CHANGE initiative

ROUNDTABLE DISCUSSION

From Dependence to Sovereignty: Renewable Energy Investment Roadmap for a Just Transition in Bangladesh

VENUE : DHAKA |
DATE : 30 MARCH 2026 (MONDAY) | TIME : 10:30 AM

The Macroeconomic Reality

The Imperative for National Energy Sovereignty

Navigating the Energy Trilemma

The Import Trap

Bangladesh's energy security is currently exposed to global fuel price volatility, specifically due to Harmuz crisis. Depleting domestic gas reserves have pushed import dependency to over 60%.

- **Security:** FX reserve drain.
- **Equity:** Rising retail tariffs.
- **Sustainability:** Decarbonization.

USD 5 - 6 Billion additional Potential Forex Drain

The Economic Sovereignty Dividend

1:17

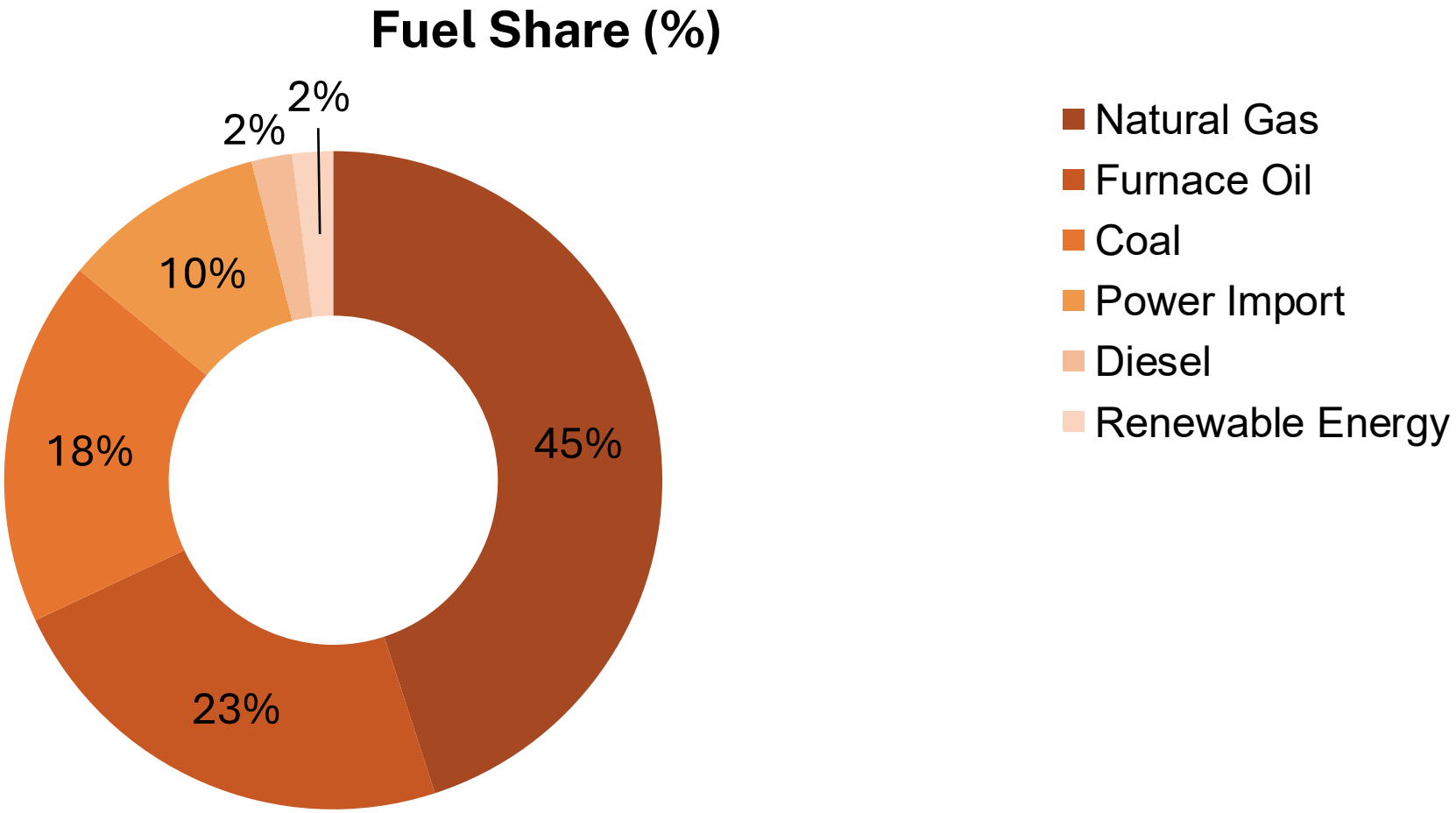
Investment-to-Return Ratio
(LNG to Renewable Energy)

Swapping Cost for Capital

For every $1 USD redirected from LNG imports to decentralized renewable energy, a total systemic benefit of **$17 USD** is generated.

This is achieved by eliminating fuel subsidy leaks and foreign exchange drains, replacing them with fixed domestic infrastructure, and it contributes to employment generation.

Energy Generation Mix in Bangladesh



Rationale: Why This Roadmap?

Bridging the Implementation Gap Existing policies (NDCs, BCPP) lack a granular, bankable investment "production system" to convert targets into MW.

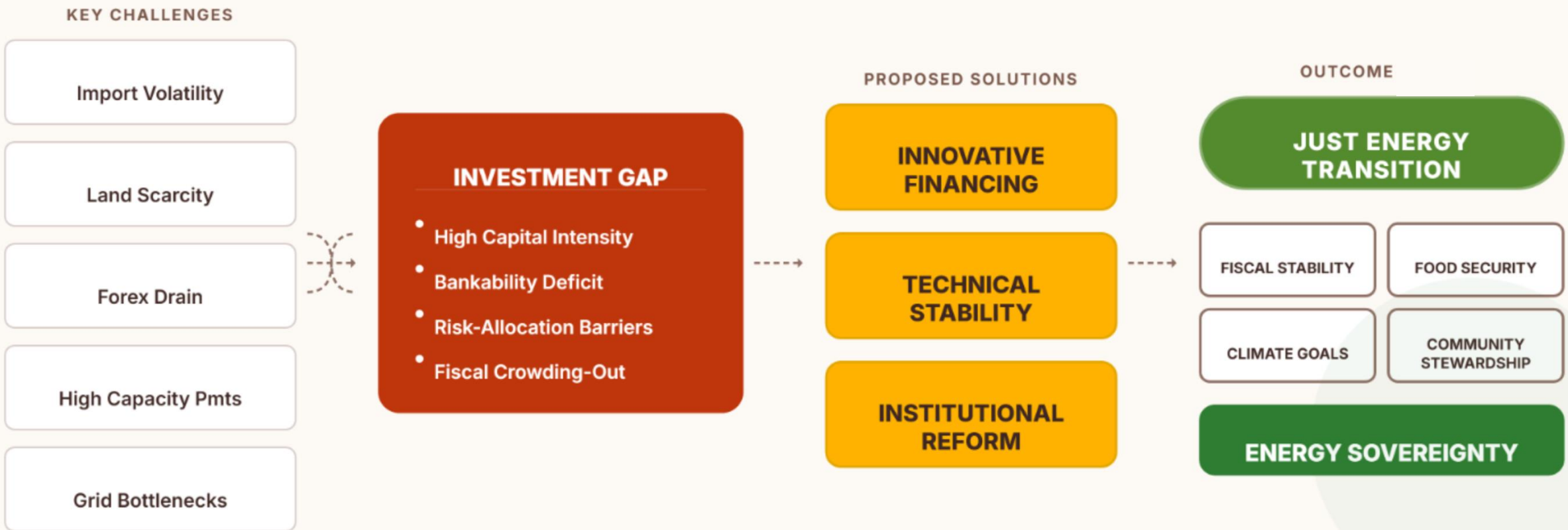
Food vs. Energy Security Strategic necessity to pivot from utility-scale (land-intensive) to decentralized models in a land-constrained nation.

The FX Stability Mandate Swapping variable, imported fuel expenses for fixed, domestic capital assets to protect foreign exchange reserves.

A Just Transition Framework Linking renewable expansion with local asset ownership, youth employment, and green industrial competitiveness.

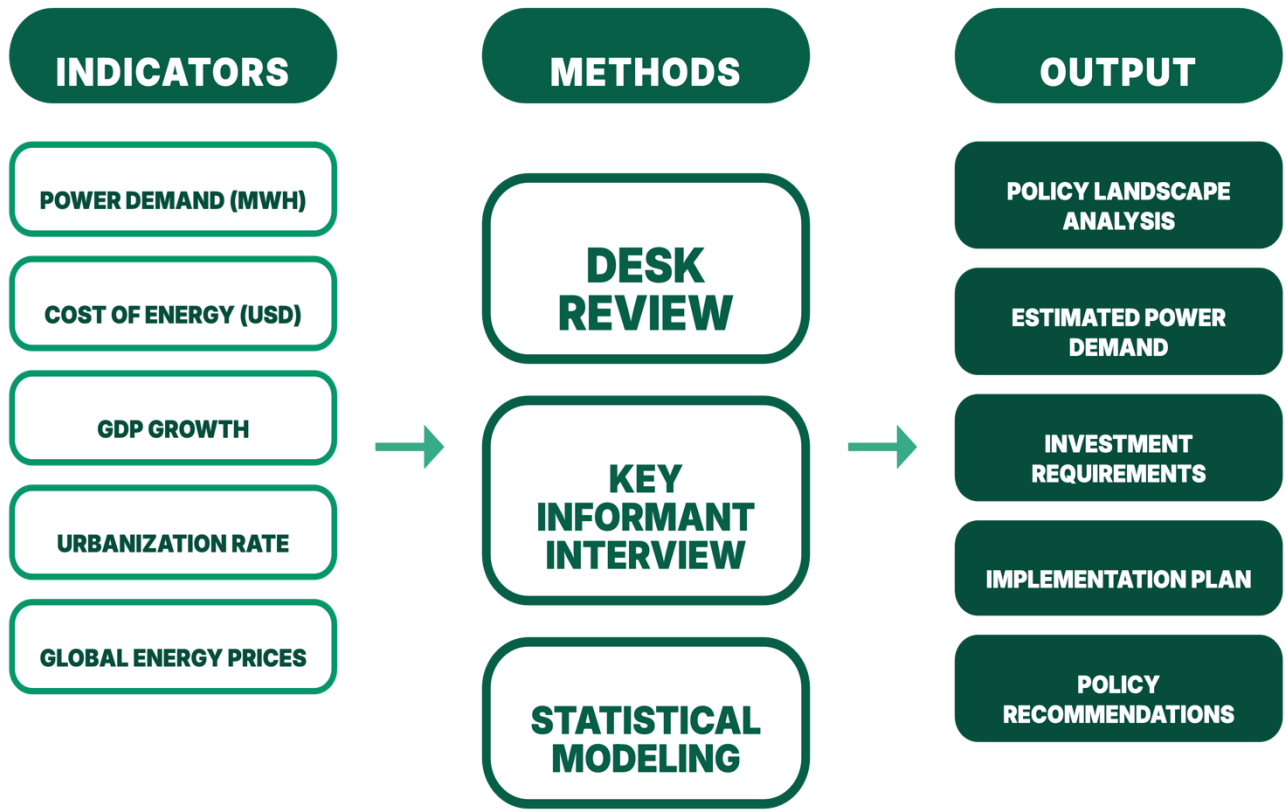
CONCEPTUAL FRAMEWORK

Renewable Energy Investment Roadmap (2026–2040)



Energy sovereignty indicates to a self-reliant, import-free, renewable-led affordable energy system

ANALYTICAL FRAMEWORK OF THE ROADMAP



Methodology: A Rigorous Approach

Quantitative Modeling

Autoregressive Distributed Lag (ARDL) Model ： Forecasting energy demand based on GDP and Urbanization elasticities (2026–2040).

Financial Modeling: CAPEX & Scenario analysis for Battery Energy Storage System (BESS) and Grid Integration.

Qualitative Insights

KIIs & Sentiment: Strategic interviews with experts from IDCOL, Brac Bank, Ministry of Finance, and IEEFA.

Political Economy: Mapping influence vs. willingness of key energy sector gatekeepers.

Strategic Validation

Stress-Testing: Testing bankability under current FX and grid absorption constraints.

Zero-Arable Mandate: Spatial analysis to ensure targets are met without agricultural displacement.

The Execution Gap

From Ambitious Policy to Bankable Renewable Energy System

Barriers to Implementation of Renewable Energy Target

Financing Gap

90% debt-led market with missing equity. High initial investment and perceived investor risk due to FX volatility.

Inadequate Land

The myth that renewables must consume agricultural land. Need for "Zero-Arable Land" decentralized strategies.

Lack of Access to Technology

Urgent need for Battery Energy Storage System (BESS) and net metering system.

The "Zero-Arable Land" Strategy

In Bangladesh, being the world's most densely populated state, food security is non-negotiable. This roadmap explicitly avoids utility-scale land acquisition.

Strategy: Utilize vertical industrial spaces, existing irrigation pumps, and potential water bodies.

Result: 60,000+ acres of arable land preserved while meeting 2040 energy targets.

Three Strategic Pillars

Pillar 1: Industrial Rooftop

12,048 MW Potential

Ready-Made Garment (RMG) factories are the primary driver of exports. By transforming roofs into "Prosumer" hubs, we secure industrial energy autonomy.

ESG Dividend: Meeting global brand mandates for zero-carbon supply chains.

Pillar 2: Agrarian Energy Hubs

3,442 MW capacity

Transitioning 1.34 million diesel pumps to solar PV. Every pump becomes a node for rural energy resilience.

Fiscal Logic: Substituting variable fuel subsidies with fixed domestic capital assets.

Pillar 3: The Blue Frontier

1,721 MW Floating Solar

Utilizing reservoirs, ponds, and Kaptai Lake. Floating PV (FPV) panels offer 5–10% higher efficiency due to natural cooling. Current potential is approximately 11,000 MW.

Benefit Multiplier: Reduces water evaporation in industrial process in coal and thermal-based power plants while generating renewable energy.

Technology Diversification

Coastal Wind

Focused on the coastal belts. Utilizing seasonal wind speeds to balance solar intermittency during evenings.

Biomass & Waste

Converting agricultural residue into renewable energy for rural areas.

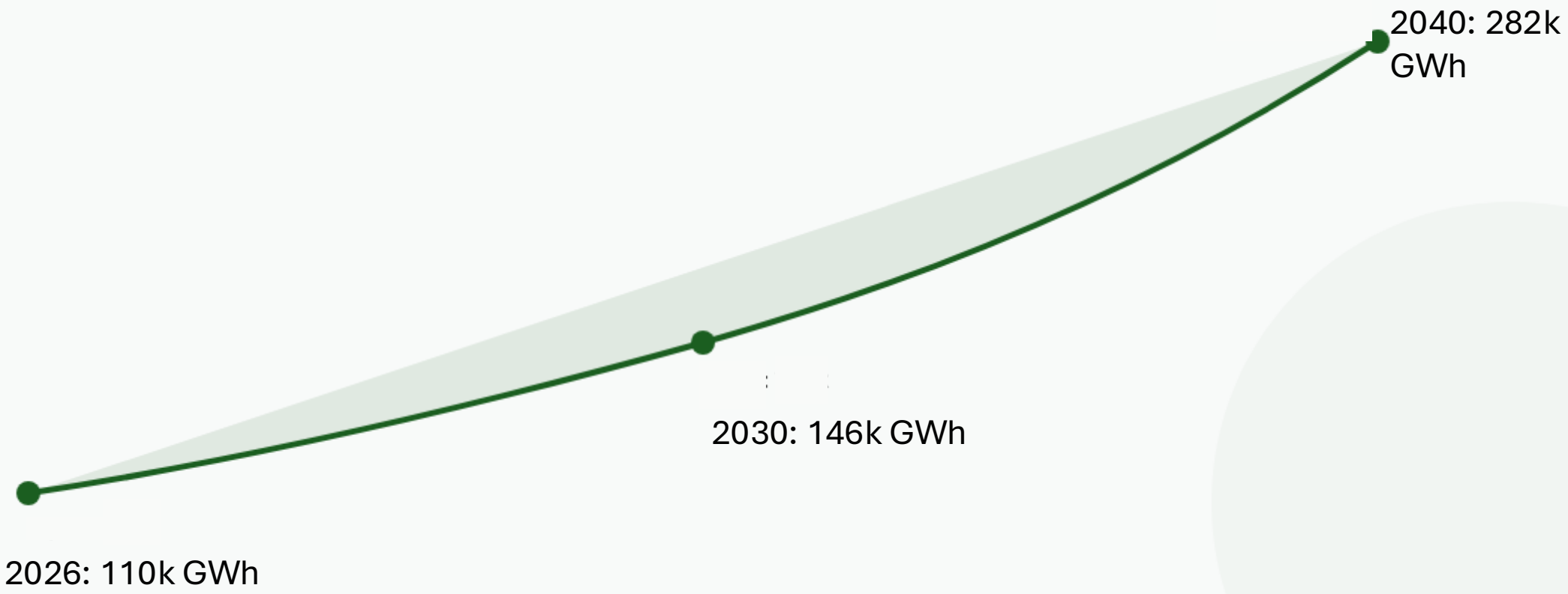
Smart Grid

Digitizing distribution lines using net metering system to manage bi-directional power flow from millions of "Prosumers."

Energy Demand and Investment Requirement

Decentralized Infrastructure for National Energy Sovereignty

Estimated Power Demand Growth Trend to 2040



Estimated Renewable Energy Demand in Bangladesh (2026-2040)

Indicator	2026 (Base)	2030 (Target)	2040 (Vision)
Energy Demand (GWh)	110,610	146,825	282,696
Peak Load Capacity (MW)	30,780	37,246	71,713
Renewable Penetration (%)	—	**20.0%**	**30.0%**
Total RE Required (MW)	—	**7,449**	**21,514**

Current Data of Peak Load Capacity might be Exposed to Overestimation

Comparative Scenario Analysis

Scenario	Investment (USD)	Focus Area	System Risk
1: Full-Spectrum **(Generation + Grid Modernization)**	$37.52 Billion ($24.97 bn + $12.55 bn)	State-led grid modernization	High Reliability / Fiscal Strain
2: Generation Only	$24.97 Billion	Rapid MW rollout only	High Curtailment Risk
3: Optimized Private-BESS **(Generation + BESS)**	**$32.82 Billion ($24.97 bn + $7.85 bn)**	Decentralized private storage	**Recommended / Bankable**

The $32.82 Billion Roadmap

Phased Investment Requirement

Proof of Concept (Phase 1): Demonstrating bankability through high-yield RMG rooftop pilots and diesel-to-solar irrigation.

The "Stability Premium"

$7.85B

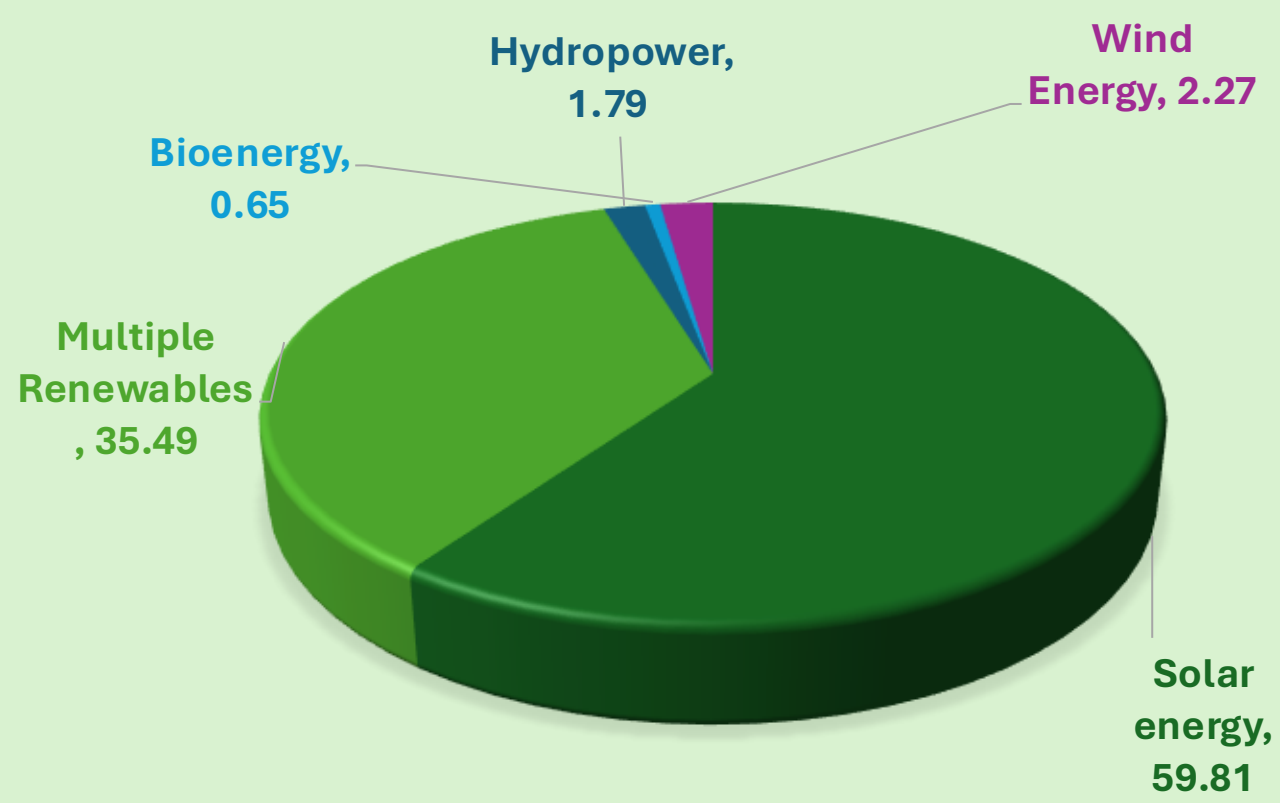
Storage Investment (BESS)

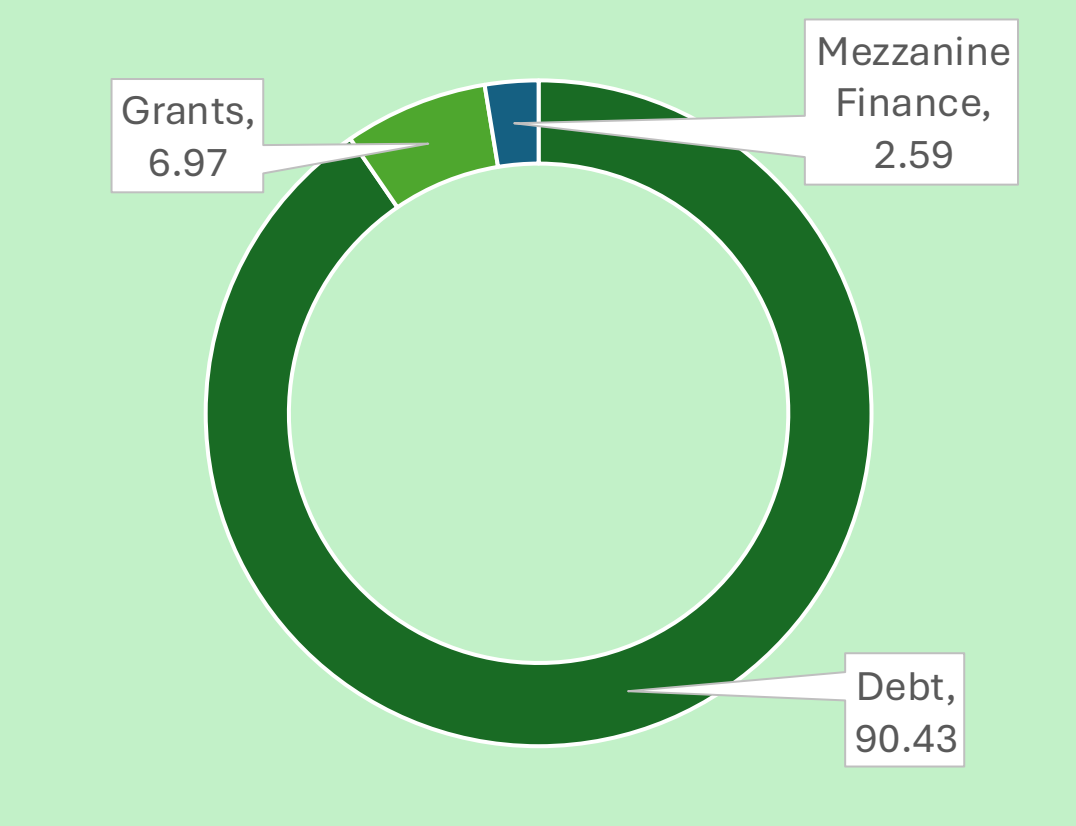
Making Solar Dispatchable

Renewables cannot scale without storage. Battery Energy Storage Systems (BESS) are a **technical necessity**, not an option.

This investment turns intermittent generation into firm evening peak power, de-risking the portfolio for institutional capital.

Targets and Modes of International Finance on RE (%)





Around $14.7 billion has been mobilized from international sources for RE sectors (2010-2024)

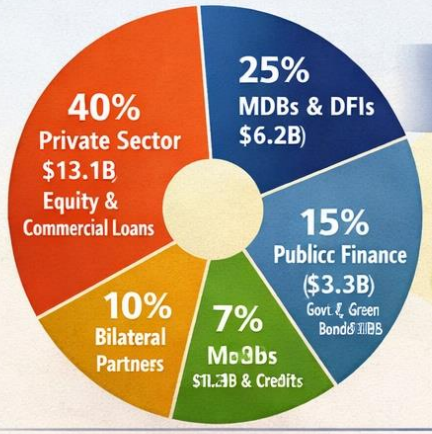
Strategic Financing Framework

Mobilizing Global and Social Capital

Multi-Stakeholder Financing Roadmap (2026–2040)

Mobilizing **$32.82 billion** *over 15 years requires an average annual investment* **$2.19 billion.**

Funding Mix to 2040



Transition in Financing

Private Sector Focus: Optimized BESS

- FDI & Local Banks
- PPAs & Green Financing

MDBs & DFIs

- Partial Risk Guarantees
- Transition Loans

Carbon Markets & Tax

- Article 6 Trading
- Domestic Carbon Levy

Impact of LDC Graduation

Higher Cost of Capital

Improved Credit Rating

Shift to Export Credits

Mobilization Timeline

Phase 1: 2026–2030
Pilot Projects & De-risking

Phase 2: 2031–2040
Market Scaling & Private Equity

Innovative Financing Pillars

Sovereign SLBs

Sustainability-Linked Bonds where borrowing costs drop as national RE targets are met.

Probashi Bonds

Tapping the 10-million-Bangladeshi diaspora, with a potential of $6 billion diaspora bonds for renewable energy in 15 years, through a fund manager.

Strategic Investment from GCC

Merchant Power Models for ACWA and Masdar, bypassing utility liquidity constraints through direct industrial PPAs.

Productive Zakat Fund

$3-4B Annual Potential

Moving from "relief" to "equity". Using wealth-redistribution funds to provide debt-free energy ownership for zakat-eligible households and enterprise.

Outcome: Energy sovereignty for the poor through community-owned solar irrigation.

De-risking Through Partnerships

Institutional Mechanisms

MDBs and other investment institutions must transition from lenders to direct investors to diversify the risk. We need **Partial Credit Guarantees (PCG)** to crowd in commercial banks.

- FX Hedging Facilities
- First-Loss Windows
- Standardized Bankable PPAs
- Virtual PPA

Implementation Pathway

2025: Policy Hub

Empowering SREDA and establishing Single-Window operations for renewable energy.

2027: Proof of Concept

Completion of first 2,000 MW industrial rooftop solar rollout.

2030: Mid-Term Pivot

Achieving 20% RE share; 50% transition of diesel irrigation pumps.

2035: Expansion Scale

Scaling secondary industrial zones, solar irrigation pumps & floating solar.

2040: Energy Sovereignty

30% RE share fully integrated with a Battery Energy Storage System.

THE SOVEREIGNTY DIVIDEND

CUMULATIVE ECONOMIC GAIN TRAJECTORY (2026–2040)

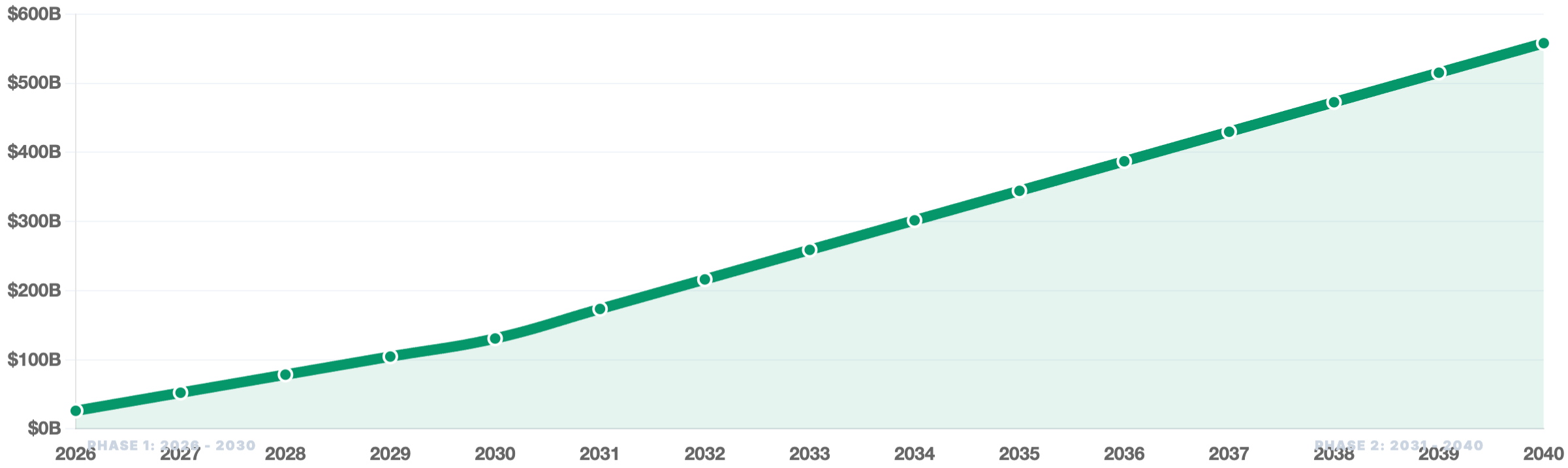
LOGIC: $1 INVESTED = $17 RETURN
($8 AVOIDED LOSS | $9 VALUE CREATION)

PHASE 1 AVG GAIN
$26.15 B /yr

PHASE 2 AVG GAIN
$42.72 B /yr

TOTAL CUMULATIVE GAIN
$557.94 B

OVERALL ANNUAL AVG
$37.20 B /yr



SOURCE: RENEWABLE ENERGY INVESTMENT ROADMAP | CHANGE INITIATIVE

GROWTH DIVIDEND

THE SOVEREIGNTY DIVIDEND

ECONOMIC CASE FOR THE 2026–2040 ROADMAP

THE MULTIPLIER EFFECT

1:17

SYSTEMIC ROI

STOP THE RESOURCE BLEEDING

CAPACITY PAYMENTS

$2.50 Billion /yr

Eliminated via Prosumer Model

FOSSIL FUEL SUBSIDIES

$3.10 Billion /yr

Reclaimed for Social Safety

CARBON MARKET GAIN

$925 Million /yr

New Sovereign Revenue Stream

STRUCTURAL RE-ENGINEERING

SECTOR CAPITAL STRUCTURE

90% DEBT → **DEBT-FREE**

ZAKAT EQUITY	$3-4B/yr
DIASPORA BONDS	$1.25B/yr
FOREX HEDGING	FULLY SECURED

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