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A Network Analysis of Policies, Laws, Plans, and Guidelines for Energy Transition

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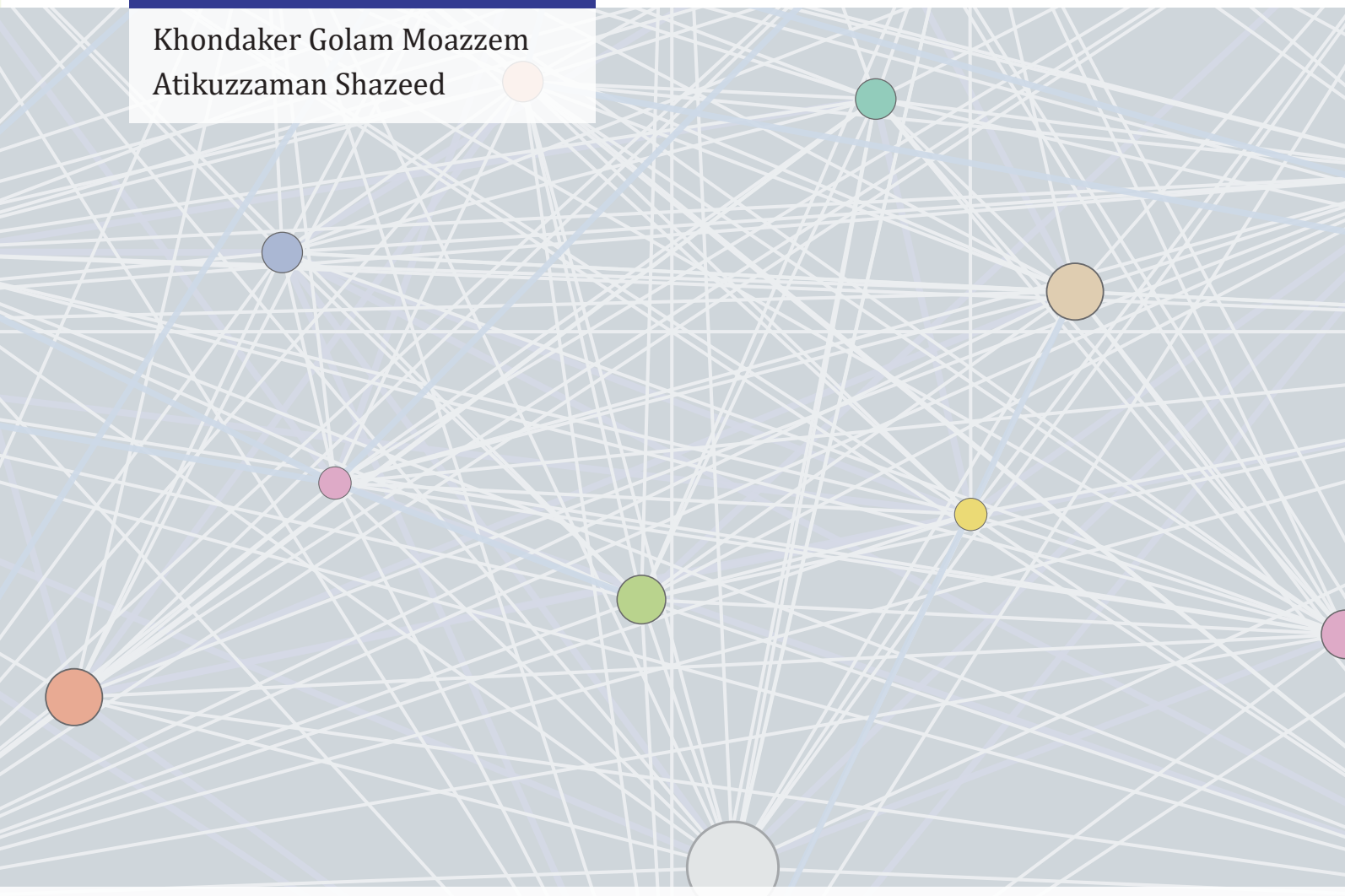

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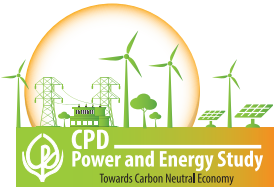

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Executive Summary

Bangladesh's power sector aims to achieve energy transition. As a reflection of the aim, it has set some ambitious goals such as increasing the proportion of renewable energy to 30 per cent by 2030 and 40 per cent by 2041 (Mujib Climate Prosperity Plan). However, according to the Bangladesh Power Development Board (BPDP), only 5.6 per cent of the country's installed capacity currently comes from renewables. The slow progress shed light on many challenges. However, among other challenges, the hurdle that is hampering its energy transition targets is incoherence among the power sector's plans, guidelines, laws, and policies that collectively shape the energy governance framework in Bangladesh.

Policy coherence can be referred to as 'systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the agreed objectives' (OECD, 2018). It ensures that policies and their objectives complement each other, avoid discrepancies, and work towards common goals. In the context of Bangladesh's power and energy sector, policy coherence is imperative for achieving energy transition. While the alignment of renewable targets with other power and energy policies would create a conducive ecosystem for this transition, the misalignment can hamper it.

This study builds on existing literature on policy coherence. It draws from the works of Carbone (2008), Nilsson et al. (2012), and Weitz et al. (2018). Although, policy coherence for energy transition in Bangladesh has been gaining more focus, there is no structured, and quantitative, cross-document assessment of the coherence among the power sector's policies. This study fills that gap through a multi-dimensional and data-driven approach of measuring coherence among 22 policy documents in the country's power sector.

A mixed-method analytical framework is used to evaluate each policy from two aspects. Firstly, this study has analysed whether a policy document contains standard structural features such as measurable objectives, adaptability, evaluation mechanisms, and whether the policy document demonstrates readiness for renewable energy transition which has been captured through indicators such as renewable targets, innovation, finance, and capacity-building in renewable energy. Secondly, the study applies a seven-point coherence typology to assess the synergy or conflict between pairs of documents which gives both pair wise coherence scores and a network map of coherence. The net coherence scores (NCS) are calculated to apprehend each policy document's structural position in the broader policy landscape.

The findings reveal that most documents lack adaptability and evaluation mechanisms. Many plans and polices are biased towards fossil fuels and offer incentives for LNG imports or coal-based power generation. In contrast, only a few of the policy documents such as the Renewable Energy Policy (2008) and the Climate Prosperity Plan prioritise renewable energy and align with transition goals. Network analysis shows that documents like the Electricity Act (2018) and REB Act are well-integrated, while the SREDA Act and IEPMP are isolated and often in conflict with others. It is also found that there are serious conflicts among the energy priority among the plans. While some of the plans promote fossil fuels and the related infrastructure, the other promotes ambitious goals in renewable and clean energy. However, to achieve energy transition, Bangladesh must be clear about its energy preference. Otherwise, the transition goal would be hampered.

The study concludes that the energy transition in Bangladesh is not solely constrained by technical or financial limitations but also by incoherence among policies, plans, laws, and guidelines. A successful

transition will require not only an energy transition policy but a systematic alignment and revision of existing ones. Key recommendations include introducing transition-readiness indicators into all new policy instruments, retiring or revising outdated fossil fuel-favouring policies, establishing coherence audits during policy formulation, and enhancing inter-agency coordination to eliminate cross-document contradictions.

By quantitatively mapping coherence across a complex and often contradictory policy landscape, this study provides critical evidence for policy reform. It offers actionable insights for government agencies, development partners, and civil society organisations working towards a more coordinated energy future in Bangladesh.

Author biography

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Acronyms

BERC – Bangladesh Energy Regulatory Commission

CPP – Captive Power Plant

EA – Electricity Act

EE&C – Energy Efficiency and Conservation

EPI – Electrification Policy for Irrigation

EPP – Enhancement of Private Participation

EVC – Electric Vehicle Charging

IEPMP – Integrated Energy and Power Master Plan

MCPP – Mujib Climate Prosperity Plan

NCI – Net Coherence Score

NMG – Net Metering Guideline

PPB – Perspective Plan of Bangladesh

PPE – Private Participation Enhancement

PSMP – Power System Master Plan

PSPG – Private Sector Power Generation

QEES – Quick Enhancement of Electricity and Energy Supply

RAPSS – Remote Area Power Supply System

RE – Renewable Energy

REB – Rural Electrification Board

REP – Renewable Energy Policy

SMP – Smart Meter Purchase

SPP – Small Power Plant

SREDA – Sustainable and Renewable Energy Development Authority

01
Introduction

Policy coherence can be referred to as 'systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the agreed objectives'(OECD, 2018). It ensures that policies and their objectives complement each other, avoid discrepancies, and work towards common goals. In the context of power and energy sector of Bangladesh, policy coherence is imperative for achieving energy transition—a shift from a dependence on fossil fuels to renewable and sustainable energy sources. Alignment of renewable targets with other power and energy policies would create a conducive ecosystem for green transition.

Bangladesh aspires to achieve energy transition. Consequently, it has introduced several plans with large renewable targets. One of them is the Mujib Climate Prosperity Plan (MCPP). The plan envisions energy independence and security and makes ambitious goals to increase the proportion of renewable energy to 30 per cent by 2030 and 40 per cent by 2041. Along with reducing emissions, it also aims to transform Bangladesh into a net exporter of green energy, boosting its economy as well as its climate resilience. Previously, the country had set the target of achieving 10 per cent of its electricity from renewable sources by 2020 as per the Renewable Energy Policy (2008). The country also established The Sustainable and Renewable Energy Development Authority (SREDA) in 2012. Yet, as of 2025, the country has only 5.6 per cent renewable capacity (*Bangladesh Power Development Board, 2025*). Among many challenges, the hurdle that is hampering its energy transition targets is incoherence among its existing plans, guidelines, laws, and policies.

Policy incoherence creates conflicting regulations, and incentives and hinders progress toward a sustainable energy future (ESG,2025). As Bangladesh is striving for a more sustainable energy mix, as much as she requires long term planning, and investment, it is important to detect incoherence towards energy transition. An incoherence of policy can lead to simultaneous promotion of fossil fuel and renewable energy and development of incoherent energy instructors, slowing down transition to renewable energy (ESG,2025).

Considering the importance of coherence among policies, plans, laws, guidelines and the energy transition aspiration of the country, it is imperative to comprehensively assess and analyse the status of coherence of the power sector. However, any study on the coherence of the power sector for energy transition is yet to be conducted.

Therefore, this study aims at measuring the level of (in)coherence among the policies, laws, plans, and guidelines in the power sector of Bangladesh. By identifying the challenges posed by policy misalignment and offering potential solutions, the study seeks to contribute valuable insights into how Bangladesh can create a more coherent and sustainable energy policy that accelerates its transition to a low-carbon economy. The findings will be crucial for policymakers, investors, and development organisations as they seek to align their efforts towards achieving the country's energy goals while also contributing to global climate action.

Research Objective

The specific objectives of the study are:

- Assessing gaps among existing policies, plans, and regulations governing Bangladesh's power sector regarding standard features.
- Analysing the conflicts of policies from the perspective of energy transition
- Measuring existing levels of coherence among plans, laws, guidelines, and policies
- Providing policy suggestions and insights to mitigate misalignments and foster policy cohesion.

02
Literature Review

There are two significant pieces of literature that shaped most of the subsequent studies on policy coherence. Carbone (2008) introduced a typology of coherence, which includes: 'horizontal coherence,' referring to the alignment between different policy domains; vertical coherence', addressing the consistency between the European Union (EU) and its member states; 'internal coherence', which pertains to the consistency of objectives and instruments within a specific policy domain; and 'multilateral coherence', which relates to the interactions between international organisations. Nilsson et al. (2012) identified policy coherence at three levels: (a) policy objectives, (b) policy instruments, and (c) implementation practices. The study also developed an analytical framework describing interactions—synergetic, neutral or conflicting—between objectives, instruments and implementation of two or more policy domains.

Acknowledging the need for coherence for energy transition, there have been many studies on it. Papadopoulou et al. (2020) developed a nexus-approach to analyse policy coherence for transition towards low carbon economy for Greece. Kivimaa's (2022) study focused on identifying complications of achieving coherence between energy and security policies as decarbonisation is taking place at a faster rate. King et al. (2013) analyzed coherence between water and energy policies. Mathieu (2022) studied coherence for Algeria and Morocco for electricity reform. Besides, Polte (2022) studied policy coherence to analyse whether Kenya's energy transition is just.

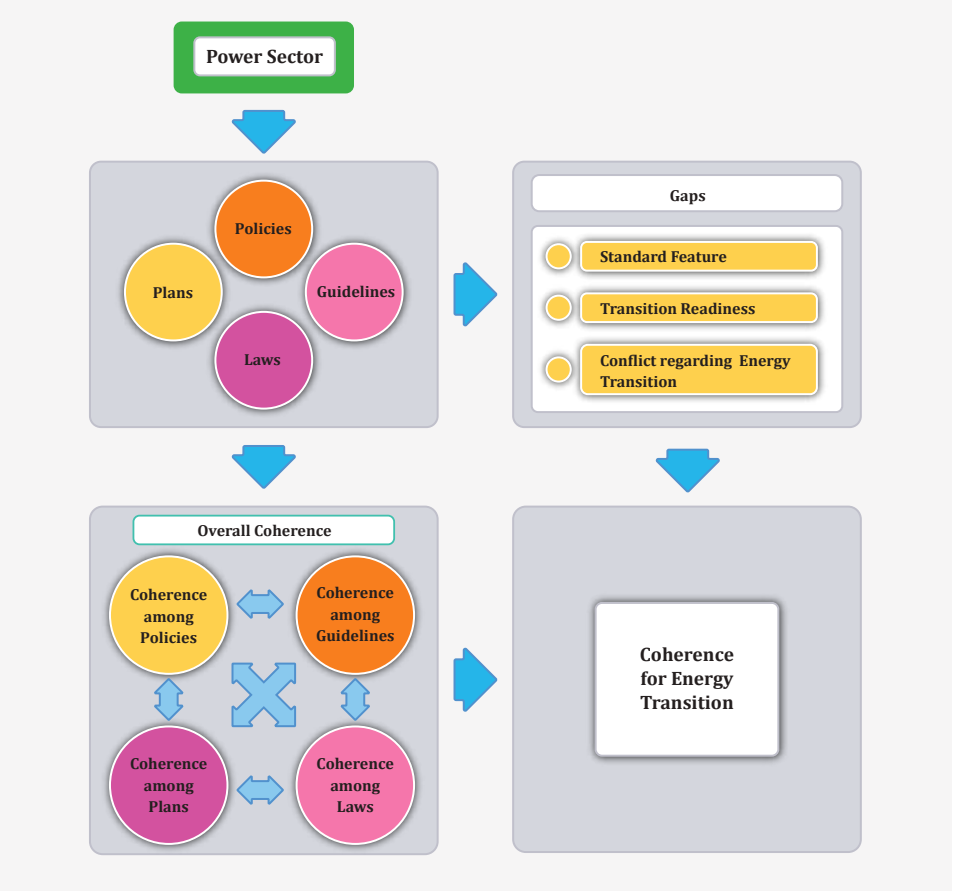
There have been several studies on policy coherence across different sectors in Bangladesh. Mahbub & Karim (2024) studied policy coherence for mitigating arsenic in groundwater. By examining goals, tactics, and strategies, the study assesses internal coherence. Additionally, it focuses on alignment with national and international laws, plans, and strategies while evaluating effectiveness, identifying gaps, and recommending improvements for better implementation and impact. John (2023) analysed coherence among non-communicable disease policies in Southeast Asia including Bangladesh. Quadir & Morshed (2001) studied coherence of Canada's development policy and the polices in Bangladesh and found significant coherence between them.

Although many global and national studies have examined policy coherence for energy transition, there is still no structured research focusing specifically on Bangladesh's power sector. There are a few articles concerning lack of coherence in the power sector's plans and policies (Chowdhury, 2025; Chowdhury & Aziz, 2025). However, those articles are descriptive, and the score is very narrow. Therefore, there is a need for a comprehensive and quantitative assessment of the coherence among the power sector's policies. This study fills those gaps by comprehensive and quantitative coherence analysis among power sector's policies, plans, laws, and guidelines. The study findings would be important to detect and understand the existing alignment and misalignment among the policies, laws, plans, and guidelines and suggest how more coherence can be established for a smoother energy transition.

03
Analytical Framework

This study examines coherence in the context of energy transition. The country's power sector is shaped by various policies, laws, guidelines, and plans (*Figure 1*). First, we assessed these documents to identify deficiencies in standard features essential for a well-structured policy framework. Next, we analysed gaps in transition readiness. Next, we examined conflicts within and between homogeneous and heterogeneous policy documents related to energy transition. We also have evaluated the coherence among policies, plans, guidelines, and laws at different levels—inter-policy, inter-plan, inter-guideline, and inter-law. Finally, we calculated the overall coherence level, integrating both the identified gaps and coherence findings to determine the overall alignment of the regulatory framework for energy transition.

Figure 1 **Analytical Framework**



Source: Authors' Illustration.

Scope of the Study

This study entails policies, plans, guidelines, and laws in the power sector of Bangladesh. The policies under this study include the Private Participation Enhancement Policy in Power Sector (2008), the Private Sector Power Generation Policy (Revised 2004), the LNG Import Subsidy Policy (2022), the Electrification Policy for Irrigation by BREB (2024), the Smart Meter Purchase by Consumer Policy (2019), and the Renewable Energy Policy Bangladesh (2008).

In addition to policies, the study considers several laws including the Bangladesh Power Development Boards Order (1972), the Bangladesh Energy Regulatory Commission Act (2003), the Quick Enhancement of Electricity and Energy Supply Act (2010), the Sustainable and Renewable Energy Development Authority Act (2012), the Rural Electrification Board Act (2013), the Electricity Act (2018).

Besides, the plans that were analysed under this study include the Action Plan for Energy Efficiency and Conservation (2016), the Integrated Energy and Power Master Plan (IEPMP), the Perspective Plan of Bangladesh, the Mujib Climate Prosperity Plan, and the Power System Master Plan.

The study also considers several guidelines including the Policy Guidelines for Power Purchase from Captive Power Plant, the Policy Guideline for Small Power Plant (SPP) in Private Sector, the Policy Guidelines for Enhancement of Private Participation in the Power Sector, the Electric Vehicle Charging Guideline, the Remote Area power Supply System (RAPSS) Guideline, and the Net Metering Guideline.

04 Methodology

The study employs mixed methods for achieving its objectives. We have gone through the documents including policies, plans, guidelines, and laws. These documents vary in terms of structures. However, there are some standard practices that should be followed when formulating these documents. First, this study evaluates the gaps that these documents have in terms of standard features. Secondly, the transition readiness of the policies was analysed. Moreover, we calculate coherence scores and utilise network analysis for visualising them. Besides, to understand how integrated each policy document is in the whole coherence network of the power sector, we calculated net coherence score (NCS) for each of them. The study also employed Key Informant Interview (KII) to gather qualitative insights from experts and stakeholders involved in policy formulation and implementation.

4.1. Standard Features and Transition Readiness

This study evaluated the policies, plans, guidelines, and laws regarding their standard features and transition readiness (Table 1). A policy refers to a set of rules or principles established by a government to guide decision-making and action on specific issues, while a plan is a comprehensive, long-term planning document that provides a conceptual layout to guide future growth and development. A guideline is a document that consists of information that suggests how something should be done. A law is a rule of conduct developed by the government or society over a certain territory. Transition readiness was checked for each policy document as per the framework developed by World Economic Forum (2024).

Table 1 **Standard Features and Transition Readiness of Policies, Plans, Guidelines, and Laws**

Category	Standard Features
Policies	**Objectives:** Specific and Measurable Objectives. **Instruments:** Tools and methods to be used for achieving the goals Evaluation Methods: Establish methods for evaluating progress of goals and its implementations and monitoring **Adaptability:** Flexibility to respond to changes and regular upgradation.
Plans	**Goals:** Clear and measurable objectives to achieve. **Strategic Actions:** Well-defined steps and required resources allocation to achieve the goals. Impact assessment: Assess effects of the plans on various groups and stakeholders. **Monitoring:** Established method of tracking progress of the plan.

Table 1 Continued

Table 1 Continued

Category	Standard Features
Guidelines	**Policy Back Up:** Guidelines offer detailed steps to effectively implement the broader goals established by policies. **Actionable Steps:** Guidelines specify practical, clear actions required to achieve the objectives. **Compliance:** Ensure that all actions align with relevant laws, regulations, and standards. **Clarity:** Provide clear and precise instructions to eliminate ambiguity and ensure consistent application. **Monitoring:** Establish systems to track progress, measure outcomes, and evaluate the success of implementation.
Laws	**Title and Preamble:** Name and purpose of the law. **Definitions:** Key terms and concepts explained. **Objectives:** Goals the law aims to achieve. **Licencing and Registration:** Requirements for permits or authorisations. **Penalties and Offenses:** Consequences for violations. **Dispute Resolution:** Procedures for resolving conflicts. **Timeline:** Timeframes for enforcement and implementation.
Transition Readiness	**Renewable Objectives:** Whether the policy has renewable goals. **Education & Human Capital:** Does it have aims of building human capacity for renewable skills? **Finance and investment:** Whether the policy emphasis on renewable financing and investments. **Research and Innovation:** Whether it has incentives for renewable energy (RE) research and innovation. **Energy Emphasis:** Whether the policy encourages fossil fuel or renewable energy for energy generation.

Source: Prepared by Authors.

4.2 Coherence Score and Network Analysis

To measure the level of coherence, this study utilises the seven-point typology developed by Weitz et al. (2018). Using typology, a rating system was developed which evaluates the interaction between objectives, instruments, and implementations practices on a spectrum from +3 to -3 (*Figure 2*).

Based on the interaction of the objectives of a policy with the objectives of another policy and interaction of instruments of one policy with that of another policy, a value from -3 to +3 was assigned. When assigning the value, it was taken into consideration that progress on the objective of one policy affects the progress on implementation of the objectives of another policy. After assigning the values, a average was taken which is the coherence score between any two policies.

At first, we calculated coherence scores among the policies, among the guidelines, among the laws, and among the plans. Later, we calculated coherence scores among all these heterogeneous documents. Moreover, we have conducted a network analysis based on the coherence score to understand more about the level of coherence and to visualise it. Policies, laws, guidelines, and plans were taken as node, and the coherence scores were considered as edges in this analysis.

Figure 2 **The Seven-point Typology**

Source: Weitz et al., 2018.

Since the coherence scores can be either positive or negative, the signed centrality has been used to understand structural position of each policy, plan, law, and guideline in the network. For each of the policy documents, the positive strength, the sum of all positive coherence scores, and the negative strength, sum of the absolute negative coherence scores, were calculated. Thus, the net coherence score was calculated as follows:

$$\text{Net Coherence Score (NCS)}_i = \text{Positive Strength}_i - \text{Negative Strength}_i$$

This score reflects how aligned or misaligned each policy is within the network of energy governance. A higher Net Coherence Score means the policy is well-connected through cooperative or mutually supportive ties, while a lower (or negative) score indicates that the policy is in conflict, with others.

To enable standardised comparison across policies, we transformed the raw Net Coherence Scores into standardised z-scores as follows:

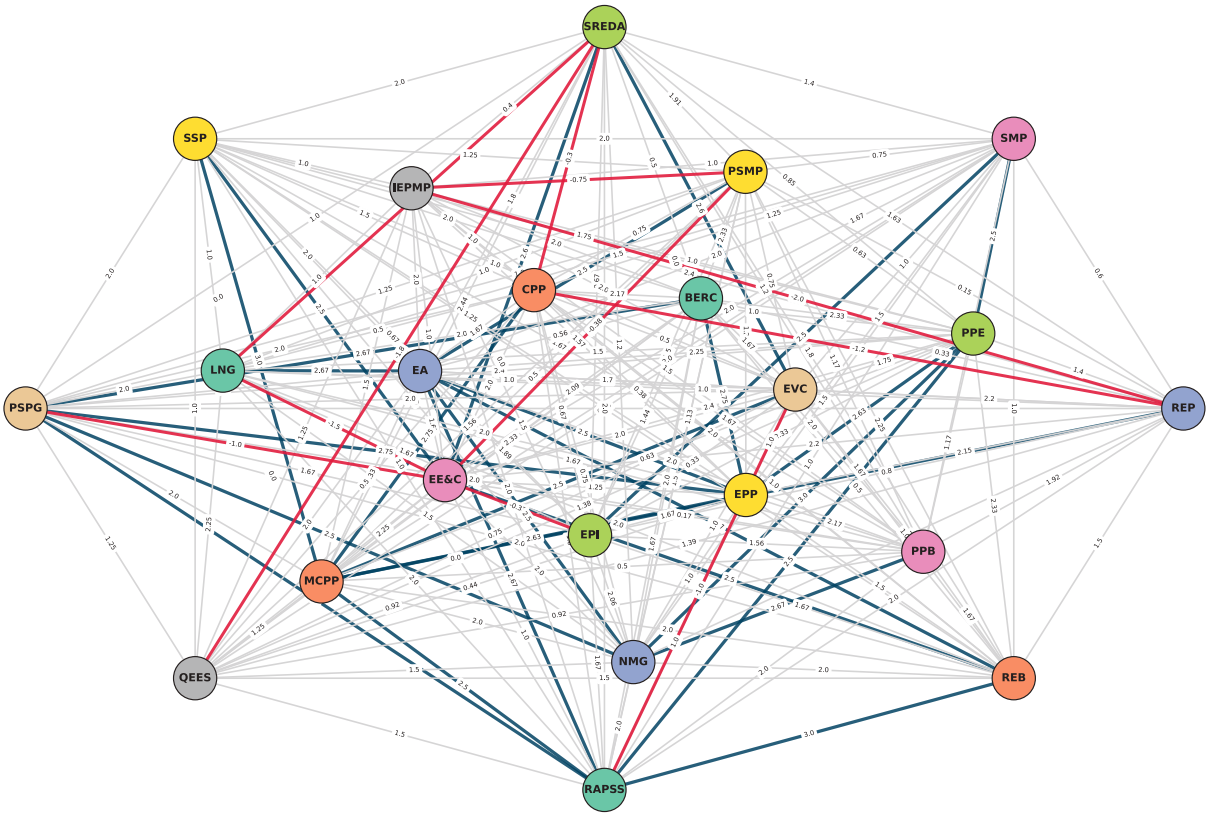
$$\textit{Standardised NCSi} = \frac{NCSi - \mu}{\sigma}$$

Here the μ is the meaning of all Net Coherence Scores across policies, and the σ is the standard deviation of these scores. This standardisation centers the scores around zero and expresses each policy's coherence relative to the overall distribution. Positive values indicate above-average coherence, negative values indicate below-average coherence, and the magnitude reflects the number of standard deviations from the mean.

05
Coherence Through Network Analysis

Table 23 in the appendix represents the coherence score among laws, plans, policies, and guidelines based on their objectives in the power sector. Figure 3 depicts the coherence score in the form of network diagram where the dark blue edges represent a strong positive coherence (coherence score equal and greater than 2.5), the light grey edges show coherence score less than 2.5, and the red edges show incoherence (negative coherence score) between policy documents. The SREDA act has negative coherence scores with Quick Enhancement of Electricity and Energy Supply Act 2010 (QEES), Policy Guidelines for Power Purchase from Captive Power Plant (CPP), and the LNG subsidy policy. The IEPMP has negative coherence scores with the renewable energy policy 2008 (REP) and the Power System Master Plan (PSMP). Moreover, the Action Plan for Energy Efficiency and Conservation (EE&C) is found to have negative coherence scores with the Power System Master Plan (PSMP), Electrification Policy for Irrigation (EPI), the LNG subsidy policy, and the Private Sector Power Generation Policy (PSPG).

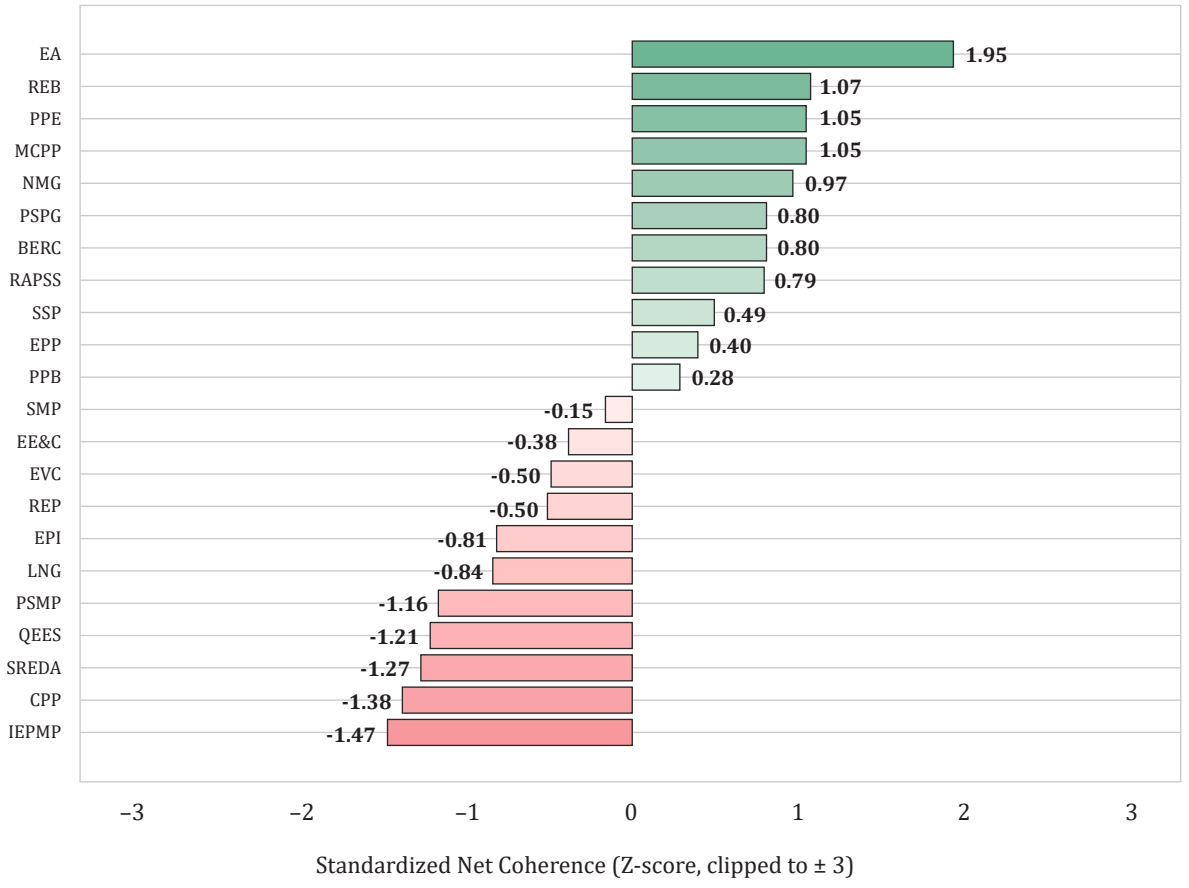
Figure 3 **Network Diagram of Coherence among Policies, Plans, Laws, and Guidelines**



Source: Authors' Illustration.

The Net Coherence Score (NCI) shows how much integrated each policy is in the coherence network. Figure 4 depicts bar plots of standardised net coherence scoresof the polices, laws, plans, and guidelines. The standardised net coherence scores reveal significant variation in how well each policy is aligned within the energy policy network. The Electricity Act (EA), the Rural Electrification Board Act (REB), and the Private Participation Enhancement Policy in Power Sector (PPE) emerge as the most coherent documents, with scores exceeding +1, indicating strong integration and support across the network. In contrast, policies such as IEPMP, CPP, and SREDA exhibit the lowest coherence, with standardised scores below –1. These findings highlight substantial misalignment or isolation of these policies. The results suggest that while a core group of policies supports coordinated governance, several key documents remain disconnected or conflict with others, warranting closer review and potential revision.

Figure 4 **Net Coherence Score of Policies, Plans, Laws, and Guidelines**

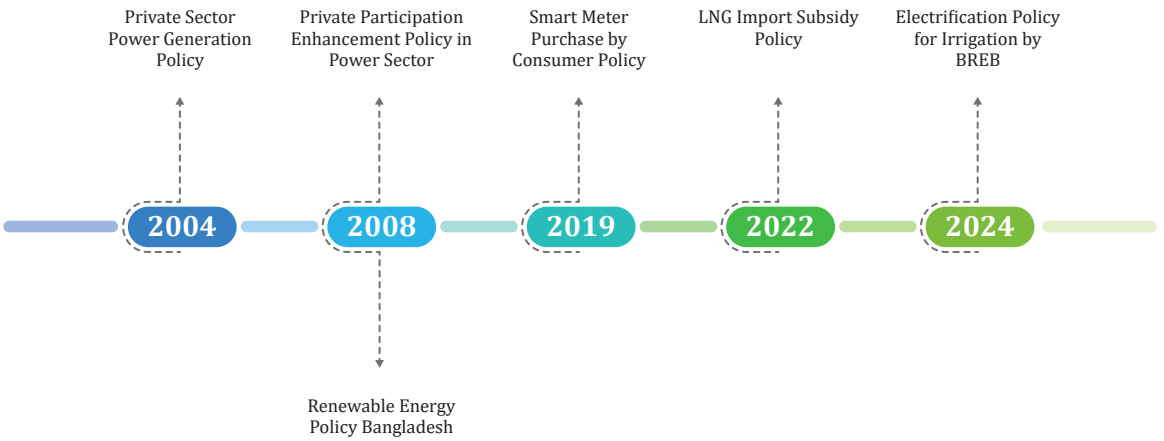


Source: Authors' Illustration.

06 Policies

This section analyses several policies: the Private Participation Enhancement Policy in Power Sector (2008), the Private Sector Power Generation Policy (Revised 2004), the LNG Import Subsidy Policy (2022), the Electrification Policy for Irrigation by BREB (2024), the Smart Meter Purchase by Consumer Policy (2019), and the Renewable Energy Policy Bangladesh (2008) (*Figure 5*). These policies guides Bangladesh's power sector. The policies have been analysed to detect gaps regarding standard features, transition readiness, energy preference for electricity generation and conflicts among the objectives of different policies in terms of energy transition. Finally, we measure coherence scores among the policies based on the objectives of different policies considering whether progress in the objective of one plan hinders or reinforces the progress in the objectives of the others.

Figure 5 **Policies in Power Sector of Bangladesh**



Source: Authors' Illustration.

6.1. Gaps in Policies Regarding Standard Features

A well-designed policy should include several standard features: specific and measurable objectives, clearly defined instruments, robust methods for evaluating progress, and adaptability to changing circumstances (*Table 2*).

It is important for policies to have measurable goals. However, only the only smart meter purchase policy (2019) and renewable energy policy (2008) have measurable goals along with non-measurable goals. The renewable energy policy has a measurable goal of producing 10 per cent electricity generation by Renewable energy by 2020 and the smart meter purchase policy aimed at 2 crore smart meter installation

by 2021. The other goal of smart meter purchase policy is facilitating smart meter purchase. The renewable energy policy aims at promoting the dissemination of renewable energy technologies across rural, peri-urban, and urban areas, encourages public and private investment, scales up renewable energy contributions to electricity production, develops local technology, and targets 10 per cent electricity generation from renewable sources by 2020.

Other than those two policies, the other policies only have unmeasurable objectives. The Private Participation Enhancement Policy in the Power Sector (2008) has several goals including encouraging private investment, creating a competitive environment, developing and renovating power plants through PPP, promoting local private sector involvement, and establishing commercial power plants. Last updated back in 2004, encouraging more i nvestment in the power sector from private sector is the goal of the private sector power generation policy. The LNG policy 2022 aims to maintain a constant supply of gas. This is for ensuring continuous power generation, energy security, and industrial development. The

Electrification Policy for Irrigation by BREB (2024) focuses on rapid electrification and reconnections for irrigation systems. The policy ensures transparency and accountability while providing uniform electricity supply to all irrigation consumers.

Additionally, all the policies do have enough instruments to achieve their respective objectives. The Private Participation Enhancement Policy in the Power Sector (2008) provides financial benefit to firms under this policy. It eases leasing of appropriate lands, cancels ceiling on credit, provides preferential treatment to coal purchase or coal mine development, and provides required licences for energy imports.

Similarly, the Private Sector Power Generation Policy has a myriad of incentives. The incentives include tax exemption from corporate tax for 15 years, exemptions of value added tax (VAT), customs duty and import permit fee on equipment and subsidy. For the foreign investors, the policy gave the opportunity of repatriation of equity, dividends, and facilitation of work permits for foreign experts. There are other incentives including protection against force majeure and changes in tax or charges, permission for corporate bonds, allowing share issuance at up to 10 per cent discounted price, and guaranteeing power purchase through PPAs.

The LNG policy has just one incentive which is a subsidy for the imported LNG. In the agricultural sector, the Electrification Policy for Irrigation provides metres with no fixed cost but a monthly charge. The policy also ensures instant replacement of stolen transmitters and a dedicated hotline for irrigation services. Besides, the policy puts together an oversight committee for monitoring and ensuring constant supply of electricity during non-peak hours.

Similarly, the Smart Meter Purchase by Consumer Policy (2019) promotes awareness campaigns, training skilled personnel, and integrating existing software with smart meters to improve efficiency and service delivery. Lastly, the Renewable Energy Policy of Bangladesh (2008) offers several incentives for expansion of renewable energy adoption in the country. The incentives include a 15 per cent VAT exemption for renewable materials, micro-credit support, subsidies for solar, wind, and biomass projects. Moreover, it also provides a five-year corporate income tax exemption for renewable energy investments, and tariff incentives.

Table 2 **Assessment of Standard Features of the Policies**

Policy	Objectives	Instruments	Evaluation Method	Adaptability
Private Participation Enhancement Policy in Power Sector (2008)	Yes, but not Measurable	Yes	No	No
Private Sector Power Generation Policy (Revised 2004)	Yes, but not Measurable	Yes	No	No
LNG Import Subsidy Policy (2022)	Yes, but not Measurable	Yes	No	No
Electrification Policy for Irrigation by BREB (2024)	Yes, but not Measurable	Yes	No	No
Smart Meter Purchase by Consumer Policy (2019)	Yes, and Measurable	Yes	No	No
Renewable Energy Policy Bangladesh (2008)	Yes, and Measurable	Yes	No	No

Source: Authors' Estimation.

Unfortunately, the policies have neither any methods for evaluating progress nor adaptability. The majority of the policies have objectives, but they do not have measurable goals which make it difficult to keep track of the level of implementation of the objectives of the respective policies. Besides, all the policies lack methods for evaluating the progress of the objectives. The policies demonstrate a considerable lack of adaptability, primarily because they are rarely updated. This stagnation creates a substantial barrier to progress, hindering efforts to achieve a successful and timely energy transition.

6.2. Deficiencies in Transition Readiness and Pro-Fossil Bias

Based on the emphasis on the energy source to be utilised to generate electricity, this study categorised policies as pro-fossil, pro-RE, and neutral. The Private Participation Enhancement Policy in power sector 2008 and LNG import policy are pro-fossil. The Private Participation Enhancement Policy in power sector 2008 explicitly states a preference for indigenous fossil fuels like natural gas and coal while allowing for other fossil fuels, including imports, if necessary and renewable energy sources, such as hydro, solar, wind, and biomass, are acknowledged but positioned as a secondary option. The Electrification Policy for Irrigation by BREB 2024 and Smart Meter Purchase by Consumer Policy 2019 are neutral. The Private Sector Power Generation Policy (Revised 2004) emphasises both non-renewable energy such as coal, imported gas, and liquefied energy and renewable energy such as wind, solar, biomass to generate electricity. The Renewable Energy Policy is the sole policy that is pro-RE as it exclusively focuses on the renewable energy sources for electricity generation.

Assessing the readiness of energy transition is crucial to plan the strategy the country would need to take for achieving the transition. The readiness in the policies can be evaluated by analysing whether the policies include renewable energy goals, support needed for renewable technology innovation, capacity building and financing opportunities for renewable projects (*Table 3*).

Table 3 **Assessment of Transition Readiness of the Policies**

Policy	Renewable Objectives	Education & Human Capital	Research and Innovation	Finance and investment	Pro-Fossil/ Pro-RE
Private Participation Enhancement Policy in Power Sector 2008	No	No	No	No	Pro-Fossil
Private Sector Power Generation Policy (Revised 2004)	No	No	No	No	Emphasised on Both
LNG Import Subsidy Policy 2022	No	No	NO	No	Pro-Fossil
Electrification Policy for Irrigation by BREB 2024	No	No	No	No	Neutral
Smart Meter Purchase by Consumer Policy 2019	No	No	No	No	Neutral
Renewable Energy Policy Bangladesh	Yes	Yes	Yes	Yes	RE

Source: Authors' Estimation.

None of the policies include renewable goals except for the renewable energy policy 2008. While renewable energy policy also includes renewable education, human capital development, research and innovation, and finance for renewable energy, the other policies do not include these indicators which enhance renewable energy adoption preparedness. Additionally, a major policy in the power sector, the Private Participation Enhancement Policy in Power Sector, is a pro-fossil fuel policy. While Private Sector Power Generation Policy emphasised on both fossil fuel and renewable energy, it does not include any special incentives for propelling renewable energy adoption in private sector.

6.3. Conflicts Between Polices in the Context of Energy Transition

There are significant conflicts between various policies and their goals in the context of energy transition as shown in table 4. The Private Participation Enhancement Policy in Power Sector 2008 promotes fossil fuel-based power plants, clashing with the Renewable Energy Policy Bangladesh target of achieving 10 per cent electricity generation from renewables by 2020.

Similarly, the LNG Import Subsidy Policy promotes reliance on LNG by subsidising the LNG imports. This LNG subsidisation undermines both the efforts of reducing dependency on conventional fossil fuels and adoption of renewable energy. Besides, since the Renewable Energy Policy Bangladesh 2008 promotes renewable energy adoption, it is directly conflicting with the LNG Import Subsidy Policy's goal of ensuring affordable LNG supply for energy security.

The Electrification Policy for Irrigation by BREB 2024 wants to ensure continuous electricity connection to irrigation. However, it did not specify the sources of energy to be used. Whilst it is essential to ensure electricity connection to irrigation; it is also important to promote renewable energy for such connections otherwise it risks promoting more fossil fuels energy. These conflicts of goals among the police from the perspective of energy transition underline the need for better policy alignment to effectively support the energy transition.

Table 5 shows the conflicts among policy instruments from the perspective of energy transition. The

Table 4 Conflicts Between Policies and Goals in the Context of Energy Transition

Policy	Conflict with	Conflicted Goals
Private Participation Enhancement Policy in Power Sector 2008	Renewable Energy Policy Bangladesh	Promotes fossil fuel-based private power plants, conflicting with the goal to achieve 10% electricity generation from renewables by 2020.
Electrification Policy for Irrigation by BREB 2024	Renewable Energy Policy Bangladesh	May cause conflict if electrification relies on non-renewable sources as it does not mention means of electrification.
Renewable Energy Policy Bangladesh 2008	LNG Import Subsidy Policy 2022	Focus on renewable energy adoption conflicts with the goal to ensure affordable gas supply for energy security through LNG subsidies.

Source: Authors' Estimation.

Private Participation Enhancement Policy includes incentives for fossil fuel-based power plants and the Private Sector Power Generation Policy does not include any incentives for renewable energy. Thus, these two police together create a strong environment for fossil fuel-based power plans as there are overlapping incentives between them, particularly in tax exemptions and financial incentives. Besides, the Private Participation Enhancement Policy has incentives for coal-based power plant development which undermines and makes the incentives provided under the renewable energy policy ineffectual in promoting renewable energy. Lastly, the subsidisation of LNG imports is also conflicting with the instruments of the renewable energy policy

Table 5 Conflicts Between Policies and Instruments in the Context of Energy Transition

Policy	Conflict with	Conflicted Instruments
Private Participation Enhancement Policy in Power Sector 2008	Private Sector Power Generation Policy (Revised 2004)	Tax exemptions and corporate incentives in the Private Sector Power Generation Policy may overlap with financial benefits under the Private Participation Enhancement Policy in Power Sector 2008 policy, leading to redundant subsidies.
Private Participation Enhancement Policy in Power Sector 2008	Renewable Energy Policy Bangladesh 2008	Preferential treatment for coal purchase and coal mine development undermines discouraging renewable energy adoption incentives
LNG Import Subsidy Policy 2022	Renewable Energy Policy Bangladesh 2008	LNG subsidies conflict with renewable energy incentives like subsidies for solar, wind, and biomass in Renewable Energy Policy.

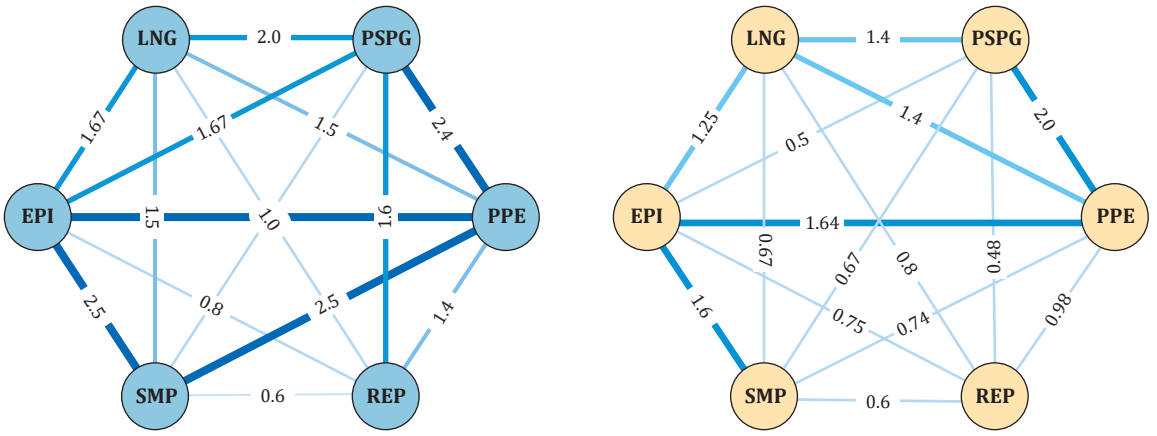
Source: Authors' Estimation.

6.4. Coherence Between Policies

In this section we illustrate the coherence among the plans based on coherence scores which are calculated based on the level of synergy and conflict among their respective objectives and instruments (*Figure 6*). Table 23 in the appendix shows a coherence score.

The left figure depicts coherence based on objectives, while the right one shows coherence based on instruments among the policies.

Figure 6 **Coherence Among Policies in Terms of Objectives and Instruments**



Source: Authors' Illustration.

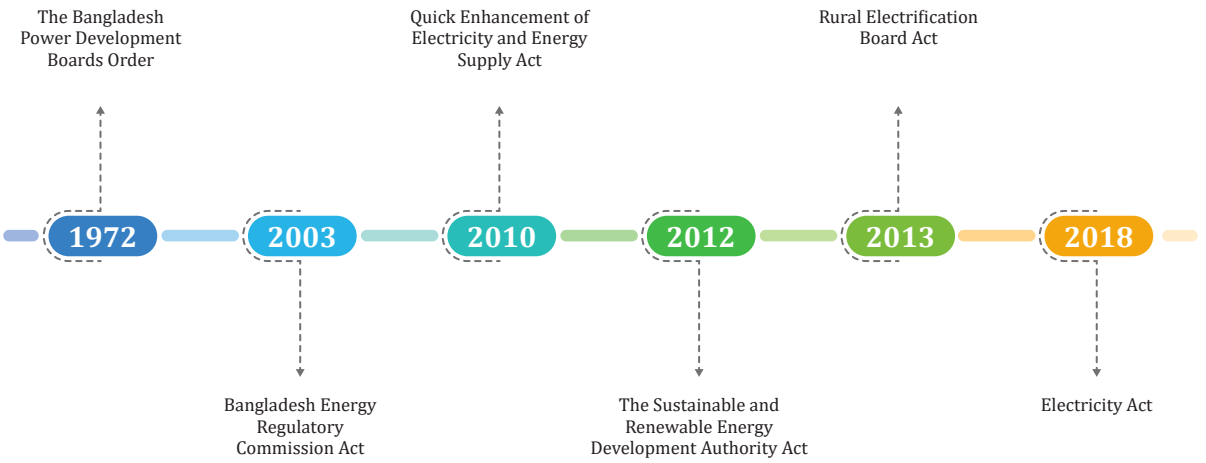
In the left figure, the Private Participation Enhancement Policy in Power Sector 2008 (PPE), a pro-fossil policy, has the highest coherence score of 2.5 (indivisible) with the Smart Meter Purchase (SMP). The Private Participation Enhancement Policy in Power Sector 2008 (PPE) also has an indivisible coherence (2.33) with the Electrification Policy for Irrigation by REB (EPI), which implies most of the electrification for irrigation is done from non-renewable sources. The Private Participation Enhancement Policy in Power Sector 2008 (PPE) also has a high coherence score of 2.4 (indivisible) with the Private Sector Power Generation Policy (PSPG) which emphasises fossil fuel as well as renewable energy. The Private Sector Power Generation Policy (PSPG) has a coherence score of 2 (reinforcing) with the LNG subsidy Policy, implying that LNG subsidy policy assists achieving the pro-fossil objectives of the PSPG. The renewable energy policy 2008 has relatively very low coherence score with the other non-renewable policies.

In terms of Instrument, the PSPG and the SMP has very low coherence, although they have very high coherence in terms of objectives. The overall coherence in terms of instruments among policies is lower than the coherence in terms of objectives. As before, the renewable policy has very low coherence with other policies in the power sector.

07 Laws

This section analyses several laws: the Bangladesh Power Development Boards Order (1972), the Bangladesh Energy Regulatory Commission Act (2003), the Quick Enhancement of Electricity and Energy Supply Act (2010), the Sustainable and Renewable Energy Development Authority Act (2012), the Rural Electrification Board Act (2013), the Electricity Act (2018) (*Figure 7*). These laws guide Bangladesh's power sector. The laws have been analysed to sort out gaps regarding standard features, transition readiness, energy preference for electricity generation and conflicts among the objectives of different laws in terms of energy transition. Finally, we measure coherence scores among the laws based on the objectives of different laws considering whether progress in the objective of one law hinders or reinforces the progress in the objectives of the other law.

Figure 7 **Laws in Power Sector of Bangladesh**



Source: Authors' Illustration.

7.1. Gaps in Laws Regarding Standard Features

This subsection looks at the relevant laws in the power sector from the point of view of standard features to detect gaps in this regard. All laws have fundamental features such as title, preamble, and objectives. Table 6 depicts the status of the presence of standard features of the laws in the power sector.

The BERC act has several goals. It wants to create a conducive environment for private investment in electricity generation, and transmission. It also aims to facilitate the marketing of gas and petroleum.

Moreover, the act promotes competition to enhance transparency and efficiency in the power sector. The electricity act wants to develop and reform power generation, transmission and distribution areas. It also aims to increase demand for electricity and ensure better delivery of service to consumers. The Quick Enhancement of Electricity and Energy Supply Act (2010) focuses on electricity and energy imports. Besides, it also emphasises urgent extract and utilisation of minerals related to energy to ensure uninterrupted suppl of electricity. The Rural Electrification Board Act (2013) focuses mainly on ensuring continuous supply of electricity in the rural area. Reducing the dependency of fossil fuels and promoting the use of renewable energy is the main goal of the Sustainable and Renewable Energy Development Authority Act (2012). The act also encourages energy efficiency and conservation.

Licencing and registration provisions are not present in the SREDA Act (2012) and the rural electrification board act (2013). Dispute resolution mechanisms and penalties, critical for enforcement, are only addressed in a few laws, notably the BERC Act (2003) and the Electricity Act (2018). Moreover, most laws do not have definite timelines. Only the Quick Enhancement of Electricity and Energy Supply Act (2010) has a definite timeline.

Table 6 **Assessment of Standard Features of the Laws**

Laws	Title, Preamble, & Definition	Objective	Timeline	Licencing and Registration	Dispute Resolution	Penalties
The Bangladesh Power Development Boards Order, 1972	Yes	N/A	No	Yes	No	No
Bangladesh Energy Regulatory Commission Act, 2003	Yes	Yes	No	Yes	Yes	Yes
Quick Enhancement of Electricity and Energy Supply Act, 2010	Yes	Yes	Yes	Yes	No	No
The Sustainable and Renewable Energy Development Authority Act, 2012	Yes	Yes	No	No	No	No
Rural Electrification Board Act, 2013	Yes	Yes	No	No	No	No
Electricity Act, 2018	Yes	Yes	No	Yes	Yes	Yes

Source: Authors' Estimation.

7.2. Deficiencies in Transition Readiness and Pro-Fossil Bias

When analysed, the laws have several gaps regarding energy transition readiness (*Table 7*). Only the SREDA act has renewable energy related objectives. Besides, it also emphasises renewable education and capacity development, research, and finance. The Rural Electrification Board Act (2013) does not have renewable energy goals. While it does mention education, skill development, research and financing, these are not related to renewable energy.

The Bangladesh Power Development Boards Order (1972), Electricity Act (2018), and Rural Electrification Board Act (2013) are found to be neutral that is they promote neither fossil fuel nor renewable energy. We found the BERC act, and the Quick Enhancement of Electricity and Energy Supply Act are pro-fossil fuel acts as they promote fossil fuels in their objectives. The finding implies the need for a revision or updates of the laws to improve the transition readiness.

Table 7 **Assessment of Transition Readiness of the Policies**

Laws	RE Objective	Education & Human Capital	Research & Innovation	Finance & investment	Pro-Fossil/ Pro-RE
The Bangladesh Power Development Boards Order, 1972	N/A	No	No	No	Neutral
Bangladesh Energy Regulatory Commission Act, 2003	No	No	No	No	Pro Fossil
Quick Enhancement of Electricity and Energy Supply Act, 2010	No	No	No	No	Pro Fossil
The Sustainable and Renewable Energy Development Authority Act, 2012	Yes	Yes	Yes	Yes	Pro-RE
Rural Electrification Board Act, 2013	No	Yes	Yes	Yes	Neutral
Electricity Act, 2018	No	No	No	No	Neutral

Source: Authors' Estimation.

7.3. Conflicts Between Laws in the Context of Energy Transition

There are several conflicts among the objectives of the laws from the point of view of energy transition (*Table 8*). There are several conflicts among the SREDA and other acts. While SREDA has a goal of facilitating reduction of dependence on fossil fuels, the QEES aims at being more reliant on fossil fuels as it aims at urgent extraction and utilisation of minerals related to energy. Besides, the QEES also aims at enhancing electricity generation through fossil fuels which is contradictory to SREDA's goals. The electricity act aims to address the growing demand for electricity, the SREDA aims at energy conservation, efficiency and renewable energy. These goals are at odds because the short-term reliance on fossil fuels to

meet immediate electricity needs weakens the long-term transition and energy efficiency. The BERC act promotes investment in gas and petroleum which is conflicted with SREDA, promoting renewable energy promotion and adoption.

Table 8 **Conflicts Between Laws in the Context of Energy Transition**

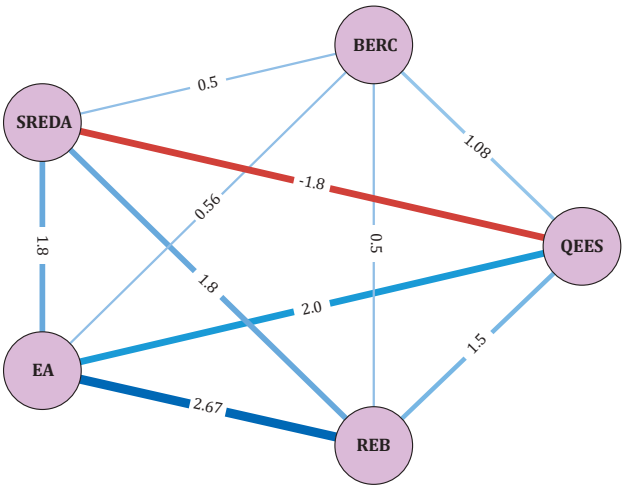
Laws	Conflict with	Conflicted Objectives
The Sustainable and Renewable Energy Development Authority Act, 2012	Quick Enhancement of Electricity and Energy Supply Act 2010	Gradual lessening dependence on fossil fuels is conflicting with urgent extraction and utilisation of minerals related to energy
The Sustainable and Renewable Energy Development Authority Act, 2012	Quick Enhancement of Electricity and Energy Supply Act 2010	Promoting the use of renewable energy is contradictory to the enhancement of generation, transmission, and marketing of electricity and energy
The Sustainable and Renewable Energy Development Authority Act, 2012	Electricity Act 2018	Focuses on enhancing the generation of electricity through nonrenewable sources which may divert resources from renewable to nonrenewable may be conflicting with promoting the use of renewable energy
Bangladesh Energy Regulatory Commission Act, 2003	The Sustainable and Renewable Energy Development Authority Act, 2012	Creation of a conducive atmosphere for private investment in generation of electricity and marketing of gas is conflicting with gradually reduction of dependence on fossil fuels

Source: Prepared by Authors.

7.4. Coherence Between Laws

In this section we illustrate the coherence among the laws (*Figure 8*) based on coherence scores which are calculated based on the level of synergy and conflict among their respective objectives. Table 23 in the appendix shows coherence score.

Figure 8 **Coherence Among Laws**



Source: Authors' Illustration.

The Quick Enhancement of Electricity and Energy Supply Act (QEES), a pro-fossil act, has a negative coherence score of 1.8 with the Sustainable and Renewable Energy Development Authority Act (SREDA), a pro-renewable act. A -1.8 (counteracting) coherence score implies that the objectives of QEES clashes with that of SREDA and vice-versa. The Electricity Act (EA) has the highest coherence score of 2.67 (indivisible) with the Rural Electrification Board Act (REB), indicating that the objectives of the EA are inextricably linked to that of REB. The QEES and the EA have 2(reinforcing) coherence score, indicating that the implementation of the objectives of QEES helps achieving that of the EA. SREDA and the REB, and the SREDA and the EA have coherence score of 1.8 (reinforcing).

08
Plans

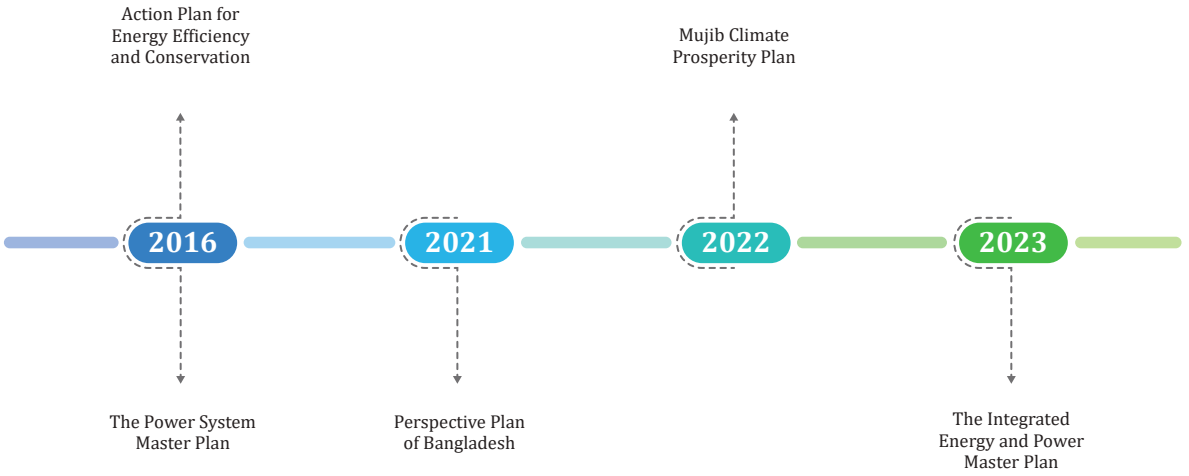
This section analyses several plans: the Action Plan for Energy Efficiency and Conservation (2016), the Integrated Energy and Power Master Plan (IEPMP), the Perspective Plan of Bangladesh, the Climate Prosperity Plan, and the Power System Master Plan (Figure 9). These plans have been taken by the government of Bangladesh over the years, setting various medium-term as well as long-term visions for the country's power sector. The plans have been analysed to detect a lack in the plans regarding standard features, transition readiness, energy preference for electricity generation and conflict among the objectives and targets of different plans in terms of energy transition. Finally, we measured coherence scores between the plans based on the objectives of different plans considering whether progress in the objective of one plan hinders or reinforces the progress in the objective of the other.

The Action Plan for Energy Efficiency and Conservation (2016) aims at achieving targets related to reduction of primary energy consumption. It eyes at 15 per cent reduction in energy use per GDP unit by 2021, and a 20 per cent reduction by 2030 compared to 2013 levels. It wants to achieve this goal through building a culture of energy conservation among the public.

On the same year, the Power System Master Plan (2016) has been enacted. The plan focuses on energy infrastructure development for imports of fossil fuel sources like oil, gas, and LNG. It also mentions the development of infrastructure for utilising domestic gas and coal. It also prioritised increasing green energy and strengthening institutional capacity for keeping a stable energy supply.

The Perspective Plan of Bangladesh aimed at achieving 100 per cent electrification by 2021 by generating 20,000 MW. It is also planned to produce 3 per cent electricity from renewable energy sources. The Integrated Energy and Power Master Plan (IEPMP) was enacted not very long ago in 2023. The plant focuses on clean energy. It aims for 40 per cent of electricity from clean energy and diversifying the energy portfolio for greater sustainability. The Climate Prosperity Plan, introduced in recent years, envisions energy independence and security, with goals to become a net green energy exporter. It targets 30 per cent renewable energy by 2030, and 40 per cent by 2041. It also prioritises grid modernisation and resilience.

Figure 9 **Plans in Power Sector of Bangladesh**



Source: Authors' Illustration.

8.1. Gaps in Plans Regarding Standard Features

Any standard plan should possess the following features: specific goals—goals that are measurable; strategic actions—well-thought-out steps and allocation of resources required to achieve the targets; impact assessment—a socio-economic impact assessment of the plan and its effects on different stakeholders; and monitoring—a mechanism for tracking the progress of the goals (*Table 9*). This section analyses how well the existing plans meet these standard features.

The action plan for energy efficiency and conservation plan has most of the features that a standard plan should have. It has clear and measurable targets. The targets include reducing primary energy consumption per GDP by 15 per cent by 2021, and 20 per cent by 2030 compared to 2013 levels. Such specific and measurable goals help keep track of progress. Besides, the plan aims at creating a self-reliant cycle where people proactively and voluntarily save energy.

Table 9 **Gaps in Plans Regarding Standard Features**

Plan's Name	Specific Goals	Strategic Actions	Impact Assessment	Monitoring
Action Plan for Energy Efficiency and Conservation	Yes	Yes	Yes	Yes
Power System Master Plan	Yes	Yes	No	No
Perspective Plan of Bangladesh	Yes	Yes	No	No
Mujib Climate Prosperity Plan	Yes	No	No	No
Integrated Energy and Power Master Plan	Yes	Yes	Yes	Yes

Source: Authors' Estimation.

As strategic actions, the plan includes four major programmes: EE&C Finance Programme, EE Building Programme, EE Labeling Programme, and Energy Management Programme. These programmes are well defined. Besides, specific roles have been assigned to various organisations for ensuring effective implementation of these programmes. In addition, it assesses the potential economic impact of the plan. However, it does not analyse the effects of the plan on other stakeholders. Moreover, the plan has a monitoring system. It collects data on energy consumption and other indicators annually and after every three years.

The Power System Master Plan 2016 has specific goals. The goals are focused on scaling up the import and production of energy resources, including gas, oil, and LNG. The plan identified potential future projects, such as the development of an LNG pipeline and the Matarbari Coal Power Plant, to meet these energy import targets. However, this plan does not have any mechanism to formally assess the impact of the proposed projects. Besides, the plan does not include any monitoring mechanisms. Moreover, the plan largely focuses on fossil fuel energy sources, with little emphasis on renewable energy.

The Perspective Plan of Bangladesh sets precise goals which include the generating of 20,000 MW electricity and 3 per cent of that electricity from renewable energy by 2021. The plan wants to achieve its target by importing electricity from India and Nepal, building petroleum pipeline infrastructure, and spending massively on port, storage and transport facilities for imported coal. The plan does not have any impact assessment and monitoring mechanisms. It has given minimal emphasis on renewable energy.

Achieving energy independence and security is the main goal of the Mujib Climate Prosperity Plan. It also envisions becoming a net green energy exporter. As per the plan, by 2030 it aims to generate 30 per cent electricity from renewable energy and 40 per cent by 2040. However, the plan currently lacks specific strategic actions, impact assessments, and monitoring mechanisms.

To achieve 40 per cent electricity from clean energy sources, the Integrated Energy and Power Mater Plan outlines strategic actions such as importing hydroelectric power from Nepal and Bhutan, developing hydrogen power generation by 2040, and establishing an LNG terminal for importing liquefied natural gas (LNG). This plan considers the impact of the plan on the environment and includes a monitoring framework with several associated SEO (Socio-Economic and Environmental) indicators to track the effects of the different projects taken under this plan.

8.2 Deficiencies in Transition Readiness and Pro-Fossil Bias

This section of the report is devoted to analysing the plans from the perspective of energy transition readiness and preference on the source of energy for electricity generation (*Table 10*). To evaluate transition readiness, we investigated whether a plan has goals of producing electricity from renewable sources, whether it has any programme of developing renewable technology adept human capital, whether it encourage renewable technology related innovation and whether it has financing plans for renewable projects.

The Action Plan for Energy Efficiency and Conservation (2016) has a primary focus on reducing energy consumption per GDP and promoting a culture of energy conservation, and so it inclines neither fossil fuel nor to renewable sources. The plan fails to acknowledge that renewable energy typically results in less transmission loss compared to centralised fossil fuel plants, but it does not set any clear renewable energy objectives or provide strategic actions to promote RE. Furthermore, there is no emphasis on renewable energy education, research, or financial mechanisms. The plan is entirely focused on energy efficiency and conservation, with no direct integration of renewable energy as a primary component.

The Power System Master Plan leans more towards fossil fuels, emphasising the development of domestic natural gas, LNG, and coal infrastructure. It focuses heavily on importing energy sources like oil, gas, and LNG to meet growing demand. Whilst there is mention of green energy and an intention to increase its share, the plan primarily views renewable energy as a tool to improve rural access to electricity rather than

a means of diversifying the energy mix. It does suggest financial incentives for some renewable energy products, but overall, the plan lacks concrete strategies for developing renewable energy infrastructure or capacity. The plan's heavy reliance on fossil fuels as the foundation of the energy system means that renewable energy remains a secondary concern. The plan mentions human capital development as a whole which does not prioritise capacity building on renewable energy. Furthermore, there is no emphasis on renewable energy research and innovation.

Table 10 **Assessment of Transition Readiness of Plans**

Plans	Renewable Objectives	Education & Human Capital	Research and Innovation	Finance and investment	Pro-Fossil/ Pro-RE
The Energy Efficiency and Conservation Plan	No	No	No	No	Neutral
The Power System Master Plan	Yes	Yes	No	Yes	Pro-Fossil
The Perspective Plan of Bangladesh	Yes	No	No	No	Pro-Fossil
The Mujib Climate Prosperity Plan	Yes	No	No	No	Pro-RE
The Integrated Energy and Power Master Plan	Yes	No	No	No	Ambiguous

Source: Authors' Estimation.

The IEPMP, on the one hand, promotes renewable energy like solar and wind. On the other hand, it promotes technologies such as nuclear, carbon capture, liquid hydrogen, and ammonia co-firing. The plan includes both types of energy sources as 'clean energy' and plans to generate 40 per cent electricity by 2040 from clean energy sources. The plan includes some strategic actions, such as importing hydroelectric power from Nepal and Bhutan and exploring hydrogen power by 2040. Particularly on renewable energy, the plan does not mention significant investment or capacity-building. The plan does not also mention any specific actions to promote renewable energy innovation, research, or finance.

In nature, the Perspective Plan of Bangladesh (PPB) is a pro-fossil. It emphasises coal-based power generation and the importation of coal to meet the country's growing energy needs. Although, it includes a goal of 3 per cent electricity from renewable by 2021, the goal is very low, indicating lower priority on renewable energy. The plan includes some projects aimed at reducing environmental harm, such as importing hydro or solar power from neighbouring countries like India. It does not include initiatives for developing renewable energy capacity nor does it outline specific financing or innovation strategies for it.

The main focus of the Mujib Climate Prosperity Plan is renewable energy. It aims to generate 30 per cent renewable energy by 2030 and 40 per cent by 2041. Additionally, the plan puts emphasis on grid resilience and modernisation to accommodate the increased share of renewables. However, the plan lacks detailed provisions for financial and technological support required to achieve them. Besides, it does not include renewable energy innovation, capacity building or investment for facilitating renewable energy adoption.

8.3. Conflicts Between Plans in the Context of Energy Transition

The Integrated Energy and Power Master Plan (IEPMP, 2023) and the Mujib Climate Prosperity Plan (MCPP) present contrasting approaches to energy sourcing (*Table 11*). While IEPMP targets 40 per cent clean energy, the MCPP sets a goal of achieving 30 per cent renewable energy by 2030 and 40 per cent by 2041, emphasising a stronger commitment to renewables.

Clean energy sources can help reduce emissions. In IEPMP the definition of clean energy is broad. It includes renewables such as wind and solar, along with technologies such as carbon capture, liquid hydrogen, and ammonia co-firing. However, the emphasis on clean energy can slow down the progress of renewable energy as mentioned in the goals of the MCPP. Besides, the PPB only mentions hydro, excluding widely recognised renewable technologies such as solar and wind. This inconsistency in the plans regarding energy sources gives a chaotic signal about the energy priorities of the countries and can hinder investment decisions.

The Energy Efficiency and Conservation Master Plan (EE&C) and the Power System Master Plan (PSMP) have different focus. The EE&C is aimed at energy efficiency and consumption reduction, whereas PSMP is focused on the expansion of fossil fuel-based infrastructure. As PSMP is promoting the expansion of fossil fuel-based power plants, the supply of electricity from non-RE is increasing and the higher supply will undermine the efforts of reducing electricity demand which the EE&C aims to achieve. The Perspective Plan aims to achieve only 3 per cent of electricity from RE sources while CPP eyes to achieve 30 per cent electricity from RE sources, highlighting a significant difference in ambition.

Table 11 **Conflicts Between Plans Regarding Energy Transition**

Area of Conflict	Plans Involved	Description of Conflict
Renewable Energy vs. Clean Energy	IEPMP (2023) and MCPP	IEPMP targets 40% clean energy, excluding RE, while MCPP aims for 30% RE by 2030 and 40% by 2041. IEPMP focuses on clean energy from non-renewable sources, while MCPP prioritises renewable energy sources
Energy Mix	IEPMP and PPB	IEPMP defines clean energy broadly, including modern variable renewables like wind and solar, as well as carbon capture, liquid hydrogen, and ammonia co-firing. In contrast, PPB only mentions hydro, excluding widely recognised renewable technologies such as solar and wind.
Energy Consumption vs. Infrastructure	EE&C (2016) and PSMP (2016)	EE&C focuses on reducing energy use; PSMP emphasises expanding fossil fuel-based infrastructure.
Renewable Energy Targets	Perspective Plan and, MCPP	Perspective Plan targets 3% RE by 2021, while MCPP aims for 30% by 2030, highlighting a significant difference in ambition.
Self-Reliance vs. Import Dependency	EE&C (2016), PSMP (2016)	EE&C promotes self-reliance, while PSMP depends heavily on imported energy sources.
Energy Independence vs. Fossil Fuel Use	MCPP, PSMP 2016	MCPP targets energy independence with green energy, while PSMP continues its reliance on fossil fuels (gas, coal).

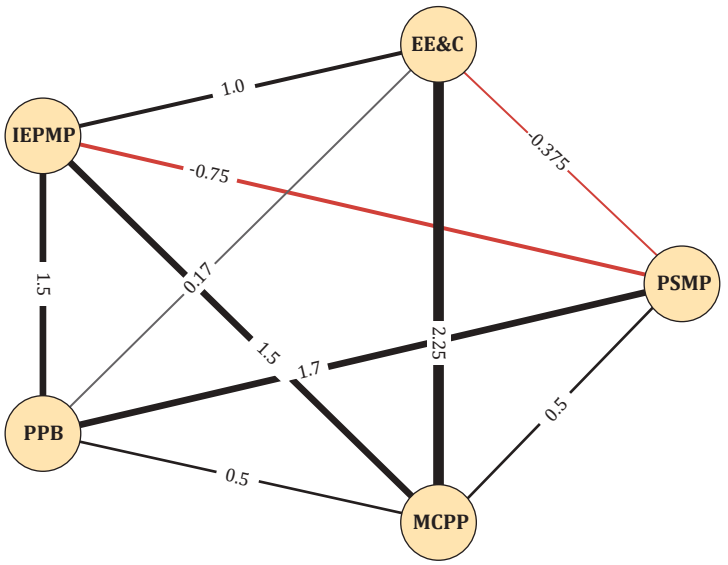
Source: Prepared by Authors.

8.4. Coherence Between Plans

In this section, we illustrate the coherence among the plans based on coherence scores which are calculated based on the level of synergy and conflict among their respective objectives (*Figure 10*). Table 23 in the appendix shows a coherence score.

The coherence scores between the plans reflect varying degrees of alignment or synergy. The Mujib Climate Prosperity Plan (MCPP), pro-renewable, and the Action Plan for Energy Efficiency and Conservation (EE&C), neutral, has the highest coherence score of 2.25 (indivisible). The Power System Master Plan (PSMP) which is pro-fossil has coherence score of -.75 (constraining) with the Integrated Energy and Power Master Plan (IEPMP) which focuses on clean energy, implying the objectives of PSMP limit achieving

Figure 10 Coherence Among Plans



Source: Authors' Illustration.

the objectives of IEPMP. Similarly, the Action Plan for Energy Efficiency and Conservation (EE&C) has constraining (-0.375) relationship with the Power System Master Plan (PSMP). Coherence among the other plans is either enabling or reinforcing.

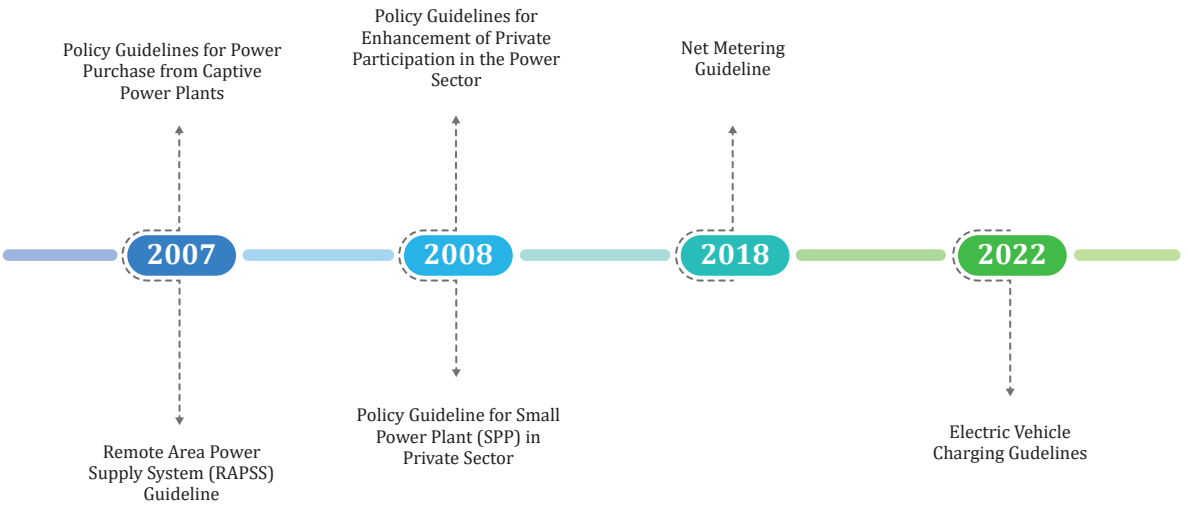
09 Guidelines

This section analyses several guidelines: the Policy Guidelines for Power Purchase from Captive Power Plant, the Policy Guideline for Small Power Plant (SPP) in Private Sector, the Policy Guidelines for Enhancement of Private Participation in the Power Sector, the Electric Vehicle Charging Guideline, the Remote Area power Supply System (RAPSS) Guideline, and the Net Metering Guideline (*Figure 11*). The guidelines have been analysed to detect a lack in the plans regarding standard features, energy preference for electricity generation and conflict among the objectives and targets of different guidelines in terms of energy transition. Finally, we measure coherence scores between the guidelines based on the objectives of different guidelines considering whether progress in the objective of one guideline hinders or reinforces the progress in the objective of the other.

The Policy Guidelines for Power Purchase from Captive Power Plants are designed to optimise the surplus capacity of these facilities, enabling electric utilities to procure electricity from them. Similarly, the Policy Guideline for Small Power Plants (SPP) in the Private Sector facilitates electricity generation for private consumption while allowing the sale of excess power to other users.

The Policy Guidelines for Enhancement of Private Participation in the Power Sector, established in 2008, aims to stimulate private involvement and create a competitive landscape. These guidelines advocate for the construction of new power plants, the renovation of existing ones through Public-Private Partnerships (PPP), and the engagement of local private sector entities in power generation. The objective of overarching is to establish commercial power plants within the private sector.

Figure 11 **Guidelines in Power Sector of Bangladesh**



Source: Authors' Illustration.

In the electric vehicle sector, the Electric Vehicle Charging Guideline stresses the development of essential infrastructure to support electric vehicle charging. Concurrently, the Remote Area Power Supply System (RAPSS) Guideline aims to expand electricity access in remote and isolated regions by promoting private sector investment.

Lastly, the Net Metering Guideline aligns with the goals of the National Energy Policy 2008 by fostering renewable energy (RE)-based distributed generation, thereby encouraging the adoption of sustainable and decentralised power solutions.

9.1. Gaps in Guidelines Regarding Standard Features and Transition Readiness

Guidelines are optional, while policies are obligatory. Typically, guidelines are backed up by a policy and include comprehensive instructions that aid in the effective implementation of the associated policies. Therefore, the standard features of guidelines should include policy backup—whether the guideline is supported by any policy; objectives—whether it has clear objectives; detailed instructions—whether it provides step-by-step instructions for the implementation of the policy; clarity—whether the instructions are clear enough to understand; and compliance—whether it complies with existing laws and regulations.

A guideline serves as a complement to a policy, and when it is derived from a policy, it embodies the vision of that policy. Therefore, if a policy is transition-ready then the subsequent guidelines should include detailed instructions on renewable education, research, innovation and financing as their standard features. On the other hand, there also exist some guidelines that are independent of policies. For those policies, we see whether those guidelines mention capacity building, research, innovation and financing in renewable energy. The 'Other' column of the following tables captures these aspects of the guidelines.

Policy Guidelines for Power Purchase from Captive Power Plan

The Policy Guidelines for Power Purchase from Captive Power Plants are designed to optimise the surplus capacity of these facilities, allowing electric utilities to acquire electricity from them (*Table 12*). Although there is no policy backup, the guidelines offer comprehensive instructions on tariff rates, electricity supply conditions, and licencing requirements. The Bangladesh Energy Regulatory Commission (BERC) ensures compliance by issuing the necessary licences. Furthermore, power plants are required to comply with all relevant laws, including environmental regulations. Besides, the policy is clearly articulated and well-organised, effectively guiding stakeholders in the process. However, this guideline does not mention anything about capacity building, research, innovation and financing in renewable.

Table 12 **Assessment of Guidelines Regarding Standard Features**

Policy Back Up	Objectives	Detailed Instructions	Compliance	Clarity	Others
Absent	Yes	Yes	Yes	Yes	No mention of any transition- readiness indicators

Source: Prepared by Authors.

Policy Guideline for Small Power Plant (SPP) in Private Sector

The Policy Guideline for Small Power Plants (SPP) in the Private Sector aims to facilitate the generation of electricity for private use while allowing the surplus to be sold to other user*s (Table* 13). However, the

policy lacks policy backup and sufficient details and provides inadequate instructions. The Power Cell is designated as the responsible institution for SPPs. The government is not obligated to purchase electricity from these plants. In areas under the jurisdiction of the BPDB, DESA, or REB, the tariffs announced by the Government of Bangladesh will apply. For other areas, the government does not regulate electricity pricing, leaving it to be negotiated between the sponsor and consumers. Despite these limitations, the policy is compliant and clear in its structure. However, this guideline does not mention anything about capacity building, research, innovation and financing in renewable energy.

Table 13 **Assessment of Guidelines Regarding Standard Features**

Policy Back Up	Objectives	Detailed Instructions	Compliance	Clarity	Others
Absent	Yes	Yes	Yes	Yes	No mention of any transition- readiness indicators

Source: Prepared by Authors.

Policy Guidelines for Enhancement of Private Participation in the Power Sector

The Policy Guidelines for the Enhancement of Private Participation in the Power Sector, 2008, are based on the Private Participation Enhancement Policy in the Power Sector 2008 (*Table 14*). The policy aims to encourage private participation and foster a competitive environment. It focuses on building new and renovating old power plants through Public-Private Partnerships (PPP), encouraging local private sector involvement in new power plants, and creating commercial power plants in the private sector.

The guidelines provide clear instructions for commercial power plants, including obtaining a licence from the Bangladesh Energy Regulatory Commission (BERC), allowing freedom to negotiate applicable tariffs, and sourcing energy independently for electricity production. For joint ventures, Public Sector Power Utilities can collaborate with Bangladeshi private investors, subject to approval from the respective private sector utilities and BERC. The policy also outlines investor qualifications, such as proven financial capacity and the ability to develop and rehabilitate power plants. The guideline also provides instructions on power purchase agreements (PPA).

The policy ensures compliance through licencing requirements provided by the BERC and environmental licences from the Department of Environment. The instructions are clear, well-structured, and free from conflicts, making the policy straightforward to implement. However, the policy is pro-fossil and so the guideline does not refer to instructions about capacity building, research, innovation and financing in renewable energy.

Table 14 **Assessment of Guidelines Regarding Standard Features**

Policy Back Up	Objectives	Detailed Instructions	Compliance	Clarity	Others
Yes	Yes	Yes	Yes	Yes	No mention of any transition- readiness indicators

Source: Prepared by Authors.

Electric Vehicle Charging Guideline

The Electric Vehicle Charging Guidelines provide clear instructions for the development of both private and public charging stations, catering to two-wheelers and three-wheelers (*Table 15*). The government's plan is to execute this in two phases: 1-3 years and 3-5 years, with standard criteria for charging stations. The Bangladesh Accreditation Board (BAB) will evaluate quality. The BERC will determine pricing to ensure that the cost of operating electric vehicles is lower than that of gas-powered ones. The application procedure and related instructions are clearly outlined, with SREDA responsible for implementation, while the Ministry of Power, Energy & Mineral Resources (MoPEMR) will oversee infrastructure development, incentives, and service charges. Even though it does not have any policy backup, it encourages electric vehicles by helping develop electric charging stations. However, it does not refer to any education or capacity building programme and financing.

Table 15 **Assessment of Guidelines Regarding Standard Features**

Policy Back Up	Objectives	Detailed Instructions	Compliance	Clarity	Others
No	Yes	Yes	Yes	Yes	No mention of any transition- readiness indicators

Source: Prepared by Authors.

Remote Area power Supply System (RAPSS) Guideline

The Remote Area Power Supply System (RAPSS) Guideline follows the goal of achieving 100 per cent electricity coverage by 2021, as outlined in the Perspective Plan of Bangladesh (*Table 16*). Its objectives include accelerating electricity coverage in remote and isolated areas through private sector investment. A private investor will be granted exclusive rights to develop, operate, and maintain the electricity distribution and retail supply system, including generation, if necessary, within a designated RAPSS Area for up to 20 years. Financial incentives, such as tax exemptions, subsidies for certain projects, and interest-free loans from the RAPSS Fund, are provided to offset challenges in remote areas. The Power Division will form a committee to oversee the funds, with BERC responsible for licencing. Any conflicts of interest will be resolved according to the Arbitration Act of 2001. The guideline clearly outlines the processes for selecting investors and project areas, and how the RAPSS Fund will be formed. Compliance will be ensured by the commission, which will annually evaluate the RAPSS operator's performance in areas like construction standards, targeted facilities, household connections, and customer satisfaction. It also does not refer to any of the transition readiness index.

Table 16 **Assessment of Guidelines Regarding Standard Features**

Policy Back Up	Objectives	Detailed Instructions	Compliance	Clarity	Others
Yes	Yes	Yes	Yes	Yes	No mention of any transition- readiness indicators

Source: Prepared by Authors.

Net Metering Guideline

The Net Metering Guideline is backed up by the National Energy Policy of 2008, which aims to generate 20 per cent of electricity, or 2000 megawatts, from RE by 2020. Its objectives include promoting the goals of the National Energy Policy and encouraging RE-based distributed generation. Applicants must be legal customers of the area, and the guideline applies only when electricity is generated from renewable sources. It outlines the pricing for net metering, additional costs for the customer, instructions for exporting electricity, accounting procedures, and tariff structures. Security conditions are also specified. To apply for net metering, individuals must apply to SREDA. The guideline provides clear instructions and includes a sample application form for ease of process (*Table 17*). Net metering is an important instrument for energy transition and this guideline is appreciated in this regard. However, this guideline does not mention any instructions for education or capacity building in net metering.

Table 17 **Assessment of Guidelines Regarding Standard Features**

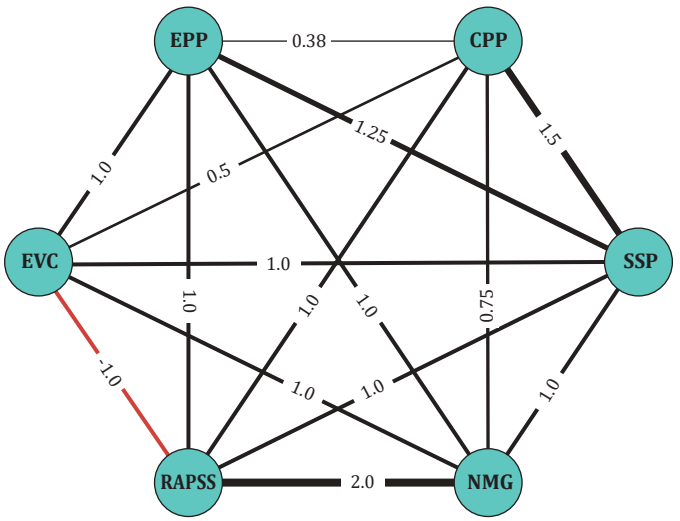
Policy Back Up	Objectives	Detailed Instructions	Compliance	Clarity	Others
Yes	Yes	Yes	Yes	Yes	No mention of any transition- readiness indicators

Source: Prepared by Authors.

9.2 Coherence between Guidelines

In this section, we illustrate the coherence among the guidelines based on coherence scores which are calculated based on the level of synergy and conflict among their respective objectives (*Figure 12*). Table 23 in the appendix shows a coherence score.

Figure 12 **Coherence Among Guidelines**



Source: Authors' Illustration.

The coherence scores between the guidelines reflect varying degrees of alignment or synergy. The highest coherence score of 2 (reinforcing) is between the Remote Area power Supply System (RAPSS) Guideline and the Net Metering Guideline (NMG), implying goals of RAPSS aids achieving the goals of NMG and vice-versa. However, the RAPSS Guideline has a coherence score of -1 (constraining) with the Electric Vehicle Charging Guideline (EVC), implying that the objectives of RAPSS limits achieving the objectives of EVC and vice-versa. The Policy Guidelines for Power Purchase from Captive Power Plant (CPP) and the Policy Guideline for Small Power Plant (SPP) in Private Sector has the second highest coherence of score of 1.5 (reinforcing). The Policy Guidelines for Enhancement of Private Participation in the Power Sector (EPP), the Electric Vehicle Charging Guideline (EVC), and the Net Metering Guideline (NMG) have a coherence score of 1 (enabling) among them. The overall coherence among the guidelines is very low.

10

Conflicts Among Heterogenous Policy Documents for Energy Transition

This section aims to analyse conflicts between heterogeneous policy documents—plans, laws, policies, and guidelines—in the power sector of Bangladesh. Although these policy documents vary in structure, each one is grounded in its own specific objectives. Furthermore, each plan, policy, guideline, and law outline how their respective objectives are to be implemented or executed. Therefore, the objectives provide a scope of measuring synergy among two heterogeneous documents. First, we will analyse potential conflicts between the objectives of plans and those of policies, guidelines, and laws. Next, we will examine conflicts between the objectives of policies and those of guidelines and laws, and finally, we will identify conflicts between the objectives of guidelines and those of laws. Additionally, a coherence score will be calculated for each interaction.

Plans and Policies

When the plans and policies were analysed, a few conflicts among the objectives were detected (Table 18). The Power System Master Plan (2016) has an objective of maximising green energy and promotion of its introduction while the Private Sector Power Generation Policy aims at attracting private investment in power sector and it does not separately have any incentives for investing to renewable power plants. Therefore, there is potential to have more investment in fossil fuel power plants and undermine the objective of green energy maximisation goal of the power system plan. The LNG Import Subsidy Policy (2022) subsidise importation of liquified natural gas which is a fossil fuel, and the Integrated Energy and Power Master Plan aims at achieving 40 per cent electricity from clean energy by 2040. The subsidisation

Table 18 **Conflicts Among Plans and Policies in Terms of RE Transition**

Plan Vs Policy	Area Conflict
Power System Master Plan 2016 vs Private Sector Power Generation Policy (Revised 2004)	The Power System Master Plan emphasises green energy, but the Private Sector Power Generation Policy may attract private investment in fossil fuel power plants, potentially conflicting with renewable energy goals.
Integrated Energy and Power Master Plan (IEPMP) 2023 Vs LNG Import Subsidy Policy (2022)	The IEPMP focuses on clean energy, not specifically renewable energy (RE), while the LNG Import Subsidy Policy emphasises LNG for energy security, potentially conflicting with green energy goals.
The Perspective Plan Vs Electrification Policy for Irrigation	The Perspective Plan targets 3% renewable energy, but the Electrification Policy for Irrigation does not specify renewable sources for expanded electricity coverage, which could conflict with the renewable energy focus of the Plan.

Source: Prepared by Authors.

to LNG can hinder the goal of producing electricity from clean energy. The perspective plan aims to produce 3 per cent electricity from renewables, and the Electricity Policy for Irrigation has the objective of rapid electrification and reconnection for irrigation Systems. The Electricity Policy for Irrigation mentions nothing about renewable energy for irrigation electrification. Therefore, rapid electrification may emphasis traditional fossil fuel based than renewable goal of the perspective plan.

Plans and Guidelines

The Integrated Energy and Power Master Plan (IEPMP) targets on achieving 40 per cent electricity from 'clean energy' but does not emphasise renewable energy (RE). On the contrary, as the Policy Guidelines for Enhancement of Private Participation in The Power Sector emphasise more participation of private firms in the power sector, there will be surge of fossil fuel-based power plants which is contradictory to the target of 40 per cent electricity from clean energy sources. In addition to achieving 30 per cent electricity from renewable sources by 2030, the Climate Prosperity Plan plans to export green energy. The Remote Area Power Supply System (RAPSS) Guideline aims at providing electricity to remote areas of the country and it does not explicitly mention where the electrification will be done through renewable sources or non-renewable sources. Therefore, this could lead to inclination towards more power generation from fossil fuels and hamper the goal of 30 per cent electricity production from renewable energy by 2030 and 40 per cent by 2041 (*Table 19*).

Table 19 **Conflicts Among Plans and Guidelines in Terms of RE Transition**

Plan Vs Guidelines	Area Conflict
Integrated Energy and Power Master Plan (IEPMP) 2023 vs. Policy Guidelines for Enhancement of Private Participation in The Power Sector (2008)	The IEPMP 2023 targets achieving 40% electricity from 'clean energy' but does not emphasise renewable energy (RE) but the guidelines encourage private sector participation, which often focuses on conventional power generation (coal, gas). This could slow the transition to cleaner energy sources
Mujib Climate Prosperity Plan vs. Remote Area Power Supply System (RAPSS) Guideline	The Mujib Climate Prosperity Plan (MCPP) emphasises renewable energy (30% by 2030, 40% by 2041) and green energy exports, while the RAPSS guideline focuses on rural electrification without explicitly prioritising renewable energy. This could lead to expansion with fossil-fuel-based solutions, contradicting the MCPP's sustainability goals.

Source: Prepared by Authors.

Plans and Laws

On the one hand the Power System Master Plan (2016) aims at enhancing import energy infrastructure and its flexible operation (Imported Oil, Gas, LNG) and efficient development and utilisation of domestic natural resources (gas and coal) and on the other hand it also aims at maximising green energy and its promotion (*Table 20*). However, the PSMP emphasised fossil fuel. The Rural Electrification Board Act focuses on continuous electricity supply in rural areas. Given the emphasis in PSMP and REB act, it is more likely that the goal of maximising green energy, and its promotion will be prioritised. Integrated Energy and Power Master Plan (IEPMP) 2023 focused on 40 per cent electricity from clean energy but not necessarily renewable energy. However, the Quick enhancement of electricity and energy supply aims at ensuring uninterrupted supply of electricity and to do so it focuses on importation of electricity and utilisation and extraction of local non-renewable energy. Therefore, the goal of the IEPMP and Quick enhancement act is contradictory. There is conflict between the electricity act (2018) which aims at development of electricity sector as a whole and the perspective plan which aims at only 3 per cent electricity from renewable from 2021. Therefore, the low emphasis on renewable energy can lead to underdevelopment in this sector

compared to fossil fuel-based power plants. The Mujib Climate Prosperity Plan has a goal of achieving energy independence through renewable energy and the Bangladesh Energy Regulatory Commission Act promotes private investment in fossil fuel-based energy, leading to conflicts of interest.

Table 20 **Conflicts Among Plans and Laws in Terms of RE Transition**

Plan Vs Laws	Area Conflict
Power System Master Plan (2016) vs Rural Electrification Board Act (2013)	The Power System Master Plan includes reliance on imported energy sources (oil, gas, LNG) and domestic non-renewable resources (coal), while the Rural Electrification Board Act focuses on continuous electricity supply in rural areas. The conflict arises in promoting cleaner energy sources versus traditional ones.
Integrated Energy and Power Master Plan (IEPMP) 2023 vs Quick Enhancement of Electricity and Energy Supply Act (2010)	The Integrated Energy and Power Master Plan focuses on clean energy but not necessarily renewable energy. The Quick Enhancement of Electricity and Energy Supply Act does not emphasise renewable energy, prioritising the enhancement of energy supply without focusing on clean sources.
Perspective Plan of Bangladesh vs Electricity Act 2018	The Perspective Plan sets a goal of only 3% renewable energy, which conflicts with the Electricity Act, which aims at developing all energy sectors without specifying renewable energy as a priority.
Mujib Climate Prosperity Plan vs Bangladesh Energy Regulatory Commission Act (2003)	The Mujib Climate Prosperity Plan's goal of achieving energy independence through renewable energy faces potential conflict with the Bangladesh Energy Regulatory Commission Act, which promotes private investment in fossil fuel-based energy and may prioritise energy sources that do not align with renewable energy aspirations.

Source: Prepared by Authors.

Policies and Laws

There are a few conflicts among policies and laws regarding energy transition (*Table 21*). While the Private Participation Enhancement Policy encourages private participation and commercial fossil fuel-based power plants, the SREDA act aims to reduce dependence on fossil fuels and promote renewable energy. The Private Participation Enhancement Policy is the 3rd most integrated policy with a net coherence score (NSC) of 1.05. On the other hand, SREDA has the third lowest NSC. The coherence score between these two are only 0.85. This low coherence score is because of this fundamental conflict between these two.

The REP 2008 and the SREDA act has a coherence score of 1.63 which should have been more. The REP 2008 targets only 10 per cent of electricity from renewables by 2020. However, SREDA aims not only at renewable expansion but only at reducing fossil fuel dependency. Therefore, the policy does not set ambitious enough targets to align with the law's long-term vision.

The Private Sector Power Generation Policy (PSPG) aims to attract private investment in power generation, which might prioritize urban or profitable regions. On the other hand, the Rural Electrification Board Act (REB) focuses on ensuring continuous rural electricity supply. If private investments prioritise profitable urban areas, rural electrification efforts could suffer. Other than this concern, the coherence score between the PSPG and REB is very positive as reflected by the coherence score of 2.

Table 21 **Conflicts Among Plans and Laws in Terms of RE Transition**

Plan Vs Laws	Area Conflict
Private Participation Enhancement Policy in Power Sector (2008) vs. The Sustainable and Renewable Energy Development Authority Act (2012)	While the policy encourages private participation and commercial power plants, which may include fossil-fuel-based energy generation, the law aims to reduce dependence on fossil fuels and promote renewable energy
Renewable Energy Policy Bangladesh (2008) vs. The Sustainable and Renewable Energy Development Authority Act (2012)	The policy does not set ambitious enough targets to align with the law's long-term vision.
Private Sector Power Generation Policy (Revised 2004) vs. Rural Electrification Board Act 2013	If private investments prioritise profitable urban areas, rural electrification efforts could suffer

Source: Prepared by Authors.

Laws and Guidelines

There is conflict between Bangladesh Energy Regulatory Commission Act (2003) and Remote Area Power Supply System (RAPSS) Guideline. The BERC act aims to establish a competitive electricity market, while the RAPSS guideline aims to expand electricity coverage in remote areas which may require government to provide incentives to the private firms. This government intervention is conflicting with the idea of establishing a competitive market. Quick Enhancement of Electricity and Energy Supply Act (2010) focuses on rapid enhancement of electricity supply though any means possible (e.g. importing electricity) which conflicts with the Policy Guidelines for Private Participation in Power Sector which promotes establishment of domestic private power plants (*Table 22*).

Table 22 **Conflicts Among Laws and Guidelines in Terms of RE Transition**

Laws Vs Guidelines	Area Conflict
Bangladesh Energy Regulatory Commission Act (2003) vs. Net Metering Guidelines.	The law encourages private sector investment in electricity generation, including fossil fuels (e.g. gas, petroleum). The Guideline's objective supports distributed renewable energy generation.
Bangladesh Energy Regulatory Commission Act (2003) vs. Remote Area Power Supply System (RAPSS) Guideline.	While the law intends to create a competitive electricity market and promotes private investment, the guideline targets expansion of electricity coverage in remote areas, which may require government subsidies
Quick Enhancement of Electricity and Energy Supply Act (2010) vs. Policy Guidelines for Private Participation in Power Sector.	The law emphasises immediate energy availability (including imports), whereas the guideline encourages long-term private investments in domestic power plants.

Source: Prepared by Authors.

11

Findings from Key Informant Interviews (KIIs)

Several KIIs were conducted to understand the level of coherence at the ground level for energy transition. The first KII revealed significant gaps in Bangladesh's energy transition framework, with the respondent stating, 'There is no phasing-out plan in Bangladesh, nor is there an overarching policy that can be considered as an umbrella guide for the energy transition'. Additionally, the interviewee highlighted inconsistencies in the definitions of various energy sources, which complicate the transition process.

The second KII highlighted, 'The policies or plans are only in the documents and there is no real action plan which will guide how to achieve the stated targets. Besides, the plans do not sketch how the financing of the projects will be conducted'. The interviewee also stated that different institutions independently, without coordination with other institutions, craft their plans which creates inconsistencies. 'Bangladesh needs a national energy transition policy which will set sectoral goals accordingly', the interviewee added.

The third KII stated, 'There are no real commitments to achieve 40 per cent electricity from renewable energy'. The interviewee emphasised that the country needs a dedicated ministry for energy transition which will coordinate, monitor the energy mix and oversee renewable energy pricing. He also highlighted other energy sources such as nuclear power as the country has limited renewable capacity.

Finally, the last interview stressed the need for an assessment of renewable energy capacity as the country is not blessed with many renewable energy sources. The interviewee said, 'The country has limited land and a huge population. Excluding the arable land, there is not much land for the installation of solar power plants. To achieve 40 per cent electricity from renewable energy, we need to create a wind mapping for wind energy and consider cross-border cooperation for renewable energy'.

The key informant interviews (KIIs) revealed major gaps in Bangladesh's energy transition including lacking coordination, action plans, dedicated oversight, and realistic assessments of renewable capacity and financing needs.

12 Recommendations

This study has identified significant gaps, inconsistencies, and conflicts within Bangladesh's power sector policies, plans, laws, and guidelines that hinder the country's energy transition. Based on the findings, the following recommendations are proposed to improve coherence and strengthen the readiness of the sector for a renewable-based energy future.

Strengthening the Structure of the Policies, Plans, Laws, and Guidelines

This study found that the policies, plans, laws and guidelines do not have a few crucial features. Moreover, the policy documents of the power sector must be revised and updated to include standard features such as specific and measurable goals, adaptability and regular updating procedure. Besides, indictors for assessing the impact of all policies and plans on society, economy and environment should be included. Furthermore, the policy documents must include clear, publicly available monitoring indicators and reporting obligations.

Increasing Transition Readiness of the Policies, Plans, Laws, and Guidelines

Majority of the policies, plans, laws, and guidelines do not have renewable energy objectives, plans for developing human capital for RE, financing for RE research and development. Therefore, to enhance transition readiness renewable objectives should be included across policy domain. Besides, a fund should be established, and that fund would be used to finance local startups, research institutions, and public-private innovation partnerships for RE technologies (solar, wind, battery storage, hydrogen, etc.). Moreover, all the policies and plans should outline training and capacity building programme for the development of RE technical skills.

Reducing the Fossil Fuel Bias of the Policies, Plans, and Laws

Private Participation Enhancement Policy in Power Sector (2008), and the LNG Import Subsidy Policy (2022) are pro-fossil fuel policies while the Private Sector Power Generation Policy (2004) primarily emphasised conventional energy sources, placing minimal focus on the development of renewable energy. Among the laws, the Quick Enhancement of Electricity and Energy Supply Act (2010) and BERC Act (2003) are fossil fuel biased. As far as plans are concerned, The Power System Master Plan and The Perspective Plan of Bangladesh inclines extremely towards fossil fuel. Therefore, these policy documents should be revised to reduce the fossil fuel biasness. Besides, a roadmap should be created for a gradual phase-out for subsidies and policy incentives currently favouring conventional energies.

Revising Policies to Align Them With the Renewable Energy Policy

A few objectives of the Private Participation Enhancement Policy in Power Sector (2008), the LNG subsidy policy, and Electrification Policy for Irrigation (2024) are conflicting with the Renewable Energy policy (2008). The Private Participation Enhancement Policy should be updated to include instruments for

encouraging investment in renewable energy. Besides, the Electrification Policy for Irrigation policy should explicitly state the use of renewable energy such as solar for irrigation. Additionally, subsidies for fossil fuels as provided in the LNG Import Subsidy Policy (2022), should be gradually withdrawn and redirected towards solar, wind, and biomass initiatives in alignment with the Renewable Energy Policy (2008).

Eliminating the Conflicting and Redundant Policy Instruments

To strengthen policy coherence and support the energy transition, it is crucial to eliminate overlapping and conflicting policy instruments. First, a comprehensive review of all fiscal incentives, including tax exemptions and subsidies in the Private Participation Enhancement Policy (2008) and the Private Sector Power Generation Policy (Revised 2004), must be conducted to streamline benefits and prevent redundancy. Financial incentives that prioritise coal and fossil fuel development under existing policies should be phased out and reoriented to support renewable energy technologies.

Resolving Conflicts and Ensure Legal Harmonisation

Laws such as the Quick Enhancement of Electricity and Energy Supply Act (2010) and the Bangladesh Energy Regulatory Commission Act (2003) should be revised to prioritise renewable energy development. The Quick Enhancement of Electricity and Energy Supply Act (2010) is negatively coherent with the SREDA Act and the BERC Act has very low coherence with the SREDA Act. The BERC Act should be updated to make it consistent with the SREDA Act. Besides, neutral acts such as the Electricity act should be updated to include renewable clauses where possible.

Harmonising Energy Planning and Renewable Targets

There are conflicts among major master plans in the power sector such as the Integrated Energy and Power Master Plan (IEPMP) and the Power System Master Plan (PSMP) has a negative coherence score (-.75). Thus, the master plans should be updated to eliminate conflicts and increase renewable components. Besides, targets of all plans should be made consistent with one another. To do so, all the plans, policies, laws, and guidelines should be updated on a synchronised 5-year cycle to prevent fragmentation and inconsistencies.

Developing a Comprehensive National Energy Transition Policy

The findings from KIIs highlight the urgent need for Bangladesh to formulate a comprehensive National Energy Transition Policy. This policy should serve as an umbrella framework that sets clear sectoral targets, outlines a phased fossil fuel phase-out plan, and establishes standardised definitions for energy sources to ensure consistency across all strategic documents. It must include detailed implementation mechanisms, financing strategies, and monitoring and coordination structures involving all relevant institutions.

Establish a Dedicated Energy Transition Authority

The findings from KIIs also highlight the need for a dedicated Ministry or high-level Authority for Energy Transition. The authority dedicated to energy transition will coordinate policies, monitor energy mix targets, and oversee renewable energy investments. The Authority should be responsible for conducting comprehensive assessments of renewable resources, including national wind mapping, feasibility studies for solar and wind energy, and evaluations of opportunities for cross-border renewable energy cooperation.

13 Conclusion

For achieving energy transition, there are lots of inconsistencies in the power sector. Firstly, except for the Renewable Energy Policy, the policies do not include renewable objectives. Moreover, these policies do not have evaluation methods mentioned and lacks adaptability. Besides, the Private Participation Enhancement Policy in Power Sector (2008), the Private Sector Power Generation Policy (Revised 2004), and the LNG Import Subsidy Policy (2022) have strong predilection towards fossil fuel for electricity generation. Besides, there is strong coherence among these pro-fossil fuel policies and the Renewable Energy Policy has very low coherence score with other policies in the power sector regarding both objectives and instruments. Similarly, except for the Renewable Energy Policy, all the other policies significantly lack transition readiness. Moreover, the goals and incentives of a few policies conflict with the renewable energy policy. For instance, the Private Participation Enhancement Policy promotes fossil fuel-based private power plants and gives preferential treatment for coal purchase and coal mine; the LNG subsidy policy aims to ensure affordable gas supply for energy security through LNG subsidies; and the Electrification Policy for Irrigation does not mention electricity for irrigation which can lead to more use of conventional energy sources.

The laws perform comparatively well in terms of standard features. The BERC Act and the Quick Enhancement of Electricity and Energy Supply Act (2010) are fossil fuel biased. Besides, all the other laws, except the SREDA and BREB, lag in terms of transition readiness. The Sustainable and Renewable Energy Development Authority (SREDA) Act (2012) conflicts with the Quick Enhancement of Electricity and Energy Supply Act (2010) by promoting reduced fossil fuel reliance, while the latter encourages urgent fossil fuel extraction. Similarly, the Electricity Act (2018) prioritizes meeting immediate electricity demand, undermining SREDA's renewable energy goals. The BERC Act (2003) also promotes investments in gas and petroleum, further conflicting with SREDA's emphasis on clean energy.

As far as standard features are concerned, majority of the plans lack strategic actions, impact assessments and monitoring mechanisms. The Power System Master Plan (PSMP) and the Perspective Plan of Bangladesh (PPB) are pro-fossil. Moreover, most plans lack emphasis on research and development, human capital development as well as financing strategies for renewable energy. The Integrated Energy and Power Master Plan (IEPMP) and the Mujib Climate Prosperity Plan (MCPP) show contrasting energy targets, with IEPMP broadly defining 'clean energy' and MCPP emphasising renewables. Inconsistencies in targets across plans like IEPMP, MCPP, and PPB risk undermining renewable energy goals. Similarly, the Energy Efficiency and Conservation Master Plan (EE&C) focuses on demand reduction, while the Power System Master Plan (PSMP) promotes fossil fuel expansion, creating conflicting incentives. The Perspective Plan's low renewable energy ambition (3 per cent) further contrasts sharply with MCPP's 30 per cent goal. Besides, the IEPMP and PSMP exhibit a negative coherence score, and similarly, the PSMP and EE&C also show a negative coherence score.

The guidelines meet standard features well except for the fact that they do not include any transition readiness indicators such as human capacity development, research and development as well as financing for the renewable energy adoption. Besides, overall coherence among the guidelines is quite weak. It is also

found that there are conflicts of policies with laws, plans, guidelines; conflicts of laws with plans and guidelines; conflicts of guidelines with plans.

The average of all the coherence scores is 1.47 which is between enabling (+1) and reinforcing (+2). Thus, the policies, plans, laws, and guidelines in the power sector are moderately aligned. Besides, the contemporary master plan such as IEPMP has the most negative net coherence score (NCI). Additionally, the renewable policy (REP) 2008 and the SREDA act are found to have negative NSI. Thus, the most recent master plan (IEPMP) that takes about reaching to net zero has been designed without taking the existing system into account. Also, the negative NSI of REP and SREDA implies how poorly they fit into the existing systems in the power sector making the energy transition extremely challenging. Thus, the overall coherence and institutional readiness of the power sector for energy transition remain weak, underscoring the urgent need for coordinated policy reform and systemic integration.

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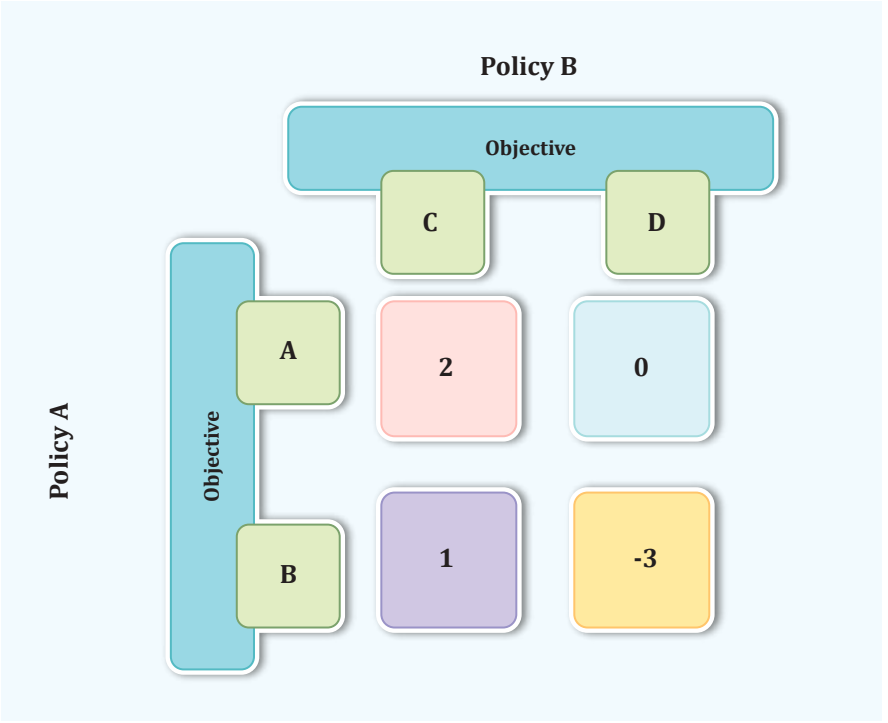
Appendix

Calculation of Coherence Score

For instance, there are two polices – policy A and policy B. Policy A has goals or objectives – A and B, while Policy B has goals or objectives – C and D. The interactions of the objectives were given scores from -3 to +3 based. The scores were given, for instance, taking into consideration that if the progress on the objective A will be cancelling (-3)/counteracting (-2)/constraining (-1)/consistent (0)/enabling (1)/reinforcing (2)/indivisible (3) for the progress of goal C of policy B. The coherence score between policy A and policy B of Figure 13 is average of all interactions: 0 (consistent).

Figure 13 **Coherence Score Calculation**



Source: Authors' Illustration.

Table 23 Coherence Score Among Policies, Plans, Laws, and Guidelines Regarding Objectives

NMG	RAPSS	EVC	EPP	CPP	SSP	REB	EA	SREDA	BERC	QEES	MCPP	PPB	IPEMP	EE&C	PSMP	REP	SMP	EPI	LNG	PSPG	PPE	
3	2.5	1.75	2.63	1	1.75	2.33	2.25	0.85	2.33	1.38	0.63	1.17	1	2.4	0.63	1.4	2.5	2.33	1.5	2.4		PPE
2.5	3	2	2.75	2	2	2	2	1	2.67	1.25	2	2	0	-1	1.25	1.6	1	1.67	2			PSPG
1.5	2	1	2	0.5	1	2	2.67	-1.6	2	2.25	0	1.67	1	-1.5	1	1	1.5	1.67				LNG
2.06	1.67	0.33	1.67	0.67	0.67	1.67	1.89	0.67	1.44	0.92	0	1.56	0	-0.3	1.5	0.8	2.5					EPI
1.5	1	1	1.5	1.25	2	1	2	1.4	1.67	0.25	2	1.33	1	3 2	0.75	0.6						SMP
2.4	2	2.2	2.15	-1.2	2.4	1.5	2.31	1.63	0.33	1.39	2.6	1.92	-2	2.2	0.15							REP
1.13	1.5	0.75	1.25	0.75	1.25	2.25	2.5	1.91	2.2	1.56	0.5	1.17	-.75	-.38								PSMP
2	1	2	1.25	2	2.5	2.5	1.67	2.6	2.09	1.81	2.25	0.17	1									EE&C
1.5	2	2	1.57	1	1	2	2	0.4	2	1.25	1.5	1.5										IEPMP
2.67	2	1.67	2.17	1.67	1.67	1.67	2	1.2	2	0.92	0.5											PPB
2	2.5	2.5	2.63	2.75	3	2	2.33	2.44	2.33	1.25												MCPP
1.5	1.5	0.75	0.44	0.5	1	1.5	2	-1.8	1.08													QEES
2	1.67	1.67	2.75	2.17	2	0.5	0.56	0.5														BERC
1.2	2	2.6	0	-.3	2	1.8	1.8															SREDA
2.5	2.67	1.7	2.5	1.67	2	2.67																EA
2	3	1	1.5	1	2																	REB
1	1	1	1.25	1.5																		SSP
0.75	1	0.5	0.38																			CPP
1	1	1																				EPP
1	-1																					EVC
2																						RAPSS
																						NMG

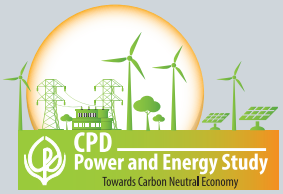
Source: Authors' Calculation.

Table 24 Net Coherence Scores

Policy/Laws/ Guidelines/ Plans	Net Coherence Score (NCI)	Standardised NCI
EA	43.69	1.946656
REB	37.89	1.074856
PPE	37.73	1.050806
MCPP	37.71	1.0478
NMG	36.99	0.972645
PSPG	36.09	0.804297
BERC	36.09	0.804297
RAPSS	36.01	0.792272
SSP	33.99	0.488645
EPP	33.39	0.398459
PPB	32.63	0.284223
SMP	29.75	-0.148671
EE&C	28.23	-0.377142
EVC	27.42	-0.498894
REP	27.38	-0.504906
EPI	25.36	-0.808533
LNG	25.16	-0.838595
PSMP	23	-1.163266
QEES	22.7	-1.208359
SREDA	22.3	-1.268483
CPP	21.56	-1.379712
IEPMP	20.97	-1.468396

Source: Author's Calculation.

Bangladesh aims at generating 30 per cent electricity from renewable energy by 2030 and 40 per cent by 2041. Yet, according to the BPDP, only 5.6 per cent of the country's installed capacity currently comes from renewables. Among major challenges, the hurdle that is hampering its energy transition targets is incoherence among the power sector's plans, guidelines, laws, and policies that collectively shape the energy governance framework in Bangladesh. This study, addressing the gap in literature, assesses coherence among 22 policy documents in the power sector in a comprehensive, well-structured, and quantitative manner for energy transition.



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