includes arranging grant support, liasoning with development partners to arrange concessional loans and guarantees etc.;
5. A few of the regional energy investment forums/platforms focus also on developing regional level plans and strategies, and on constituting a regional level investment fund;
6. Other key areas of focus for regional energy investment forums/platforms consist of assistance in financial closure, transaction support, project implementation support, and project monitoring support.

6.2.7.2 Institutional structure and funding

Among the reviewed regional energy investment forums/platforms, except for Sustainable Energy Investment Forum (SEIF) Europe, all others are part of a larger institution. The investment forum/platform derives its funds, and undertakes its activities utilizing its parent institutional structure. In comparison, standalone forums such as SEIF are restricted in their scope, such as organizing workshops and discussion sessions and providing assistance in analytical studies only.

In terms of an independent administrative structure, the role of funding of development financial institutions will be of key importance. For example, PAU, even though under SAPP, was supported in the initial years through grants from the International Development Agency (IDA).

6.3 International experience on regional Projects

While the key focus of the review of international experience is to review the regional energy investment forums/platforms across the globe, it is also important to derive learning from some of the successful regional energy investment projects as such. These may or may not have been supported by a regional forum. Nevertheless, such projects will be a key source for South Asian countries to draw inspiration and learn from.

With the same in mind, a few key regional projects have been studied, and their key characteristics, especially, the investment and development modalities have been described in the below subsections.

6.3.1 Greater Mekong Sub-region: Nam Theun 2 hydroelectric project, Lao PDR

Criteria	Details
Location	Nam Theun River, tributary of the Mekong River in Laos in the provinces of Bolikhamsai and Khammouane. [357]
Type	Generation
Physical attributes	Nam Theun hydroelectric project has:[357] Installed capacity 1080 MW Annual Supply 6,000 GWh Hydraulic Head 39 m Catchment Area 4,039 Km²
Project schedule	1990: World Bank and UNDP conducted a feasibility study. 1993: Signing of Project Development Agreement by Government of Lao PDR with Nam Theun 2 Electricity Consortium (NTPC) 2002: Concession contract was signed between NTPC and the Laos government. 2003: Signing of power purchase agreements (PPA) for 25 years, between NTPC and, Electricity Generating Authority of Thailand (EGAT) and Laotian state-owned power company Electricite du Laos (EDL). 2005: Financial closure was reached 2006: Nam Theun River diversion was begun (Concluded- April 2008). 2009: This was followed by the completion of the Nakai Dam. Test hydro power generation began. 2010: Commercial operations of the plant began.[357]
Purpose of the project (benefit to the region)	75 MW generated for domestic consumption of Lao PDR, 1000MW exported to Thailand. $1.9 billion in foreign exchange earnings for Lao PDR over a 25- year period through the export of electricity to Thailand. In 2010, the Nam Theun project represented 42% of Lao's electricity generation capacity. $1.3 million from the project was allocated every year to protection of the watershed and the Nakai Nam Theun National Protected Area.[358]
Ownership Structure	This project is developed by Nam Theun 2 Power Company. It is owned by a consortium which is composed of: [359] Électricité de France (EDF) 40 % Electricity Generating PCL (EGCO) of Thailand 35 % Government of Laos 25 %

Criteria	Details
Financial information	Base project cost of $1.3 billion was funded 28% by equity and 72% by debt. The debt financing for the project was provided by several multilateral and bilateral agencies, like ADB, World bank etc. The Project is expected to generate around $1.9 billion in revenues for the Government over the 25-year project concession period.[358]
Modality of Development	The project was developed as a public-private partnership (PPP) between the government of Lao PDR and private investors. The project is structured as a build-own-operate-transfer (BOOT) project. By the end of 25-year concession period (in 2035) the project will be transferred to the Government of Lao PDR.[358]
Tariff & payment support	Tariffs were fixed by a PPA for each year over the agreement period. The initial tariff was $0.02118 + Thai Baht 0.805 per kWh in 2009, with an annual increase of 1.4% Export credit agencies, and a consortium of 14 international private commercial banks – nine international dollar lenders and seven Thai lenders. Loan Guarantees cover risks like:[358] • Currency inconvertibility and transfer restrictions • Expropriation • War and civil disturbance • Breach of contract Dispute mediation services
Overruns	7% capital cost overrun[360]
Challenges	Asian Financial crisis led to slowdown in the project Loans taken were disproportionately large as compared to the GDP of Laos Loan Guarantees were required to bring down interest rates.

6.3.2 African continent: Ruzizi 3 HEP

Criteria	Details
Location	The hydroelectric project is being developed on the Ruzizi river which flows along the borders of Burundi, Congo, and Rwanda.[361]
Type	Generation
Physical attributes	Ruzizi 3 hydroelectric project has a projected:[361] Installed capacity 206 MW Annual Supply 1,157 GWh Storage capacity 7.7 million m^3

Criteria	Details
Project schedule	2015: The project was approved. 2019: Project was signed. 2021: Tender process of the project began. 2023: The construction process is expected to begin. 2027: The project is expected to begin operations.[362]
Purpose of the project (benefit to the region)	Studies identified that the project would benefit a population of 30 million people averaging a 24% electricity access rate. After commissioning, the Ruzizi 3 project will almost double Burundi's current electricity generation capacity. It will increase Rwanda's installed capacity by nearly 30% and it will connect Eastern DRC to the electric grid.[363]
Ownership Structure	The shareholders of Ruzizi III Energy Limited (REL) consortium are Industrial Promotion Services (IPS) and SN Power AS (SNP). [364] In July 2019, the project agreement was signed post the negotiations between Communauté Economique des Pays des Grands Lacs (CEPGL) member states (Burundi, the DRC and Rwanda) and the consortium. It was agreed upon that all three of the contracting states (Congo, Burundi, and Rwanda) will each have a stake of 10% with an equal off-take share in the project, through CEPGL's energy affiliate Energie des Grands Lacs (EGL). the remaining 70% stake will be owned by the private consortium.
Financial information	Estimated investment of about $700m A substantial portion of the project cost will be funded by International financial institutions such as the World Bank, the EU, the European Investment Bank (EIB), the African Development Bank (AfDB), Kreditanstalt Für Wiederaufbau (KFW), and French Development Agency (AFD) in the form of loans and grants.
Modality of Development	The project is being undertaken as a PPP - public-private partnership model between the 3 countries and a consortium of Industrial Promotion Services (IPS – it is the infrastructure and industrial development arm of Aga Khan Fund for Economic Development (AKFED)) and SN Power through a 25-year concession agreement. The project will be developed under the build, own, operate and transfer (BOOT) model by the consortium and the consortium will run the plant as an independent power producer.
Tariff & payment support	To be determined
Overruns	Project yet to be completed
Challenges	Project is still in implementation stage Covid-19 Pandemic has led to minor delays in the project

6.3.3 South America: Itaipu Dam

Criteria	Details
Location	The Itaipu dam is located on the Paraná River located on the border between Brazil and Paraguay.[365]
Type	Generation
Physical attributes	Itaipu hydroelectric project has:[366] Installed capacity 14 GW Annual Supply 76,382 GWh Hydraulic Head 118 m Catchment Area 1.35 million Km^2 Reservoir Capacity 29km^3
Project schedule	1966: Iguaçu Act was signed by the Brazilian and Paraguayan Ministers. 1971: The construction of the Dam began. 1973: The Itaipu treaty was signed. 1978: Paraná River had its route changed. This allowed a section of the riverbed to dry so the dam could be built there. 1979: A diplomatic settlement was reached with the signing of the Acordo Tripartite by Brazil, Paraguay and Argentina. This agreement established the allowed river levels. 1982: The reservoir began its formation. 1984: First generation unit started running in Itaipu. The first 18 units were installed at the rate of two to three a year; 1991: Installation of all 18 generation units was completed. 2006: Two more electric generation units started operations raising the generation capacity to 14GW. 2009: The agreement concerning Brazil's annual compensation to Paraguay for the purchase of electricity was renegotiated.[367]
Purpose of the project (benefit to the region)	Production of electricity to supply to Brazil and Paraguay with the power. 10 units generate power at 50 Hz for Paraguay Another 10 units generate power at 60 Hz for Brazil. In 2018, the energy generated by the project was used to supply about 90% of the electricity consumed in Paraguay and about 15% in Brazil.[368]
Ownership Structure	In 1974, the Treaty of Itaipu created Itaipu Binacional, a company jointly owned by Brazil and Paraguay, to build and operate the dam.

	The national administrations in charge of electricity in the two countries, Centrais Elétricas Brasileiras (Eletrobras, Brazil) and the Administración Nacional de Electricidad (Ande, Paraguay), each share 50% of the entity's equity.[368]
Financial information	The costs of building the dam were assumed by loans guaranteed by the Brazilian Government. Paraguay did not have the financial resources to build the plant, so it arranged for a loan from Brazil. Itaipu Binacional states USD 17.6 billion as the price of dam's construction. The repayment of the debt is assured by sales of the energy to Eletrobras and Ande (i.e: Brazil and Paraguay).[367]
Modality of Development	The plant was built and is operated by Itaipu Binacional a company jointly owned by the national administrations in charge of electricity of Brazil and Paraguay.[368]
Tariff & payment support	Since 2009, Itaipú has been supplying its power to Paraguay and Brazil at a tariff of USD 22.6 per kW of monthly contracted power.[369] At an energy basis, this is nearly 43.8 USD/MWh.[370]
Overruns	The project had a 240% cost overrun[371]
Challenges	Owing Political challenges, renegotiation of 2009 became difficult Corruption charges have been levelled against the project Huge cost Overrun of 240% has raised several questions Large dams have been found to be damaging to the environment

6.3.4 South African Power Pool: ZIZABONA Interconnector

Criteria	Details
Location	Interconnection between nations of Zimbabwe, Zambia, Botswana & Namibia identified by SAPP - SADC as a regional priority project.[372]
Type	Transmission
Physical attributes	ZIZABONA network includes 3 transmission lines:[373] Hwange (Zimbabwe) to Mukuni (Zambia) 115 km Victoria Falls (Zimbabwe) to Pandamatenga (Botswana) 59 km Mukuni (Zambia) to Zambezi (Namibia) 231 km Each line has a voltage capacity of 400 kV
Project schedule	2012: Intergovernmental agreements for the project were signed 2016: Detailed study prepared 2017: Feasibility report approved

Criteria	Details
	2019: Funding of approximately USD 34 million has been secured form African Development Bank (AfDB). The Project was repackaged into three.[374]
Purpose of the project (benefit to the region)	The project will help decongest the central transmission corridor facilitate evacuation of power from upcoming projects in Zambia and Zimbabwe to demand centres in South Africa and Namibia project is expected to create steady revenues for both utilities through wheeling charges and exports. The increased transmission capacity will also greatly impact the quality and reliability of electricity supply and has the potential to mitigate energy deficits
Ownership Structure	The project is currently being implemented and executed by the South African Power Pool (SAPP)[375]
Financial information	AfDB approved preparatory financing for the ZIZABONA project in 2012, through a US$1.995 million NEPAD-IPPF grant. Other financiers included the Government of Norway and SIDA (US$0.5 million), DBSA-PPFs (US$0.5 million) and ZIZABONA Member Utilities (US$0.184 million). The estimated overall cost to prepare the project was US$3.179million.[375] The project was financed by creating an SPV in which all the ZIZABONA sponsors will be shareholders, including other possible third parties. Key funding parties are (for debt financing): Multilateral Development Banks (USAID, JICA, DGCS, BMZ, DFID IBRD, IDA, ADB, AFD, EIB, JBIC, KfW, AfDB, IFC) Development Financing Institutions (Actis, DEG, Globeleq, IFC, FMO, PROPARCO) Other institutions (Cotonou Investment Facility, emerging Africa Infrastructure Fund, etc.)[376] An Inter-governmental MoU was signed for the project between the Governments of Zimbabwe, Zambia, Botswana and Namibia, which agreed to create a special purpose vehicle (SPV) by the participating utilities, to develop the project.
Modality of Development	The project is being executed and implemented by SAPP[375]
Tariff & payment support	To be determined
Overruns	Project still in construction stage
Challenges	Project still in construction stage

6.3.5 SIEPAC (Central American Electrical Interconnection System)

Criteria	Details
Location	SIEPAC network is an interconnection of the power grids of 6 Central American nations - Panama, Costa Rica, Honduras, Nicaragua, El Salvador, and Guatemala. [377]
Type	Transmission
Physical attributes	SIEPAC network includes: [377] Transmission line length 1,790 km Voltage Capacity 230 kV
Project schedule	1987: Concept of a regional market was first envisaged. A feasibility study was conducted. (IADB funded). 1989: Central American Electrification Council (CEAC) was established as a forum for discussion and coordination among the utilities in the region. 1997: IADB approved a loan for construction and technical assistance to CEAC. 2000: Regional electricity market regulator was established. (CRIE - (Comisión Regional de Interconexión Eléctrica) 2001: Regional electricity system and market operator was established. (EOR - Ente Operador Regional) Plan Puebla-Panama (PPP) was established as a presidential-level forum for advancing integration in the region. 2002: transition The regional electricity market (MER) began operating under a code in 2002 and moved to an updated code in 2005. The design and concept studies for MER were carried out from 1999 to 2001 2003: Environmental impact assessments for the SIEPAC line completed. 2004: Central American Free Trade Agreement (CAFTA) was signed 2006: Construction of the SIEPAC transmission line begins. 2008: Initially planned completion deadline for SIEPAC network missed. 2014: SIEPAC line completed.[377]
Purpose of the project (benefit to the region)	Create a competitive & integrated energy market & attract private investment. Alleviate periodic power shortages in the region. Reduce operating costs, optimize shared use of hydroelectric power.
Ownership Structure	SIEPAC transmission project is owned by the Regional Operations Entity (EPR), created in 1999 with registration in Panama, and comprising the public utilities and transmission companies. It has three extra-regional partners (CFE, ENEL and ISA). The transmission companies of the six participating countries have 75% share and private capital has another 25%.[377]

Criteria	Details
Financial information	SIEPAC transmission project was financed by the Interamerican Development Bank (IDB), Central American Bank for Economic Integration (CABEI), Development Bank of Latin America (CAF), and private banks – total investment was around USD 505 million.[378]
Modality of Development	The Regional Operations Entity (EPR) which is a public-private company has designed, built and is sustaining the SIEPAC interconnection system.[379]
Overruns	Delay of about 6 years [377]
Challenges	Challenge is to capitalize upon the potential of the line and regional market by attracting regional-level energy projects. Insufficient coordination between national and regional generation plans.

6.3.6 Summary of review of regional energy projects

Based on the review of identified regional energy projects, the following key learnings become apparent:

1. Regional energy projects are typically planned under a regional level umbrella agreement/organization. In the absence of such umbrella agreement/organization, the project will require bilateral/multilateral intergovernmental agreements;
2. Presence of regional energy investment forums/platforms greatly facilitates the development of regional energy investment projects. Nam Theun 2 HPP, ZIZABONA interconnector etc. are examples of the same;
3. Partial governmental ownership, or concessional loans from development financing institutions are a key feature of most of the regional energy projects; and
4. Regional energy projects developed under PPP structure, typically follow a BOOT model for project implementation.

7 Review of suitability of existing institutions for the purpose of the proposed SAFEI

7.1 Introduction

As part of review of international experience, it was found that most of the studied regional energy investment forums/platforms are not standalone, but are part of a larger institution. The investment forum/platform derives its funds, and undertakes its activities utilizing its parent institutional structure. Considering the above, it is highly relevant to analyse if any of the existing regional institutions in South Asia can host the proposed SAFEI.

This chapter provides an analysis of existing forums/ institutional mechanisms currently operating in the South Asian region and their roles, responsibilities, structure, functioning etc. from the perspective of identifying potential synergies with the proposed SAFEI. Linkage of the concerned forum(s) with the existing regional institutions in South Asia, such as SAARC, BIMSTEC, SAFIR, SASEC, etc. are analysed.

7.2 Existing regional institutions/platforms on energy sector in South Asia

Within South Asia, there are various regional cooperation bodies or platforms such as South Asian Association for Regional Cooperation (SAARC), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), South Asia Forum for Infrastructure Regulation (SAFIR) and South Asia Subregional Economic Cooperation (SASEC).

7.2.1 South Asian Association for Regional Cooperation (SAARC)

The South Asian Association for Regional Cooperation (SAARC) is an economic and political organization of eight countries in South Asia. It was established in 1985 when the Heads of State of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka formally adopted its charter. Afghanistan was admitted into the SAARC as the eighth member in 2007.

Two key regional institutions function under SAARC which deal with energy related aspects, and with commerce related aspects. These are the SAARC Energy Center, and SAARC Chambers of Commerce, which are discussed in further detail in the subsequent subsections.

7.2.1.1 SAARC Energy Center

Under the South Asian Association for Regional Cooperation (SAARC), the SAARC Energy Centre was established on 1st March 2006, with the objective of serving as a regional institution of excellence for the initiation, coordination and facilitation of SAARC programs in energy. The Centre is envisaged to provide technical inputs to the SAARC Working Group meetings on Energy, and facilitate accelerating the integration of energy strategies within the region by providing relevant information and expertise.

The Centre has an office in Islamabad, headed by a Director, who reports to the SAARC Secretary General. The Director is assisted by a Deputy Director, Programme Leaders and other staff.[380] The governing board of the Centre has representation from Governments of all the Member States.

The key activities of SAARC Energy Centre are:

- Development of various study reports related to energy sector in SAARC;
- Compilation of Energy Data Books;
- Development of an Energy Data Portal;
- Organize seminars, workshops and conferences;
- Provide training; and
- Provide support to SAARC Working Group (and other) meetings on Energy.

7.2.1.2 SAARC Chambers of Commerce

The representatives of National Federations of Chambers of Commerce and Industry of SAARC countries at the second meeting of Chambers of Commerce & Industry of the developing countries (G-77) in New Delhi in December 1988, signed a memorandum of understanding, expressing their intention and desire to establish the Chamber of Commerce and Industry of SAARC countries. The objective behind the formation of such a Chamber of Commerce was to promote trade and industry in the SAARC region and to develop and achieve common objectives in these areas. Pursuant to the directive of SAARC Secretariat, SAARC Chamber of Commerce & Industry, assisted by the National Federations, submitted its draft constitution to the SAARC Secretariat and received its approval in December 1992. This signified the official recognition of the SAARC Chamber of Commerce and Industry (SAARC CCI) by all the national governments of SAARC as the apex body of all the National Federations of Chambers of Commerce and Industry of SAARC.

The constitution of SAARC CCI designates Pakistan as the Permanent Secretariat of SAARC with a Secretary General to be the Chief Executive Officer of the Secretariat. The secretariat is established in Islamabad, with sub-offices in Colombo and Mumbai. The presidency of SCCI rotates alphabetically amongst member organizations.

The SAARC Chamber comprises the following organs:

1. The General Assembly (also to be known as GA) - Maximum 168 members nominated by National Bodies (Chambers of Commerce) from eight countries;
2. The Executive Committee (also to be known as EC) - Maximum 88 members nominated by National Bodies (Chambers of Commerce) from eight countries; and
3. The General Secretariat.

The membership subscription, fixed by General Assembly, is shared in the following proportion:

1. India and Pakistan each receive 25%.;
2. Bangladesh, Nepal & Sri Lanka 11.91% each; and
3. Afghanistan, Bhutan & Maldives 4.76% each.

7.2.2 Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional organization comprising seven Member States lying in the littoral and adjacent areas of the Bay of Bengal constituting a contiguous regional unity. This sub-regional organization came into being on 6 June 1997 through the Bangkok Declaration. It comprises seven Member States: five deriving from South Asia, including Bangladesh, Bhutan, India, Nepal, Sri Lanka, and two from Southeast Asia, including Myanmar and Thailand.

7.2.2.1 BIMSTEC Grid Interconnection Coordination Committee (BGICC)

The BIMSTEC countries have signed a Memorandum of Understanding (MoU) for establishment of BIMSTEC grid interconnection on 31st August 2018.[381] BIMSTEC had envisaged the creation of a BIMSTEC Grid Interconnection Coordination Committee (BGICC) to actively coordinate and represent parties involved in the regional energy trade. The MoU for establishment of BGICC was signed in August 2018.[382]

The MoU recognizes the need to have an appropriate structure referred to as the BIMSTEC Grid Interconnection Coordination Committee (BGICC), to actively coordinate, for successful implementation of grid interconnections and trade in electricity. BGICC can engage BIMSTEC Energy Sector Committee of Experts/Officials, Task Force for BIMSTEC Trans-Power Exchange and Development Projects, BIMSTEC Energy Center and other institutions to provide technical support. The BGICC can determine modalities to implement BIMSTEC Grid Interconnections Master Plan and regional trade arrangements. As per the MoU, the BGICC shall report to the BIMSTEC Senior Officials' Meeting on Energy and/or Energy Ministers Meeting.

7.2.2.2 Sectoral cooperation on "Trade, Investment and Development"

BIMSTEC focuses on seven areas of cooperation, one of which is "Trade, Investment and Development". Bangladesh is the Lead Country for Trade, Investment and Development Sector as recommended by the Seventeenth BIMSTEC Ministerial Meeting held virtually in Colombo, Sri Lanka on 01 April 2021.

The initial vision for BIMSTEC economic cooperation, as articulated in the First (Special) BIMSTEC Ministerial Meeting held in Bangkok, Thailand on 22 December 1997, had three major pillars: i) close public-private partnership to promote economic cooperation; ii) identification of sectors, sub-sectors and projects for economic cooperation, and iii) elimination of non-tariff and tariff barriers through government-to-government negotiations.

Trade and Investment Sector has a well-developed institutional mechanism under BIMSTEC to conduct its activities:

i) Trade and Economic Ministerial Meeting (TEMM);

ii) Senior Trade and Economic Officials' Meeting (STEOM);

iii) Trade Negotiating Committee (TNC) and its Working Groups;

iv) BIMSTEC Economic Forum; and

v) BIMSTEC Business Forum.

7.2.3 South Asia Forum for Infrastructure Regulation (SAFIR)

Established in May 1999, with the support of The World Bank, the South Asia Forum of Infrastructure Regulators (SAFIR) focuses on providing high capacity training and capacity building on Infrastructure regulation. The objectives of the forum are to:

- Provide a platform for experience sharing amongst the regulators of the region;
- Build regulatory decision-making and response capacity in South Asia;
- Facilitate the regulatory process;
- Conduct training programs to serve regulatory agencies and other stakeholders;
- Spur research on regulatory issues; and
- Provide a databank of information relating to regulatory reform processes and experiences.

As per the Memorandum of Association of the forum, a Steering Committee is formed comprising all the members. Furthermore, an Executive Committee is formed consisting of a representative each from India, Bangladesh, Pakistan, Nepal, Bhutan and Sri Lanka.

7.2.4 South Asia Subregional Economic Cooperation (SASEC)

The South Asia Subregional Economic Cooperation (SASEC) program, funded and supported by the Asian Development Bank (ADB) brings together Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, and Sri Lanka in a project-based partnership that aims to promote regional prosperity, improve economic opportunities, and build a better quality of life for the people of the subregion.

SASEC is working to improve energy access and security in the region by developing essential infrastructure, and promoting intraregional power trade to reduce costs and import dependence. SASEC energy initiatives focus on renewable energy.

ADB serves as the SASEC Secretariat, working with member governments to help implement SASEC projects and initiatives and to provide technical support. The SASEC Secretariat also coordinates capacity-building activities and works to identify necessary technical organizations and development partners to strengthen

training and knowledge-building programs for member countries. It provides overall coordination and administrative and logistical assistance to the member countries.

7.3 Review of possibility of housing SAFEI within an existing institution in South Asia

An analysis has been undertaken to determine the functions of the existing multilateral regional institutions/platforms and their suitability to house SAFEI within them. The analysis compares the key areas of focus for those institutions/platforms, and their roles in activities such as project identification, project implementation, project financing, and dispute resolution. The analysis also tries to ascertain if there is a dedicated sub-group/working group/any other arrangement focusing on investments within the identified institutions/platforms.

Table 26: Review of possibility of housing SAFEI within an existing institution in South Asia

Parameters	South Asian Association for Regional Cooperation (SAARC) Energy Cooperation [SAARC Energy Center/SAARC Chamber of Council]	South Asia Forum of Infrastructure Regulators (SAFIR)	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) BIMSTEC Grid Interconnection Coordination Committee	South Asia Subregional Economic Cooperation (SASEC)
Member Countries	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka	Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand	Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka
Key areas of focus	Facilitate in establishment of a regional electricity grid, to promote sustainable development in the SAARC, promote private sector investment and participation in energy activities in the region.[383]	Build regulatory decision-making and response capacity in South Asia, facilitate the regulatory process, conduct training, spur research on regulatory issues, provides a databank of information relating to regulatory reform processes and experiences.[384]	Promoting experience sharing and capacity building, prepare and operationalize a framework for networking among the national level institutions in the region, prepare the groundwork, such as feasibility studies, data collection, disseminates prevailing policies etc.[385]	Enhance electricity trade to meet energy needs and secure power reliability and optimizing development impacts of economic corridor investments through improved cross-border links.[386]
Project Identification	No	No	No	Yes

Parameters	South Asian Association for Regional Cooperation (SAARC) Energy Cooperation [SAARC Energy Center/SAARC Chamber of Council]	South Asia Forum of Infrastructure Regulators (SAFIR)	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) BIMSTEC Grid Interconnection Coordination Committee	South Asia Subregional Economic Cooperation (SASEC)
Project Implementation	No	No	No	Yes
Project Financing	No	No	No	Yes, provided loans and grants to 16 projects with a total cost of $2.92 billion
Dedicated Investment forum available	No	No	No	No
Dispute Resolution	Yes	No	Yes[387]	No

A preliminary observation of the above comparison will indicate that considering the objectives of SAFEI there is no direct fit under any of the above platforms. At the same time, there would still be indirect ways to house SAFEI within any of these platforms, if those platforms also agreed. For example, under the SAARC Chamber of Commerce, two additional forums/councils also exist – The SAARC Chamber Young Entrepreneur's Forum and The SAARC Chamber Women Entrepreneur Council. Similarly, if SAARC Chamber of Commerce agrees, the South Asia Forum for Energy Investments can also be placed within it. At the same time, one cannot be oblivious of the fact that SAARC platform itself has not been comparatively active in the past several years, and that the last SAARC summit was held on 2014.

An alternative would be to have SAFEI supported by a regional energy program/project supported by a development partner/donor agency in the initial years, and thereafter, after a few years, transfer the same to any of the above regional platforms. This will also ensure substantial technical assistance and capacity building assistance under development partner/donor agency funding, which will be crucial for any new platform such as SAFEI in its initial years.

8 Proposed institutional framework for SAFEI

While there exist various regional cooperation bodies or platforms in South Asia for energy cooperation, there is no regional investment focused platform or forum for energy projects. South Asia's vision towards regional energy projects and the plan to take advantage of diversity in respect of demand and generation sources, further reinforces the requirement of such a platform. Therefore, it is necessary to deliberate on certain key elements for its establishment. The various aspects of the institutional mechanism should be developed considering SAFEI's main purpose of mobilizing huge investments at an affordable cost, and the overall need to ensure a conducive environment for private sector investments both at country and regional level, while also looking at the need for a regional platform to support regional energy investments.

The key decision points for the formation of such a new entity will be:

- What type of entities should be members?
- What should be the key objectives, roles and responsibilities?
- What should be the legal status?
- What should be the institutional structure?
- What should be the governance and operational mechanism?
- What should be a sustainable funding arrangement for the institution?

The subsequent sub-sections explore options to the above queries utilizing the learnings from the existing regional mechanisms and international experience.

8.1 Potential vision and mission of SAFEI

Based on the review of current scenario and future outlook of regional energy investments in South Asia, and based on the review of international examples, the following vision and mission has been proposed for SAFEI.

Vision

To become the regional centre of excellence for creating an investor friendly ecosystem for the development of sustainable regional energy projects and advancing cross border energy trade in South Asia.

Mission

To facilitate, support and promote regional energy investments in South Asia in a sustainable and cost-effective manner.

The vision and mission of SAFEI will have to be achieved through accomplishment of its objectives, roles and functions, which are described in the following sections.

8.2 Objectives, roles & functions

It has been adequately highlighted in this Report, that increase in CBET opportunities in South Asia will necessitate the requirement to bring in significant quantum of investment for regional energy projects, for which private participation is absolutely essential. Taking cognizance of the requirement in South Asia and the international experiences, the key objectives and functions have been proposed, considering the role of SAFEI in the entire project lifecycle i.e., from the concept stage to development of regional projects till commencement of construction.

8.2.1 Key Objectives

The key objectives of SAFEI in relation to the regional energy investments at both country and regional level can be as follows:

1. Facilitate the development of a conducive and investor friendly ecosystem for creating a sustainable market for energy investment.
2. Advocate for the development of coordinated and harmonious policy, investment and commercial framework across countries of South Asia for accelerating the investments in CBET and regional energy projects.
3. Facilitate the mobilisation of financing and investment avenues with increased private sector participation in regional energy projects.
4. Promote sustainable regional energy projects and the adoption of associated frontier technologies and best practices.
5. Act as a credible source of all investment related information in respect of regional energy projects and help dissemination of such information for investor community in taking prudent investment decision.
6. Undertake cross cutting analysis and research and commission regional studies on regional energy investment opportunities with special emphasis on international best practices.
7. Serve as a regional platform to facilitate networking, information and knowledge exchange, including stakeholders outreach.

8.2.2 Proposed roles and functions

Even though the progress has been slow, cross border energy interlinkages between South Asian countries have improved over the past decade. The spill over benefits of such connections are obvious. Large scale regional energy infrastructure achieves economies of scale, brings about regional collaboration and generates a strong drive toward common energy security through long term regional relationships. However, attracting investments is key to developing such regional projects, which requires participation of several stakeholders. SAFEI would provide such a platform for the relevant entities and its proposed functions have been derived from its key objectives.

The main functions of SAFEI are described below.

1. **Facilitate the development of a conducive and investor friendly ecosystem for creating a sustainable market for energy investment**

SAFEI would undertake various activities to facilitate the creation of a conducive and investor friendly ecosystem for regional energy investments, at both country and regional levels:

- Provide a credible platform and opportunities for interaction between Governmental stakeholders, investors and financing institutions;
- Undertake consultations on a regular basis to analyse and evaluate the key barriers to regional energy investments;
- Suggest innovative policy, fiscal and market instruments required to mobilize investments including specific financial instruments that can be adopted to address different risks associated with regional energy projects;
- Develop a clear risk sharing framework that indicates who bears what risks, roles and responsibilities of different stakeholders, the investors, the financial institutions, the government, and the power sector organizations vis-à-vis the particular business models concerning the regional energy projects;

- Undertake proactive studies to identify solutions to problems faced by regional energy investment projects from their preparatory phases to financial closure;
- Provide platform and opportunities for interaction among Governmental stakeholders, investors and financial institutions; and
- Facilitate the identification of broad solutions for risk management and mitigation for regional energy investments, especially by coordinating with entities that offer risk mitigation instruments such as the Multilateral Investment Guarantee Agency (MIGA).

2. Advocate for the development of coordinated and harmonious regional policy, investment and commercial framework

- Analyse the need for changes in country level investment/finance related policy, regulatory, legal, investment and commercial framework policies and regulatory provisions to make them conducive towards the deployment and growth of the investments, and undertake such analysis on a regular basis;
- Initiate dialogues with policy makers on potential solutions for removal of overall barriers to investment in regional energy projects;
- Facilitate the development of joint recommendations/requests of investors on potential changes to policy and regulatory frameworks to promote investments; and
- Provide support to the effort of policy makers towards regional harmonization of policies and regulations, and adoption of international leading practices, to promote regional energy investments.

3. Facilitate the mobilisation of financing with increased private sector participation

SAFEI will facilitate the mobilization of financing, and private sector investment in regional energy projects, through consultation with financing institutions, investors, development partners, national electricity utilities, planning agencies, Governments and other key stakeholders. This would also involve tasks such as:

- Interaction with utilities and other key entities on identification of financing sources and regional energy investment opportunities;
- Identification of a list of regional energy investment projects based on the preferences of the countries and priorities of the region and formulation of pipeline of projects to explore opportunities of investment;
- Commissioning of studies and development of reports on potential investment opportunities;
- Facilitate initial interactions between multiple financing sources (both development and commercial institutions) and investors, by maintaining a strong connect with key financing institutions and sources, together with an in-depth knowledge and understanding of the financing products offered by them;
- Propose options to leverage the adoption of innovative financing instruments and business models; and
- Facilitate adoption of instruments such as partial risk guarantees, MIGA guarantees and sovereign guarantees to help mitigate expropriation and similar risks.

4. Promote sustainable regional energy projects and the adoption of frontier technologies and best practices

- SAFEI will promote the adoption of environmental and social safeguards in development of sustainable energy infrastructure.; and

- Considering the impact of new technologies such as energy storage, distributed renewables, block chain etc. from the perspective of cross border trade of energy storage services and regional energy integration, SAFEI will facilitate adoption of such new technologies for regional energy investments, through undertaking studies, coordinating with entities that can implement pilot projects or project concepts etc.

5. Act as a credible source for information dissemination and resources for investment facilitation

- Through a mix of literature, media and workshops, the Forum will highlight the importance of regional projects, commercial aspects related to such projects and the advantages emerging out of these, to the stakeholders from different countries in the region;
- Develop an information repository covering new and proposed regional energy investments, project success stories and other project related information; and
- Development of standard templates and quick reference guides by SAFEI which may be made available for the use of investors.

6. Undertake cross-cutting analysis and research on regional energy investment opportunities

SAFEI is expected to lead broader regional level analysis and research on investment opportunities and is also expected to play a supporting role in project preparatory phase, by providing limited assistance for some of the identified priority projects, The assistance could cover aspects such as:

- Undertake detailed analysis and research on broader regional energy investment project opportunities;
- Provide assistance for analysis of project opportunities by developing common toolkits and frameworks for initial analysis of project opportunities;
- Development and updating of investment templates, that provide a common template for initial discussion on project opportunities and regional investment tool kit for investors;
- Undertake project specific analysis in initial stages of project preparation, for a limited set of projects, if the concerned Governments express a desire for SAFEI to assist them in the same; and
- Prepare and publish a flagship annual/biennial publication on South Asia Regional Energy Investment Outlook.

7. Serve as a platform to facilitate networking, information dissemination, and stakeholder outreach

SAFEI would provide a platform for networking, knowledge exchange, capacity building and consultations among the policy makers, , concerned statutory agencies and other related bodies, including business networks, such as chambers of commerce and industries, think-tanks, and thought leaders in the following way:

- Organise an annual "South Asia Regional Energy Investment Summit", bringing together the Governmental and private sector stakeholders, along with financing institutions under a common roof to discuss the priority issues, challenges and opportunities relating to regional energy investments;
- Conduct workshops and conferences at regular intervals for exchange of ideas, deliberating on possible financing mechanisms, removal of barriers to investment, risk mitigation etc.;

- Prepare and publish SAFEI Quarterly Newsletters on energy investment scenario and updates in the region;
- Organize high-level investment delegations, where key investors, policy makers and financing institutions interact;
- Undertake knowledge sharing and capacity building exercises related to various aspects of development of energy investment projects;
- Tie up with relevant international forums that may assist in knowledge exchange and sharing of leading practices relating to energy investments; and
- Coordinate with similar/relevant entities within and outside region, to enhance the value for members, and to utilize synergies in operation.

8.3 Membership

There are multiple stakeholders involved from each country's energy sector in the development of regional energy infrastructure projects. Therefore, in line with what SAFEI intends to achieve, the potential stakeholders, all of whom can become members on a voluntary basis, are identified below. The following list is only indicative. An open participation model may be followed, wherein any organization that is willing to be part of SAFEI may be allowed to become the forum's member, subject to any administrative requirements such as agreeing to the charter of SAFEI, payment of any membership fees in the future etc.

- National Investment promotion bodies
- Industry associations/chambers of commerce and industries
- Government and privately owned banks and financial institutions
- National power utilities involved in cross border projects
- Private power companies involved/interested in cross border projects
- Energy departments or ministries
- National planning authorities
- Research institutions and think tanks
- Regional energy programs
- Development partners/donor/aid agencies
- Any other organization involved in energy or finance sectors

The role played by the respective members will depend on the evolutionary stage of the forum. At least for the initial years, it is proposed that decision-making and overall functions of SAFEI will be undertaken by adopting a consultative approach among the members.

The membership will be for organization, rather than for individual members within the organization. Therefore, the head of organization will be able to decide whom to depute for the meetings of SAFEI, on a case by case basis also.

8.4 Institutional framework

8.4.1 Setting up of SAFEI

Various options for establishing SAFEI have been proposed based on the key learning from international examples, careful evaluation of the possibility of housing SAFEI within a multilateral regional cooperation institutions/platforms in South Asia and the functions that SAFEI is expected to undertake.

Figure 41: Options for housing SAFEI

Options	Pros	Cons
1. Host the SAFEI under any of the existing regional intergovernmental Institutions such as SAARC	• The institution will benefit from the intergovernmental nature of host institution • The institution will be able to leverage the resources of host institution	• Existing regional framework in South Asia is under SAARC. In the existing geopolitical environment, there are constraints in utilizing the SAARC framework. • Alternate regional frameworks such as BIMSTEC and BBIN does not cover the entire set of South Asian countries.
2. Incorporate as an independent platform (as an association of members with membership from relevant authorities and investment communities)	• Complete operational flexibility and independence • Enjoy a higher degree of freedom and a dedicated focus (allowing to work on all the expected key objectives of SAFEI), enabling faster decision-making at the regional level • Suitable for long term mandates and objectives • Flexibility in man-power hiring	• More time will be taken to form SAFEI • A legal structure has to be defined that should be in compliance with laws of the country in which the institution will be registered • There may be difficulties relating to registration and obtain initial funding • Consensus building might take more time initially
3. With technical and knowledge support from donor agencies/programs, SAFEI IR can be hosted jointly in partnership with single or multiple financing entities/industry bodies.	• Easier to implement if willing financing entities/industry bodies can be identified • The supporting institution's experience in undertaking networking, outreach and advocacy can be utilized by SAFEI.	• At a regional level, there are only quite a few financing entities or industry bodies that operate across the South Asian countries. • Coordination with multiple agencies at times can be challenging.
4. Hosted by one of the regional energy programs supported by development partners/donor agencies, as a transitional measure for initial three to five years, till an independent forum can be established.	• Quick and easier to implement • Can benefit from the expertise and technical assistance provided by the program in general • Can leverage the donor agencies in the marketplace and private sector players,	• Appropriate for limited mandate only • Not a long term option because generally these programs are for a definite period (e.g., 5 years or so) • Less operational flexibility

Options	Pros	Cons
	investors, local organizations, etc. • Easier access to grants and financing	

These options were put forward to stakeholder for their comments and suggestions, as part of stakeholder consultation workshop organized by SARI/EI on 26 September 2022. Key stakeholders, representing the Governments, utilities, financing institutions, industry and commerce associations, and private sector players from Bangladesh, Bhutan, India, Nepal and Sri Lanka participated in the event. Multiple participants have supported the idea of SAFEI being developed independent of a Governmental mechanism, and instead supported setting up SAFEI under models 3 and 4 suggested above. A few participants also recommended that in the longer term, the institution could also be coupled with an active intergovernmental organisation such as the SAARC or the BIMSTEC. More importantly, the stakeholders were of a common opinion that it is necessary to set up the institution in a prompt manner.

Considering the analysis of South Asian context, and after considering the comments and suggestions received from the stakeholders during the stakeholder consultation workshop organized by SARI/EI on 26 September 2022, it is proposed that SAFEI may be set up under either of the following two models:

1. With technical and knowledge support from donor agencies/programs, SAFEI can be hosted jointly in partnership with single or multiple financing entities/industry bodies

   In this case, the partnering financing entities or industry bodies will work in coordination with a donor or development partner supported regional energy program, to set up SAFEI. The role of partnering financing entities or industry bodies are expected to be in terms of providing institutional support and partial manpower support, while bulk of the financial support, manpower and technical assistance is expected to come from a donor or development partner supported regional energy program.

2. Hosted by one of the regional energy programs supported by development partners/donor agencies, as a transitional measure for initial three to five years, till an independent forum can be established.

Key aspects to consider for setting up SAFEI

The following aspects may be considered while deciding on the mode under which SAFEI shall be set up:

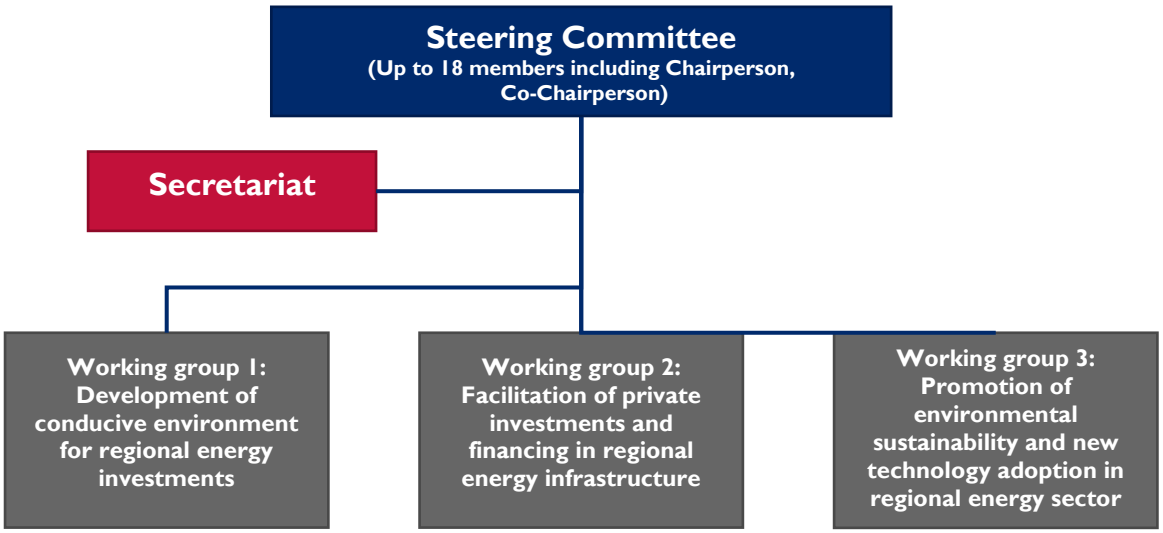
a) Identification of one or more leading industry bodies/financing entities/ with regional operations/associations desirous to partner SAFEI within its structure?

b) Extent to which the development partners/donor agencies want to support the establishment of SAFEI directly, or through their regional energy programs.

8.4.2 Organizational structure

The proposed structure of the SAFEI is as illustrated below.

Figure 42: Proposed structure of SAFEI



- **Steering Committee** members can be nominated by the members. The Steering Committee would provide direction and oversight, supervise the working of secretariat and working groups and, be responsible for taking the key decisions related to SAFEI. The Secretariat and the Working Groups would report to the Steering Committee.

  The Steering Committee will have *up to 18 committee members*, who are selected through a nomination procedure in which the organizational members of SAFEI are allowed to propose/nominate such committee members. The Steering Committee membership will be for individuals, as compared to overall SAFEI membership, which is an organizational membership. While formulating the constitution of the Steering Committee, though any specific constitution/representation format is not being envisaged, it would however be endeavoured that to the extent possible, the Steering Committee may have representation / membership from the different BBINS countries as well as the stakeholders of regional energy sectors such as industry bodies, financial/banking sectors, power utilities and think-tanks/thought leaders etc.

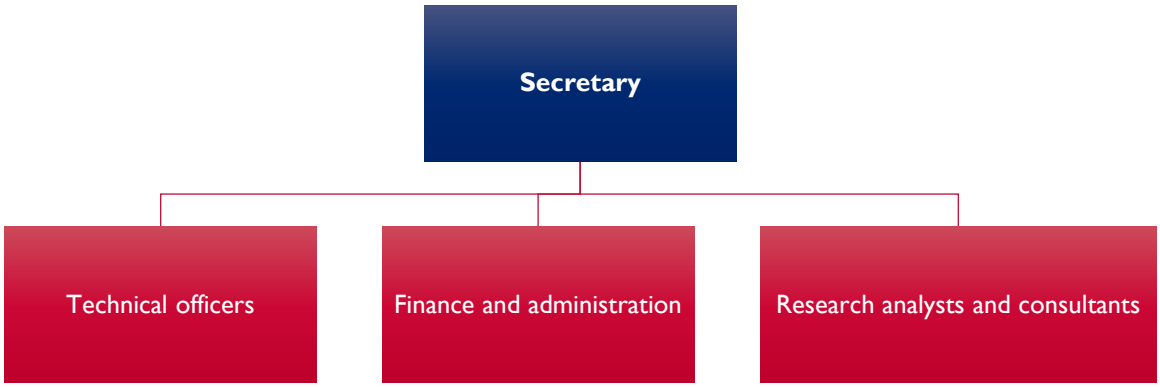
  The Steering Committee members will select from among themselves, a *Chairperson* and *a Co-Chairperson*. It is recommended that the Chairperson and Co-chairperson be from separate countries. The Chairperson will head the meeting of Steering Committee. In the absence of Chairperson, Co-Chairperson will head the meeting of Steering Committee. The Steering Committee members will have a term of two years, and will be eligible for re-election. Similarly, the Chairperson and Co-Chairperson selections from among the Steering Committee members will also be initially for a term of two years, with eligibility for re-election. The Steering Committee will provide strategic guidance and direction to the SAFEI and members will act as a goodwill ambassador for promoting investment in regional energy projects, Cross Border Energy Trade , regional energy markets and integration.

- **Secretariat** will take care of the day to day operations and would be responsible to general administration of SAFEI. In line with the directions and advise by the Steering Committee, it would prioritize overall goals that need to be adopted, set timelines for such actions, and monitor their progress.

  In case SAFEI is hosted with the help of a regional energy project/program, it is expected that such regional project/program can also provide secretariat support. Consultants may be hired as required for short-term engagements or filling in any positions of the Secretariat in absence of regular officials.

Sufficient administrative and IT support staff may also be provided through full-time or part-time positions. A potential structure for Secretariat is provided below. The exact deployment of the positions will also be dependent on the available budget from the supporting institutions/agency.

Figure 43: Potential structure of secretariat of SAFEI



In the above figure, other than Secretary, all other officers may either be dedicated full time for SAFEI, or may work on a part-time basis, as they may have other organizational or institutional responsibilities. Ideally, the Secretary shall work full time as part of SAFEI. If the supporting organizations of SAFEI do not have adequate manpower to serve these roles, persons may be hired on contract as consultants.

The broad functions of the Secretariat can be as follows:

- Implementation: Implementation of tasks as directed by the Steering Committee.
- Monitoring and Coordination: Secretariat staff shall prepare the periodic work plan, monitor progress of key activities and present findings on regular basis. Coordination with external stakeholders (including donors) will also be led by Secretariat.
- Media/Public Relations: Inform media outlets about work performed by SAFEI and upcoming events.
- Funding: Properly account and manage the finances and funding of SAFEI, including coordination with donor/development agencies to solve any financing gaps.
- Provide Secretarial support to the Working Groups.

- **Working Groups** – The objectives and tasks of SAFEI will be distributed among the three working groups:
    - Working group 1: Development of conducive environment for regional energy investments;
    - Working group 2: Facilitation of private investments and financing in regional energy infrastructure ; and
    - Working group 3: Promotion and adoption of sustainable practices and new technologies in regional energy sector.

8.5 Governance and Operational aspects

8.5.1 Governing mechanism and key meetings for regular reporting

The Steering Committee would be the governing authority which would formulate objectives, take all the major decisions and govern the coordination. The Secretariat would report to the Steering Committee. The overall governance by the Steering Committee can be undertaken by adopting all or a combination of the proposed activities.

- Different Working Groups can render the inputs and support to the Steering Committee, regarding implementation of the plan of action and, can examine and discuss the various relevant subjects in depth.
- The Steering Committee can prepare an Operating Manual/Agreement for SAFEI, specifying the key objectives, functions; Membership criteria; responsibilities of the Member and Participant entities; responsibilities of the Secretariat, and the Working Groups.
- The Steering Committee can specify and amend from time to time the duties of the Secretariat, the Working Groups.
- Each Member entity can have one vote in the Steering Committee

SAFEI would have a well-defined schedule of key meetings among all the required levels of officials, ensuring regular and proper reporting to the Steering Committee. The follow key meetings can be suggested.

Table 27: Proposed key meetings

Meeting type	Frequency/schedule	Participants
Steering Committee meetings	Quarterly	Secretariat and Working Groups discuss the quarterly progress, raise relevant issues to seek solutions (as applicable) and present to the Steering Committee
Working Group meetings	Monthly (can be done through virtual platforms)	Working level – Each Working Group undertakes meeting to discuss about the status, topics related to that Group and identify new areas new areas (as applicable)

8.5.2 Secretariat location

Setting up a dedicated independent secretariat is a time consuming task. Aspects such as financing modalities, staff recruitment, staff rules etc. will need to be agreed among the members.

8.6 Financial arrangement

The expenses can be categorized into two types:

- Set up costs – office establishments including initial cost for taking up office space, furniture, recruitment cost
- Operating costs – employees' salary (fixed and contractual), training cost, administrative costs – travel costs, cost for workshops and meetings, communication cost, cost to undertake studies, office rent

The following options are available for funding (including a combination of the below options):

- Member funding – which will ensure higher ownership but more suitable in the long run because the establishment process may be hindered owing to delay in securing funds and disagreement regarding sharing funds.
- MDB/Development partner funding – will allow to bring in external expert for capacity building and provide more time to the member countries to arrange for funding. However, the ownership may get diluted.
- External grants/contributions from any interested parties – Grants and support from various agencies who are not necessarily directly involved in supporting and operating SAFEI.

The pros, cons and ease of implementation of the options are as below.

Figure 44: Options for funding

Options	Pros	Cons
Member funding	▪ Higher ownership among the member countries ▪ More sustainable in the long run	▪ Establishment and progress can be hindered, owing to delay in securing funds ▪ Disagreement among the member countries regarding manner of sharing of funding can cause further delays
MDB/Development partner funding or Project funding (example: SAREP)	▪ Allows to bring in external expertise for capacity building ▪ Provides time for the member countries to arrange for funding and avoids disagreements on manner of sharing of funding contributions, thus expediting the establishment of SAFEI	▪ Member's sense of ownership and responsibility over SAFEI may seem to be lower
External grants/contributions from any interested parties	▪ Access to a larger pool of funding sources	▪ There will be substantial legal requirements and compliance risks relating to maintaining license/approval to receive such funds. Utilization of such funds may also come under a strict compliance and reporting framework.

To expedite the process of establishment of SAFEI, in the initial years, it has been proposed that the forum can be housed within a regional program/project. During the roundtable discussions undertaken by SARI/EI on 26 September 2022, one of USAID's new programs, the South Asia Regional Energy Partnership (SAREP) expressed its willingness to provide support in the implementation of SAFEI.

Once the operations are stabilized during its initial years, a self-sustainable option of membership funding may be explored.

9 Country Investment Data Book

The country investment data book summarizes recent data, relevant regulations, upcoming and existing regional projects pertaining to the power sector in the respective countries. These profiles provide quick access to the information for each country aiding investors in getting a brief overview of these South Asian nations.

The profile of each country has been divided into 3 separate sections:

1. Macroeconomics
2. Power sector scenario
3. Investment scenario.

The Macroeconomics section in the Country Profiles cover parameters such as Gross Domestic Product (GDP) at current prices, GDP per capita, Consumer price index, foreign exchange rate, debt to GDP ratio etc. This gives the investor an overview of the prevalent economic conditions in the country.

The power sector scenario describes the demand & supply, Energy mix, import & export, Nationally Determined Contribution (NDC) targets, relevant policy, and regulatory mechanisms etc. This provides an investor with a brief insight into the power sector, its functioning, regulatory and policy mechanisms of the countries in South Asian region.

The Investment scenario includes information about Foreign Direct Investment (FDI), financing models available, investment opportunities available, potential funding sources etc. It considers the best practices of the past as well as the new financing models and funding sources available in the power sector.

These country profiles hope to provide investors insight into the power sector functioning, investment scenario and the macroeconomic situation in the countries of South Asia enabling them to take an informed decision.

The objective is to provide a quick overview of most relevant information, rather than trying to be an all-inclusive database.

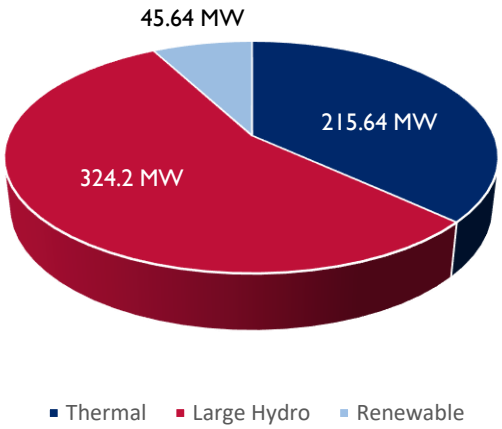
9.1 Afghanistan

Afghanistan
Official Name: Islamic Republic of Afghanistan
Population – 32.9 million[388]
Area – 652,864 sq. km[388]

Key macroeconomic statistics [388]	
GDP (Current Prices)	19.79 billion USD (FY 2021)
GDP per capita	595.65 USD (FY 2021)
Growth Rate	-1.9% (FY 2021)
Consumer price Index (Inflation)	5.6% in (FY 2021)
Debt as a percent of GDP	External debt: (FY 2022) 173,793 million Afs Domestic Debt: (FY 2022) 167 million Afs[389]
Repo Rate (Bank Rate)	Not available
Local Currency	Afghan Afghani (Afs)
Foreign Exchange rate (USD to Afs)	76.81 Afs (FY 2021)
Sovereign credit rating	Not available

Power Sector	
Institutional Setup	The Ministry of Energy and Water (MEW): It is responsible for development of policy and regulatory framework governing the electricity sector in Afghanistan. Da Afghanistan Breshna Sherkat (DABS): It is responsible for operating and managing electric power generation, import, transmission, and distribution throughout Afghanistan.
Applicable policy and legislative framework	**1. Law on Private Investment, 2005** **2. Renewable Energy Policy, 2015** **3. Law on Land Acquisition, 2017**
Applicable regulatory framework	1. Power Services Regulation Act, 2016
Demand scenario	5.53 BU electric energy per year.[390]
Supply scenario	1.21 BU electric energy per year.[390]

Afghanistan Installed Capacity Mix[394]



Generation project capacity.	Total Power Plants Generation Capacity in Afghanistan: 2021- 585.5 MW [391]	
Transmission project capacities. [392]	Voltage	Length ckt. km
	220 kV	- 5,844
	132 kV	- 120
	35 kV	- 173.14
Regional projects	Several regional projects between Afghanistan and Central Asia have been commissioned, However, no regional project between Afghanistan and South Asian Countries has been commissioned yet.	
NDC, Net zero targets etc.	Afghanistan aims for 13.6% reduction in GHG emissions by 2030 compared to a business as usual (BAU) 2030 scenario, conditional on external support.[393]	

Power Sector		
Energy resource potential	Coal -	73 million tons
	Gas -	50.97 BCM[395]
	Hydro -	23 GW[396]
	Renewable –	
	Solar-	222 GW
	Wind-	158.5 GW
	Biomass-	4 GW[397]

Investment Scenario	
Foreign Direct Investment	The total FDI in Afghanistan in year 2020 was 12.90 million USD. [399]
Financing and investment models for regional projects in the country	No regional energy project between Afghanistan and rest of the South Asian countries have been commissioned yet. However, most national projects in Afghanistan have been built via grants and donations.

Electricity export / import	Net electricity imports by Afghanistan (2020): [398]		**Investment Opportunities (Potential)**	Central Asia South Asia Electricity Transmission Project (CASA – 1000) Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan Energy project Turkmenistan, Afghanistan, and Pakistan (TAP) 500 kV Power Project[400]
	Country	MU		
	Iran	817.39		
	Tajikistan	926.79		
	Turkmenistan	733.19		
	Uzbekistan	2,674.51		
	Total Imports	5,151.88	**Potential funding sources**	Donation from bilateral and multilateral agencies
			Risk and Mitigation instruments	Afghanistan is a signatory to the New York Convention of 1958, on the Recognition and Enforcement of Foreign Arbitral Awards. [401] Afghanistan's Commercial Arbitration Act of 2007 provides legislation on arbitration and dispute resolution. Afghanistan is a contracting state party to the ICSID (International Centre for Settlement of Investment Disputes) Convention (1969)[402.]

9.2 Bangladesh

Bangladesh
Official Name: People's Republic of Bangladesh
Population – 168.22 million. [403]
Area – 147,570 sq. km [404]

Key macroeconomic statistics

GDP (Current Prices)	465 billion USD (FY 2021)[405]	
GDP per capita	2,462 USD (FY 2021) [406]	
Growth Rate	7.25% (FY 2022)[407]	
Consumer price Index (Inflation)	6.15% (FY 2022) [408]	
Debt as a percent of GDP	31.42% (2022)[409]	
Repo Rate (Bank Rate)	4.75%[410]	
Local Currency	Bangladeshi Taka (BdT)	
Foreign Exchange rate (USD to BdT)	85.52 BdT per USD (FY 2022) [411]	
Sovereign credit rating	S&P	BB -
	Moody's	Ba3
	Fitch	BB -

Power Sector

Institutional Setup

Ministry of Power, Energy and Mineral Resources (MoPEMR): It is responsible for the overall planning, development, and management of energy resources. It also formulates power sector policies.

Bangladesh Power Development Board (BPDB): It is responsible for the generation and distribution of electricity.

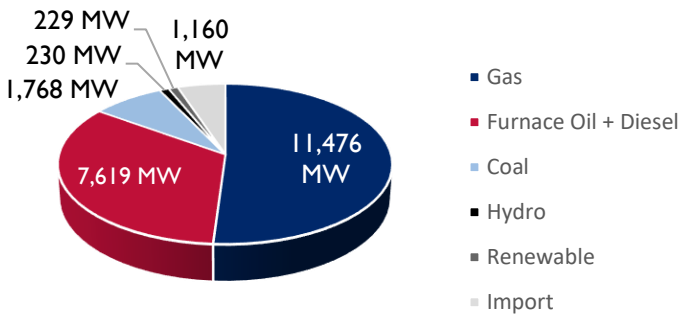
Power Grid Company of Bangladesh Ltd (PGCB): It is responsible for operation and maintenance of the transmission network.

Bangladesh Energy Regulatory Commission (BERC): It is responsible for regulating the energy sector (gas, electricity, and petroleum products) in Bangladesh fixing of electricity tariffs.

Sustainable & Renewable Energy Development Authority (SREDA): It promotes development of renewable energy.

Power Cell: It is a Bangladesh government regulatory agency under the Ministry of Power, Energy and Mineral Resources responsible for regulating the power (electricity) industry in Bangladesh. The Power Cell is responsible for promoting and reforming the power sector.

Bangladesh Installed Capacity Mix[Error! Bookmark not defined.]



Applicable policy and legislative framework	1. Foreign Private Investment (Promotion and Protection) Act, 1980 2. National Energy Policy, 1996 3. Bangladesh Energy Regulatory Commission Act, 2003 4. Private Sector Power Generation Policy of Bangladesh, 2004 5. Policy Guidelines for Enhancement of Private Participation in Power Sector, 2008 6. Quick Enhancement of Electricity and Energy Supply (Special Provisions) Act, 2010 7. Public Private Partnership Policy, 2010 (amended in 2015) 8. Sustainable and Renewable Energy Development Authority (SREDA) Act, 2012 9. The Electricity Act 2018 10. Renewable Energy Policy 2018 11. Policy Guidelines for Power Purchase from Captive Power Plant, 2007, revised up to March 2019
Applicable regulatory framework	1. BERC (Electricity Grid Code) Regulations 2018 2. BERC Dispute Settlement Regulations, 2021
Demand scenario	FY 2021 – 80.42 MU[412]
Supply scenario	FY 2021 – 72.32 MU[413]
Generation project capacity.	Bangladesh has a generation capacity of 21,322 MW[414]
Transmission project capacities. [415]	Voltage – Length ckt. km 400 kV - 950.14 230 kV - 3,658 132 kV - 8,227.8
Regional projects	Transmission projects: 400 kV Bheramara – Baharampur HVDC (2x500 MW) 132 kV Surjyamaninagar - South Comilla AC line.

	NDC, Net zero targets etc.	The following NDC targets have been defined by Bangladesh: Unconditional contribution by 2030 • Implementation of renewable energy projects: Grid-connected Solar 581 MW Solar Mini-grid 56.8 MW Wind 149 MW Biomass & Biogas 25 MW New Hydro 100 MW Total 911.8 MW Conditional contribution by 2030 • Implementation of renewable energy projects: Grid-connected Solar 2,277 MW Solar Mini-grid 56.8 MW Wind 597 MW Biomass & Biogas 55 MW New Hydro 1,000 MW Waste to Electricity 128.5 MW Total 4,114.3 MW [416]
Power Sector		**Investment Scenario**
Energy resource potential	Coal - 3,089 million tons Gas - 12 Trillion cubic feet Oil - 8 million tons Renewable – 4 GW[55]	**Foreign Direct Investment** — Up to 100% allowed in power sector
Electricity export / import	Net electricity imports by Bangladesh (2021): 1,160 MW or 8,103 GWh[417]	**Financing and investment models for regional projects in the country** — Loans from Multilateral agencies and Public Private Partnership. BOO model: Build, Own, Operate BOT model: Build, Operate, Transfer ROO model - contract to Rehabilitate, Own and Operate Old and Inefficient Power Plants of Bangladesh.

		ROT model - contract to Rehabilitate, Own and Transfer old and inefficient Power Plants of Bangladesh. Post the concession period, the facility will be transferred to the original owner.[418] Public Private Sector Infrastructure Development Facility (PPIDF) is established by ADB for debt funding for infrastructure projects in Bangladesh. [419]
	Investment Opportunities (Potential)	Bornagar (India NER) – Parbotipur (Bangladesh) – Katihar (India ER) 765 kV D/C line transmission line (to be initially operated at 400kV) for supply of 500 MW power to Bangladesh.
	Potential funding sources	ADB, JICA etc. have funded projects in Bangladesh. ADB has funded 400 kV Bheramara – Baharampur HVDC (2x500 MW)
	Risk and Mitigation instruments	The Arbitration Act, 2001: Provides provision for settlement of dispute to a third country forum. Foreign Private Investment (Promotion and Protection) Act, 1980: The act aims to provide equal and fair treatment to foreign private investors.

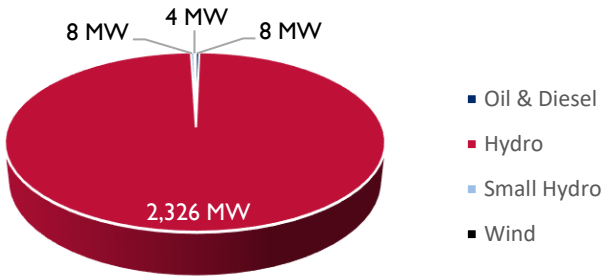
9.3 Bhutan

Bhutan
Official Name: The Kingdom of Bhutan
Population – 0.75 million[420]
Area – 38,394 sq. km[421]

Key macroeconomic statistics [422]	
GDP (Current Prices)	2.54 billion USD (FY 2022)
GDP per capita	3,358.59 USD (FY 2022)
Growth Rate	4.09% (FY 2022)
Consumer price Index (Inflation)	7.35% (FY 2022)
Debt as a percent of GDP	127.70% (FY 2022)
Repo Rate (Bank Rate)	Not available
Local Currency	Ngultrum (Nu)
Foreign Exchange rate (USD to Nu)	73.94 Nu per USD (FY 2022)
Sovereign credit rating	Not Available

Power Sector	
Institutional Setup	Bhutan Power System Operator (BPSO): It is responsible for system operation. Department of Hydropower and Power System (DHPS): It is responsible for hydropower development. Bhutan Power Corporation (BPC): It is responsible for distributing electricity throughout the country and providing transmission access for generating stations for domestic supply as well as export. Druk Green Power Corporation (DGPC): It operates and maintains the large hydropower assets of the nation and is also responsible for promoting and developing new hydropower stations in the country. Bhutan Electricity Authority (BEA): It is an electricity regulator which is responsible for developing regulations, standards, and codes.
Applicable policy and legislative framework	1. Electricity Act of Bhutan 2001 2. Bhutan Sustainable hydro development policy, 2008 3. Land Act, 2007 4. Alternative Renewable Energy Policy – 2013 5. Domestic Electricity Tariff Policy of Bhutan 2016 6. Economic Development Policy (EDP), 2016 7. National Energy Efficiency & Conservation Policy - 2019

Bhutan Installed Capacity Mix[427]



Applicable regulatory framework	1. BEA Regulatory Fees Regulation 2006 2. BEA Accounting and Reporting Regulations, 2006 3. BEA (Distribution Code) Regulations, 2006 4. BEA Safety Regulations, 2008 5. BEA Safety Code, 2008 6. BEA Grid Code Regulation, 2008 7. BEA Dispute Resolution Procedure, 2009 8. BEA final Guidelines for filing tariff applications, 2012 9. BEA Tariff Determination Regulation, 2016 10. BEA Public hearing procedure, 2016 for electricity tariff determination. 11. Bhutan Electricity Authority Distribution Code (Amendment) Regulation 2020
Demand scenario	2,028.36 MU in 2020[423]
Supply scenario	11,370.84 MU in 2020[424]
Generation project capacity.	Total generation capacity installed is 2,346 MW.[425]
Transmission project capacities.	Voltage — Length ckt. km 400 kV - 500.85 230 kV- 325.54 132 kV- 473.86 66 kV - 414.19
Regional projects	Transmission project: • 400 kV Tala HEP - Siliguri (Three lines) • 400 kV Malbase – Siliguri (LILO of one of the Tala – Siliguri lines) • 400 kV Jigmeling – Alipurduar • 400 kV Punatsanchu Alipurdwar D/C • 220 kV Chukha HEP – Birpara • 220 kV Malbase – Birpara • 132 kV Geylephu – Salakati • 132 kV Motanga – Rangia

	Generation project: • Tala HEP (1,020 MW) • Chukha HEP (336 MW) • Kurichu HEP (60 MW) • Mangdechu HEP (720 MW) • Dagachhu HPP (126 MW)
NDC, Net zero targets etc.	Bhutan plans to build clean hydropower which enables low GHG emissions from Bhutan and aids in the achievement of carbon neutral status.[426]

Power Sector		**Investment Scenario**	
Energy resource potential	Coal – 7.71 mega tons Hydro – 26,600 MW Solar – 12,000 MW Biogas - 760 MW[428]	**Foreign Direct Investment**	Bhutan allows 100% FDI in Infrastructure through PPP route, though there are procedures to be followed.
Electricity export / import	Net electricity exports by Bhutan (2022): 7,596.71 MU (Export to India)	**Financing and investment models for regional projects in the country**	Most regional energy projects have been developed under Governmental mode or as joint-venture including Governmental entity as one of the owners. There is one generation project developed under PPP model, though the same also has Governmental entity as one of the shareholders.
		Investment Opportunities (Potential)	Generating Stations: • Amochu reservoir HEP (540 MW) • Kuri-I HEP (1,125 MW) • Punatsangchu HEP-I (1,200 MW) • Kuri Gonguri HEP (2,640 MW) 429 Transmission lines: • 400kV D/C Punatsangchu HEP-I to Sankosh/Lhamoizingkha to Alipurdaur (India). • 400kV D/C Yangbari (Bhutan) – Rangia/Rowta (India)
		Potential funding sources	ADB, JICA and other multilateral donor agencies.

	Risk and Mitigation instruments	Alternate Dispute Resolution Act of Bhutan, 2013: It provides an option of resolving the dispute between investor and government through alternate dispute settlement mechanism. Foreign Direct Investment Policy, 2019: Foreign investors shall have the right to repatriate their invested capital and any capital gains secured, in the currency of investment.[430]

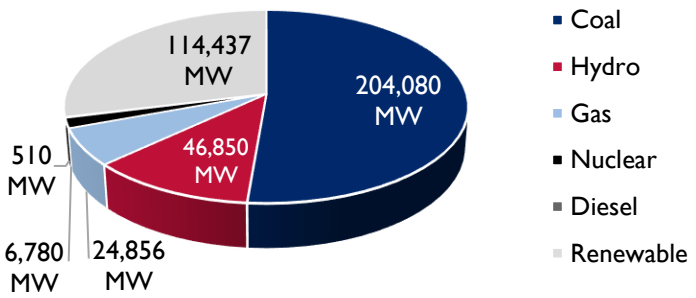
9.4 India

India
Official Name: The Republic of India
Population – 1.38 billion[431]
Area – 3.3 million sq. km[432]

Key macroeconomic statistics	
GDP (Current Prices)	3103.32 billion USD (FY 2022)[433]
GDP per capita	2,248 USD (FY 2022) [434]
Growth Rate	8.7% (FY 2022) [435]
Consumer price Index (Inflation)	5.39% (FY 2022 average Inflation Percentage)[436]
Debt as a percent of GDP	63.1% (FY 2022).[437]
Repo Rate (Bank Rate)	5.40%[438]
Local Currency	Indian Rupee (INR)
Foreign Exchange rate (USD to INR)	74.81 INR per USD (FY 2022)[439]
Sovereign credit rating	Moody- Baa3 Standard and Poor – BBB - Fitch - BBB-

Power Sector	
Institutional Setup	Designated Authority: It grants approval for import and export. Central Electricity Regulatory Commission (CERC): It regulates power sector at the central level. State Electricity Regulatory Commissions (SERCs): They regulate power sector at the state level. Central Transmission Utility (CTU): It grants approval of interstate long term and medium term open access and approval of connectivity. Power System Operation Corporation (POSOCO): It is responsible for day to day system scheduling, and approval of interstate short term open access.
Applicable policy and legislative framework	1. Hydro Power Development Policy, 1998 2. Foreign Exchange Management Act, 1999 3. Electricity Act 2003 4. National Electricity Policy – 2005 5. Electricity Amendment Act 2007 6. Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 7. National offshore wind energy policy, 2015

India Installed Capacity Mix[445]



	8. Revised Tariff Policy – 2016 9. Guidelines on import and export of power, 2018 10. CERC (Cross Border Trade of Electricity) Regulations 2019 11. Consolidated FDI Policy, 2020
Applicable regulatory framework	1. Indian Electricity Grid Code, 2010 2. CERC (Open Access in inter-State Transmission) (6th Amendment) Regulations 2019 3. CERC (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020 4. Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2020 5. Power Market Regulations 2021 6. CERC (Connectivity and General Network Access to the Inter State Transmission System) Regulations, 2022
Demand scenario	2020-21: 1,275,534 MU[440]
Supply scenario	2020-21: 1,270,663 MU[441]
Generation project capacity.	Total All India Installed Electricity Generating Capacity as of July 2022 is 404,133 MW[442]
Transmission project capacities.	Voltage - Length ckt. km[443] ± 800 kV HVDC - 9,655 ± 500 kV HVDC - 9,432 765 kV - 51,023 400kV - 193,978 220 kV - 192,340
Regional projects	Transmission projects: India-Nepal: • 400 KV D/C Dhalkebar-Muzzafarpur line • 132 kV Kataiya – Duhabi • 132 kV Raxaul-Parwanipur

	• 132 kV Kataiya-Kushaha • 132 kV Gandak East – Gandak/Surajpura • 132 kV Tanakpur – Mahendranagar India-Bhutan: • 132kV, 400 kV Tala HEP - Siliguri (Three lines) • 400 kV Malbase – Siliguri (LILO of one of the Tala – Siliguri lines) • 400 kV Jigmeling – Alipurduar • 400 kV Punatsanchu - Alipurdwar D/C • 220 kV Chukha HEP – Birpara • 220 kV Malbase – Birpara • 132 kV Geylephu – Salakati • 132 kV Motanga – Rangia India – Bangladesh: • 400 kV Bheramara – Baharampur HVDC (2x500 MW) • 400 kV Surjyamaninagar - South Comilla AC line (charged at 132 kV).
NDC, Net zero targets etc.	To achieve about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.[444]

Power Sector				**Investment Scenario**	
Energy resource potential	Coal -	352.13	billion tons	**Foreign Direct Investment**	100% FDI in the power sector in India is allowed for generation from all sources (except atomic energy), transmission and distribution of electric energy, and Power Trading under the automatic route. 49% FDI is allowed in Power Exchanges registered under the Central Electricity Regulatory Commission (Power Market) Regulations, 2010.[448]
	Lignite -	46.02	billion tons		
	Oil -	587.33	million tons		
	Gas -	1,372.62	BCM		
	Hydro -	145,000	MW		
	Renewable -	14,90,727	MW[446]		
Electricity export / import	Net electricity Import / Export by India (2022): Country: Energy Bangladesh: 7,301.74 MU (Export) Bhutan: 7,596.71 MU (Import)				

Myanmar: 8.80 MU (Export) Nepal: 1,921.09 MU (Export)[447]	**Financing and investment models for regional projects in the country**
	Various PPP (Public, Private Partnership) models like BOOT (Build, Own, Operate, Transfer), BOT (Build, Operate, Transfer), HAM (Hybrid Annuity Model) etc. are prevalent in the country.
	Investment Opportunities (Potential)
	Transmission Projects: 1. India- Nepal: a. Two 400kV D/C Dododhara (Nepal) - Bareli (India) b. 400 kV D/C Attariya (Nepal) to Bareli (India) c. Two 400kV D/C Phulbari (Nepal) to Lucknow (India) d. Two 400 kV D/C Inaruwa – Purnea 2. India – Bhutan: Two 400kV D/C Punatsangchu HEP-I to Lhamoizingkha (Bhutan border) (6x200 MW)[449]. 3. India – Bangladesh: 765 kV D/C Bornagar (India NER) – Parbotipur (Bangladesh) – Katihar (India ER) (to be initially operated at 400kV) for supply of 500 MW power to Bangladesh.
	Potential funding sources
	ADB, JICA and other Multilateral agencies.
	Risk and Mitigation instruments
	The Arbitration and Conciliation Act, 1996: The act provides provisions for enforcement of certain foreign awards like New York convention awards and Geneva convention awards. India is a signatory to New York convention of 1958 on the Recognition and Enforcement of Foreign Arbitral Awards.[450] The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013: The act ensures transparent process for acquiring land by providing fair compensation for industrialization, development of essential infrastructural facilities and urbanization.[451]

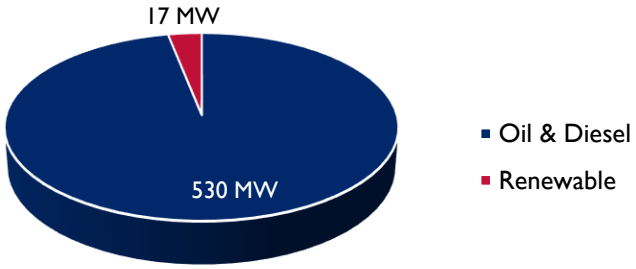
9.5 Maldives

Maldives
Official Name: Republic of Maldives
Population – 568,362 (Projected 2021)[452]
Area – 90,000 sq. km (Approximate)[453]

Key macroeconomic statistics [454]		
GDP (Current Prices)	5.674 billion USD (FY 2022)	
GDP per capita	9,794.6 USD (FY 2022)	
Growth Rate	12.0 % (FY 2022)	
Consumer price Index (Inflation)	0.5% (FY 2021)	
Debt as a percent of GDP	113.0% (FY 2022)	
Repo Rate (Bank Rate)	Overnight deposit facility: 1.50% Overnight Lombard facility: 10.00%	
Local Currency	Maldivian Rufiyaa (MVR)	
Foreign Exchange rate (USD to MVR)	15.39 (FY 2022)	
Sovereign credit rating	Moody's Fitch	Caa1 B -

Power Sector	
Institutional Setup	State Electric Company Ltd. (STELCO): It is responsible for supply of electricity in the inhabited islands in the Male' (capital) region. FENAKA Corporation and Island Community/Council: It is responsible of supply of electricity in the outer islands. Maldives Energy Authority (MEA): It is regulatory body responsible for regulating and developing rules in the power sector.
Applicable policy and legislative framework	1. Maldives National Energy Policy and Strategy 2016
Applicable regulatory framework	1. MEA Metering Scheme Regulations 2. MEA Installation Standards Regulations 3. MEA Energy (Electricity Licensing) Regulations, 2012
Demand scenario	552.71 MU (FY 2021)[455]
Supply scenario	552.71 MU (FY 2021) [456]
Generation project capacity.	Maldives has a generation capacity of 547 MW[457]
Transmission project capacities.	Network capacity is limited to 33 KV.
Regional projects	No regional project has been executed due to geographic isolation from other counties.

Maldives Installed Capacity Mix[459]



NDC, Net zero targets etc.

1. Increase the installed capacity of RE share to 15% of energy mix, including public & private sector.
2. Waste to energy: Completion of planned project of 8 MW capacity in Thilafushi and 1.5 MW capacity in Addu City.
3. Government of Maldives aims 26% reduction of emissions in 2030 (under a BAU) in a conditional manner or to reach net-zero by 2030 provided on condition that it gets the extensive support and assistance from the international community.[458]

Power Sector	
Energy resource potential	Not available
Electricity export / import	Nil, owing to the geographical conditions

Investment Scenario	
Foreign Direct Investment	Maximum percentage of foreign shareholding in electricity, renewable energy projects stands negotiable and is subject to government approval.[460]
Financing and investment models for regional projects in the country	No regional project has been executed due to geographic isolation from other counties
Investment Opportunities (Potential)	No regional project has been identified due to geographic isolation from other counties
Potential funding sources	No regional project has been executed due to geographic isolation from other counties

	Risk and Mitigation instruments	Maldives is a signatory to the New York Convention of 1958, on the Recognition and Enforcement of Foreign Arbitral Awards. [461] Maldives's Arbitration Act of 2013 provides legislation on arbitration and dispute resolution. Maldives is a party to Multilateral investment guarantee Agency (MIGA) that protects the FDI from political risks.[462]

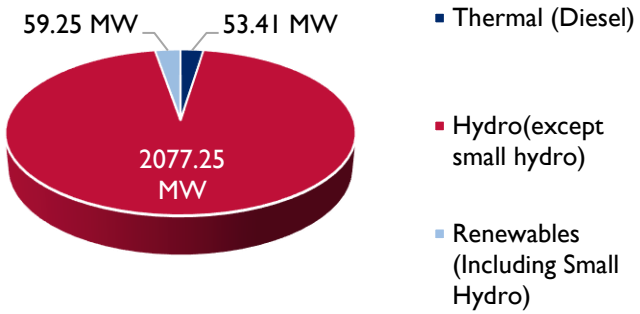
9.6 Nepal

Nepal
Official Name: Federal Democratic Republic of Nepal
Population – 29.2 million[463]
Area – 147,181 sq. km.[464]

Key macroeconomic statistics	
GDP (Current Prices)	33.66 billion USD (FY 2021)[465]
GDP per capita	1,191 USD (FY 2021) [466]
Growth Rate	4.00% (FY 2021) [467]
Consumer price Index (Inflation)	3.60% (FY 2021)[468]
Debt as a percent of GDP	38.25% (FY 2022)[469]
Repo Rate (Bank Rate)	7%[470]
Local Currency	Nepali Rupees (NPR)
Foreign Exchange rate (USD to NPR)	117.87 NPR per USD (FY 2021) [471]
Sovereign credit rating	Not Available

Power Sector	
Institutional Setup	Ministry of Energy, Water Resources and Irrigation (MoEWRI): It is responsible for taking key policy decisions related to regional energy cooperation like bilateral energy cooperation arrangements with India, Bangladesh etc. Nepal Electricity Authority (NEA): It is responsible for generation, transmission and distribution of electricity. It formulates the plans and policies and determines the tariff structure. Electricity Regulatory Commission: It is responsible for regulatory aspects in generation, transmission & distribution. Department of Electricity Development (DOED): It is responsible for granting Licenses in electricity sector, including electricity import and export licenses.
Applicable policy and legislative framework	1. Foreign Exchange (Regulation) Act, 1963 2. Electricity Act, 1992 3. Foreign Investments and Technology Transfer Act, 1992 4. Hydropower Development Policy, 2001 5. Private Investments in Infrastructures Act, 2006 6. Electricity Regulatory Commission Act, 2017
Applicable regulatory framework	1. Electricity Regulatory Commission Rules, 2018 2. Electricity Rules, 1993
Demand scenario	FY 2022: 8,823 GWh[472]

Nepal Installed Capacity Mix[477]



Supply scenario	FY 2022: 7,773 GWh[473] (Remaining is imported)
Generation project capacity.	Nepal has a generation capacity of 2,189.92 MW. (FY 2022) [474]
Transmission project capacities. [475]	Voltage — Length ckt. Km 400 kV - 78 230 kV- 602.6 132 kV- 3,459.54 66 kV - 514.46
Regional projects	Transmission projects: • 400 kV D/C Dhalkebar-Muzzafarpur line • 132 kV Kataiya – Duhabi • 132 kV Raxaul-Parwanipur • 132 kV Kataiya-Kushaha • 132 kV Gandak East – Gandak/Surajpura • 132 kV Tanakpur – Mahendranagar Generation projects: • Upper Tamakoshi HEP (456 MW) • Upper Bhote Koshi HEP (45 MW) • Kaligandaki HEP (144 MW), • Marshyangdi HEP (69 MW) • Middle Marshyangdi HEP (70MW) • Chameliya HEP (30MW) • Likhu IV HEP (52.4MW)
NDC, Net zero targets etc.	1. By 2030, Nepal aims to expand clean energy generation from approximately 1,400 MW to 15,000 MW, of which 5-10% will be generated from mini and micro-hydro power, solar, wind and bioenergy. 2. By 2030, ensure 15% of the total energy demand is supplied from clean energy sources.[476]

Power Sector			Investment Scenario	
Energy resource potential	Coal - Hydro – Renewable -	Less than 1 million ton 83 GW 5 GW[55]	**Foreign Direct Investment**	Nepal allows 100% foreign ownership in projects that are in non-restricted sectors (like power).[479]
Electricity export / import	493 GWh was exported to India in FY 2022. The net import of electricity after deduction of export was 1,050 GWh in Nepalese FY 2021-22. [478]		**Financing and investment models for regional projects in the country**	As early as 1992, Nepal had adopted the Build, Own, Operate and Transfer (BOOT) model for infrastructure development. PPP legislation of Nepal first came into operation in August 2003. It was ratified as an Act in December 2006. The latest update to the PPP legislation was in 2015.[480]
			Investment Opportunities (Potential)	India – Nepal: • Two 400 kV D/C Dododhara (Nepal) - Bareli (India) • 400 kV D/C Attariya (Nepal) to Bareli (India) • Two 400 kV D/C Phulbari (Nepal) to Lucknow (India)
			Potential funding sources	ADB, JICA and other Multilateral agencies.
			Risk and Mitigation instruments	Nepal is a signatory to the New York Convention of 1958, on the Recognition and Enforcement of Foreign Arbitral Awards. [481] The Arbitration Act of 1999: It is based on Model UNCITRAL (United Nations Commission on International Trade Law) Commercial Arbitration Act (1985). It allows the enforcement of foreign arbitral awards. Nepal is also a party to the ICSID (International Centre for Settlement of Investment Disputes) Convention (1969)[482].

9.7 Pakistan

Pakistan
Official Name: Islamic Republic of Pakistan
Population – 224.78 million[483]
Area – 796,095 sq. km[484]

Key macroeconomic statistics		
GDP (Current Prices)	USD 383 billion (FY 2022) [485]	
GDP per capita	USD 1,798 (FY 2022) [486]	
Growth Rate	GDP growth of 5.97% [487]	
Consumer price Index (Inflation)	10.89 % - Inflation Rate, (Average FY-2022) [488]	
Debt as a percent of GDP	71.5 % (FY 2022) [489]	
Repo Rate (Bank Rate)	15.00% (FY 2022)[490]	
Local Currency	Pakistani Rupee (PKR)	
Foreign Exchange rate (USD to PKR)	157.3 PKR (FY 2022) [491]	
Sovereign credit rating	Standard and Poor - Moody – Fitch -	B- B3 B-

Power Sector

Institutional Setup

Power division of the Ministry of Energy: It is responsible for policy formulation, planning, coordination, monitoring and import/export of electricity.

National Transmission and Dispatch Company (NTDC): It is mostly responsible for system operation, and transmission network operation.

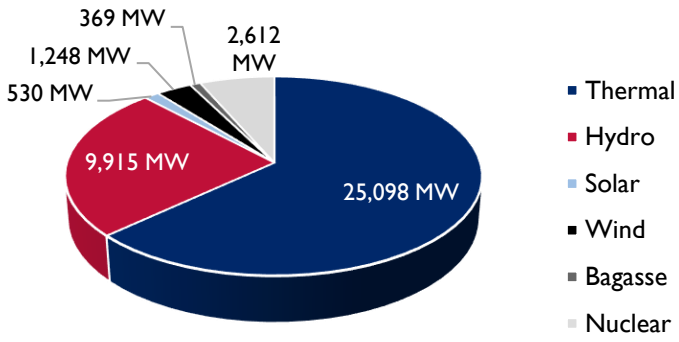
Central Power Purchasing Agency (CPPA): It is the Market Operator responsible for procuring electric power and facilitating the power market transition from the current single buyer to competitive market.

National Electric Power Regulatory Authority (NEPRA): It is responsible for regulating the power sector and is also responsible for framing rules and regulations for import of power into Pakistan.

Water and Power Development Authority (WAPDA): It is an autonomous and statutory body under the administrative control of the Federal Government and is entrusted with operation and maintenance of the running Hydro Power Projects (HPP) and future development of HPPs.

Private Power and Infrastructure Board (PPIB): It was created in 1994 as "One Window Facilitator" to promote private sector participation. It provides investor facilitation, project bidding and award, coordination with federal provinces etc.

Pakistan Installed Capacity Mix[497]



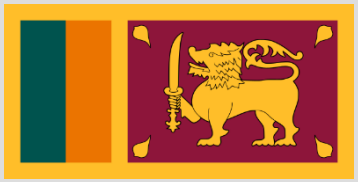
Applicable policy and legislative framework	1. Land Acquisition Act (LAA) of 1894 2. Foreign Private Investment Promotion and Protection Act, 1976 3. NEPRA Act, 1997 4. National Power Policy, 2013 5. Regulation of Generation, Transmission and Distribution of Electric Power amendment act 2018 6. Alternative and Renewable Energy Policy 2019
Applicable regulatory framework	1. NEPRA National Transmission and distribution company Grid Code 2005 2. NEPRA Competitive Bidding Tariff Regulations 2008 3. NEPRA Supply of Electric Power Regulations 2015 4. National Electric Power Regulatory Authority Wheeling of Electric Power Regulations 2016 5. Tariff Approval Procedure Regulation 2017 6. NEPRA Import of Power Regulations December 2017 7. NEPRA Power Trader Regulations 2022 8. NEPRA Market Operator Regulations 2022
Demand scenario	143,588.60 GWh (FY 2021) [492]
Supply scenario	143,090.64 GWh (FY 2021) [493]
Generation project capacity.	39,772 MW [494]
Transmission project capacities.	NTDC[495] Voltage — Length ckt. km 500 kV - 8,059 220 kV - 11,438 K - Electric Voltage — Length ckt. km 220 kV - 365 132 kV- 833

			Regional projects	No regional project between Pakistan and other South Asian Countries has been constructed. However, Pakistan has cross border interconnections with Iran. Further, many generation projects are being built in Pakistan through Chinese investment.
			NDC, Net zero targets etc.	1. Pakistan has set a cumulative ambitious conditional target of overall 50% reduction of its projected emissions by 2030. 2. Renewable Energy: By 2030, 60 % of all energy produced in the country will be generated from renewable energy resources, including hydro. 3. Coal: From 2020 onwards, a moratorium is in place on new imported coal-based power plants that will be shelved in favour of hydro-electric power.[496]
Power Sector			**Investment Scenario**	
Energy resource potential	Coal - Oil - Gas - Hydro - Renewable -	1,85,175 million tons 2.30 million tons 14.2 trillion cubic feet 42 GW 340 GW[55]	**Foreign Direct Investment**	FDI in Pakistan was 0.7% of GDP or USD 2.06 Billion in 2020. 100% foreign investment in power sector is allowed.
Electricity export / import	Pakistan imported 498.37 GWh from Iran in 2021.[498]		**Financing and investment models for regional projects in the country**	No project has been completed yet. However, some of the large Chinese hydropower plants, such as Karot hydro utilizes a debt-equity ratio of 80:20.
			Investment Opportunities (Potential)	Pakistan is associated with several regional projects like: • Central Asia South Asia Electricity Transmission & Trade Project (CASA – 1000) [Under construction] • Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan Energy project • Turkmenistan, Afghanistan, and Pakistan (TAP) 500 kV Power Project
			Potential funding sources	Bilateral and Multilateral agencies (Asian development bank, Islamic development Bank etc.)

	Risk and Mitigation instruments	Investment policy of 2013 of Pakistan allows profit repatriation in foreign currency. Pakistan is a signatory to the New York Convention of 1958 on the Recognition and Enforcement of Foreign Arbitral Awards [499]. Pakistan is a contracting state party to the ICSID Convention (International Centre for Settlement of Investment Disputes) Convention (1969)[500.] Chinese projects are covered under guarantee of up to 95% by China Export and Credit Insurance Corporation, known as Sinosure. The guarantee covers losses on account of non-payment and economic losses due to risks including war, expropriation, and breach of contract. NEPRA has allowed a Sinosure fee of up to 7 percent of the total debt servicing to be included in the project cost used to calculate the tariffs for all CPEC power generation projects.[501]

9.8 Sri Lanka

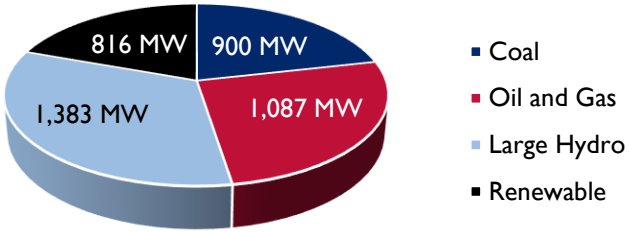
Sri Lanka
Official Name:
Democratic Socialist Republic of Sri Lanka
Population – 21.92 million[502]
Area – 65,610 sq. km[503]



Key macroeconomic statistics	
GDP (Current Prices)	84.5 billion USD (FY 2022)[504]
GDP per capita	3815 USD (FY 2022) [505]
Growth Rate	3.7 (FY 2022)[506]
Consumer price Index (Inflation)	7.0% (FY 2022) [507]
Debt as a percent of GDP	104.6% (FY 2022) [508]
Repo Rate (Bank Rate)	9.00 (FY 2022) [509]
Local Currency	Sri Lankan Rupee (LKR)
Foreign Exchange rate (USD to LKR)	185.52 Sri Lankan Rupee (FY 2021)[510]
Sovereign credit rating	Standard and Poor - SD (Selectively defaulted) Moody's - Ca Fitch - RD (Uncured payment default or distressed debt exchange)

Power Sector	
Institutional Setup	Ministry of Power, Energy and Business Development: Responsible for framing energy policy and supervising the state-owned energy entities such as Ceylon Electricity Board (CEB) and Lanka Electricity Company (LECO). Ceylon Electricity Board (CEB): Transmission utility and is responsible for planning and development of transmission lines. Public Utilities Commission of Sri Lanka (PUCSL): Infrastructure regulatory commission empowered to regulate the electricity, bunker fuel and lubricating oil industries.
Key policy and legislative framework	1. National Energy Policy and Strategies of Sri Lanka 2008 2. Sri Lanka Electricity Act 2009 3. Sri Lanka Public Utilities Commission Act 2002
Applicable regulatory framework	1. Electricity (Applications for Licenses and Exemptions) Regulation 2009 2. Grid code of Sri Lanka, 2014 3. Electricity Procurement Rules 2016 4. Electricity (Procedure for Review & Adjustment of Tariffs), 2016

Sri Lanka Installed Capacity Mix[516]



5. The Electricity Dispute Resolution Procedure Rules

Demand scenario	15,714 MU (FY 2020)[511]	
Supply scenario	15,714 MU (FY 2020) [512]	
Generation project capacity.	4,186 MW (FY 2020)[513]	
Transmission project capacities. [514]	Voltage	Length ckt. km
	220 kV	799
	132kV	2,361
Regional projects	No regional energy project has been commissioned yet.	
NDC, Net zero targets etc.	1. The island state has established 2030 targets to achieve 70% renewable energy in electricity generation. 2. Sri Lanka expects to achieve Carbon Neutrality by 2050 and has committed to not increase the capacity of its coal power plants.[515]	

Power Sector

Energy resource potential	Hydro – 1,082 MW Solar – 29,639 MW Wind – 9,910 MW Biogas – 793 MW[517]
Electricity export / import	0

Investment Scenario

Foreign Direct Investment	100% FDI is allowed in the renewable energy sector. However, investment in electricity transmission and distribution sector is restricted (application to be processed through Board of Investment).[518]
Financing and investment models for regional projects	No regional project commissioned yet.
Investment Opportunities (Potential)	India-Sri Lanka cross border transmission link ~ 400 million USD[519]
Potential funding sources	ADB, JICA, and other multilateral donor agencies.
Risk and Mitigation instruments	Sri Lanka has signed bilateral Investment Protection Agreements with 28 countries.

10 Model Investment Template

The "Model Investment Templates" discussed in this section serves two key purposes:

1. Potential investors who has already identified a regional energy project can utilize this template to highlight the key aspects of the project, and utilize it for further discussion with financing institutions and utilities.
2. Governmental departments which are looking for private investment in regional energy projects can utilize the template to highlight the key aspects of the potential projects, thereby inviting the attention of potential developers and financing institutions.

Investment templates serve to provide comprehensive information regarding the prevailing environment, the opportunities, cost benefits, likely challenges and the risks that they may be undergoing while venturing towards investments. It identifies the investment opportunity and also cover financial aspects, key policy, regulatory and technical attributes.

Three Investment Templates have been developed for the South Asian region. The templates are prepared for a transmission project, hydropower project and solar power plant.

India- Nepal cross border transmission line

Peaking run-of-river hydroelectric Project in Nepal owned by an Indian developer

Solar power plant in India supplying power to Bangladesh

Transmission project considers project that is spread across both sides of the border. The hydropower project assumes that the project is being developed for export of power. The third project assumes a solar project developed in one country wherein power is wheeled up to the border, from where the same is transmitted to the other country through a cross border line.

All the templates have been developed with same structural parameters; however, the content will vary with the projects and have been indicated with examples. The template contains project details such as project name, name and details of the company, purpose of the project and physical attributes. The provided details give a fair idea on project attractiveness. Another component that the investment templates include is the country specific roles & responsibilities, approvals that are required for the execution of project, agreements that are required to be signed etc. Finally, the potential risks and their mitigation measures are also presented.

How can the templates be used?

The templates provide a framework that is ready to use. With check boxes available it is convenient to select the applicable parameter. The blank spaces are provided to fill in the details and are supported with indicative values. The relevant user (investor/Govt. department) can fill in the actual numbers based on their project concept and related analysis.

10.1 Transmission Project

Project Name	**India- Nepal cross border transmission line**
Company Profile	*Company Name:* *Legal registration no:* *Address:* *Corporate group / key promoters:*
Countries Involved	☐ Afghanistan ☐ Bangladesh ☐ Bhutan √ India √ Nepal ☐ Pakistan ☐ Sri Lanka
Purpose of the project	As part of Transmission System Development Plan, Govt. of Nepal has identified the five new 400 KV cross border interconnections with India, to export Nepal's surplus hydropower capacity to India. Out of the five new lines, implementation under a JV arrangement has already been finalized for Butwal-Gorakhpur line. The proposed project will be related to any of the remaining four lines (Attariya-Bareili, Dodoshara-Bareili, Phulbari-Lucknow or Inaurwa-Purnea).
Investment opportunity	Expected Project Cost is USD _____ million. (*Estimated to be approximately 0.51 million USD per KM for 400KV D/C*)[520] Benefits of project for: Developer: A one-time investment with long term returns for 35 years. Nepal: Support hydropower evacuation, thereby resulting in job creation, and revenue generation in the form of free power, royalty etc. India: Obtain access to partially dispatchable power on 24 hour basis, especially between the months of March to November.
Physical Attributes	The transmission line length from ___, Nepal to ___, India ___ (765/400) kilo Volt (kV) transmission line is around ___ km and it will have a capacity of ___ MW. The transmission lines are single circuit/double circuit Quad Moose. The RoW for the line will be _____(meters). The transmission line will have _____ number of _____ (GIS/AIS) substation: (765/440kV or 440kV/220 kV) at _____, (765/440kV or 440kV/220 kV) at _____, (765/440kV or 440kV/220 kV) at _____.
Countries involved and roles/ responsibilities	Govt. of Nepal: Provision of government land (if available), facilitate land acquisition, and facilitate legal approvals/permits Govt. of India: Provide overall policy level guidance for the project Role of Private Sector: Plan, design, build, finance and operate the facilities

Project Name	**India- Nepal cross border transmission line**
	Role of NEA: Interconnect the project with Nepal's transmission grid Role of CTU: Ensure that relevant transmission infrastructure at the Indian side is built and interconnected with India's grid India-Nepal Joint Working Group (JWG), co-chaired by Joint Secretaries of the Power/ Energy Ministries of the two countries to promote and facilitate cooperation. India-Nepal Joint Steering Committee (JSC) co-chaired by the Power/ Energy Secretaries of the two countries to review the progress made by the Joint Working Group. India-Nepal Joint Technical Team – Transmission (JTT-T): to discuss and coordinate planning/ implementation /monitoring of cross border transmission lines and related matters
Status	☐ Feasibility report has been prepared ☐ Detailed project report has been prepared ☐ Survey license has been granted ☐ Generation license has been granted
Developer selection process	√ Negotiation with Government √ Competitive bidding ☐ Other modes ** Competitive bidding at the Indian side. Nepal side to be awarded by Govt. of Nepal, most probably to NEA or Rastriya Prasaran Grid Company Ltd. (RPGCL), though private participation can also not necessarily be ruled out.*
Experience of the developer	The developer is a company duly incorporated under the relevant laws (Bidding Company) or a Consortium of companies (Bidding Consortium) with one of the companies acting as the Lead Member of the Consortium **Experience in EHT transmission projects:** 1. The developer has installed & commissioned the following EHT lines: _____ 2. Average annual turnover of USD __ million 3. Net worth of USD _____ million in last financial year
Unique Features	The proposed line will improve reliability of existing 400 KV Nepal-India cross border interconnection, and will also increase the existing power transfer capability between Nepal and India by at least 1000 MW.
Type of project concession	☐ Build-Operate-Transfer (BOT) ☐ Build-Own-Operate (BOO) √ Build Own Operate Transfer (BOOT) ☐ Design-Build-Finance-Operate (DBFO) ☐ O & M (Operation & Maintenance) ☐ Any other model _____

<table>
<tr><td>Project Name</td><td>India- Nepal cross border transmission line</td></tr>
<tr><td>Type of financing</td><td>Equity share of developer's promoters: USD _____ million (___% of project cost)
Equity share of other equity shareholders: USD _____ million (___% of project cost)
Project cost covered under grants: USD _____ million (___% of project cost)
Project cost for which long term financing will be required: USD _____ million (___% of project cost)</td></tr>
<tr><td>Project Structuring</td><td>☐ Public private partnership
☐ Govt. Owned
☐ Private Owned</td></tr>
<tr><td>Key financial information</td><td>Segment of transmission line in <u>Country I</u>:
☐ Sole ownership
☐ Joint Venture with (indicative: 50-50) _____equity between the companies ___and ____
The project shall be implemented with debt to equity ratio of _____ (indicative – 80:20).
<table><tr><td>Tariff determination:</td><td>☐ Determination by Electricity Regulatory Commission
☐ Negotiation between parties
☐ Competitive bidding</td></tr><tr><td>Transmission charges:</td><td>___ million USD per year, linked to target availability (usually 98%)
(Charges could even have sub-components, annual number, indexations etc. depending on competitive bidding methodology and tariff mechanism that is adopted.)</td></tr><tr><td>Expected contract tenure:</td><td>___ years (typically, 35 years)</td></tr><tr><td>Anticipated equity IRR and payback period:</td><td>___ and ___ years
(usually 15-20% and 5-10 years)</td></tr><tr><td>Life of the project:</td><td>___ years (typically, 35 years)</td></tr><tr><td>Interest rate on debt:</td><td>___ % (typically, 8 - 10%)</td></tr></table></td></tr>
</table>

Project Name	**India- Nepal cross border transmission line**	
	Inflation rate for operation and maintenance expenses:	___% (typically, ~5%)
	Taxes on profit:	___% (for example, 20%)
	Currency of payment:	___ (USD or INR)
	Segment of transmission line in <u>Country 2</u>: ☐ Sole ownership ☐ Joint Venture with (indicative: 50-50) _____equity between the companies ___and _____ The project shall be implemented with debt to equity ratio of _____ (indicative – 80:20).	
	Tariff determination:	☐ Determination by Electricity Regulatory Commission ☐ Negotiation between parties ☐ Competitive bidding
	Transmission charges:	___ million USD per year, linked to target availability (usually 98%) (Charges could even have sub-components, annual number, indexations etc. depending on competitive bidding methodology and tariff mechanism that is adopted.)
	Expected contract tenure:	___ years (typically, 35 years)
	Anticipated equity IRR and payback period:	___ and ___ years (usually 15-20% and 5-10 years)
	Life of the project:	___ years (typically, 35 years)
	Interest rate on debt:	___ % (typically, 8 - 10%)
	Inflation rate for operation and maintenance expenses:	___% (typically, ~5%)
	Taxes on profit:	___% (for example, 20%)

Project Name	**India- Nepal cross border transmission line**
	Currency of payment: ___ (USD or INR)
Project Schedule	Project financial closure within _____ months from signing of agreement. Project construction likely to commence within _____ months from the date of financial closure and transmission line energization/ commercial operation to begin within ___ months from the date of commencement of construction.
Key approvals required	**Approvals required in India:** Approval from Designated Authority for building cross border transmission line. Approval for clearance from Power & Telecommunication Co-ordination Committee (PTCC), Aviation authority, railway authority, forest department and Chief Electrical Inspector for energizing the line. Transmission License: license granted by the CERC in terms of the relevant regulations for grant of such license issued under the Electricity Act, 2003 to transmit electricity. Forest & Environmental Clearance from Ministry of Environment & Forest, Government of India, if applicable. **Approvals required in Nepal:** Survey Licenses for transmission line, from Govt. of Nepal Construction License: License for construction of transmission line (as amended or supplemented from time to time) granted to the Company by the GoN in accordance with the Laws of Nepal. Environmental Impact Assessment (EIA)/Initial Environmental Examination (IEE): The Company shall submit the EIA/IEE to the GON for approval. The GON shall approve the EIA/IEE provided that the EIA/IEE complies with the requirements of the Laws of Nepal, including the Environment Protection Act, 2053 (1997), the Environment Protection Regulation, 2054, and the National Environmental Impact Assessment Guidelines, 2050, as well as any regulations and guidelines made there under. Land Acquisition Application: The GON-owned part of the project area may be leased to the company at an annual rent. The Company shall make best efforts to acquire title to and vacant possession of the project area and right of way for the transmission line not owned by GON ("Non-GON Project Land") directly from the owners of such land at the prevailing market prices. Approval for foreign investments.
Agreements to be signed	☐ Implementation and Transmission Service Agreement (ITSA): Signed between Nepal Electricity Authority and SPV that develops the line, agreeing on the modalities for construction and operation of transmission line, and recovery of charges. ☐ Connection Agreement: Connection agreement is signed between transmission service provider (TSP) and Central Transmission Utility (as applicable) in accordance with the grid code.
Provisions	**Regional:**

Project Name	**India- Nepal cross border transmission line**	
	In October 2014, India and Nepal signed an Agreement on electric power trade, cross-border transmission interconnection and grid connectivity. SAARC Framework Agreement for Energy Cooperation (Electricity) was signed in 2014 and ratified in 2015. **Regulatory Provisions in Nepal** Electricity Act, 1992 and Electricity Rules, 1993: Fundamental electricity legislation. The Electricity Regulatory Commission Act, 2017: Law concerning regulation of electricity sector. The Arbitration Act of 1999: It provides provision for enforcement of foreign arbitral awards. Land Acquisition, Resettlement and Rehabilitation Policy, 2015: It provides provision to the Investor to acquire land on its own or request the Government of Nepal for support in land acquisition. Public land may be given on long-term lease basis. **Regulatory Provisions in India** Guidelines for Import/Export (Cross Border) of Electricity, 2018: The guidelines provide broad principles for eligibility, approval process, institutional framework, tariff, and transmission aspects for cross border electricity trade. The guidelines have enabling provisions for power trade, and trade through power exchanges. Central Electricity Regulatory Commission (Cross Border Trade of Electricity) regulations, 2019: The regulations allow cross border electricity trade between India and its neighbours through bilateral agreements, bidding or mutual agreement between the entities in the countries. Tariff determination for import/export would be through competitive bidding or through mutual agreement. Procedure for approval and facilitating import/export (cross border) of electricity, 2021: It lays down the procedure for interconnecting national grids safely, securely and with coordinated operation. CERC (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022: The regulations provide a framework to facilitate non-discriminatory open access to generating companies for inter-state transmission systems through general network access.	
Other aspects	The project is supported by the following multilateral / development financing institutions: ___.	
Risk Type	**Risk Description**	**Risk Mitigation Measure**
Commercial risks	These risks impact the economic viability of the investment. E.g.: inability to generate adequate revenue to cover costs and returns.	Achieve maximum economy on costs, and best technical performance on the project.
Off–take risks	Refers to risk when utilization of line is not possible due to various	Transmission charge recovery linked to availability instead of actual utilization

Project Name	**India- Nepal cross border transmission line**	
	reasons such as network constrains, reduced need for power, reduced availability of power etc.	
Project completion risks	It includes risks like inability / delay to get licenses, complicated land acquisition process, timely clearances etc.	Avoided through the use of leading practices on project management, and expertise of the developer
Technology risks	Obsolescence of technology	Not anticipated

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Data Sources (To be provided by entity that furnishes the information in the template)

List of annexures attached (To be provided by entity that furnishes the information in the template. For example, copy of DPR etc.)

10.2 Hydroelectric Project

Project Name	**Peaking run-of-river hydroelectric Project in Nepal owned by an Indian developer**
Company Profile	*Company Name:* *Legal registration no:* *Address:* *Corporate group / key promoters:*
Countries Involved	☐ Afghanistan ☐ Bangladesh ☐ Bhutan √ India √ Nepal ☐ Pakistan ☐ Sri Lanka
Purpose of the project	The project will utilize Nepal's hydropower potential, to supply hydropower to India. Since the plant is of peaking ROR type, the peaking functionality will provide some level of scheduling/dispatch ability to manage the supply scenario in India, especially in the context of grid integration of intermittent energy,
Investment opportunity	Expected Project Cost of hydro power plant is _____ (Estimated cost for reference: USD 116.17 million for 150 MW in year 2021[2]) Expected transmission evacuation infrastructure, considering 400 kV, is USD _____ million (*Estimated to be approximately 0.51 million USD per KM*)[521] Benefits of project for: Investor: Generate attractive rate of return on investment Nepal: Creation of new job opportunities, additional benefit through free power, royalty etc. India: Obtain access to partially dispatchable power on 24 hour basis, especially between the months of March to November.
Physical Attributes	Project will have an installed capacity of _____ MW and it is expected to generate _____ GWh in a typical dependable year. Catchment area of _____ sq. km with concrete gravity dam of ___ m height. Gross head of _____m and net head of _____m with penstock pipe of average length _____m and diameter _____m. Design flow rate of _____ cubic m/sec. Peaking storage of _____ hours

[2] https://www.power-technology.com/marketdata/begnas-rupa-storage-project-nepal/

Project Name	**Peaking run-of-river hydroelectric Project in Nepal owned by an Indian developer**
	Full reservoir level of _____ m and minimum water level of ____ m with gross reservoir capacity of _____ million cubic meter (MCM) and effective reservoir capacity of _____ MCM. Project's power evacuation will be either of the following: ☐ Dedicated evacuation line till Nepal-India border ☐ Dedicated transmission line to nearest capable NEA substation, with NEA providing open access and wheeling of power till Nepal-India border (As on September 2022, this facility is not available)
Entities involved and roles/responsibilities	Govt. of Nepal: Provision of government land (if available), facilitate land acquisition, and facilitate legal approvals/permits Govt. of India: Provide overall policy level guidance for the project Role of Private Sector: Plan, design, build, finance and operate the facilities Role of NEA: Provide connectivity and open access (or alternatively allow a dedicated transmission line till the border) Role of trading licensees in India: Sign PPA and Power Sale Agreement (PSA) with the generating company, and offtaker. Role of CTU: Ensure that relevant transmission infrastructure at the Indian side is built India-Nepal Joint Working Group (JWG), co-chaired by Joint Secretaries of the Power/ Energy Ministries of the two countries to promote and facilitate cooperation. India-Nepal Joint Steering Committee (JSC) co-chaired by the Power/ Energy Secretaries of the two countries to review the progress made by the Joint Working Group. India-Nepal Joint Technical Team – Transmission (JTT-T): to discuss and coordinate planning/ implementation /monitoring of cross border transmission lines and related matters
Status	☐ Feasibility report has been prepared ☐ Detailed project report has been prepared ☐ Survey license has been granted ☐ Generation license has been granted
Developer selection process	☐ Negotiation with Government √ Competitive bidding ☐ Other modes
Experience of the developer	The developer is a company duly incorporated under the relevant laws (Bidding Company) or a Consortium of companies (Bidding Consortium) with one of the companies acting as the Lead Member of the Consortium

Project Name	**Peaking run-of-river hydroelectric Project in Nepal owned by an Indian developer**
	Experience in Solar project: 4. The developer has installed & commissioned the following hydropower projects: _____ 5. Average annual turnover of USD __ million (USD ___ million per MW of project capacity) in last 3 financial years 6. Net worth of USD _____ million in last financial year
Unique Features	The project can be used to balance intermittent renewable energy to some extent.
Type of project concession	☐ Build-Operate-Transfer (BOT) ☐ Build-Own-Operate (BOO) √ Build Own Operate Transfer (BOOT) ☐ Design-Build-Finance-Operate (DBFO) ☐ O & M (Operation & Maintenance) ☐ Any other model _____
Type of financing	Equity share of developer's promoters: USD _____ million (___% of project cost) Equity share of other equity shareholders: USD _____ million (___% of project cost) Project cost covered under grants: USD _____ million (___% of project cost) Project cost for which long term financing will be required: USD _____ million (___% of project cost)
Project Structuring	☐ Public private partnership ☐ Govt. Owned ☐ Private Owned
Key financial information	☐ Sole ownership ☐ Joint Venture with (indicative: 50-50) _____equity between the company(ies) ___and ____. The project shall implement with loan to equity _____ (indicative: 80/20) investment.
	Tariff determination: ☐ Determination by Electricity Regulatory Commission ☐ Negotiation between parties ☐ Competitive bidding
	Expected tariff ___US cents /kWh during dry season ___US cents /kWh during wet season _____% annual escalation for _____ years

Project Name	**Peaking run-of-river hydroelectric Project in Nepal owned by an Indian developer**
	Expected contract tenure: ___ years (typically, 30 years)
	Anticipated equity IRR and payback period: ___ and ___ years (usually 15-20% and 5-10 years)
	Life of the project: ___ years (typically 30-35 years)
	Interest rate on debt: ___ % (typically, 8 - 10%)
	Inflation rate for operation and maintenance expenses: ___% (typically, ~5%)
	Taxes on profit: ___% (for example, 20%)
	Currency of payment: ___ (USD or INR)
Project Schedule	Project financial closure within _____ months from signing of PPP agreement. Project construction likely to commence within _____ months from the date of financial closure and transmission line energization/ commercial operation to begin within ___ months from the date of commencement of construction.
Key approvals required	**Approvals required in Nepal:** Survey Licenses for generation project and transmission line, from Govt. of Nepal Construction License: License for construction of generation plant and transmission line (as amended or supplemented from time to time) granted to the Company by the GoN in accordance with the Laws of Nepal. Environmental Impact Assessment (EIA)/Initial Environmental Examination (IEE): The Company shall submit the EIA/IEE to the GON for approval. The GON shall approve the EIA/IEE provided that the EIA/IEE complies with the requirements of the Laws of Nepal, including the Environment Protection Act, 2053 (1997), the Environment Protection Regulation, 2054, and the National Environmental Impact Assessment Guidelines, 2050, as well as any regulations and guidelines made there under. Land Acquisition Application: The GON-owned part of the project area may be leased to the company at an annual rent. The Company shall make best efforts to acquire title to and vacant possession of the project area and right of way for the transmission line not owned by GON ("Non-GON Project Land") directly from the owners of such land at the prevailing market prices. Approval for foreign investments (facilitated by Investment Board of Nepal).

Project Name	**Peaking run-of-river hydroelectric Project in Nepal owned by an Indian developer**
	Approvals required in India: Approval of open access (and if applicable, connectivity) at the Indian side Approval of PPA and adoption of tariff, in cases where power is purchased by regulated distribution licensees
Agreements to be signed	☐ Project Development Agreement: This agreement may be signed between Govt. of Nepal and the developer. It shall include the schedules and terms for the development of the project. ☐ Power Purchase Agreement between developer and an entity in India, directly, or through an Indian trading licensee (Power Sale Agreement and Power Purchase Agreement) ☐ Financing Agreements: Loan agreements, security documents, notes, indentures, security agreements, letters of credit and other documents, as may be amended, modified, or replaced from time to time, signed between developer and financing institutions.
Provisions	**Regional:** In October 2014, India and Nepal signed an Agreement on electric power trade, cross-border transmission interconnection and grid connectivity. SAARC Framework Agreement for Energy Cooperation (Electricity) was signed in 2014 and ratified in 2015. **Regulatory Provisions in Nepal** Electricity Act, 1992 and Electricity Rules, 1993: Fundamental electricity legislation. The Electricity Regulatory Commission Act, 2017: Law concerning regulation of electricity sector. The Arbitration Act of 1999: It provides provision for enforcement of foreign arbitral awards. Hydropower Development Policy, 2001: The policy aims to generate electricity at a lower cost by the utilisation of water resources available in the country and to develop hydropower as an exportable commodity. Land Acquisition, Resettlement and Rehabilitation Policy, 2015: It provides provision to the Investor to acquire land on its own or request the Government of Nepal for support in land acquisition. Public land may be given on long-term lease basis. **Regulatory Provisions in India** Guidelines for Import/Export (Cross Border) of Electricity, 2018: The guidelines provide broad principles for eligibility, approval process, institutional framework, tariff, and transmission aspects for cross border electricity trade. The guidelines have enabling provisions for power trade, and trade through power exchanges. Central Electricity Regulatory Commission (Cross Border Trade of Electricity) regulations, 2019: The regulations allow cross border electricity trade between India and

Project Name	**Peaking run-of-river hydroelectric Project in Nepal owned by an Indian developer**	
	its neighbours through bilateral agreements, bidding or mutual agreement between the entities in the countries. Tariff determination for import/export would be through competitive bidding or through mutual agreement. Procedure for approval and facilitating import/export (cross border) of electricity, 2021: It lays down the procedure for interconnecting national grids safely, securely and with coordinated operation. CERC (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022: The regulations provide a framework to facilitate non-discriminatory open access to generating companies for inter-state transmission systems through general network access.	
Other aspects	The project is supported by the following multilateral / development financing institutions: ___.	
Risk Type	**Risk Description**	**Risk Mitigation Measure**
Commercial risks	These risks impact the economic viability of the investment. E.g.: inability to generate adequate revenue to cover costs and returns.	Achieve maximum economy on costs, and best technical performance on the project.
Off–take risks	Refers to risk when off-take of power is not possible due to various reasons such as non-connectivity to the generation plant, network constraints at buyer's end or seller's end, excess energy with the buyer, buyer defaulting on PPA due to other cheaper options etc.	Payment security guarantee from offtaker in India
Project completion risks	It includes risks like inability / delay to get licenses, complicated land acquisition process, timely clearances etc.	Avoided through the use of leading practices on project management, and expertise of the developer
Technology risks	Obsolescence of technology	Not anticipated
Technical risks – Generation risk	The generated energy level is much below the initial estimates	Undertake detailed survey, investigations and analysis at the project preparatory and project development stages

Disclaimer: All responsibility of the data presented in the template lies with _____ (Name of entity that furnishes the information)

Data Sources **(To be provided by entity that furnishes the information in the template)**

List of annexures attached **(To be provided by entity that furnishes the information in the template. For example, copy of DPR etc.)**

10.3 Renewable Energy Project

Project Name	**Solar power plant in India supplying power to Bangladesh**
Company Profile	*Company Name:* *Legal registration no:* *Address:* *Corporate group / key promoters:*
Countries Involved	☐ Afghanistan ☑ Bangladesh ☐ Bhutan ☑ India ☐ Nepal ☐ Pakistan ☐ Sri Lanka
Purpose of the project	The project aims to generate solar power in India in an economic manner, which will thereafter be transmitted to Bangladesh. The project will help Bangladesh to partially achieve its NDC target of reducing emissions (conditional) to 89.47CO_2e by 2030.
Investment opportunity	Expected project cost is USD _____ million. (*Estimated to be approximately 0.4 million USD per MW, based on industry estimates*) Expected transmission evacuation infrastructure, considering 400 kV, is USD _____ million (*Estimated to be approximately 0.51 million USD per KM*)[522] Expected cost of 400 KV cross border line along India-Bangladesh border is USD ___ million.* (*Estimated to be nearly USD 200 million or higher*) * *Note: The cross border component will be awarded by CTU, most probably under competitive bidding. However, costs for the same will be recovered through relevant transmission revenue requirement. Cross border component at Bangladesh side, inclusive of HVDC back-to-back substation is expected to be financed by PGCB/Govt. of Bangladesh.* Benefits of project for: Developer: A one-time investment with long term returns for 25 years. Govt. of Bangladesh: Obtain green energy without the use of setting aside large land area within the country; and to contribute towards achievement of NDC targets Govt. of India: Creation of new job opportunities and revenue generation
Physical Attributes	India-Bangladesh Solar plant is planned to be developed in _____. The _____ region has high solar irradiance of ____ kWh/sq. m/day Solar plant will have installed capacity of ____ MW with monocrystalline PV modules, with an annual degradation of ____% in initial year, and ____% thereafter.

Project Name	Solar power plant in India supplying power to Bangladesh
	The expected annual energy from the solar plant in initial year is estimated to be _____ MU. The plant will be developed on ___ acres of land. *(Approx. 0.1 kW/sq. m)* The plant will be connected to the nearest inter-state transmission substation through a dedicated evacuation line. Power will be wheeled through ISTS grid till it reaches near the border, by obtaining open access. However, a small segment of cross border line will also have to be developed up to Bangladesh border. Interstate losses within India are expected to be around _____ (estimate: 3.35%).[523] The Project will be installed with a √ single axis ☐ double axis tracker.
Entities involved and roles/ responsibilities	Govt. of India: Provision of government land (if available), facilitate land acquisition, and facilitate legal approvals/permits Govt. of Bangladesh: Provide overall policy level guidance for the project, provide policy and strategic guidance to PGCB and BPDB Role of Private Sector: Plan, design, build, finance and operate the facilities Role of CTU: Provide connectivity and open access. Award the work for development of cross border lines, if required. Role of trading licensees in India: Sign PPA and Power Sale Agreement (PSA) with the generating company, and offtaker. Role of PGCB: Build relevant transmission infrastructure at the Bangladesh side Role of BPDB: Act as PPA counterpart, ensure timely payment India-Bangladesh Joint Working Group (JWG), co-chaired by Joint Secretaries of the Power/ Energy Ministries of the two countries to promote and facilitate cooperation. India-Bangladesh Joint Steering Committee (JSC) co-chaired by the Power/ Energy Secretaries of the two countries to review the progress made by the Joint Working Group. India-Bangladesh Joint Technical Team – Transmission (JTT-T): to discuss and coordinate planning/ implementation /monitoring of cross border transmission lines and related matters
Status	☐ Feasibility report has been prepared ☐ Detailed project report has been prepared ☐ Preliminary license has been granted

Project Name	**Solar power plant in India supplying power to Bangladesh**
Developer selection process	☐ Negotiation with Government √ Competitive bidding ☐ Other modes
Experience of the developer	The developer is a company duly incorporated under the relevant laws (Bidding Company) or a Consortium of companies (Bidding Consortium) with one of the companies acting as the Lead Member of the Consortium **Experience in Solar project:** 7. The developer has installed & commissioned the following grid connected solar PV power plants: 8. Average annual turnover of USD __ million (USD ___ million per MW of project capacity) in last 3 financial years 9. Net worth of USD _____ million in last financial year
Unique Features	The plant is expected to mitigate ___ million tons of carbon every year. (Emission factor for Gas Turbine is 0.41 tCO2/MWh)[524] The 30 minute time difference between IST and BST is expected to provide a better supply scenario for Bangladesh, as solar peak generation from this plant, and solar peak generation from solar plants within Bangladesh will happen on different time. The project would scale up the peak power flow between India and Bangladesh to ____ MW.
Type of project concession	☐ Build-Operate-Transfer (BOT) ☐ Build-Own-Operate (BOO) √ Build Own Operate Transfer (BOOT) ☐ Design-Build-Finance-Operate (DBFO) ☐ O & M (Operation & Maintenance) ☐ Any other model _____
Type of financing	Equity share of developer's promoters: USD _____ million (___% of project cost) Equity share of other equity shareholders: USD _____ million (___% of project cost) Project cost covered under grants: USD _____ million (___% of project cost) Project cost for which long term financing will be required: USD _____ million (___% of project cost)
Project Structuring	☐ Public private partnership ☐ Govt. Owned ☐ Private Owned
Key financial information	☐ Sole ownership

<table>
<tr><td>Project Name</td><td colspan="2">Solar power plant in India supplying power to Bangladesh</td></tr>
<tr><td></td><td colspan="2">☐ Joint Venture with (indicative: 50-50) _____equity between the companies ___and _____.
The project will be implemented with debt to equity ratio of _____ (indicative: 80:20).</td></tr>
<tr><td></td><td>Tariff determination:</td><td>☐ Determination by Electricity Regulatory Commission
☐ Negotiation between parties
☐ Competitive bidding</td></tr>
<tr><td></td><td>Expected tariff</td><td>___US cents /kWh</td></tr>
<tr><td></td><td>Expected contract tenure:</td><td>___ years (typically, 25 years)</td></tr>
<tr><td></td><td>Anticipated equity IRR and payback period:</td><td>___ and ___ years
(usually 15-20% and 5-10 years)</td></tr>
<tr><td></td><td>Life of the project:</td><td>___ years (typically 25-30 years)</td></tr>
<tr><td></td><td>Interest rate on debt:</td><td>___ % (typically, 8 - 10%)</td></tr>
<tr><td></td><td>Inflation rate for operation and maintenance expenses:</td><td>___% (typically, ~5%)</td></tr>
<tr><td></td><td>Taxes on profit:</td><td>___% (for example, 20%)</td></tr>
<tr><td></td><td>Currency of payment:</td><td>___ (USD or INR)</td></tr>
<tr><td>Project Schedule</td><td colspan="2">Project construction likely to commence in year _____ and commercial operation to begin within 6 months from commencement of construction.</td></tr>
<tr><td>Key approvals required</td><td colspan="2">Approvals required in India:
Approval for grant of Stage I and stage II connectivity from CTU.
Long Term Access (LTA): LTA is granted by Central Transmission Utility.
Approval from Designated Authority for export of electricity. (Except in case of Inter Government Agreement for specific project).
Approval for clearance from Power & Telecommunication Co-ordination Committee (PTCC), Aviation authority, railway authority, forest department (as applicable) and Chief Electrical Inspector for energizing the line.
Land conversion certificate – In many states, such a certificate is needed for conversion from agricultural to non-agricultural purposes.</td></tr>
</table>

Project Name	Solar power plant in India supplying power to Bangladesh
	Forest & Environmental Clearance from Ministry of Environment & Forest, Govt., of India, depending on type of land being utilized. **Approvals required in Bangladesh:** Signing of PPA Approvals relating to transmission network at Bangladesh side, such as Environmental Clearance Certificate (ECC) from the Department of the Environment (DOE)
Agreements to be signed	☐ Power Purchase Agreement between developer and BPDB, directly, or through an Indian trading licensee (Power Sale Agreement and Power Purchase Agreement) ☐ Financing Agreements: Loan agreements, security documents, notes, indentures, security agreements, letters of credit and other documents, as may be amended, modified, or replaced from time to time, signed between developer and financing institutions ☐ Connection Agreement: Connection agreement signed with the Central Transmission Utility in accordance with the grid code.
Key applicable legal and policy provisions	**Regional:** India-Bangladesh MoU for Cooperation in Power sector was signed in January 2010 for cross border trading of energy. SAARC Framework Agreement for Energy Cooperation (Electricity) was signed in 2014 and ratified in 2015. **India:** The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013: The act ensures transparent process for acquiring land by providing fair compensation for industrialization, development of essential infrastructural facilities and urbanization. Commercial Courts Act, 2015: The act provides resolution of dispute through courts, specialized tribunals who deal with recovery of debt by banks, or through mutual resolution/ mediation and conciliation. Guidelines for Import/Export (Cross Border) of Electricity, 2018: The guidelines provide broad principles for eligibility, approval process, institutional framework, tariff, and transmission aspects for cross border electricity trade. The guidelines have enabling provisions for power trade, and trade through power exchanges. Central Electricity Regulatory Commission (Cross Border Trade of Electricity) regulations, 2019: The regulations allow cross border electricity trade between India and its neighbours through bilateral agreements, bidding or mutual agreement between the entities in the countries. Tariff determination for import/export would be through competitive bidding or through mutual agreement. Procedure for approval and facilitating import/export (cross border) of electricity, 2021: It lays down the procedure for interconnecting national grids safely, securely and with coordinated operation.

Project Name	**Solar power plant in India supplying power to Bangladesh**	
	CERC (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022: The regulations provide a framework to facilitate non-discriminatory open access to generating companies for inter-state transmission systems through general network access. **Bangladesh:** National Energy Policy, 1996: This policy aims to promote public and private participation in energy sector and to develop a regional energy market. It also promotes the use of renewable generation sources. The Arbitration Act, 2001: The act provides provision for settlement of dispute to a third country forum. Private Sector Power Generation Policy (PSPGP), 1996 (Revised in 2004): This policy aims to increase private sector participation in power generation sector. This policy specifies minimum 20% equity as minimum requirement for investment in the projects. Bangladesh Electricity Regulatory Commission Act, 2003 (Amended in 2005): The act mandates license for involvement in the activities like generation, transmission, distribution, energy supply and energy storage. Bangladesh Renewable Energy Policy, 2008: The policy aims to scale up renewable energy in the grid. Quick Enhancement of Electricity and Energy Supply (Special Provisions) Act, 2010 (Amended in 2016): The act provides provisions for quick development of plans to import energy from other nations and implementation of infrastructure required for such arrangement to ensure uninterrupted supply of power in Bangladesh. The Acquisition and requisition of immovable property ordinance, 2017: Acquisition of property for public use or public interest (except graveyard, place of worship, or cremation ground) by providing fair compensations. Procurement Guidelines for PPP projects, 2018: The guidelines describe the various stages of PPP procurement of projects and the bidding process.	
Other Aspects	The project is supported by the following multilateral / development financing institutions: ___.	
Risk Type	**Risk Description**	**Risk Mitigation Measure**
Commercial risks	These risks impact the economic viability of the investment. E.g.: inability to generate adequate revenue to cover costs and returns.	Sovereign PPA with Bangladesh
Off–take risks	Refers to risk when off-take of power is not possible due to various reasons such as non-connectivity to the generation plant, network constraints at buyer's end or seller's end, excess energy with the buyer,	Payment security guarantee from Govt. of Bangladesh Scheduling of transactions under Long Term Access (LTA)

Project Name	**Solar power plant in India supplying power to Bangladesh**	
	buyer defaulting on PPA due to other cheaper options etc.	
Project completion risks	It includes risks like inability / delay to get licenses, complicated land acquisition process, timely clearances etc.	Avoided through the use of leading practices on project management, and expertise of the developer
Technology risks	Obsolescence of technology	Not anticipated
Technical risks – Generation risk	The capacity utilization factor is much below the initial estimates	Undertake detailed survey, investigations and analysis at the project preparatory and project development stages

Disclaimer: All responsibility of the data presented in the template lies with _____ (Name of entity that furnishes the information)

Data Sources (To be provided by entity that furnishes the information in the template)

List of annexures attached (To be provided by entity that furnishes the information in the template. For example, copy of DPR etc.)

11 Way forward

Considering the discussions on various aspects detailed above, especially the legal status and institutional structure, and considering the geopolitical scenario in South Asia, the following activities form a potential roadmap for the establishment of SAFEI:

1. **Release of the SAFEI report-** Roundtables/Conference /or in Major investment related energy /power conferences to disseminate the findings of strategy paper and generate interest.
2. **Identification of Key donor institutions** – Discussion with donor agencies and development institutions to identify the key institution.
3. **Identification of Key partner institutions** – Discuss with the identified/perspective key institution which can provide the strategic support towards the programs/activities of SAFEI as partner institutions such as finance organization, industry bodies etc.
4. **MoU or Agreement** – MoU or Agreement with key donor and partner institutions such as industry bodies, finance organization.
5. **Finalization of the charter of SAFEI -** Finalization of a membership charter which the members can accept, describing the member responsibilities, modality of selection of Executive Committee members, modality of meetings etc. The charter will serve as the base document for formation of SAFEI and can be modified/fine-tuned from time to time based on requirement.
6. **Adding members to SAFEI**

a. Interacting with the potential organizations dealing in energy subjects and associated areas with some connection/relationship with regional/cross-border matters and highlighting the objectives of SAFEI and their possible association with this.

b. Sharing of membership charter to potential members inviting them to join as part of SAFEI, by agreeing to the charter.

7. **Initial preparatory meeting/interaction of institutional members to elect the Steering Committee and to discuss the work plan**

a. The Steering Committee members may be selected through a nomination process from the institutional members who are present.

b. During the initial meeting of the Steering Committee a discussion on workplan for the initial year may be made. Organize annual or biannual South Asia Regional Energy Infrastructure Investment Summit (SAREIS) bringing both SAFEI members and other key stakeholders to a common platform, to deliberate on the most crucial regional energy investment and CBET related projects and related policy, investment, and finance aspects.

c. Organize Annual International Investment Delegation to Global/Major International Financing Centers Such as New York, London, Singapore, Hong Kong, Los Angeles and San Francisco. etc. to meet with leading financing institutions in these International Financing Centers for Mobilizing Investment.

8. **Networking and outreach -** Participation in the other power summits/conferences where the subjects related to energy investments are discussed and deliberated.

12 Annexure 1: Additional statistical information

12.1 Power sector scenario in South Asia

Table 28: South Asia - Electricity installed capacity (2022), in MW

Country	Coal	Oil/diesel	Gas	Large Hydro	Renewables	Nuclear	Total
Afghanistan		216		324	46		585
Bangladesh	1,768	7,619	11,342	230	229		21,188
Bhutan		8		2,326	9		2,343
India	210,700	510	24,856	46,850	114,437	6,780	404,132
Maldives		530			17		547
Nepal		53		2,077	59		2,190
Pakistan	10,467	11,854	2,777	9,915	2,147	2,612	39,772
Sri Lanka	900	1,087		1,383	816		4,186
Total South Asia	223,835	21,877	38,975	63,106	117,760	9,392	474,944

* *For Pakistan, most gas plants are dual fuel enabled, and therefore distinction of gas and oil plants may not be reflective of actual fuel use scenario*
Information relates to FY22 for India, Nepal, and Bangladesh, FY21 for Pakistan and Sri Lanka and FY20 for Bhutan, Maldives and Afghanistan.

In case of Bangladesh, there is an additional 3.2 GW of off-grid power generation capacity also. Also, 1.16 GW import capacity in Bangladesh is excluded to avoid double counting, as the same is already considered in India's capacity.

Source: Statistical departments / utilities of respective countries. [525]

Table 29: Growth of installed capacity of electricity generation

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Afghanistan	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Bangladesh	9.32	10.44	11.77	12.96	15.29	17.80	19.22	20.87	21.19
Bhutan	1.50	1.61	1.62	1.62	1.62	2.34	2.34	2.34	2.34
India	243.03	284.30	310.01	330.86	349.29	367.28	375.32	382.15	404.13
Maldives	0.11	0.28	0.28	0.22	0.25	0.55	0.55	0.55	0.55
Nepal	0.79	0.79	0.86	0.97	1.07	1.18	1.33	1.45	2.19
Pakistan	23.53	23.76	25.89	29.94	33.43	34.28	38.72	39.77	39.77
Sri Lanka	3.93	3.85	4.02	4.06	4.05	4.22	4.22	4.19	4.19
Total	**282.79**	**325.61**	**355.02**	**381.22**	**405.59**	**428.24**	**442.29**	**451.91**	**474.94**

Source: Statistical departments / utilities of respective countries. [526]

Table 30: Growth of RE capacity vis-a-vis total installed capacity in South Asia, in GW

Particulars	2015	2016	2017	2018	2019	2020	2021	2022
Total capacity, GW	326	355	381	406	428	442	452	475
RE capacity, GW	38	47	62	77	87	94	97	118
RE, incl. large hydro capacity, GW	92	102	119	135	148	155	159	181

Information relates to FY22 for India, Nepal, and Bangladesh, FY21 for Pakistan and Sri Lanka and FY20 for Bhutan, Maldives and Afghanistan.

In case of Bangladesh, there is an additional 3.2 GW of off-grid power generation capacity also. Also, 1.16 GW import capacity in Bangladesh is excluded to avoid double counting, as the same is already considered in India's capacity.

Source: Statistical departments / utilities of respective countries. [527]

13 Annexure II: Draft charter for South Asia Forum on Energy Investment (SAFEI)

1. Name of the Forum

1.1. Name of the Forum shall be "**South Asia Forum on Energy Investment (SAFEI)**".

2. Office

2.1. The Secretariat of SAFEI will serve as the office of the Forum.

2.2. The address of office will be _____

3. Mission of the Forum

3.1. To facilitate, support and promote regional energy investments in South Asia in a sustainable and cost-effective manner.

4. Vision of the Forum

4.1. To become the regional centre of excellence for creating an investor friendly ecosystem for the development of sustainable regional energy projects and advancing cross border energy trade in South Asia.

5. Aims and objectives

5.1. Facilitate the development of a conducive and investor friendly ecosystem for creating a sustainable market for energy investment.

5.2. Advocate for the development of coordinated and harmonious policy, investment and commercial framework across countries of South Asia for accelerating the investments in Cross Border Electricity Trade (CBET) and regional energy projects.

5.3. Facilitate the mobilisation of financing and investment avenues with increased private sector participation in regional energy projects.

5.4. Promote sustainable regional energy projects and the adoption of associated frontier energy technologies and best practices.

5.5. Act as a credible source of all investment related information in respect of regional energy projects and help dissemination of such information for investor community in taking prudent investment decision.

5.6. Undertake cross cutting analysis and research and commission regional studies on regional energy investment opportunities with special emphasis on international best practices.

5.7. Serve as a regional platform to facilitate networking, information and knowledge exchange, including stakeholders outreach.

6. Income and assets

6.1. Income for SAFEI may come from the following sources, in order to allow SAFEI to undertake activities to meet its aims and objectives:

i. Multilateral Development Bank/Development Partner funding;

ii. Grants/contributions from any interested parties; and

iii. Contributions by members by way of membership fee etc. (as and when made applicable in future).

6.2. Subject to the directions of Steering Committee from time to time, the funds, and assets if any, of SAFEI shall be held by the Secretary, and their application and disposal shall be undertaken based on such directions.

6.3. All the income and assets of SAFEI shall be utilized by SAFEI only for the promotion and achievement of its aim and objectives as set out in this Charter. No portion of income and assets shall be paid directly or indirectly by way of dividend, bonus, profit and or in any other manner to any present or past or future member of SAFEI or their representatives.

6.4. Application of the funds of SAFEI shall be undertaken based on the directions of Steering Committee from time to time.

6.5. All moveable and immoveable properties of SAFEI and all funds created by SAFEI shall be held by and in the name of SAFEI and shall be deemed to be vested in SAFEI.

6.6. An office-bearer of SAFEI shall be allowed reasonable remuneration for services rendered with the approval of the Steering Committee.

7. Accounts and audit

7.1. The accounts of SAFEI shall be audited every financial year by an Auditor, as defined under applicable laws and shall be appointed by the Chairperson of Steering Committee. The Auditor's report shall be placed in the following Annual General Meeting of SAFEI along with the Audited Accounts.

8. Indemnity and liability

8.1. Every office bearer of SAFEI shall be indemnified out of the funds of SAFEI against all losses and expenses incurred in the discharge of his/her duties.

8.2. Office bearers shall not be personally liable to any expenses on account of the discharge of his/her duties in SAFEI.

9. Institutional structure

9.1. Top-most body of SAFEI is a Steering Committee. The Steering Committee will provide strategic guidance and direction to the SAFEI and members will act as a goodwill ambassador for promoting investment in regional energy projects, Cross Border Energy Trade, regional energy markets and integration.

9.2. The Secretariat will take care of the day to day operations and would be responsible to general administration of SAFEI. In line with the directions and advise by the Steering Committee, it would prioritize overall goals that need to be adopted, set timelines for such actions, and monitor their progress.

9.3. The objectives and tasks of SAFEI will be distributed among the three working groups:

- Working group 1: Development of conducive environment for regional energy investments;
- Working group 2: Facilitation of private investments and financing in regional energy infrastructure ; and
- Working group 3: Promotion and adoption of sustainable practices and new technologies in regional energy sector.

9.4. The Steering Committee will have *up to 18 committee members*, who are selected through a nomination procedure in which the organizational members of SAFEI are allowed to propose/nominate such committee members.

9.5. The Steering Committee membership will be for individuals, as compared to overall SAFEI membership, which is an organizational membership.

9.6. The Steering Committee would provide direction and oversight, supervise the working of secretariat and working groups and, be responsible for taking the key decisions related to SAFEI.

9.7. The Steering Committee members will select from among themselves, a *Chairperson* and *a Co-Chairperson*. It is recommended that the Chairperson and Co-chairperson be from separate countries.

9.8. The Chairperson will head the meeting of Steering Committee. In the absence of Chairperson, Co-Chairperson will head the meeting of Steering Committee.

9.9. The Secretariat and the Working Groups would report to the Steering Committee.

10. Membership

10.1. Any organization that is willing to be part of SAFEI may be allowed to become the forum's member, subject to any administrative requirements such as agreeing to the charter of SAFEI, payment of any membership fees in the future etc.

10.2. An indicative list of potential members, by no means exhaustive, is provided below:

i. National Investment promotion bodies
ii. Industry associations/chambers of commerce and industries
iii. Government and privately owned banks and financial institutions
iv. National power utilities involved in cross border projects
v. Private power companies involved/interested in cross border projects
vi. Energy departments or ministries
vii. National planning authorities
viii. Research institutions and think tanks
ix. Regional energy programs
x. Development partners/donor/aid agencies
xi. Any other organization involved in energy or finance sectors

10.3. The membership will be for organization, rather than for individual members within the organization.

10.4. The head of organization will be able to decide whom to depute for the meetings of SAFEI, on a case by case basis also.

11. Selection of steering committee

11.1. The Steering Committee will be formed through nomination from member organizations. While formulating the constitution of the Steering Committee, though any specific constitution/representation format is not being envisaged as of now, it would however be endeavoured that to the extent possible, the Steering Committee may have representation / membership from the different BBINS countries as well as the distinct participants/stakeholders of regional energy sectors such as industry bodies, financial/banking sectors, power utilities and think-tanks/thought leaders etc.

11.2. The Steering Committee members will have a term of two years, and will be eligible for re-election. Similarly, the Chairperson and Co-Chairperson selections from among the Steering Committee members will also be initially for a term of two years, with eligibility for re-election.

12. Secretariat

12.1. The Secretariat will be headed by a Secretary, and assisted by technical officers, finance & administration, research analysts and consultants.

12.2. The Secretariat officials may be full-time or part-time.

12.3. The Consultants may be hired as required for short-term engagements or filling in any positions of the Secretariat in absence of regular officials.

12.4. The Secretary shall be entitled to sign contracts on behalf of SAFEI, subject to authorization by the Chairperson.

13. Rules and regulations

13.1. Detailed rules and regulations for operations of SAFEI will be prepared by Secretary and submitted to Steering Committee for approval. This shall cover detailed procedures to undertake meetings, utilization of funds etc.

14. Annual General Meeting

14.1. Annual General Meeting shall be held every year after audited accounts of SAFEI are made available.

14.2. AGM shall be held only after providing notice period of at least 14 days.

14.3. All member organizations will be allowed to attend AGM through their representatives.

15. Other meetings

15.1. The Steering Committee meetings and other meetings may be held as required, but preferably with three days' notice.

16. Voting at meetings

16.1. One-third of Steering Committee members will constitute a quorum.

16.2. Matters shall be decided by majority vote among members present.

16.3. Chairperson will have a casting vote in case of tie in voting.

17. Resignation, withdrawal or expulsion of members

17.1. A member of SAFEI shall cease to be a member upon being removed by Steering Committee due to non-observance of SAFEI charter and rules and upon non-renewal of membership fee for consecutive 2 years.

17.2. Members have option to voluntarily withdraw from SAFEI without approval of Steering Committee, by intimation to Chairperson of Steering Committee.

18. Funds and donations

18.1. SAFEI may receive gift, grants, donations and benefactions from any individual, corporate body, association, trust, multilateral or national development agency, or any other statutory or regulatory or financial body, Government or any other source and the same shall be used by SAFEI for exercising its objects and discharging its aim.

18.2. Foreign contributions shall be received subject to applicable laws and regulations.

18.3. A Corpus fund of (amount) will be created with contribution from various entities which shall form the fund of SAFEI.

19. Winding-up or dissolution

19.1. At any time, if it is found that the affairs of SAFEI cannot be carried on, either because it has survived its usefulness, or any other reason, the Steering Committee may wind up SAFEI, after obtaining a clear majority of two-third of members of Steering Committee present and voting at a meeting. In such cases, any remaining properties and funds of SAFEI shall be given to some other body or charitable entity having objects similar to SAFEI, as determined during the meeting that decides on such dissolution.

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14 Abbreviations

ADB	Asian Development Bank
ADR	Alternate Dispute Resolution
AEDB	Alternate Energy Development Board
AFD	Agence Française de Développement (The French Development Agency)
AIFU	Afghanistan Investment Facilitation Unit
AKFED	Aga Khan Fund for Economic Development
APAEC	ASEAN Plan of Action for Energy Cooperation
APG	ASEAN Power Grid
APGCC	ASEAN Power Grid Consultative Committee
ASEAN	Association of Southeast Asian Nations
BAU	Business As Usual
BBIN	Bangladesh, Bhutan, India, Nepal
BBINS	Bangladesh, Bhutan, India, Nepal, Sri Lanka
BDT	Bangladeshi Taka
BEA	Bhutan Electricity Authority
BERC	Bangladesh Energy Regulatory Commission
BGCTCL	Butwal-Gorakhpur Cross Border Transmission Company
BGICC	BIMSTEC Grid Interconnection Coordination Committee
BIDA	Bangladesh Investment Development Authority
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (The Federal Ministry of Economic Cooperation and Development)
BOI	Board of Investment
BOOT	Build, Own, Operate and Transfer
BPC	Bhutan Power Corporation
BPDB	Bangladesh Power Development Board
BPSO	Bhutan Power System Operator
CABEI	Central American Bank for Economic Integration
CAF	Corporación Andina de Fomento (Development Bank of Latin America)
CAFTA	Central American Free Trade Agreement
CAGR	Compound Annual Growth Rate
CAREC	Central Asia Regional Economic Cooperation
CASA	Central Asia-South Asia

CASAREM	Central Asia-South Asia Regional Electricity Market
CBET	Cross Border Electricity Trade
CBS	Central Bank of Sri Lanka
CCI	Chamber of Commerce and Industry
CEA	Central Electricity Authority
CEAC	Consejo de Electrificación de América Central (Central American Electrification Council)
CEB	Ceylon Electricity Board
CEF	Connecting Europe Facility
CEPGL	Communauté Economique des Pays des Grands Lacs (Economic Community of the Great Lakes Countries)
CERC	Central Electricity Regulatory Commission
CFE	Comisión Federal de Electricidad (Federal Electricity Commission)
CINEA	Climate, Infrastructure and Environment Executive Agency
COBRA	Copenhagen-Brussels-Amsterdam
COVID	Coronavirus Disease
CPPA	Central Power Purchasing Agency
CPTCL	Cross Border Power Transmission Company Limited
CRIE	Comisión Regional de Interconexión Eléctrica (Regional Commission for Electrical Interconnections)
CTU	Central Transmission Utility
DABS	Da Afghanistan Breshna Sherkat
DBSA	Development Bank of Southern Africa
DEG	Deutsche Investitions- und Entwicklungsgesellschaft (German investment and development company)
DFID	Department for International Development
DGCS	Italian Agency for Development Cooperation
DGPC	Druk Green Power Corporation
DHPS	Department of Hydropower and Power Systems
DOED	Department of Electricity Development
DPR	Detailed Project Report
DRC	Democratic Republic of the Congo
DTAA	Double Tax Avoidance Agreements
EDF	Électricité de France
EDGAR	Emissions Database for Global Atmospheric Research
EDL	Electricité du Laos
EDP	Economic Development Policy

EGAT	Electricity Generating Authority of Thailand
EGCO	Electricity Generating Public Company Limited
EGL	Energie des Grands Lacs (Great Lakes Energy)
EIB	European Investment Bank
EIF	Energy Investment Forum
ENTSO-E	European Network of Transmission System Operators for Electricity
EOR	Ente Operador Regional (Regional Operator Entity)
EPC	Engineering, Procurement, and Construction
EPF	Electric Power Forum
EPR	Empresa Propietaria de la Red (Regional Operations Entity)
EPS	Electric Power Survey
ERC	Electricity Regulatory Commission
EUR	Euro
EXIM	Export Import Bank
FATF	Financial Action Task Force
FCDO	Foreign, Commonwealth and Development Office
FDI	Foreign Direct Investment
FII	Foreign Institutional Investment
FITTA	Foreign Investments and Technology Transfer Act
FMO	Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V. (Dutch Entrepreneurial Development Bank)
GBP	Great British Pound
GDP	Gross Domestic Product
GHG	Green House Gases
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
GMS	Greater Mekong Sub-region
GOB	Government of Bangladesh
HAPUA	Heads of ASEAN Power Utilities/Authorities
HCI	High Commission on Investment
HEP	Hydro Electric Plant
HIDC	Hydroelectric Investment and Development Company
HPP	Hydro Power Plant
HRT	Head Race Tunnel
HVAC	High Voltage Alternating Current

HVDC	High Voltage Direct Current
IADB	Inter-American Development Bank
IBN	Investment Board of Nepal
IBRD	International Bank for Reconstruction and Development
ICSID	International Centre for Settlement of Investment Disputes
IDA	International Development Association
IDB	Interamerican Development Bank
IEGC	Indian Electricity Grid Code
IEX	Indian Energy Exchange
IFC	International Finance Corporation
IFI	International Financial Institutions
IGA	Inter-Governmental Agreement
IGMOU	Inter-Governmental Memorandum of Understanding
INEA	Innovation and Networks Executive Agency
INR	Indian Rupee
IPB	Industrial Promotion Board
IPP	Independent Power Producer
IPPF	Infrastructure Project Preparation Facility
IPS	Industrial Promotion Services
ISA	International Solar Alliance
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
JWG	Joint Working Group
JYP	Japanese Yen
KFW	Kreditanstalt für Wiederaufbau (Reconstruction Credit Institute)
KHEL	Kholongchhu Hydro Energy Ltd
LAA	Land Acquisition Act
LILO	Line In Line Out
LKR	Lankan Rupee
LNG	Liquified Natural Gas
LTMS	Laos-Thailand-Malaysia-Singapore
MEA	Ministry of External Affairs
MER	Mercado Eléctrico Regional (Regional Electricity Market)
MFI	Multilateral Financial Institutions

MIGA	Multilateral Investment Guarantee Agency
NBR	National Board of Revenue
NDC	Nationally Determined Contributions
NEA	Nepal Electricity Authority
NEPAD	New Partnership for Africa's Development
NEPRA	National Electric Power Regulatory Authority
NER	North-East Region
NHPC	National Hydro Power Corporation
NIWE	National Institute for Wind Energy
NPPF	National Pension & Provident Fund
NPR	Nepali Rupee
NPTC	Nepal Power Trading Company Limited
NTDC	National Transmission Dispatch Company
NTPC	Nam Theun 2 Power Company Limited
NTPC	National Thermal Power Corporation
NVVN	NTPC Vidyut Vyapar Nigam
OSOWOG	One Sun, One World and One Grid
PAU	Project Advisory Unit
PCI	Projects of Common Interest
PCL	Public Company Limited
PDR	People's Democratic Republic
PDRA	Project Development Readiness Assessment
PFC	Power Finance Corporation
PGCB	Power Grid Company of Bangladesh
PGCIL	Power Grid Corporation of India Limited
PHEP	Punatsangchhu Hydroelectric Project
PICOM	Private Infrastructure Committee
PIP	Power Integration Project
PKR	Pakistani Rupee
PNB	Punjab National Bank
POSOCO	Power System Operation Corporation
PPA	Power Purchase Agreement
PPIB	Private Power and Infrastructure Board
PPIDF	Public Private Sector Infrastructure Development Facility

PPP	Public - Private Partnership
PRC	People's Republic of China
PROPARCO	Société de Promotion et de Participation pour la Coopération Economique
PSIG	Private Sector Infrastructure Guidelines
PSMP	Power System Master Plan
PSP	Pumped Storage Project
PSPGP	Private Sector Power Generation Policy
PSPP	Pumped Storage Power Plant
PTC	Power Trading Corporation
PTCNL	Power Transmission Company Nepal Limited
PUCSL	Public Utilities Commission of Sri Lanka
RAPSS	Remote Area Power Supply System
REC	Rural Electrification Corporation
REDF	Renewable Energy Development Fund
REL	Ruzizi III Energy Limited
RGoB	Royal Government of Bhutan
RIF	Regional Investment Framework
ROE	Return on Equity
RPTCC	Regional Power Trade Coordination Committee
RPTOA	Regional Power Trading Operating Agreement
RTIFF	Regional Transmission Investment Financing Facility
SAARC	South Asian Association for Regional Cooperation
SADC	Southern African Development Community
SAFEI	South Asia Forum on Energy Investment
SAFIR	South Asia Forum for Infrastructure Regulation
SAME	SAARC Market for Electricity
SAPP	South African Power Pool
SAREP	South Asia Regional Energy Partnership
SARI/EI	South Asia Regional Initiative for Energy Integration
SASEC	South Asia Subregional Economic Cooperation
SBI	State Bank of India
SCCI	SAARC Chamber of Commerce and Industry
SDPA	Strategic Development Project Act
SEIF	Sustainable Energy Investment Forum

SIDA	Swedish International Development Cooperation Agency
SIEPAC	Sistema de Interconexión Eléctrica de los Países de América Central (Central American Electrical Interconnection System)
SJVN	Satluj Jal Vidyut Nigam
SLSEA	Sri Lanka Sustainable Energy Authority
SNP	SN Power AS
SPRR	Simplified Procurement Rules and Regulation
SPV	Special Purpose Vehicle
SREDA	Sustainable and Renewable Energy Development Agency
STEOM	Senior Trade and Economic Officials' Meeting
SWOT	Strength - Weakness - Opportunity - Threat
TEMM	Trade and Economic Ministerial Meeting
TICFA	Trade and Investment Cooperation Forum Agreement
TIFF	Transmission Infrastructure Financing Facility
TNC	Trade Negotiating Committee
TYNDP	Ten-Year Network Development Plan
UBI	Union Bank of India
UNCITRAL	United Nations Commission for International Trade Rights Arbitration Law
UNDP	United Nations Development Programme
UNEP	UN Environment Programme
UNFCC	UN Framework Convention for Climate Change
USA	United States of America
USAID	US Agency for International Development
USD	US Dollar
VGF	Viability Gap Funding
WBSEDCL	West Bengal State Electricity Distribution Company Limited
ZIZABONA	Zambia-Zimbabwe-Botswana-Namibia

15 References

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About SARI/EI

The US Agency for International Development (USAID) initiated the South Asia Regional Initiative for Energy (SARI/E) program in the year 2000 to promote Energy Security in the South Asia region, working on three focus areas: Cross Border Energy Trade (CBET); Energy Market Formation; and Regional Clean Energy development. The program covers the eight countries in South Asia, viz. Afghanistan, Bangladesh, Bhutan, India, The Maldives, Nepal, Pakistan and Sri Lanka. The fourth and current phase of the program, called South Asia Regional Initiative for Energy Integration (SARI/EI), is aimed at advancing regional grid integration through cross border power trade. This phase is being implemented by Integrated Research and Action for Development (IRADe), leading South Asian Think Tank. SARI/EI program was extended to 2022 and is a key program under USAID's Asia EDGE (Enhancing Growth and Development through Energy) Initiative. In its extended phase, SARI/EI will focus on moving the region to trilateral and multilateral power trade, and establishing the South Asia Regional Energy Market (SAREM).

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For more information, please visit the SARI/EI project website:
https://sari-energy.org/