Energy & Power Sector Master Plan 2025 (EPSMP 2025) (2026-2050)

Ministry of Power, Energy and Mineral Resources

7 January 2026

Presentation Outline

1. Background & Introduction
2. Policy Gap Analysis: Review of Previous Master Plans
3. Baseline Assessment – The Fresh Approach
4. Primary Energy Demand Forecasts & Supply Plan
5. Electricity Demand Forecasts & Supply Plan
6. Financial Sustainability
7. Environment and Social Plan
8. Policy Recommendations
9. Expected Outcome

Where do we stand?

Primary Energy

- Depletion of Gas reserves amid increasing demand
- Untapped cheaper resource – domestic coal
- Import dependency (LNG, Coal & Oil)

Electricity

- Overcapacity amid Fiscal Stress
- Inadequate domestic primary fuel leading to Import Dependency
- Growing Costs due to use of liquid fuels resulting subsidy needs

How have we ended up here?

Primary Energy	Limited Exploration Efforts	Despite of high success ratio - 1:3.3 in compared to world average 1:10, total well drilled only 100 till date.
	High volatility of global LNG/oil/coal prices	COVID-19, Russia-Ukraine War resulted a long-term global economic recession and high volatile LNG/Oil/Coal market
	High technical & non-technical losses	Total current system loss is 6.38% against the international norm of 2%
Electricity	Overstated Demand Forecasts	Unrealistic peak demand projections (70.5 GW by 2050) led to excess generation and capacity payments.
	Unsustainable Fuel Mix	>70% import dependency on primary fuel - LNG, coal, and oil, exposing the economy to volatility and foreign currency depletion.
	Financial Unsustainability	Escalating subsidies (Tk 40,273 crore - FY 2023-24 & Tk 43,170 crore - FY 2024-25)
	Tariff adjustments	Not adjusted in last 17 months
	Technological Unrealism	Assumed large-scale CCS, hydrogen, and Ammonia
Both	Lack of Adaptive Governance	No mechanism for rolling updates, data integration, or scenario-based revisions
	Institutional Fragmentation	Over 30 agencies operating under two divisions with weak coordination and overlapping mandates

Policy Gap Analysis

Review of Previous Master Plans

Plan & (Period)	Focus	Contribution & Limitations
PSMP 1985 (1985–2005)	• Gas-based Generation strategy • Identified key hubs (Meghnaghat, Baghabari)	• First long-term power sector plan with clear capacity and demand targets. • No fuel diversification.
PSMP 1995 (1996–2015)	• Dual fuel scenarios: Sufficient Gas vs No New Gas. • Introduced coal (Barapukuria) and expanded CCGT plans.	• Strengthened long-term grid vision- 230/400 kV • Limited diversification beyond gas & coal.
PSMP 2006 (2006 – 2025)	• Introduced major coal-based and 700 MW CCGT options. • Emphasized 230 kV expansion and regional power import.	• Delivered highly accurate long-term forecasts • Limited focus on renewables
PSMP 2010 (2010–2030)	• Fuel diversification: Large-scale coal (domestic & import) development; • Oil-based Rental & IPP	• Lacked renewable integration (10% by 2030) • Became outdated due to rapid demand growth.

Policy Gap Analysis

Review of Previous Master Plans

Plan & (Period)	Focus	Contribution & Limitations
PSMP 2016 (2016 – 2041) PSMP 2016 (Revisited 2018) (2016 – 2041)	• **3E:** Energy Security, Economic Efficiency, and Environment • Heavy Coal import & LNG imports introduced • Aligned with Vision 2041 • Less Renewables (10-15% by 2041)	• Provided a structured analytical base • Unrealistic projections • Incomplete integration with energy sector; • Introduced energy efficiency, but slow pace • Gradually Oil-based generation phase out
GSMP 2017	• Largely gas-dependent but import-driven; LNG projected > 50% of total gas by 2030	• Oil minimal; ignored renewables potential
IEPMP 2023 (2023–2050)	• (**S+3E**: Safety, Energy Security, Economic Efficiency, and Environment); • Promoted "clean energy" and net-zero pathways.	• First Integrated energy-power framework • Over optimistic GDP-linked demand (>8% GDP Growth – 70 GW in 2050). • Overly reliant on fossil fuels (>70% primary fuel imports) & unproven tech H2, Ammonia

EPSMP Origin, Vision, Philosophy & Pillars

Vision

"To ensure reliable, affordable, and sustainable primary energy & electricity for all Bangladeshis through domestic resource optimization, energy security, efficiency, and environmental responsibility."

Philosophy

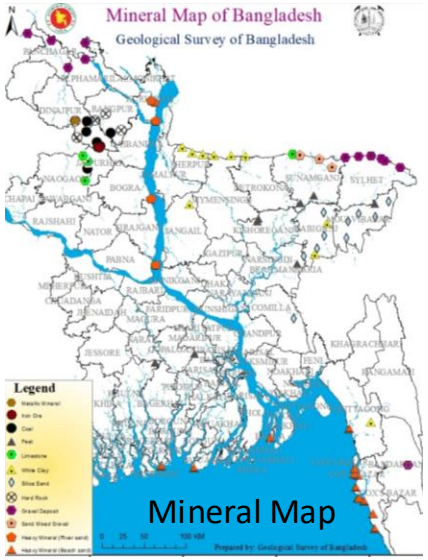
- **Evidence-based**, Transparent, and Efficient

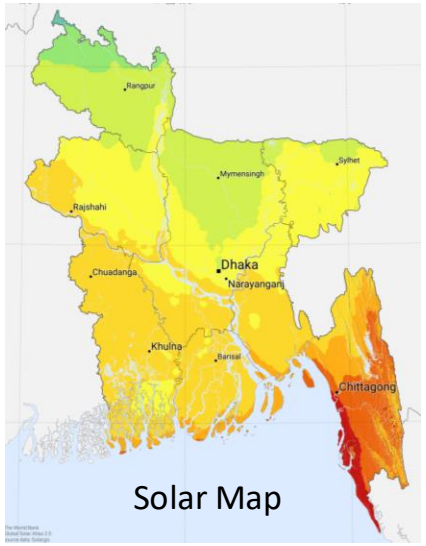
Pillars

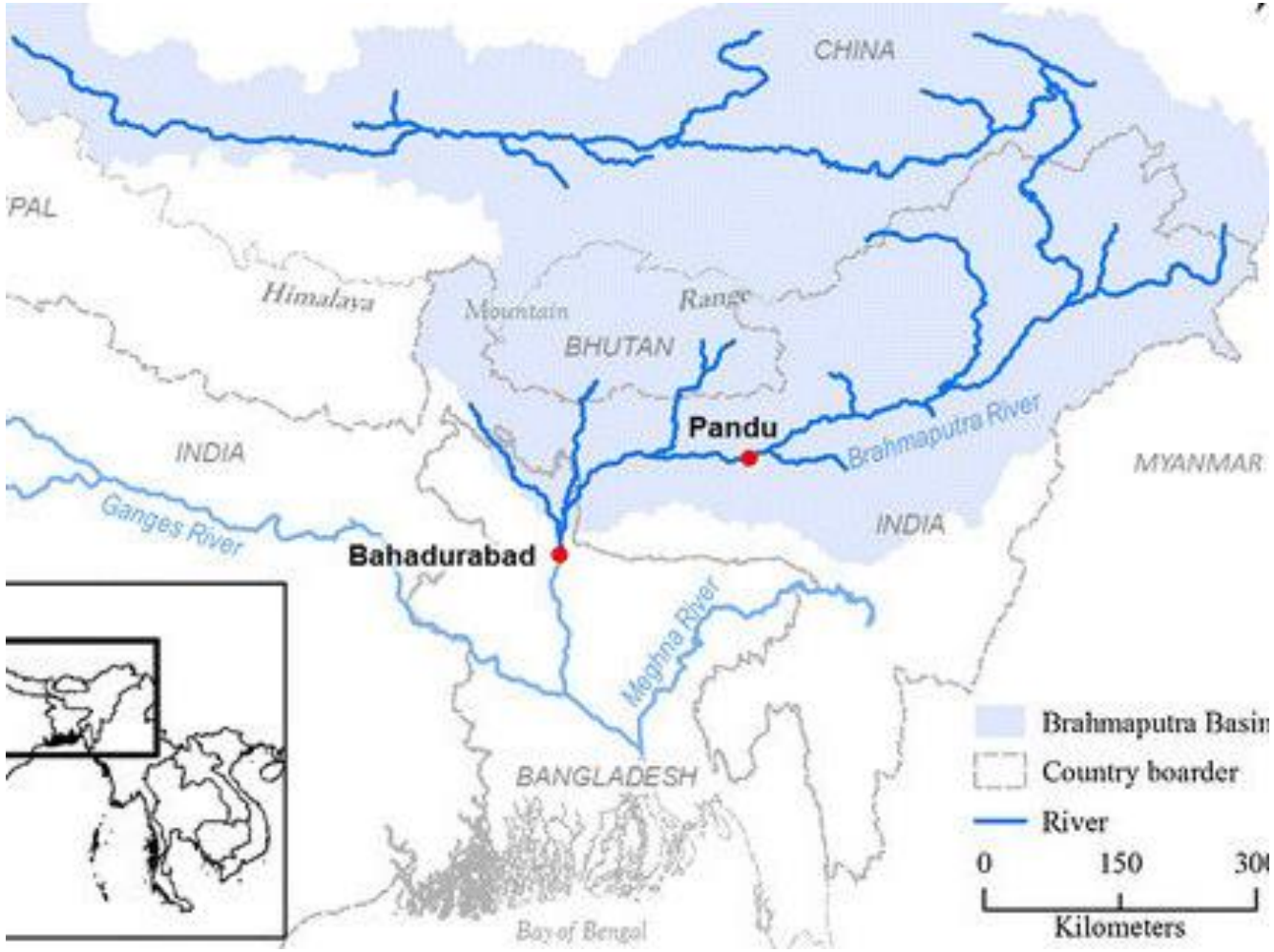
- Realism and Adaptive Planning
- Resource Optimization and Energy Security
- Fiscal and Environmental Sustainability

"The Fresh Approach"

Primary Resources (Minerals, RE, Water Bodies)



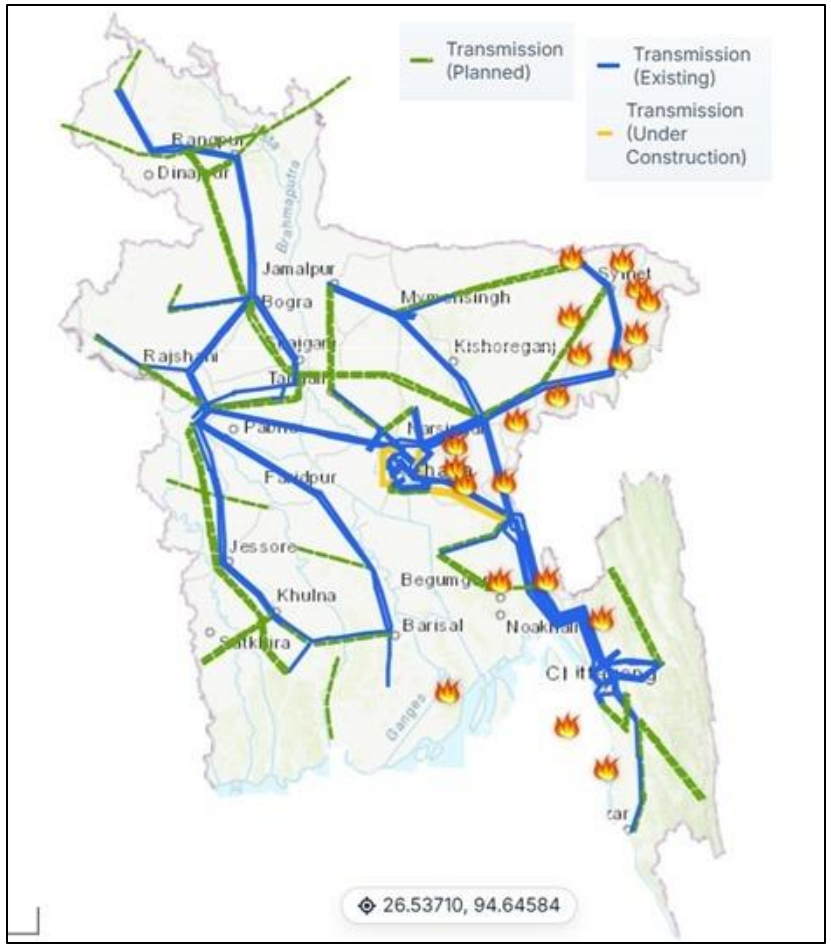




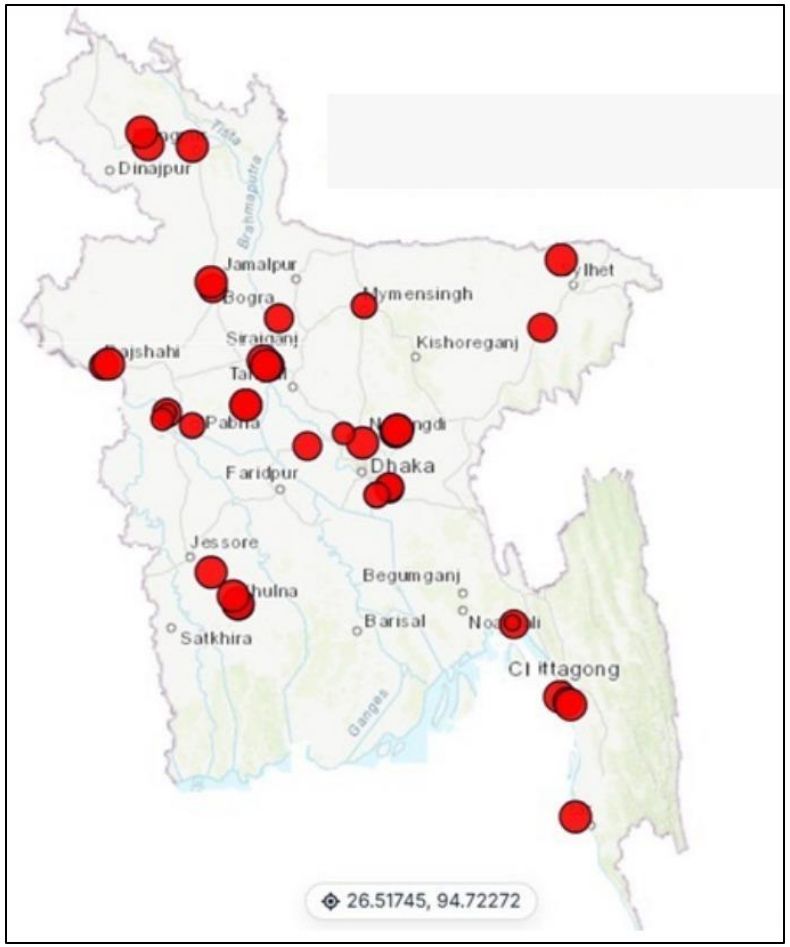
Brahmaputra Basin

Major water Source of Bangladesh

Primary Energy Infrastructure (Gas)

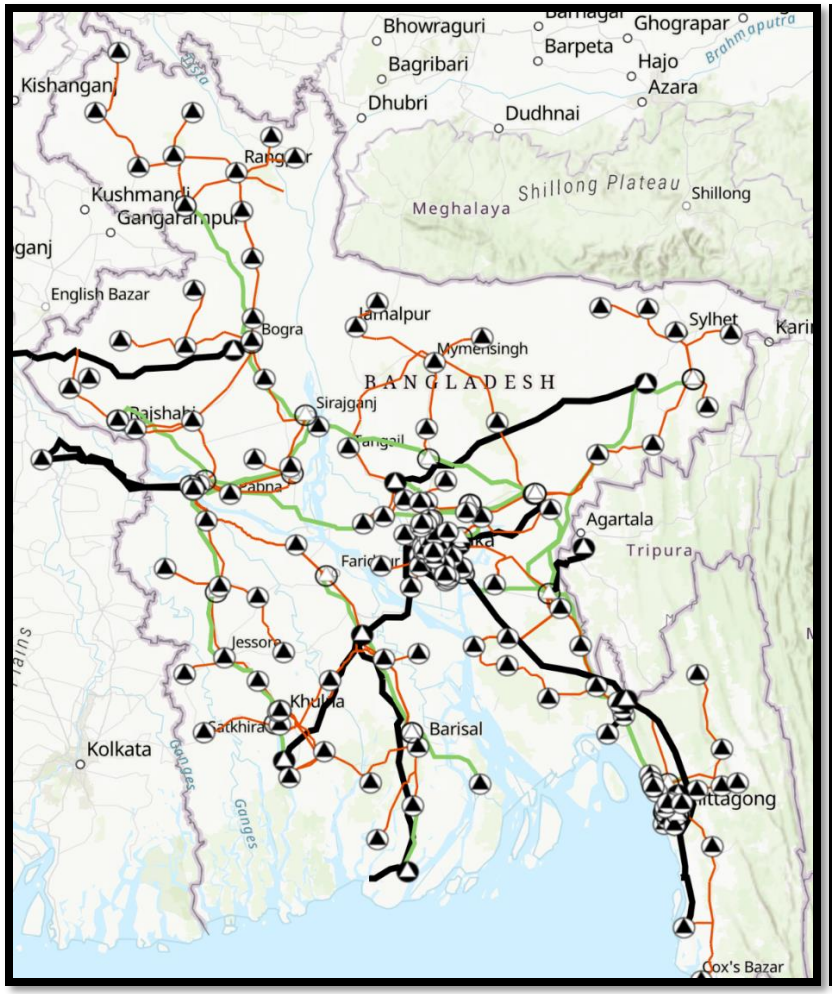


Gas Network

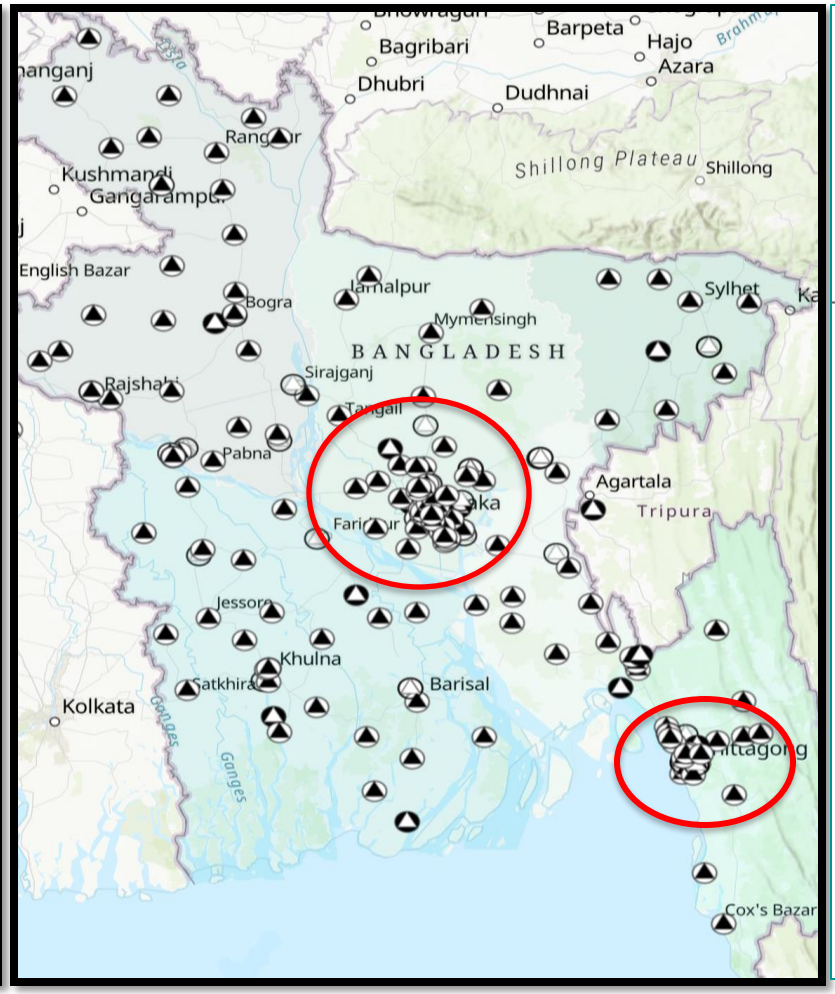


Gas Network Bottleneck

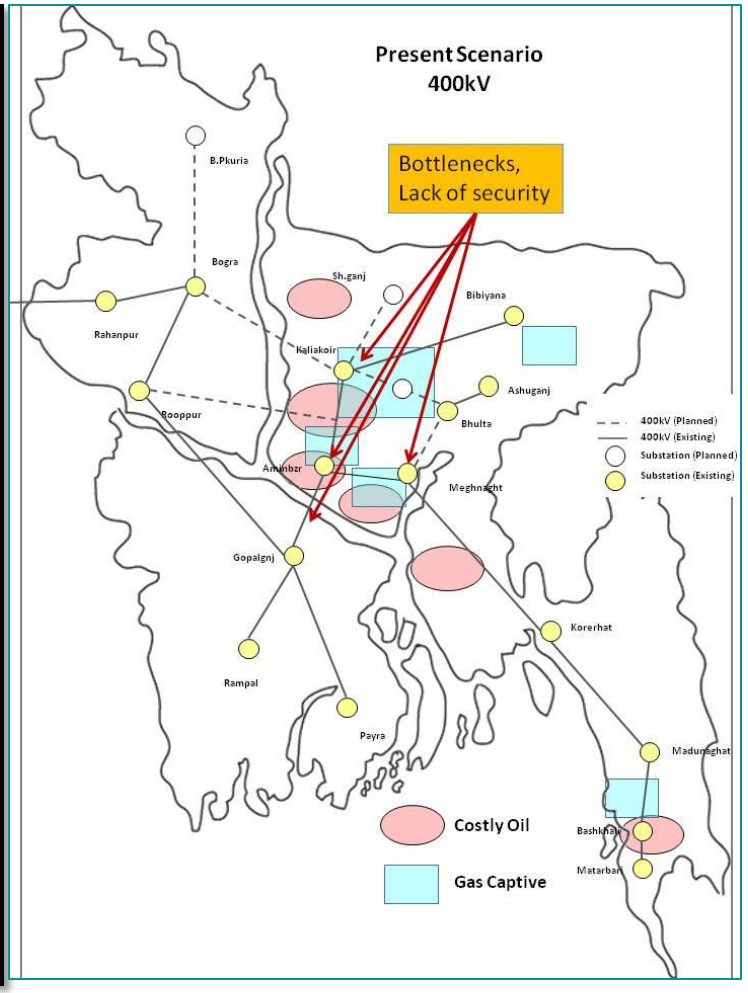
Electricity Infrastructure



Electricity Network



Load Centers (Electricity)



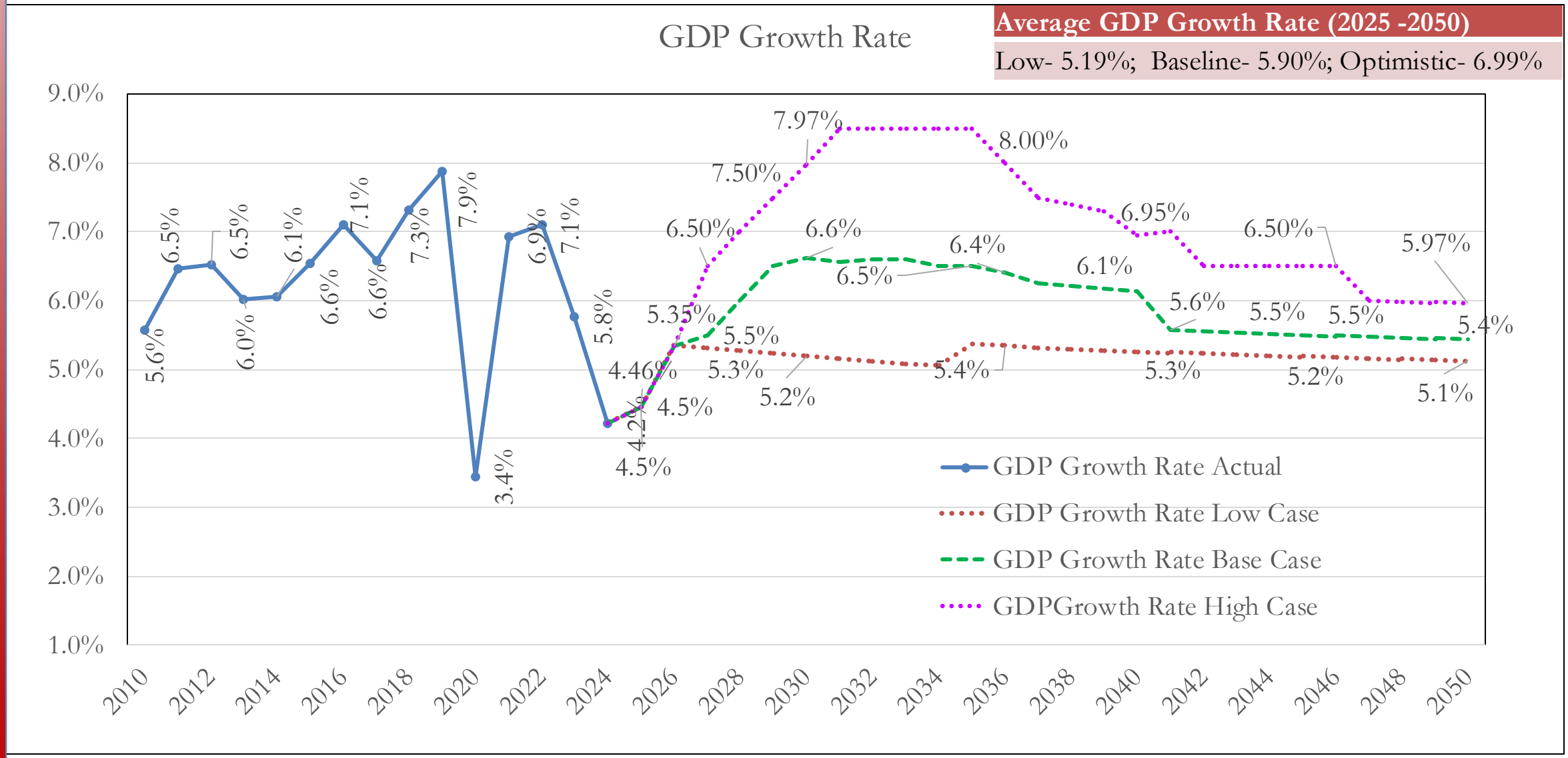
Infrastructure Bottlenecks

Macro Economic Forecasts

Macro Economic Forecasts

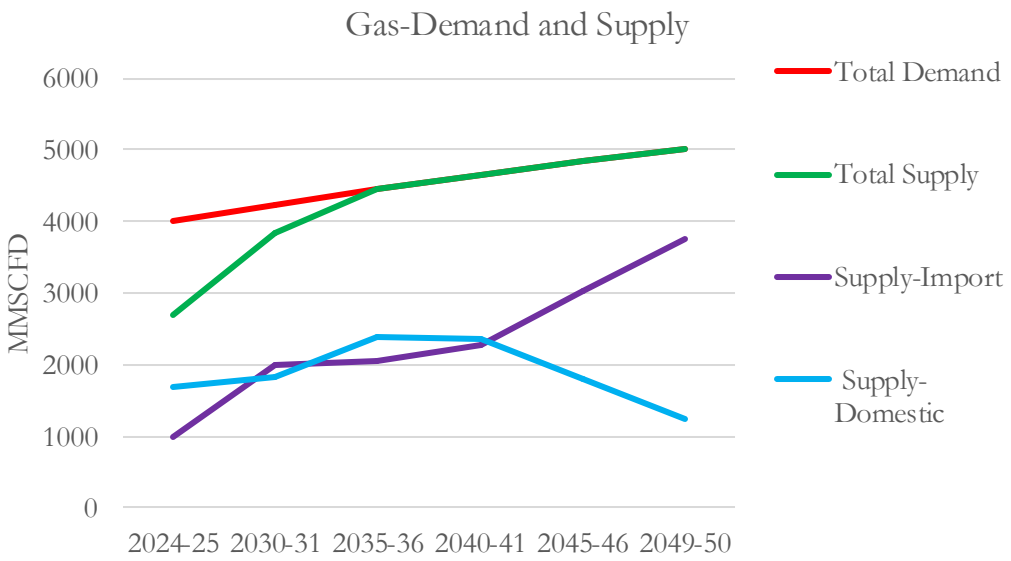
Average GDP Growth Rate (2025 -2050)

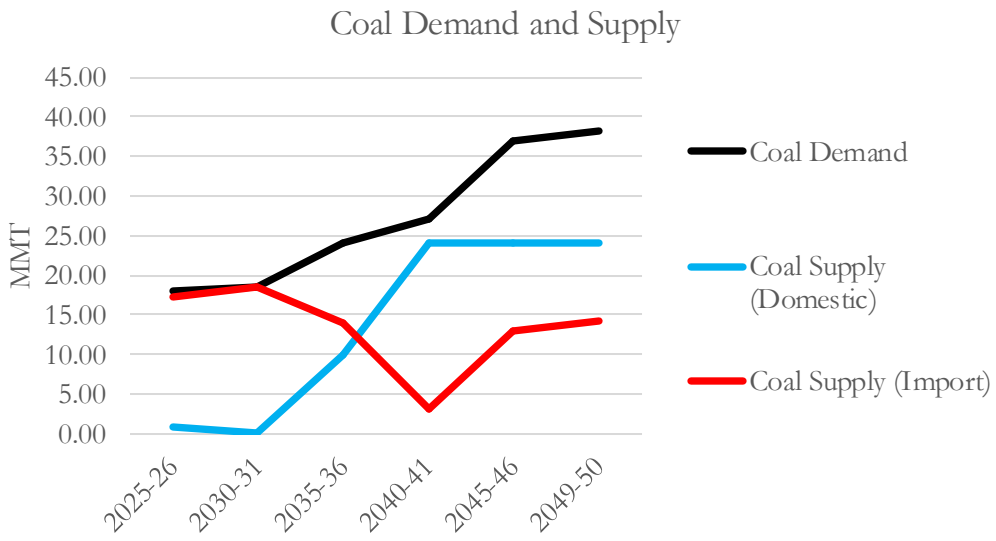
Low- 5.19%; Baseline- 5.90%; Optimistic- 6.99%

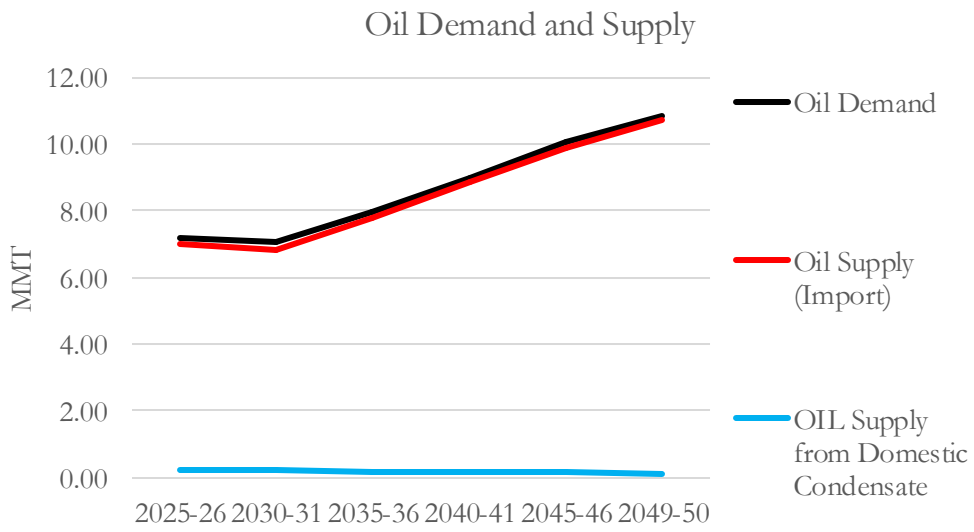


Primary Energy Demand-Supply

Primary Energy: Demand-Supply







IMPLEMENTATION ROADMAP (2026-2050) PRIMARY ENERGY SECTOR

PHASE I (2026-2030): Supply Stabilization & System Strengthening

Natural Gas

- Drilling **150 wells**
- Seismic surveys: **2D-7755 LKM, 3D-5674 SqKM**

LNG, Oil & Coal

- LNG imports through FSRUs
- **Oil:** ERL modernization and SPM installation
- **Coal:** Barapukuria stabilization and mineral assessment

System Efficiency

- Gas transmission network expansion
- Cost control and subsidy discipline
- Gas loss reduction

PHASE II (2030-2040): Infrastructure Expansion & Resource Diversification

Natural Gas

- Offshore development and onshore integration

LNG

- Matarbari LNG terminal operation

Oil & Coal

- **Oil:** Refining capacity enhancement
- **Coal:** Dighipara and Jamalganj development

PHASE III (2040-2050): Transition & Sustainability

Renewable & Future Energy

- Massive renewable energy energy integration
- Hydrogen energy introduction
- Advanced energy storage solutions

Advanced Tech

- Carbon Capture and Storage (CCS) implementation
- Smart grid deployment
- Digitalization of energy systems

Sector Transformation

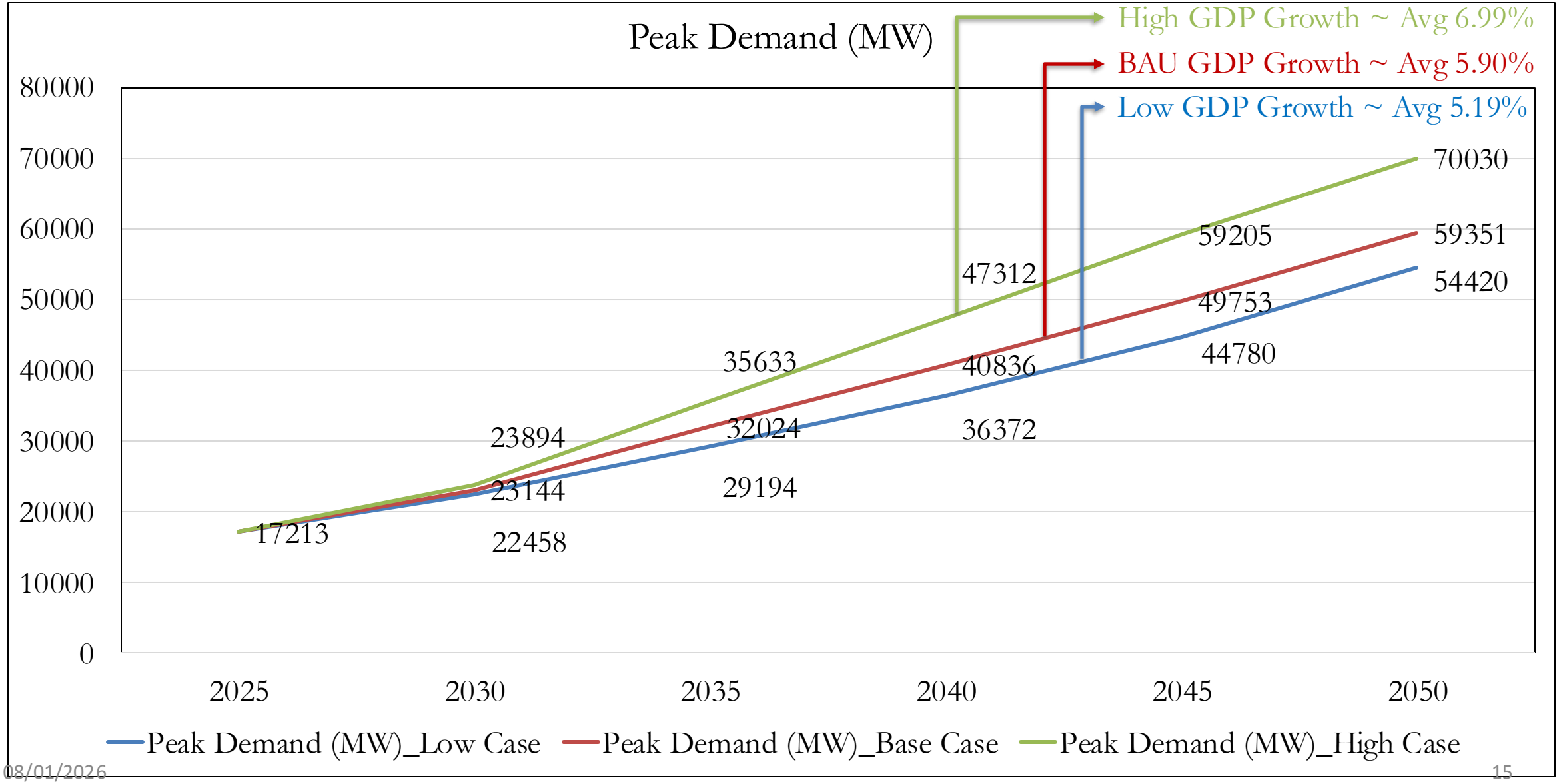
- Sustainable energy transition
- Net-zero emissions target alignment
- Enhanced energy security and resilience

Legend: initial stabilization | Legend: growth and diversification | Blue-Gren: sustainable transition | Critical actions and highlights

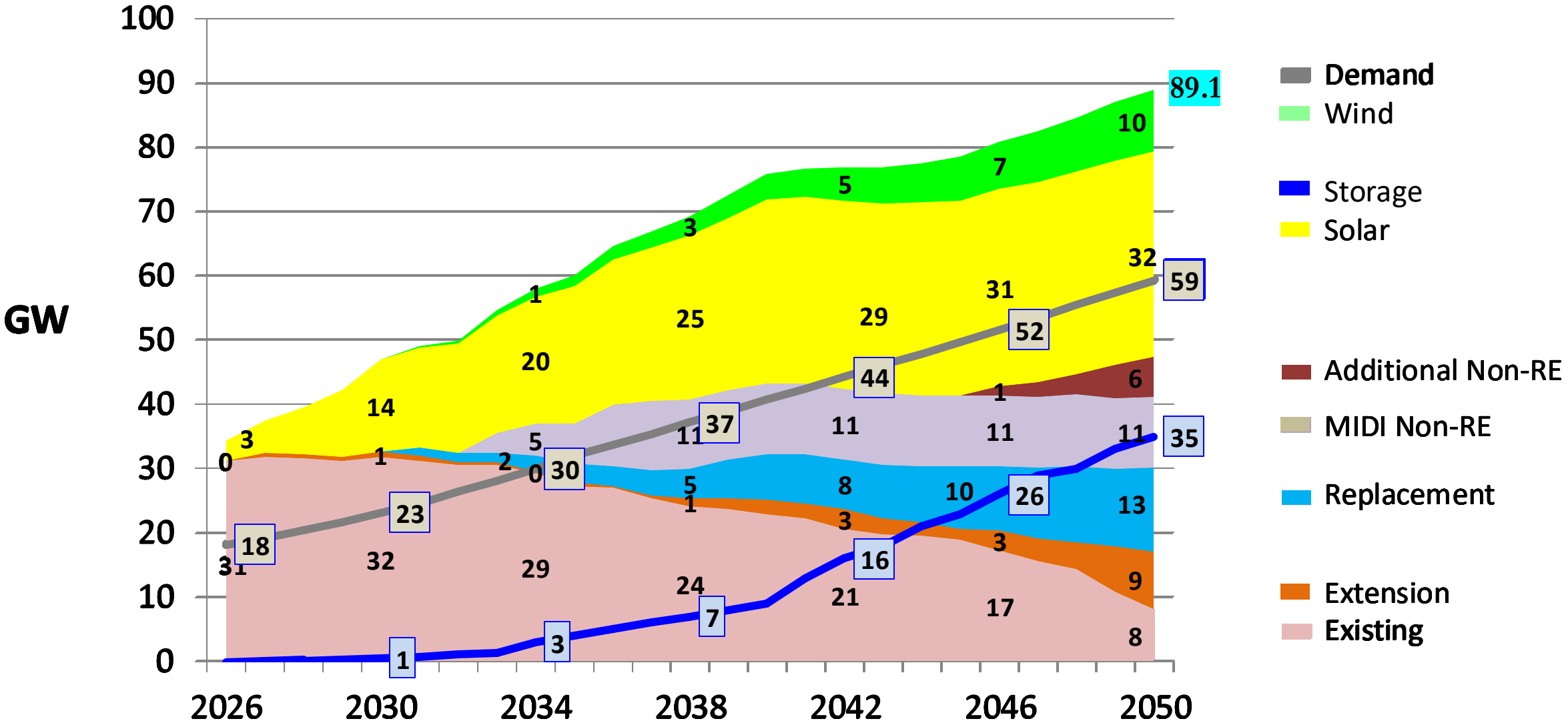
Priority & Strategic Projects

Fast-Track Priority Projects (2026-2030)	Long-Term Strategic Projects (2030-2050)
Offshore Exploration Round -2026 ▪ Immediate launching of PSC bidding ▪ Priority for shallow & deep-water blocks	**Offshore Gas Development** ▪ Production from deep-water & frontier blocks ▪ Expansion of offshore pipelines and landing stations
Gas Production Boost ▪ 150 new wells (onshore) in next 5 years ▪ Accelerated 3D seismic in Chattogram & Sylhet	**Large-Scale Refining & Petrochemical Expansion** ▪ New oil refinery (10-15 MTPA) ▪ Integrated petrochemical complexes
LNG Supply Security ▪ 1 new FSRU (quick) ▪ Start construction of 1 land-based LNG terminal	**Hydrogen & Ammonia Infrastructure** ▪ Green hydrogen production hubs ▪ Ammonia import/export terminals ▪ Hydrogen-ready industrial clusters
Refinery Capacity Expansion ▪ Fast-track ERL-2 ▪ Approve new 10-15 MTPA refinery under G2G/PPP/GoB	**Geothermal Development & Tidal Wave** ▪ Commercial-scale geothermal in Chattogram Hill Tracts ▪ High-enthalpy resource development
Strategic Storage Expansion ▪ Petroleum storage for 45-60 days ▪ Expand LPG coastal terminals	

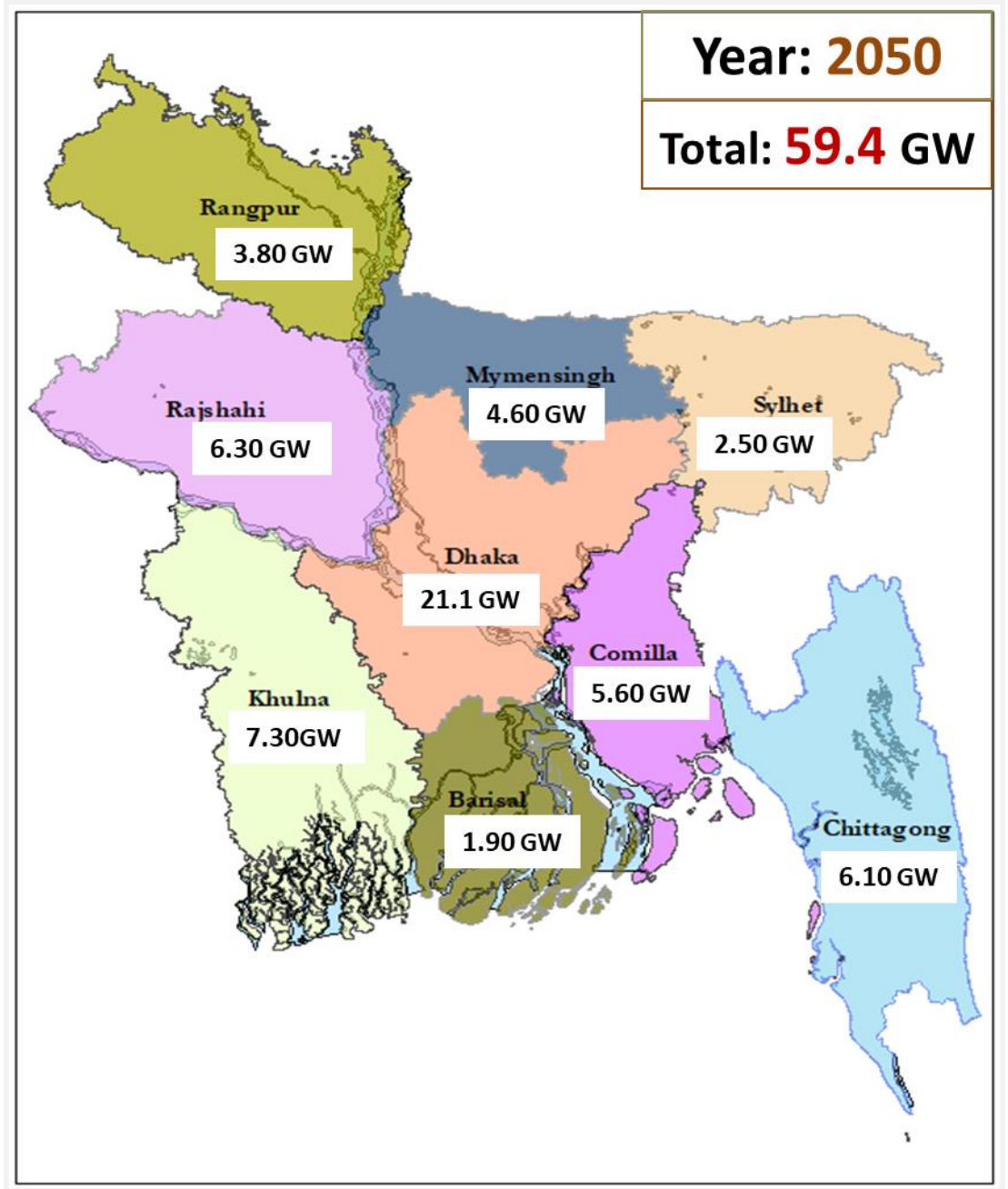
Electricity Peak Demand (MW)



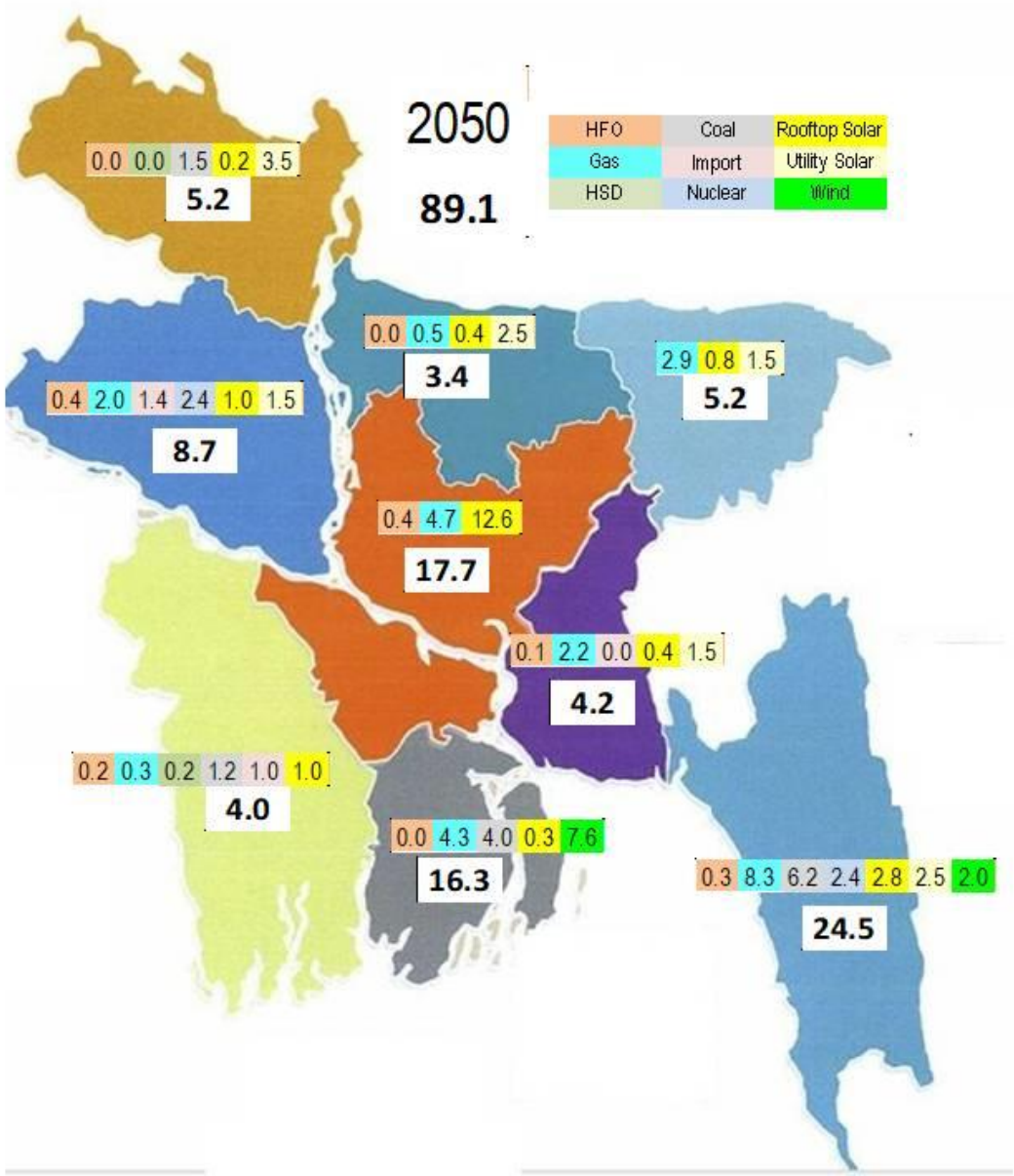
Generation Plan vs. Demand



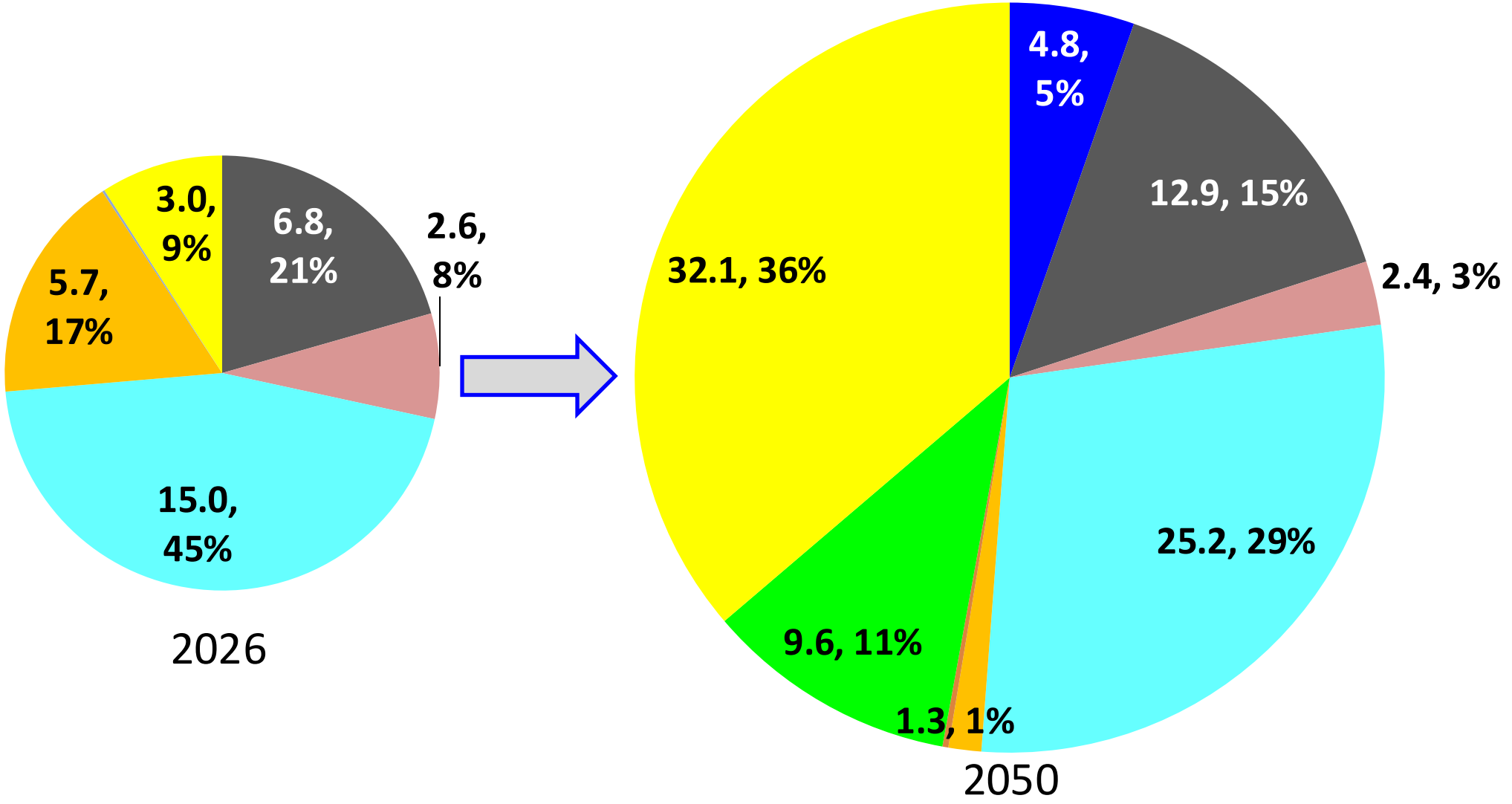
Zone wise Peak Demand



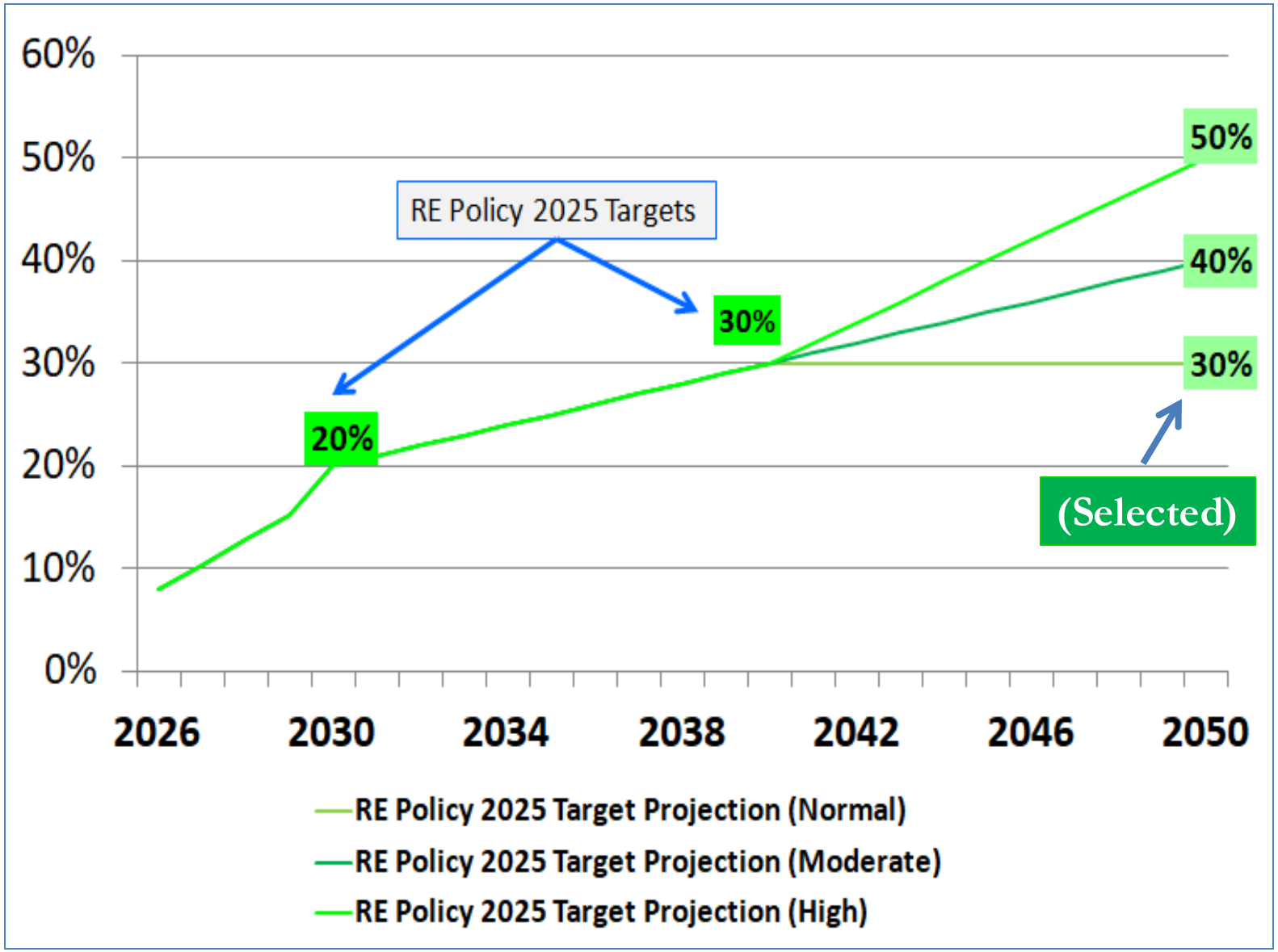
Zone wise Electricity Generation Plan (GW)



Electricity Fuel Mix Transition Plan (From 2026 to 2050) in GW

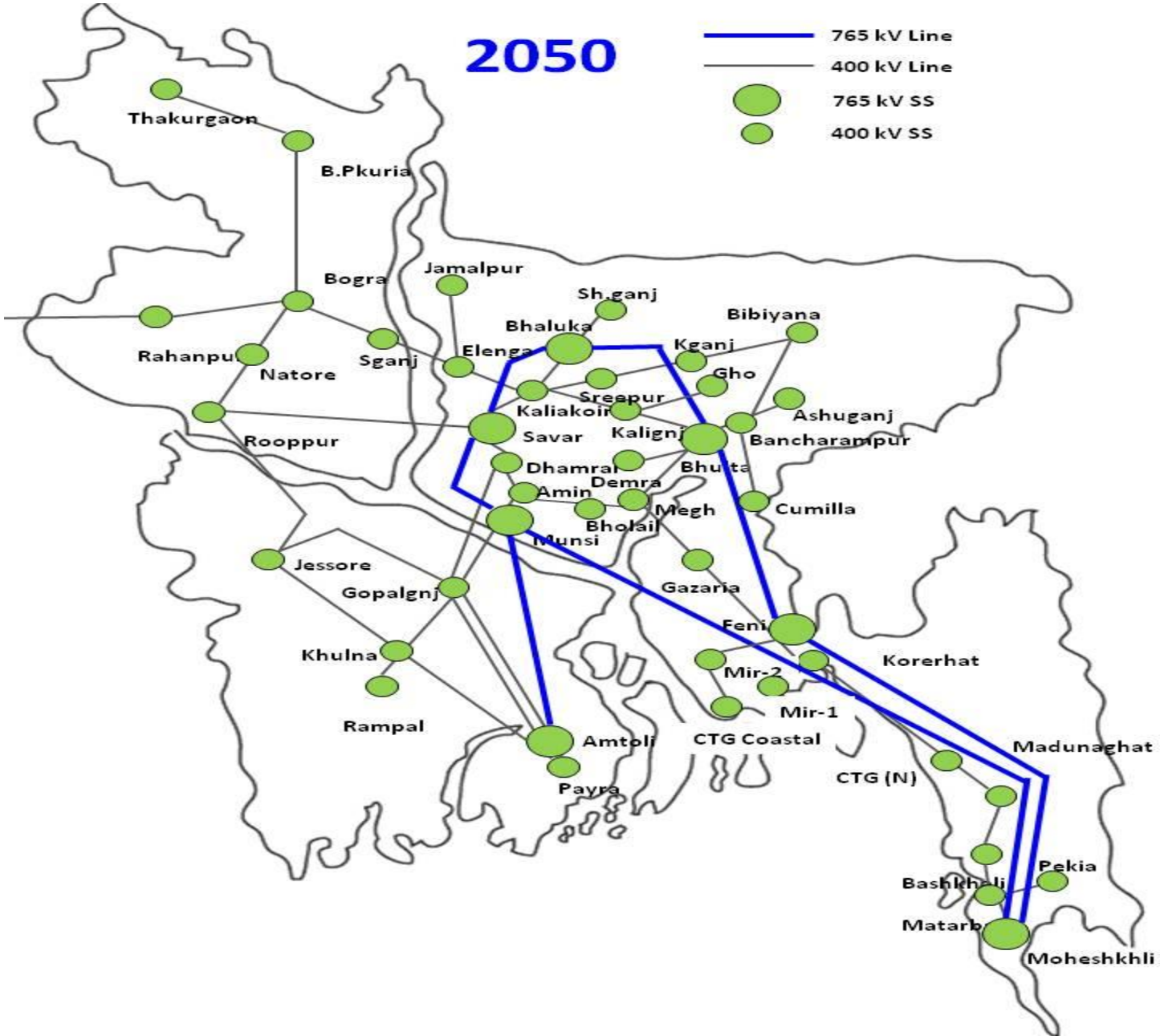


Renewable Energy Policy Targets



1. Large Scale Utility Solar
2. Large Scale Rooftop Solar
3. Onshore & Offshore Wind
4. Waste to Energy
5. Geothermal
6. Hydrogen
7. Ammonia Co-firing

Transmission Network Development Plan



Financing Needs (2026-2050)

Primary Energy Sector	Estimated Investment (USD)
LNG terminals + pipelines	25-30 bn
Gas exploration (on + offshore)	10-12 bn
Refinery + storage	15-20 bn
Hydrogen/geothermal	2-3 bn
Total	**70-85 billion**

Financing Channels

- **Public Finance:** Exploration, Pipelines
- **G2G:** Refinery, LNG terminals, SPM
- **PPP:** LPG terminals

Fiscal Sustainability Measures

- Targeted subsidies
- Demand-based tariff adjustment

Electricity Sector	Estimated Investment (USD)
Generation	85.15 bn
Transmission	11.45 bn
Distribution	10.65 bn
Total	**107.25 billion**

Financing Channels

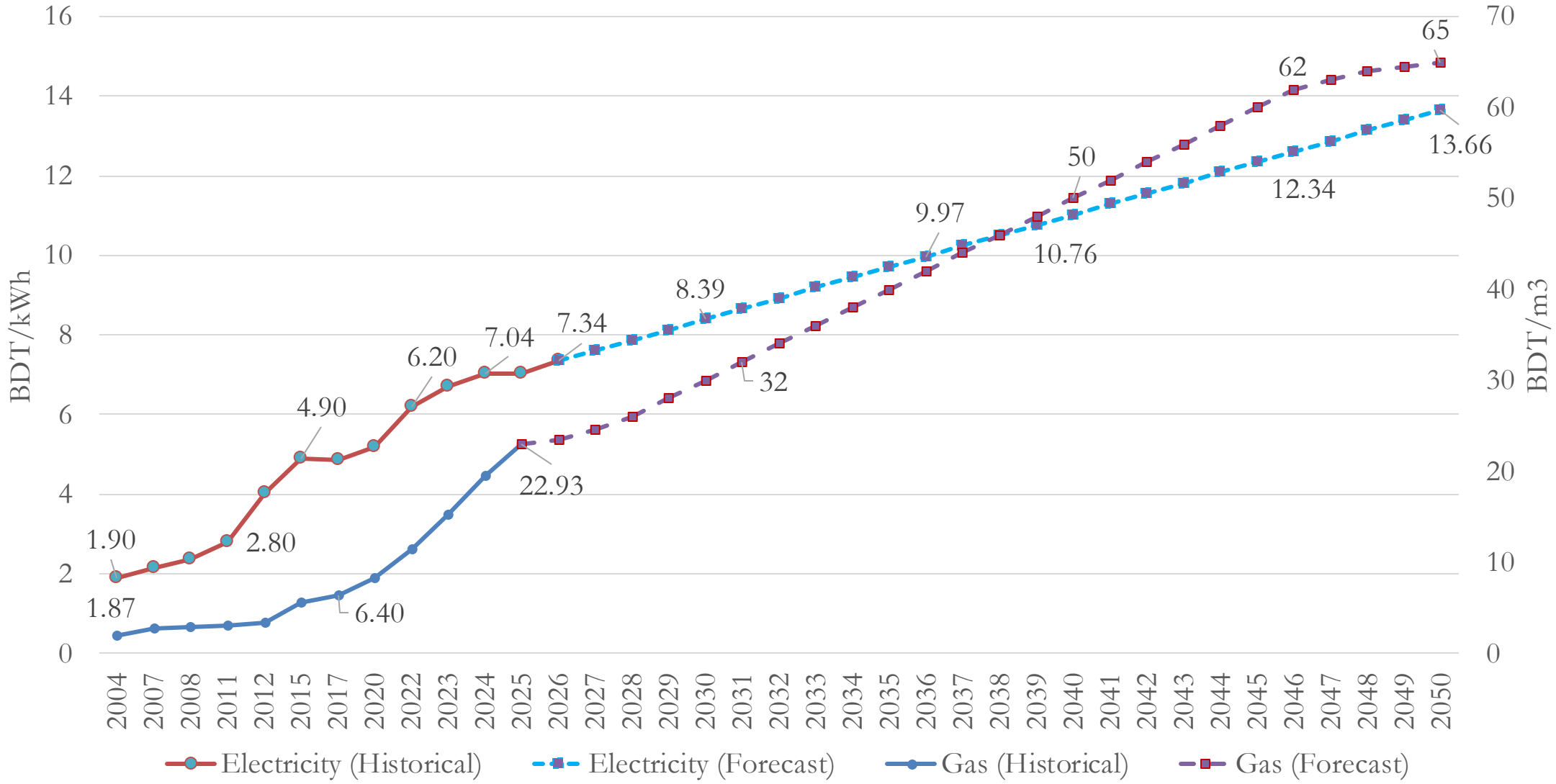
- **Public Finance:** Rooftop/ Small Solar, Small Storage, Smart Grid Program, Grid Flexibility Program
- **G2G:** Nuclear, Transmission, Storage, Wind and Solar
- **PPP:** CCPP, Large Steam Turbine Power Plants, Large Storage, Wind and Solar
- **FDI:** Offshore wind, hydrogen
- **Climate Finance:** ADB, WB, GCF for RE + efficiency

Fiscal Sustainability Measures

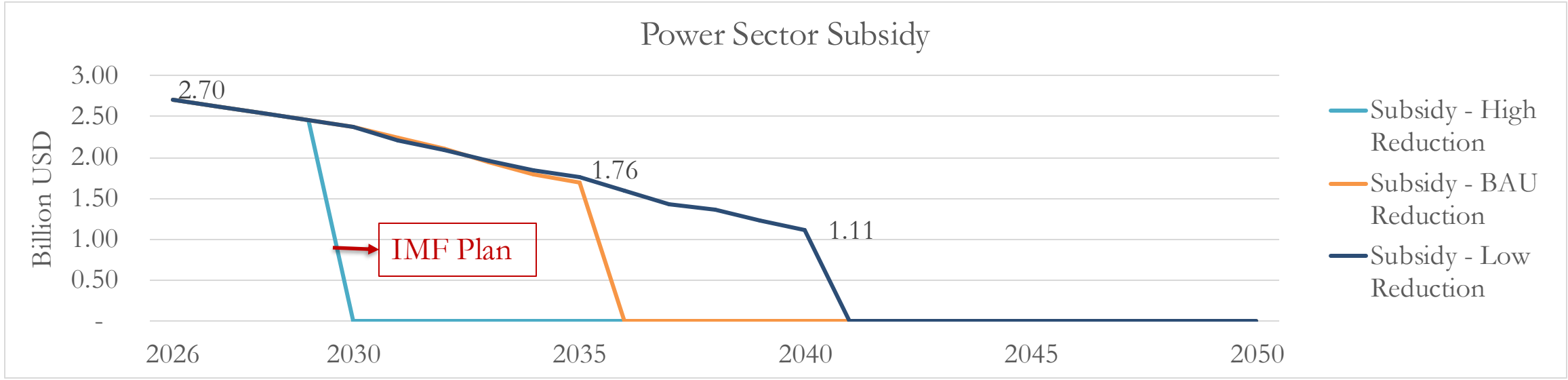
- Competitive procurement, Carbon Credit, RPO
- Targeted subsidies & Tariff rationalization
- EE&C Program

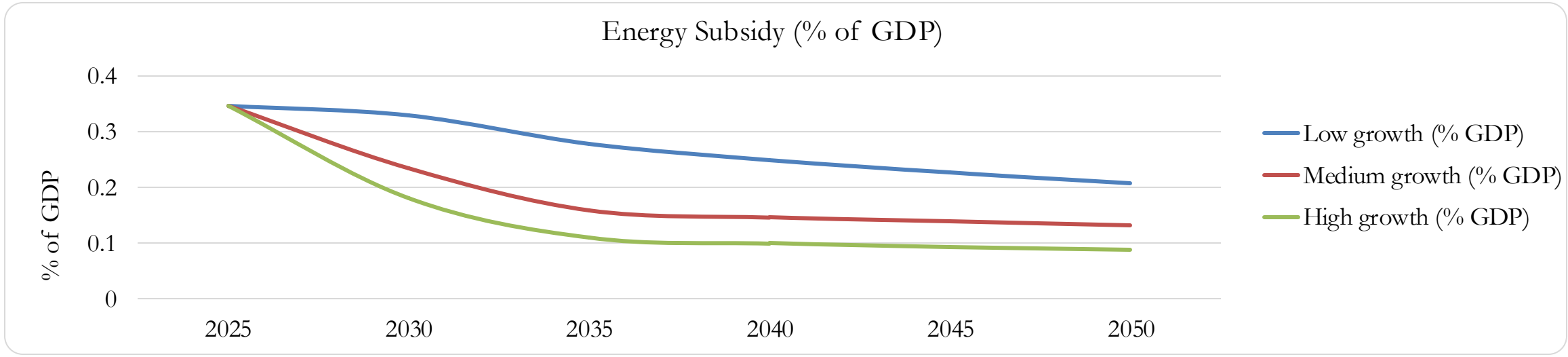
Financial Sustainability

Tariff Forecast



Subsidy Reduction Plan





Environmental & Social Plan

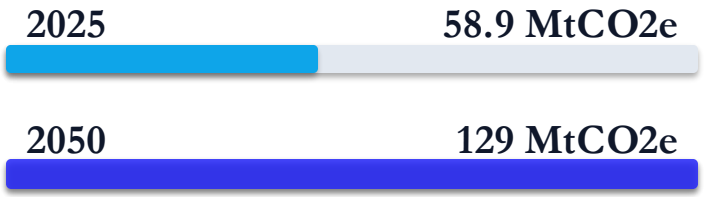
POWER DEMAND GROWTH

17 GW → 59 GW

Current — 2050 Forecast

This massive expansion creates new environmental & social pressures.

ABSOLUTE EMISSIONS (YEARLY)



EMISSION INTENSITY EFFICIENCY

0.62 ↓ 0.35

tCO2e / MWh (2025 vs 2050)

Significant improvement in carbon efficiency per unit of power

ENVIRONMENTAL IMPACT (2050 SCENARIO)

64.5 M tCO2

Annual Savings (Year 2050)

1,600 M tCO2

Cumulative Savings

CARBON FINANCE POTENTIAL

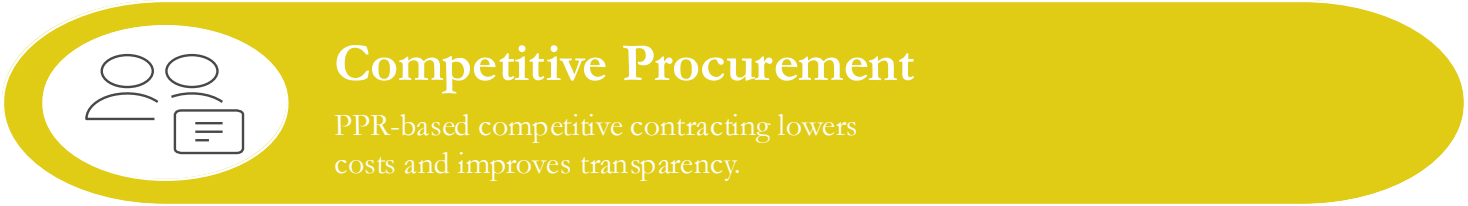
$20.68

Billion USD

Potential revenue via Carbon Credits

Landmark Policy Reforms

EPSMP supported by Landmark Energy Sector Policy Reforms



Competitive Procurement

PPR-based competitive contracting lowers costs and improves transparency.

Overdue Payments

Settling overdue payments normalizes supply chains and reduces risk.

Competitive Import

Revised tender conditions and expanded supplier enlistment save foreign exchange.

Operational Efficiency

Reducing system loss improves financial performance and supply efficiency.

Organizational Restructuring

Restructuring organizations and signing new contracts

EPSMP supported by Landmark Power Sector Policy Reforms

Repeal of the Quick Enhancement of Electricity and Energy Supply (Special Provision) Act, 2010

&

Reinstatement of the Public Procurement Act, 2006.

↓

Transparent competitive bidding - End of unsolicited tenders and corruption

Market-based generation and B2B power trading

↑

Merchant Power Policy 2025

Renewable Energy Policy 2025

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Green Revolution - (20% by 2030, 30% by 2040)

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Rooftop Solar Program, 2025

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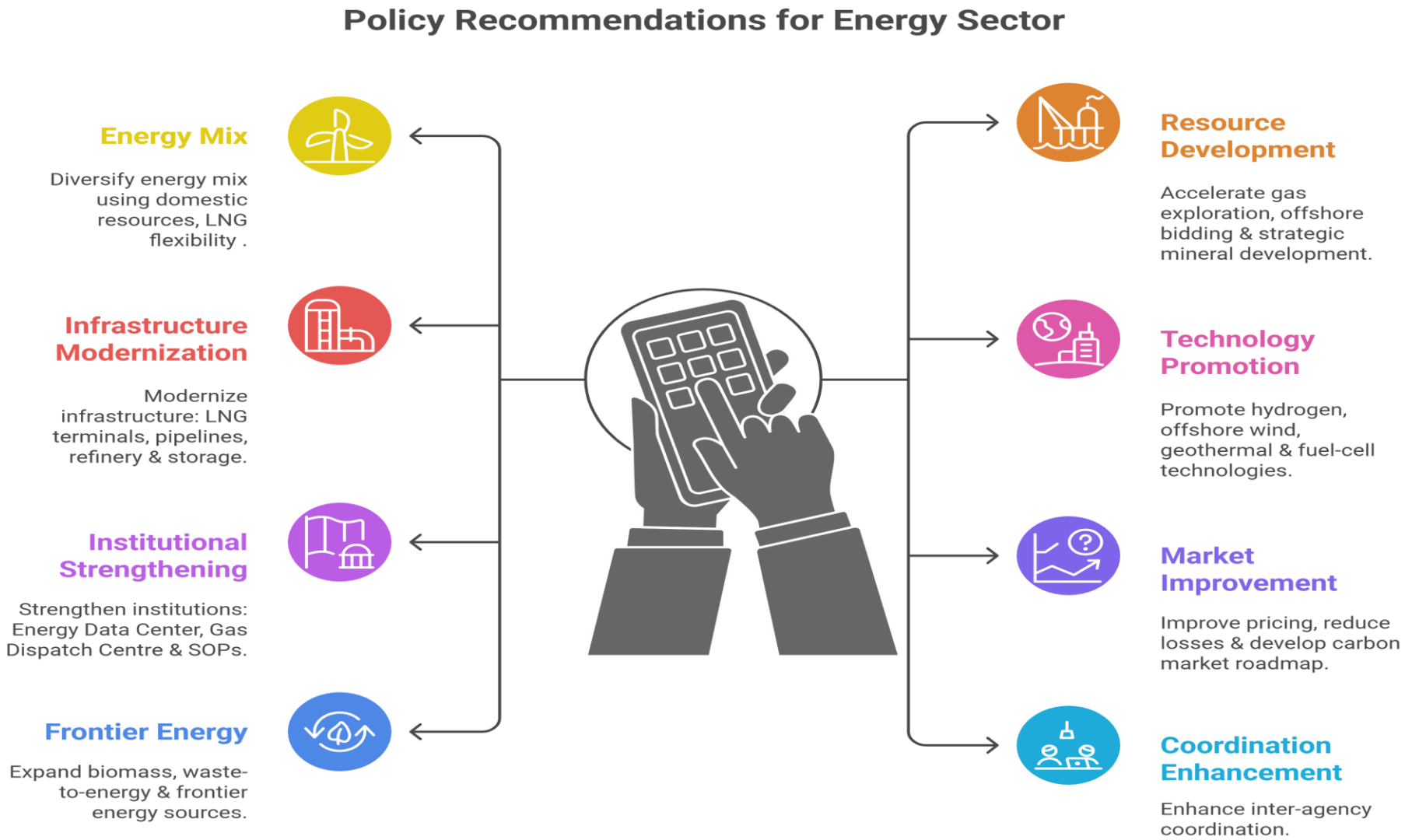
Net Metering Guideline, 2025

Policy Recommendations for Primary Energy



Policy Recommendations: Power Sector

Generation

- Towards Zero-Oil Generation (Minor Grid Upgrades & Optimized Operation) by 2026
- Towards Zero Captive (Industrial Grid Strengthening) (2030-2033)
- MIDI Power Hub Development from 2033
- Large-Scale Solar (Now) & Wind (from 2033) Power Generation
- Energy Storage Roadmap (by 2026) & Large-Scale Storage Deployment (from 2035)

Transmission

- National SCADA & Smart Grid Policy by 2026
- Payra-Dhaka 400kV 2nd Transmission Line by 2031
- 765kV National Transmission Backbone by 2035
- N-2 Reliability Standards for Critical Transmission Corridors by 2026
- Grid Flexibility Program by 2036

Distribution

- Smart Distribution Network (2026-2035)
- Uniform Design Standards & Integrated Urban Utility Framework by 2027
- Underground Cable Design & Layout Policy for Urban area by 2027
- Distribution Transformer Metering and Monitoring System Policy by 2026

Policy Recommendations: Power Sector

Environmental Sustainability

- National Rooftop and Renewable Energy Registry by 2026
- Building Energy Efficiency & Environment Rating (BEER) Implementation by 2031
- Energy Saving Certificate Trade program (2026-2036)
- Energy Efficiency Labelling Program by 2035

Financial Sustainability

- Tariff Rationalization & Subsidy Reduction
- Financial Capacity Assessment of Power Sector Companies by 2026
- Carbon Credit Guideline by 2026
- RPO (Renewable Purchase Obligation) Guideline by 2026
- Local Manufacturing of RE Components (80% by 2040)

Governance/ Institutional Reform

- Single Buyer to Market, Functional Re-structuring of Utilities
- Regular Review of EPSP
- Centralized HR Policy by 2026
- GIS-Centric Asset Management & Data Governance by 2026
- Regular Power Quality Audits

Expected Outcome: Primary Energy Sector

Expected Outcome: 2050 Primary Energy Sector

Dimension	Present Situation	2050 Outcome
Energy Security & Imports	High import dependence; strong exposure to global volatility	Import dependency ≤50% with adequate strategic supply buffers
Natural Gas Supply Balance	Declining domestic gas; rising LNG dependence	≥60% domestic gas; LNG ≤40% for balancing and peak use
Gas Network Performance	Transmission bottlenecks; regional gas shortages	Integrated and planned national gas network
Gas System Efficiency	High technical losses and methane leakage	≤5% system loss and ≥50% methane leakage reduction
Coal's Transitional Role	Domestic coal underutilized; import reliance	Selective, safe domestic coal supplying ≤10-15% of demand
Oil Supply Resilience	Heavy dependence on imported refined fuels	Refined fuel import dependency ≤70%
Refining & Strategic Storage	Aging refineries; limited reserve coverage	Modernized refining and ≥60 days strategic oil reserve
LPG Market Development	Rapid expansion with safety and affordability concerns	Safe, affordable LPG with nationwide access and market-based pricing
Fiscal Sustainability	High, volatile energy subsidies	Energy subsidies ≤1% of GDP, fully targeted

Expected Outcome: Power Sector

Expected Outcome: 2050 Power Sector

Dimension	Present Situation	2050 Outcome
Annual Electricity	~100 TWh	~400 TWh
Primary Fuel Import Dependency	>70%	<50%
Fuel Mix	Fossil Fuel Dominated ~1-1.5% yearly energy from renewable	Renewable Centric 30%-50% yearly energy from renewable
Governance	Subsidized Single Buyer, Fragmented	Power Market, Coordinated
Transmission Network	Weak Interconnections, Weak Industrial Grid = Costly Oil, Captive, Under utilized Cheap Capacity	Strong Grid, 765kV Backbone, N-2 Reliability
Distribution Network	Fragmented, Unreliable	Uniform Network, Reliable
Grid Operation	Mostly Manual, Inflexible, Ineffecient	Fully Automatic, Flexible, Efficient
Power Quality	Unstable Frequency and Voltage, Poor Quality Power	Stable Frequency and Voltage, High Quality Power
Local Manufacturing of RE Equipment	Minimal	Target is 80%
Financial	Highly Subsidized Power Sector	Competitive Power Sector
Energy Efficiency	Slow-paced, weak energy efficiency programs	24% Electricity Demand Reduction
Environment	Zero Carbon Credit	$20 Billion Carbon Credit

Thank You