CHANGE initiative

PRESS CONFERENCE ON

Decarbonization Pathways for SMEs under Bangladesh Small and Cottage Industries Corporation (BSCIC)

SUPPORTING NDC ALIGNED TARGETS THROUGH LOW-CARBON INDUSTRIAL TRANSFORMATION

VENUE : DHAKA |

DATE : 28 MARCH 2026 (SATURDAY) | TIME : 10:30 AM

Background

The Economic Weight of Bangladesh

90%

Of industrial units are SMEs.

- Employ 85% of the industrial workforce (State of Economy, 2025)
- Contributes 25-30% of GDP (ADB,2024).

The Reality

95.16%

Of Bangladesh's electricity comes from fossil fuels. (BPDB, 2026)

- SMEs suffers from high electricity tariffs
- Unreliable supply.

Bangladesh's NDC 3.0

Bangladesh reached

252 $MtCO_2e$ emission in 2022

(~49% from energy).

- Aims to reduce 69.84 MtCO2e emission by 2035 from energy sector (Bangladesh NDC 3.0).
- Implementation plan at the SME level remains limited.

BSCIC-SME Industrial Estate Overview

BSCIC hosts over 82 industrial estates.

which are:

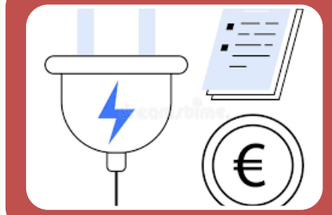
- Cottage industries – 6,842,884
- Medium industries – 7,106
- Small industries – 859,318

This study focuses specifically on high-emitting SMEs[1] due to their critical role and greater potential for scalable decarbonization interventions.

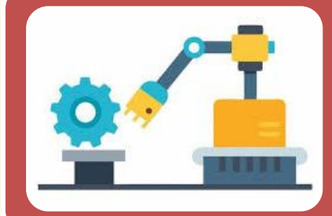
- [1]Small enterprises : 25-99 employees and 5-10 crore tk assets,
- Medium enterprises: 100-250 employees and 10-30 crore tk assets

BSCIC-SME Structural Challenges

Unreliable Energy Supply



High Electricity Tariffs



Outdated Machinery And Low Automation

Inadequate Support To Adopt Advanced Technologies

Why Decarbonize BSCIC-SMEs?

- **Reducing Resource Bleeding Fossil Fuel Dependency:** Transitioning from import heavy fossil fuel dependence to renewables like solar can drastically lower production costs and increase profit margins.

- **Renewable Energy Led Economic Sovereignty:** BSCIC estates can use solar to reduce grid dependence, stabilize costs, and enhance energy autonomy.

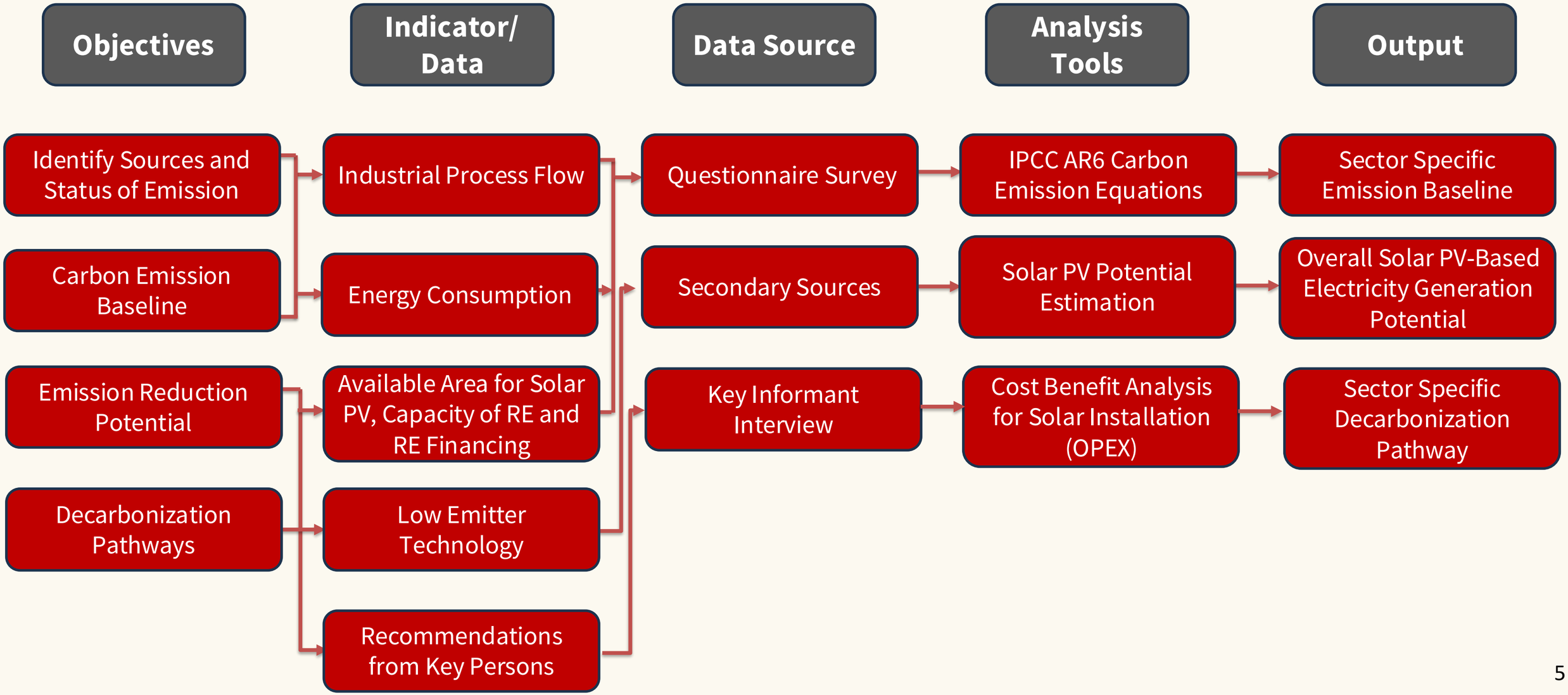
- **Renewable Energy Expansion:** Support to the achieve the national renewable energy targets of 20% by 2030 and 30% by 2040.

- **Commitment and Policy Alignment:** Supports Bangladesh's NDC 3.0 targets and BNPs election manifesto 2026.

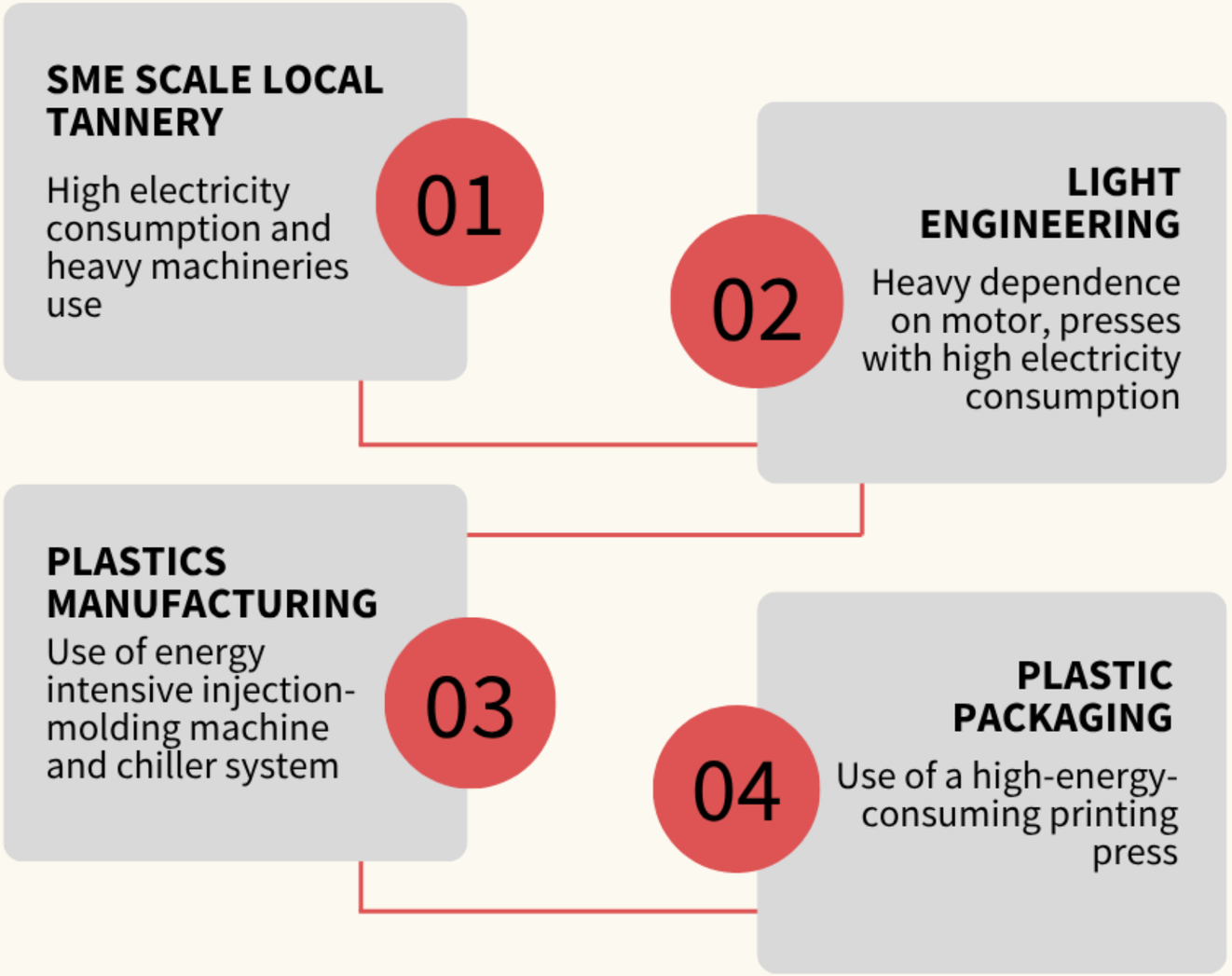
Objectives of the Study

1	2	3	4
Identify the sources and status of carbon emissions from selected SME clusters under BSCIC.	Create a baseline and establish benchmark for measuring and reporting carbon emissions.	Identify emission reduction potential	Develop sector-specific decarbonization strategies to reduce carbon emissions for SMEs under BSCIC

Analytical Framework



Study Scopes



Industrial Process Flowchart of a SME Scale Local Tannery

PHASE 1: BEAMHOUSE

Process: Soaking, Unhairing, Liming

Energy Intake: 22.88 kWh/ton

Waste: Hair sludge, dirt, manure

Liming Drum

Process: Fleshing

Energy Intake: 31.2 kWh/ton

Waste: fat, meat tissues

Fleshing Machine

Process: Bating & Pickling

Energy Intake: 22.88 kwh/ton

Waste: Wastewater

Liming Drum

PHASE 2: TANNING

Process: Chrome Tanning

Energy Intake: 31.2 kWh/ton

Waste: Cr Mixed Water

Blue Drum

PHASE 3: WET BLUE PROCESSING

Process: Sammying

Energy Intake: 22.88 kWh/ton

Waste: Wastewater

Sammying Machine

Process: Splitting

Energy Intake: 141.44 kWh/ton

Waste: Leather dust

Splitting Machine

Process: Shaving

Energy Intake: 341.12 kWh/ton

Waste: Chrome shavings

Shaving Machine

PHASE 4: CRUSTING

Process: Neutralisation, Retanning & Fatliquoring

Energy Intake: 31.2 kWh/ton

Waste: Wastewater

Tannery Drum

Process: Dyeing

Energy Intake: 31.2 kWh/ton

Waste: Wastewater

Tannery Drum

Final Leather

PHASE 5: FINISHING

Process: Setting

Energy Intake: 22.88 kWh/ton

Waste: Very small amount of water

Setting Machine

Process: Staking

Energy Intake: 22.88 kWh/ton

Waste: Leather dust/ fibers

Staking Machine

Process: Final Finishing

Energy Intake: 20.8 kWh/ton

Waste: Small amount of leather dust

Hydraulic Press

Process: Trimming

Energy Intake: 5.2 kWh/ton

Waste: Finished leather off-cuts/scraps

Trimming Machine

Industrial Process Flowchart of a Light engineering Factory

PHASE 1: Material Preparation & Sizing

Process: Shearing and Cutting

Units: 1

Energy Intake:
58.5 kWh/ton

50-ton pressing machine

PHASE 2: Component Forming (Core Production)

Process: Shaping

Units: 6

Energy Intake:
468 kWh/ton

30-Ton Pressing Machine

PHASE 3: Assembly & Finishing

Process: Mechanical Crimping

Units: 2

Energy Intake:
156 kWh/ton

30-Ton Pressing Machine

Industrial Process Flowchart of a Plastic Manufacturing Factory

Phase 1: Material Preparation

Process: Resin Preparation

Energy Intake:
4.7762 kWh/ton

Mixer Machine

Phase 2: Loading & Plasticizing

Process: Chrome Tanning

Energy Intake:
390 kWh/ton

Injection Molding Machine

Phase 3: Injection & Molding

Process: Injection into mold

Energy Intake:
390 kWh/ton

Injection Molding Machine

Phase 4: Cooling & Output

Process: Cooling & Solidification

Energy Intake:
585 kWh/ton

Chiller Machine

Industrial Process Flowchart of a Plastic Packaging Factory

Phase 1: Visual Reproduction Phase

Pr ocess: Printing

Energy Intake:
280.8 kWh/ton

Offset Printing Machine

Phase 2: Surface Treatment & Finishing Phase

Process: Laminating & Coating

Energy Intake:
31.2 kWh/ton

Corona Treatment Machine

Phase 3: Structural Shaping Phase

Process: Cutting & Die-Cutting

Energy Intake:
62.4 kWh/ton

Die-Cutting Machine

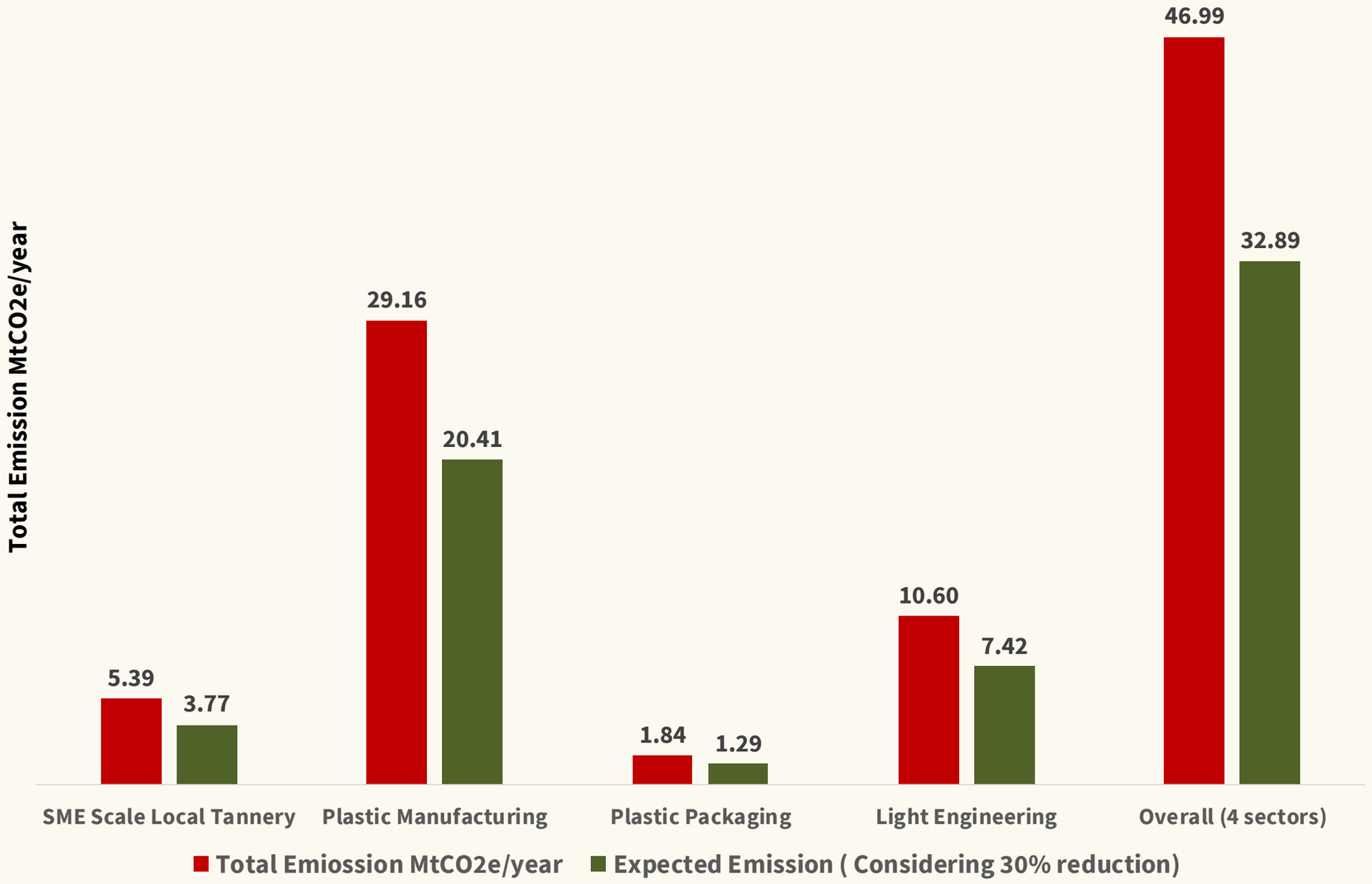
Phase 4: Final Assembly Phase

Process: Folding & Gluing

Energy Intake:
58.5 kWh/ton

Folder-Gluer Machine

Sector Specific Emission Baseline



4 sectors: 46.99 MtCO2e/year

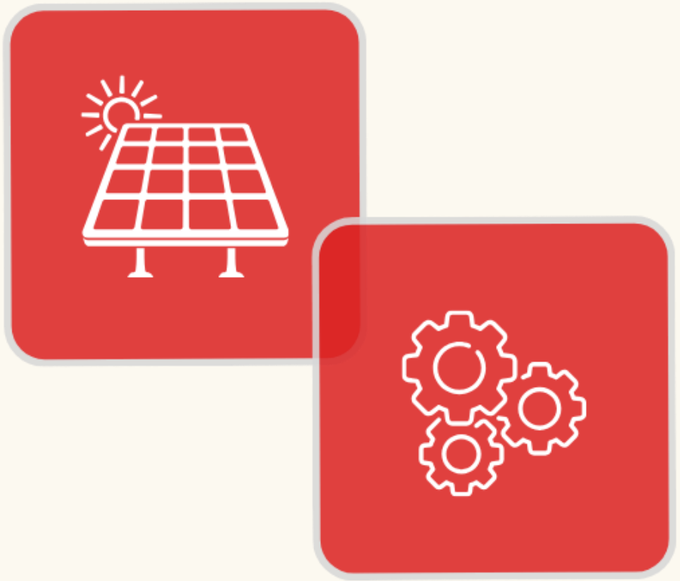
- 11.23% of national emissions
- 40.12% of industrial emissions (Manufacturing + IPPU)

Reduction potential: 14.097 MtCO2e/year

- 16.4% of NDC target
- 0.03% of total emissions

Overall SME Emission Reduction Interventions

Solar Photovoltaic (Rooftop and Clustered)



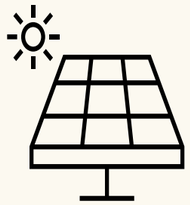
Technological and Process Upgradation

Solar PV-Based Electricity Generation Potential

Division	BSCIC Zone Area (acres) (Rooftop + Open Suitable Space)	10% of space for potential solar power system		20% of space for potential solar power system	
		Potential Installed capacity- MW (Mega Watt)	Potential Electricity Generation-MWh (Mega Watt hour) per year	Potential Installed capacity (MW)	Potential Electricity Generation (MWh) per year
Khulna	173.38	4.95	7232.42	9.91	14464.85
Chattogram	339.71	9.71	14170.76	19.41	28341.52
Dhaka	665.23	19.01	27749.59	38.01	55499.19
Barisal	221.02	6.31	9219.69	12.63	18439.38
Rangpur	147.37	4.21	6147.43	8.42	12294.87
Rajshahi	323.89	9.25	13510.84	18.51	27021.68
Sylhet	118.38	3.38	4938.14	6.76	9876.27
Total	**1988.98**	**57**	**82968.88**	**114**	**165937.76**

Solar PV-Based Emission Reduction Potential

Scenario 1: 10% Rooftop + Open Suitable Space Allocation (57 MW)



51,441 tCO_2e annual emission reduction

Investment Needed: 285 Crore BDT (23.25 million USD)

Scenario 2: 20% Rooftop + Open Suitable Space Allocation (114 MW)

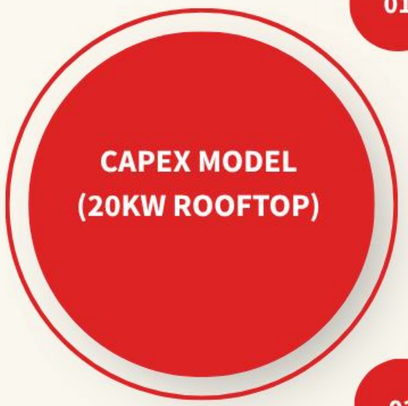
102,881 tCO_2e annual emission reduction

Investment Needed: 570 Crore BDT (46.33 million USD)

Dhaka zone alone contributes 27,750-55,499 MWh annually

Cost-Benefit Analysis of Solar PV Installation

Initial investment: Tk 1.37 million



01 Simple payback: 4 years 2 months

02 Discounted payback: ~5 years

03 Benefit Cost Ratio (BCR): 2.11

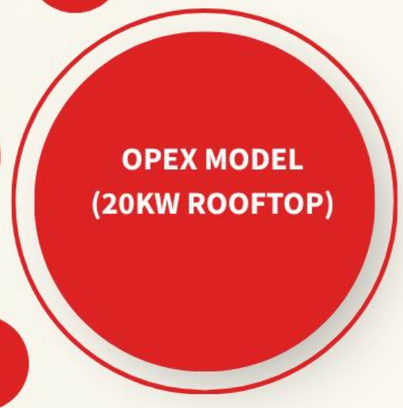
In the CAPEX model, for every 1 taka investment, the benefit is 2.11 taka in 25 years.

Zero Initial investment by SME

01 First-year savings: Tk 69,204

02 Immediate positive cash flow

03 Benefit Cost Ratio (BCR): 1.25

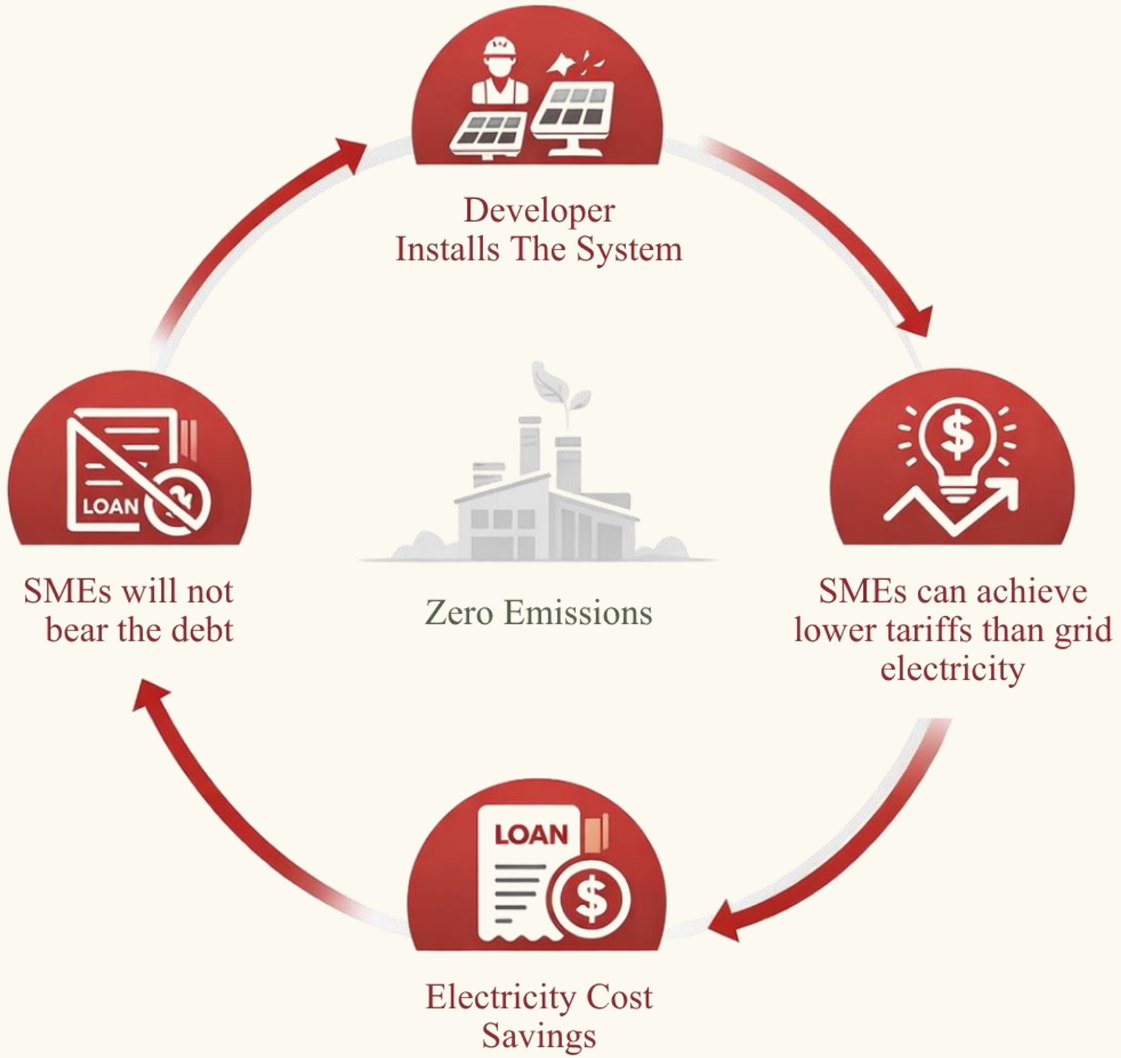


In the OPEX model, for every 1 taka investment, the benefit is 1.25 taka.

There is zero fossil fuel benefit!

The OPEX Solar Power

A self-sustaining financing model that reduces emissions without increasing the cost of SMEs.



Sector Specific Technical and Process based Emission Reduction Potential

Sector	Emission Reduction Potential
SME Scale Local Tannery	**19-33%** (2.23-3.77 tCO_2e/month)
Plastic Manufacturing	**33-49%** (1.97-2.97 tCO_2e/month)
Light Engineering	**19-31%** (1.21-1.99 tCO_2e/month)
Plastic Packaging	**15-28%** (0.78-1.50 tCO_2e/month)

Comparative Summary: Economic & Energy Performance (2025–2026)

Country	Primary RE Driver	Economic Benefit	Energy Benefit
China	Massive investment in **battery storage** (up 69% in 2025)	Cost reduction through transition from coal-fired thermal power	Storage-driven energy Autonomy/Sovereignty
India	Rooftop Solar / KUSUM	30-50% Cost Reduction	Decentralized Grid Relief
Germany	Onshore Wind / Solar	Price Shock Resilience	Localized Energy Trading
Vietnam	DPPA / Rooftop PV	Export Market Compliance	Reduced Grid Peak Load

Barriers and Constraints to Emission Reduction

Institutional and Governance Gaps

- Absence of decarbonization framework
- Weak coordination among SMEs, BSCIC, Ministry of Environment, BPDB , PGCB and other related institutions

Data and Information Gaps

- Absence of factory-level energy audit.
- Lack of transparency on energy consumption data
- Lack of 24-hour load data.

Financial Constraints

- High initial investment
- Limited access to finance.
- High perceived credit risk.

Technological Barriers

- Outdated, inefficient equipment.
- Reliance on diesel generators.
- Space constraints for rooftop solar

Decarbonization Pathways for SMEs under BSCIC

Technological Upgradation

Motor & Drive Efficiency

- Replace IE1/IE2 with IE3-IE4
- Install Variable Frequency Drives (VFD/VSD).
- Conduct motor efficiency audit regularly

Target Sectors: Plastics, light engineering, high-load factories

Boiler & Thermal Upgrade

- Replace diesel/furnace oil boilers with solar-based electric boilers
- Promote efficient compressors

Target Sectors: Thermal systems, boilers, process heat

Process Optimization

- Install Servo injection molding
- Improve efficient chillers
- Introduce waste heat recovery

Target Sectors: Plastics, light engineering

Energy Transition

- Phase out diesel generators
- Shift to a solar-based battery storage system
- Net meteing system
- Training and maintenance network

Target Sectors: All estates, outage backup systems

Waste & Circular Economy

- Pretreatment before CETP
- Install plastic recycling hubs

Target Sectors: Tannery, plastics, cluster-level systems

Governance and Structural Reform

Policy Reform

- Develop ESCO (Energy Service Company) regulatory framework
- Create carbon registry to obtain carbon credits nationally

Purpose: Enable renewable investment

Space Allocation Guideline by BSCIC

- Allocate 10-20% of space in all BSCIC estates

Purpose: Future renewable capacity

BSCIC Renewable Energy Cell

- Create a carbon baseline immediately
- Install a solar system with the proper feasibility studies.

Purpose: Institutional control of decarbonization

MRV System

- Conduct an energy audit periodically
- Load curve data sharing with PGCB

Purpose: Financing & grid integration

BSCIC-Led Special Purpose Vehicle (SPV) Approach

- Create SPV
- Install a 20 kW-10 MW centralized solar system
- Sign long-term PPA with SMEs

Purpose: Centralized renewable deployment

Just Energy Financing for SME Decarbonization

	Current Problems	Recommended Solutions
For IDCOL and Other Financing Agencies	• Loan process is complicated and takes too long	• Make the process simple, fast, and standardized
	• Absence of localized systems for SMEs	• Place banking agents inside BSCIC estates
	• No Investment products made for energy transition in SME	• Design flexible and SME-friendly renewable energy loans
	• Banks see SMEs as risky due to perceived high credit risk	• Combine grants + concessional loans to reduce SME risk
	• Application process is manual and scattered	• One-stop system for SMEs to apply, track and access financing
For IDCOL	• Financing is only designed for large projects (1 MW+), not SMEs	• Introduce small loans (10-50 lakh) specially for SMEs
	• SMEs cannot apply directly, need aggregation	• Create easy cluster-based financing for BSCIC estates

Recommendations for Related Public Stakeholders

Capital Subsidies for Solar & Efficient Machinery

Tax Rebates on Energy-Efficient Equipment

Low-Interest Green Financing Schemes

Duty Drawback on Green Technology Imports

Reduced Import Duty on Energy Storage

Export Incentives for Low-Carbon Products

Projected Outcomes of Nature Smart Industrial Transition

Energy Self-Reliance

Reduced import dependecy on energy security

Lower Energy Costs

Up to 20% savings in energy cost

Enhanced Competitiveness

Compliance with global low-carbon standards

Carbon Credit Opportunities

Potential to generate up to 0.40 million USD additional revenue through carbon markets

Cleaner Environment

Reduced up to 102,881 tCO_2e annual emission and better air

Operational Efficiency

Optimized processes & higher producticity

Thank You !!