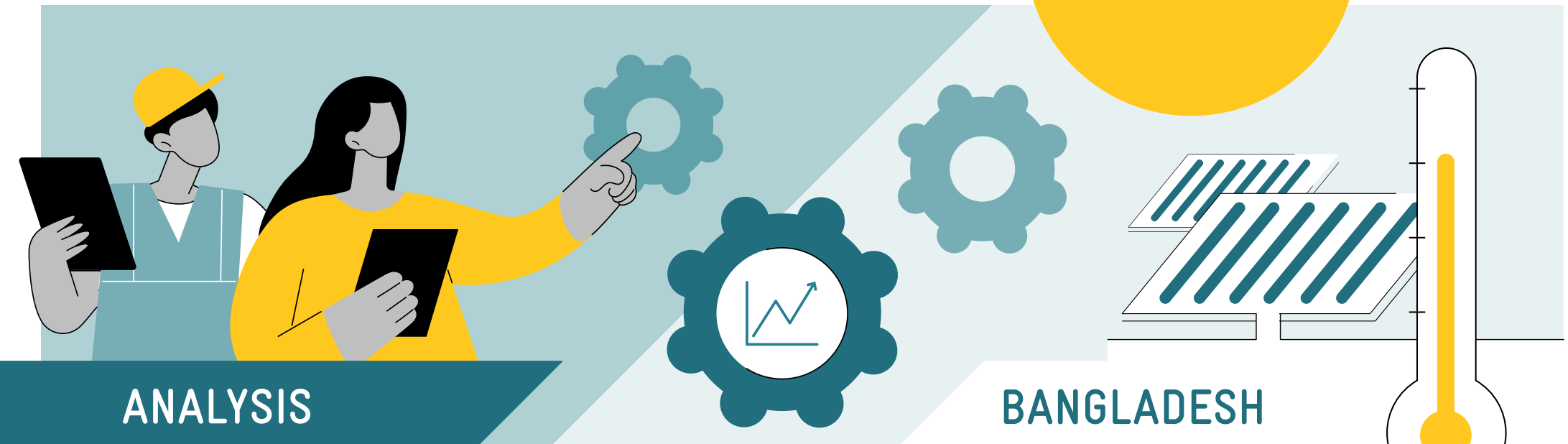


Sector Analysis Bangladesh

Renewable heat supply and process heat solutions for the C&I sector

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

This publication was commissioned by the German Energy Solutions Initiative of the German Federal Ministry for Economic Affairs and Energy (BMWE)

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

List of tables

List of figures

Abbreviations/acronyms

ADB	Asian Development Bank
AL	Awami League
ASEAN	Association of Southeast Asian Nations
BAPI	Bangladesh Association of Pharmaceutical Industries
BB	Bangladesh Bank
BCMA	Bangladesh Cement Manufacturers Association
BCR	Benefit to cost ratio
BD	Bangladesh
BERC	Bangladesh Energy Regulatory Commission
BIDA	Bangladesh Investment Development Authority
BGCCI	Bangladesh-German Chamber of Commerce and Industry
BKMEA	Bangladesh Knitwear Manufacturers and Exporters Association
BMWE	Bundesministerium für Wirtschaft und Energie (German Federal Ministry for Economic Affairs and Energy)
BNP	Bangladesh Nationalist Party
BPDB	Bangladesh Power Development Board
BREB	Bangladesh Rural Electrification Board
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSMA	Bangladesh Steel Manufacturers Association
BTMA	Bangladesh Textile Mills Association
CAPEX	Capital expenditure
CHP	Combined heat and power
CIB	Credit Information Bureau
C&I	Commercial and industrial (users)
CoF	Cost of Funds
COP	Coefficient of Performance
CSTs	Concentrated solar thermal collectors
DEG	Deutsche Investitions- und Entwicklungsgesellschaft
DEPZ	Dhaka Export Processing Zone
DoE	Department of Environment (Bangladesh)
EBA	Everything But Arms
ECC	Environmental Clearance Certificate
EECB	Energy Efficient Building Code
EECMP	Energy Efficiency and Conservation Master Plan
EPC	Engineering, procurement and construction
EPZ	Export Processing Zone
ESG	Environmental, social and governance
EU	European Union
FBCCI	Federation of Bangladesh Chambers of Commerce and Industry
G2G	Government-to-government

Currency units

BDT	Bangladeshi taka
EUR	Euro
USD	United States dollar

Date	**EUR**	
	Buy	**Sell**
29 June 2025	143.909	144.051
26 June 2025	143.056	143.301

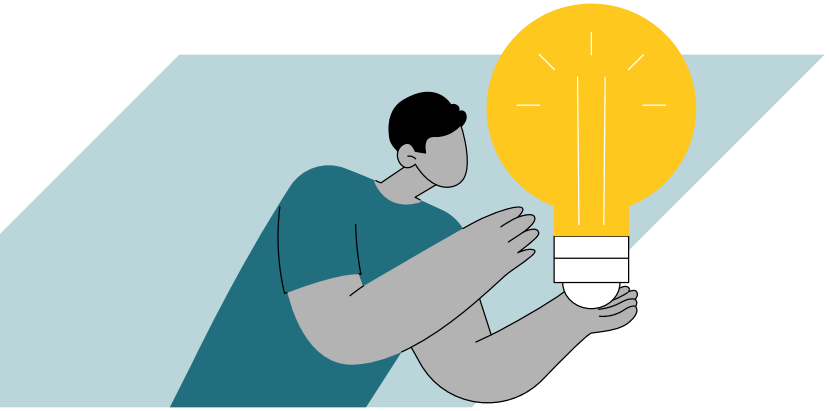
BB data average for two days (both buy and sell)	**143.5794**
Currency conversion rate (CCR) used in this publication Note: When using two decimal spaces, .57 is given instead of .58 to eliminate upward bias)	**143.57**

Source: Bangladesh Bank, 2025, https://www.bb.org.bd/en/index.php/econdata/exchangerate

Haas	Heat-as-a-service
GBM	Ganges-Brahmaputra-Meghna
GCF	Green Climate Fund
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoB	Government of Bangladesh
HACCP	Hazard Analysis and Critical Control Points
HFC	Hydrofluorocarbons
HFO	Heavy fuel oil
HSD	High-speed diesel
IDCOL	Infrastructure Development Company Limited
IEPMP	Integrated Energy and Power Master Plan
IFC	International Finance Corporation
IMF	International Monetary Fund
IRR	Internal rate of return
IPP	Independent power producer
KfW	Kreditanstalt für Wiederaufbau
LEED	Leadership in Energy and Environmental Design
LDC	Least developed country
LNG	Liquefied natural gas
MoI	Ministry of Industries (Bangladesh)
MoPEMR	Ministry of Power, Energy and Mineral Resources (Bangladesh)
MW	Megawatt
NBFI	Non-banking financial institution
NBR	National Board of Revenue
NDC	Nationally determined contribution
NPL	Non-performing loans
NWPGCL	North-West Power Generation Company Limited
O&M	Operation and maintenance
OSS	One Stop Service
PAYS	Pay-as-you-save
PBP	Payback period
PDP	Project Development Programme
PPP	Public-private partnership
PtH	Power-to-Heat
ROI	Return on investment
RMG	Readymade garments
RPCL	Rural Power Company Limited
SEZ	Special Economic Zone
SME	Small and medium-sized enterprise
SREDA	Sustainable and Renewable Energy Development Authority (Bangladesh)
PV	Photovoltaic
TVET	Technical and vocational education and training
VAT	Value added tax
WHR	Waste heat recovery
WTO	World Trade Organization

Technical units

°C	Degrees Celsius
bar	Metric unit of pressure
bcf	Billion cubic feet (gas)
bcm	Billion cubic metres (gas)
COP	Coefficient of performance
GWh/year	Gigawatt-hour per year (energy/year)
KTOE	Kilotonne of oil equivalent
kW	Kilowatt (power)
kWe	Kilowatt-electric (electrical power output)
kWh/m²	Kilowatt-hour per square meter (solar irradiance)
kWth	Kilowatt-thermal (thermal power output)
m²	Square metres
m³	Cubic metre
MJ	Megajoule (energy unit)
MTOE	Million tonnes of oil equivalent
MW	Megawatt = 1,000 kW
MWh	Megawatt-hour (energy)
TOE	Tonne of oil equivalent



ENERGY SOLUTIONS – MADE IN GERMANY

The German Energy Solutions Initiative

The German Energy Solutions Initiative of the German Federal Ministry for Economic Affairs and Energy (BMWE) aims to globalise German technologies and expertise in climate-friendly energy solutions.

Years of promoting smart and sustainable energy solutions in Germany have led to a thriving industry known for world-class technologies. Thousands of specialised small and medium-sized enterprises (SMEs) focus on developing renewable energy systems, energy efficiency solutions, smart grids, and storage technologies. Cutting-edge energy solutions are also built on emerging technologies such as power-to-gas, fuel cells, and green hydrogen. The initiative's strategy is shaped around ongoing collaboration with the German business community.

The initiative creates benefits for Germany and the partner countries by:

- boosting global interest in sustainable energy solutions
- encouraging the use of renewables, energy efficiency technologies, smart grids, and storage technologies, while facilitating knowledge exchange and capacity building
- enhancing economic, technical and business cooperation between Germany and partner countries

THE PROJECT DEVELOPMENT PROGRAMME (PDP)

PDP is a key pillar of the German Energy Solutions Initiative and is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. It connects development cooperation with private-sector engagement and supports climate-friendly energy solutions in selected developing and emerging countries, enabling local businesses to adopt solutions in energy efficiency, electricity and heat supply, and hydrogen, while facilitating market access for German solution providers.

Developing and emerging economies offer promising business potential for climate-friendly energy solutions but also pose challenges for international business partners. The PDP team works closely with local industries to develop financially viable projects by providing technical expertise, financial guidance, and networking opportunities.

It identifies project leads, collects and analyses energy consumption data, and assesses projects from both a technical and economic perspective. This includes outlining the business case, calculating payback periods, and evaluating profitability. Companies can then choose to finance projects using their own funds or explore leasing and other financing options. PDP provides cost-free advice to local companies and connects them with German solution providers for project implementation.

Additionally, by offering training, organising reference project visits, and publishing studies on the potential of climate-friendly solutions and on navigating regulatory frameworks, the programme supports market development and fosters private-sector cooperation.

Executive summary

BANGLADESH'S ENERGY POLICY: FOCUS ON RENEWABLE ENERGY

Home to 170 million people, Bangladesh is currently grappling with energy shortages and political uncertainty, which have slowed its economic momentum. Nonetheless, the country has set an ambitious goal of sourcing 20% by 2030 and 30% by 2041 through the Integrated Energy and Power Master Plan. Enhancing industrial heat efficiency and promoting renewables are key policy directions. Germany continues to be a vital trade and technology partner, while institutions such as BERC, SREDA, and MoPEMR are playing pivotal roles in advancing Bangladesh's energy transition.

TECHNOLOGICAL OPTIONS FOR PROCESS HEAT

Among the nine process heat technologies identified in the sector analysis, the three most viable options for Bangladesh are electric boilers, solar thermal systems using non-concentrating collectors and low-temperature heat pumps. It is important to note that the following findings and recommendations are primarily applicable to a specific subset of industrial facilities that meet defined technical, operational, and infrastructure criteria. They are not universally applicable across all factories, and each potential project should be validated through site-specific feasibility studies, technical audits, and discussions with facility managers.

Zusammenfassung

BANGLADESCHS ENERGIEPOLITIK: ERNEUERBARE ENERGIEN IM FOKUS

Bangladesch mit seinen 170 Millionen Einwohnern und Einwohnerinnen ist mit Energieengpässen und politischer Unsicherheit konfrontiert, die das Wirtschaftswachstum bremsen. Mit dem „Integrated Energy and Power Master Plan" hat sich das Land nun ein ambitioniertes Ziel gesetzt: Bis 2041 sollen 40 Prozent des Energiebedarfs aus Quellen der erneuerbaren Energien gedeckt werden. Zu seinen zentralen politischen Maßnahmen gehören die Steigerung der Effizienz bei industrieller Prozesswärme und die Förderung erneuerbarer Energien. Deutschland bleibt ein wichtiger Handels- und Technologiepartner, während Institutionen wie BERC, SREDA und das MoPEMR eine Schlüsselrolle bei der Umsetzung der Energiewende in Bangladesch spielen.

TECHNOLOGISCHE OPTIONEN FÜR PROZESSWÄRME

Von den neun identifizierten Technologien zur Bereitstellung von Prozesswärme gelten drei als besonders vielversprechend für Bangladesch: Elektrokessel, solarthermische Systeme mit nichtkonzentrierenden Kollektoren und Niedertemperatur-Wärmepumpen. Diese Technologien passen gut zu dem industriellen Energiebedarf des Landes, sind mit der Infrastruktur kompatibel und unterstützen die Klimaziele Bangladeschs, insbesondere im Bereich der Anwendungen mit niedrigen bis mittleren Temperaturen.

TRADE PARTNERSHIP WITH GERMANY AND MARKET OPPORTUNITIES

Bangladesh and Germany share a strong development partnership focused on clean energy, climate adaptation, and sustainable industrial growth. In 2024, Bangladesh imported approximately USD 0.8 billion worth of goods from Germany, primarily consisting of machinery and renewable energy equipment. Given that renewable process heat technologies are still emerging in Bangladesh, there is growing demand from both commercial and industrial sectors. This presents a strategic opportunity for German SMEs to expand their export of renewable heat technologies to Bangladesh, supporting industrial decarbonization and strengthening bilateral cooperation.

SECTOR POTENTIAL AND TECHNOLOGICAL SUITABILITY

With shifting gas prices, stronger decarbonization objectives, and growing support for green finance, Bangladesh presents a moderate but growing potential for climate-friendly heat solutions. Technologies such as solar thermal, electric boilers, and heat pumps are becoming increasingly relevant in key industries including garments (RMG), food and beverage, and ceramics. These sectors demonstrate strong compatibility with renewable thermal technologies in terms of heat demand range, process type, and infrastructure conditions.

HANDELSPARTNERSCHAFT MIT DEUTSCHLAND UND MARKTOPPORTUNITÄTEN

Bangladesch und Deutschland verbindet eine enge entwicklungspolitische Partnerschaft. Ihr Schwerpunkt liegt auf sauberer Energie, Klimaanpassung und nachhaltigem industriellen Wachstum. Im Jahr 2024 importierte Bangladesch aus Deutschland Waren im Wert von rund 0,8 Milliarden US-Dollar, vor allem Maschinen und Ausrüstung für erneuerbare Energien. Da erneuerbare Prozesswärmetechnologien in Bangladesch noch nicht weit verbreitet sind, steigt insbesondere im gewerblichen und industriellen Sektor (C&I-Sektor) die Nachfrage nach entsprechenden Lösungen. Dies eröffnet deutschen KMU eine strategische Chance: den Ausbau der Exporte von Technologien zur Erzeugung von Wärme aus erneuerbaren Energien nach Bangladesch, um dessen industrielle Dekarbonisierung zu unterstützen und die bilaterale Zusammenarbeit zu stärken.

SEKTORPOTENZIALE UND TECHNOLOGISCHE PASSFÄHIGKEIT

Mit schwankenden Gaspreisen, ambitionierteren Dekarbonisierungszielen und wachsender Unterstützung für grüne Finanzierung bietet Bangladesch ein moderates, aber größer werdendes Potenzial für klimafreundliche Wärmelösungen. Technologien wie Solarthermie, Elektrokessel und Wärmepumpen gewinnen insbesondere in Schlüsselbranchen wie der Bekleidungsindustrie (RMG), der Lebensmittel- und Getränkeindustrie sowie der Keramikbranche an Relevanz. Diese Sektoren weisen eine hohe Kompatibilität mit Technologien für die Gewinnung von Wärme aus erneuerbaren Energien auf, sowohl hinsichtlich der benötigten Temperaturen als auch der Prozessarten und infrastrukturellen Voraussetzungen.

FINANCING MODELS AND STRATEGIC LEVERS FOR GERMAN PROVIDERS

Financial institutions are backing long-term concessional loans, and EPC contractors are increasingly open to piloting innovative models. Scalable business models such as Heat-as-a-Service, leasing, and EPC-based contracts are becoming more viable options to reduce upfront capital barriers and accelerate deployment. To drive success, German firms should focus on engaging in policy dialogue, investing in local capacity building, and leveraging blended finance solutions.

RECOMMENDATIONS FOR IMPLEMENTATION AND COOPERATION

To unlock Bangladesh's renewable heat potential, stakeholders should expand policy coverage, promote pilot projects in priority sectors, and scale concessional financing. German SMEs can lead with efficient, modular technologies and flexible business models like > Heat-as-a-Service. Coordinated efforts across industry, government, and development partners will help accelerate adoption, reduce emissions, and deliver long-term economic and environmental benefits as part of Bangladesh's industrial energy transition.

FINANZIERUNGSMODELLE UND STRATEGISCHE HEBEL FÜR DEUTSCHE ANBIETER

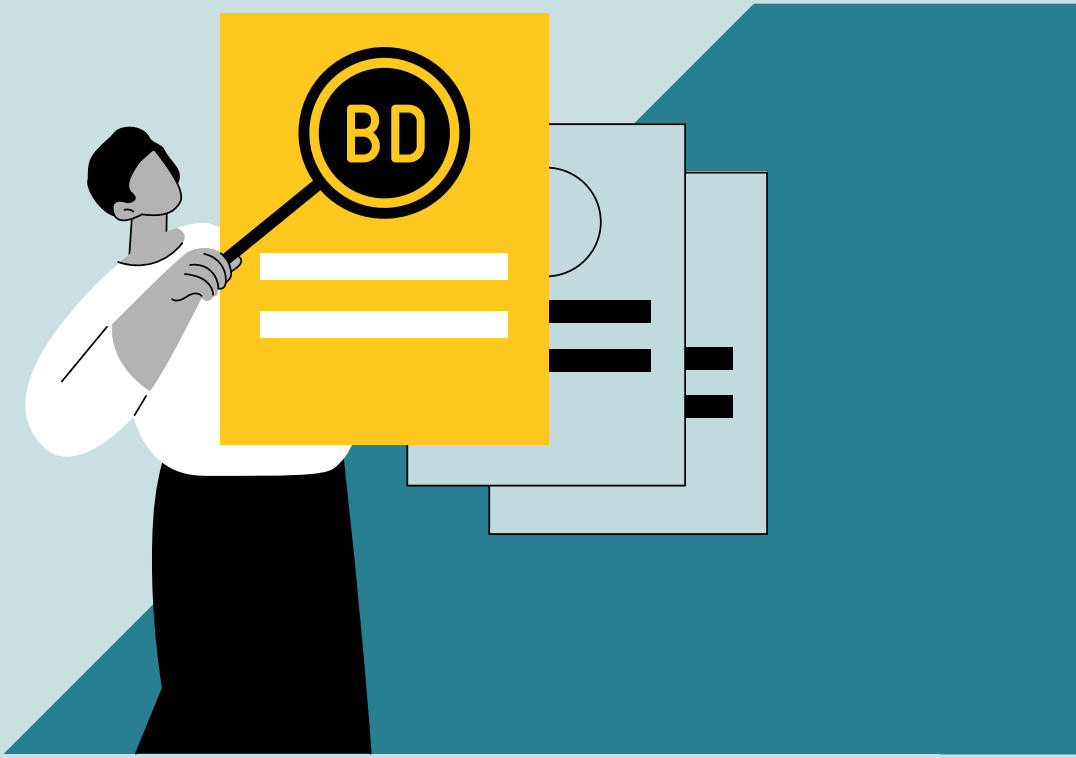
Finanzinstitutionen unterstützen langfristige zinsgünstige Kredite, und EPC-Dienstleister zeigen zunehmend Offenheit für die Erprobung innovativer Modelle. Skalierbare Geschäftsmodelle wie Heat-as-a-Service, Leasing oder EPC-basierte Verträge (EPC – Engineering, Procurement and Construction [Planung, Beschaffung und Bau]) gewinnen an Bedeutung: Mit ihnen lassen sich hohe Anfangsinvestitionen umgehen und der Markthochlauf beschleunigen. Für einen erfolgreichen Markteintritt sollten sich deutsche Unternehmen darauf konzentrieren, den politischen Dialog mitzugestalten, in den Aufbau lokaler Kapazitäten zu investieren und Mischfinanzierungsansätze gezielt zu nutzen.

EMPFEHLUNGEN FÜR DIE UMSETZUNG UND KOOPERATION

Um das Potenzial von Prozesswärme aus erneuerbaren Energien in Bangladesch zu erschließen, sollten die politischen Rahmenbedingungen ausgeweitet, Pilotprojekte in prioritär relevanten Sektoren gefördert und zinsgünstige Finanzierungsinstrumente skaliert werden. Deutsche KMU können mit effizienten, modularen Technologien und flexiblen Geschäftsmodellen wie Heat-as-a-Service eine Vorreiterrolle spielen. Ein koordiniertes Vorgehen von Industrie, Regierung und Entwicklungsakteuren ist entscheidend dafür, dass die Einführung beschleunigt, Emissionen gesenkt und langfristige wirtschaftliche sowie ökologische Vorteile im Rahmen der industriellen Energiewende Bangladeschs erzielt werden.

1

Country Profile



1.1 Socio-economic overview of Bangladesh

Bangladesh is a rapidly developing country in South Asia with a population exceeding 170 million (Bangladesh Bureau of Statistics, 2023)[1]. Table 1 shows key statistics for Bangladesh. Its gross domestic product (GDP) growth slowed from 5.78% in FY 2022-23 to 4.22% in FY 2023-24 and further to a provisional 3.97% in FY 2024-25, marking the lowest rate since the pandemic, banking sector challenges and reduced investment confidence (Bangladesh Bureau of Statistics, Planning Commission, 2025)[2]. The industry sector GDP was 3.51% and service sector GDP was 4.51%. Germany is a key trade partner and investor for Bangladesh.

TABLE 1. Key statistics for Bangladesh

Population	170 million
GDP	USD 462 billion
GDP growth rate	3.97%
Industrial contribution to GDP	37.95%
Primary energy consumption	57.27 MTOE
Renewable energy share	3%
Energy cost per kWh (industrial)	BDT 10.76
Industrial process heat temperature in 60% of the industries in BD	250°C

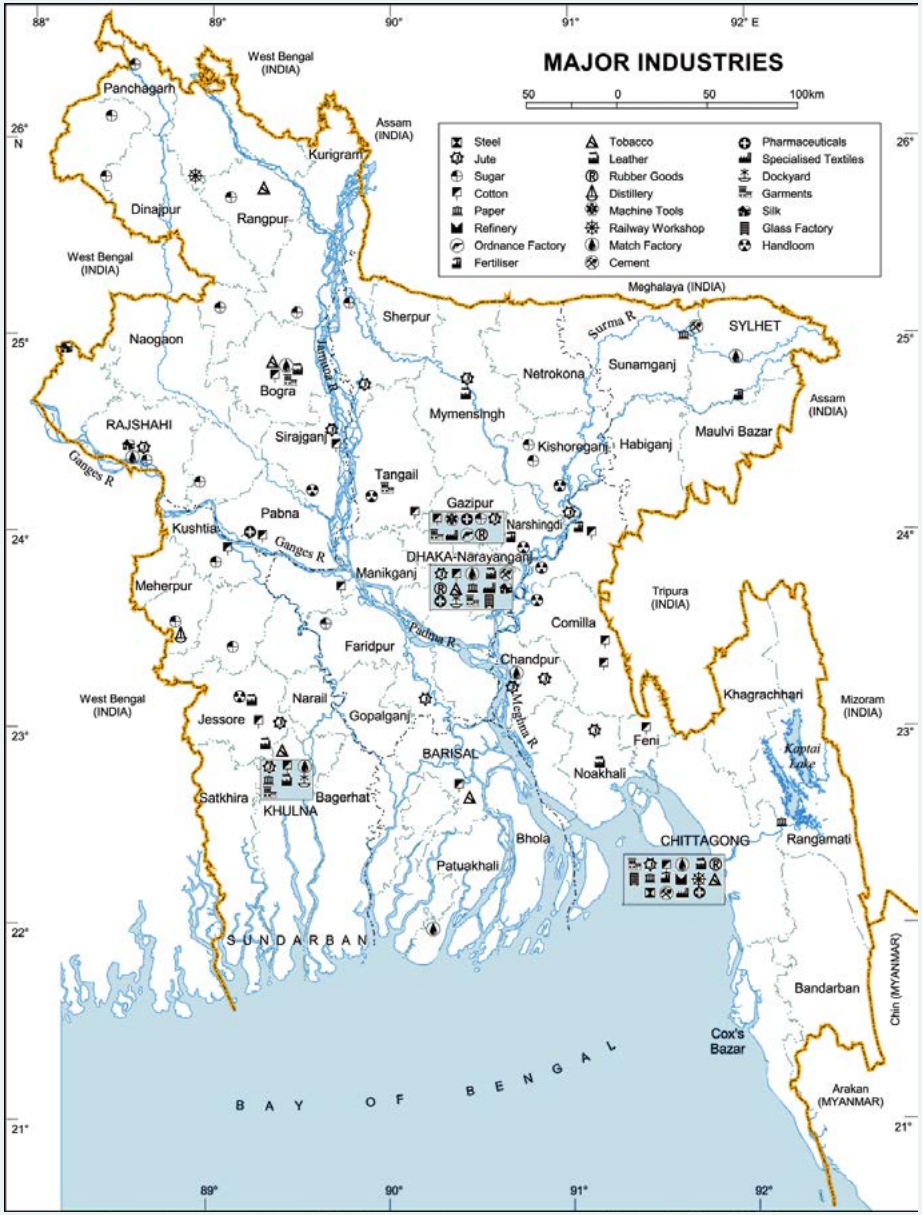
1 Bangladesh Bureau of Statistics. (2023, November 15). Population and Housing Census. Retrieved from Bangladesh Bureau of Statistics: https://bbs.gov.bd/site/page/47856ad0-7e1c-4aab-bd78-892733bc06eb/Population-and-Housing-Census, Accessed on 26 May 2025

2 Bangladesh Statics Bureau, Planning Commission. (2025, May 27). 2024-25 Fiscal Year's Provisional Estimate of GDP. Retrieved from Bangladesh Bureau of Statistics: https://bbs.gov.bd/site/page/dc2bc6ce-7080-48b3-9a04-73cec782d0df/Gross-Domestic-Product-(GDP), Accessed on 30 May 2025

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on (Bangladesh Bureau of Statistics, 2023) and (Bangladesh Bureau of Statistics, Planning Commission, 2025), (Hydrocarbon Unit, Energy and Mineral Resources Division, 2024), (Tasmin, Farjana, Hossain, & Golder, 2022)

Process heat demand in Bangladesh is growing rapidly in line with industrial expansion and GDP growth, with electricity consumption per capita showing a strong correlation ($R \approx 0.98$) with GDP, indicating a parallel rise in energy use (MDPI, 2020). Industrial energy consumption is projected to increase nearly sevenfold – from 8,000 KTOE in 2015 to 54,000 KTOE by 2040 – driven largely by sectors including textiles, RMG, steel and cement, which collectively contribute over 10% to GDP (IJERT, 2017). This rising demand for thermal energy creates a significant opportunity for cleaner and more efficient process heat technologies, especially as energy efficiency improvements in key industries could reduce fuel use by up to 30%, saving approximately 73.4 bcf of LNG – around 30% of national imports (World Economic Forum, 2023). Figure 1 shows the industrial landscape, with a high concentration around Dhaka, Chittagong and Khulna region.

FIGURE 1. Geographic overview of major industrial zones in Bangladesh



Source: The Bangladesh Network, 2017, https://www.thebangladesh.net/major-industries-of-bangladesh.html, Accessed on 28th May 2025

1.2 Geography and climate

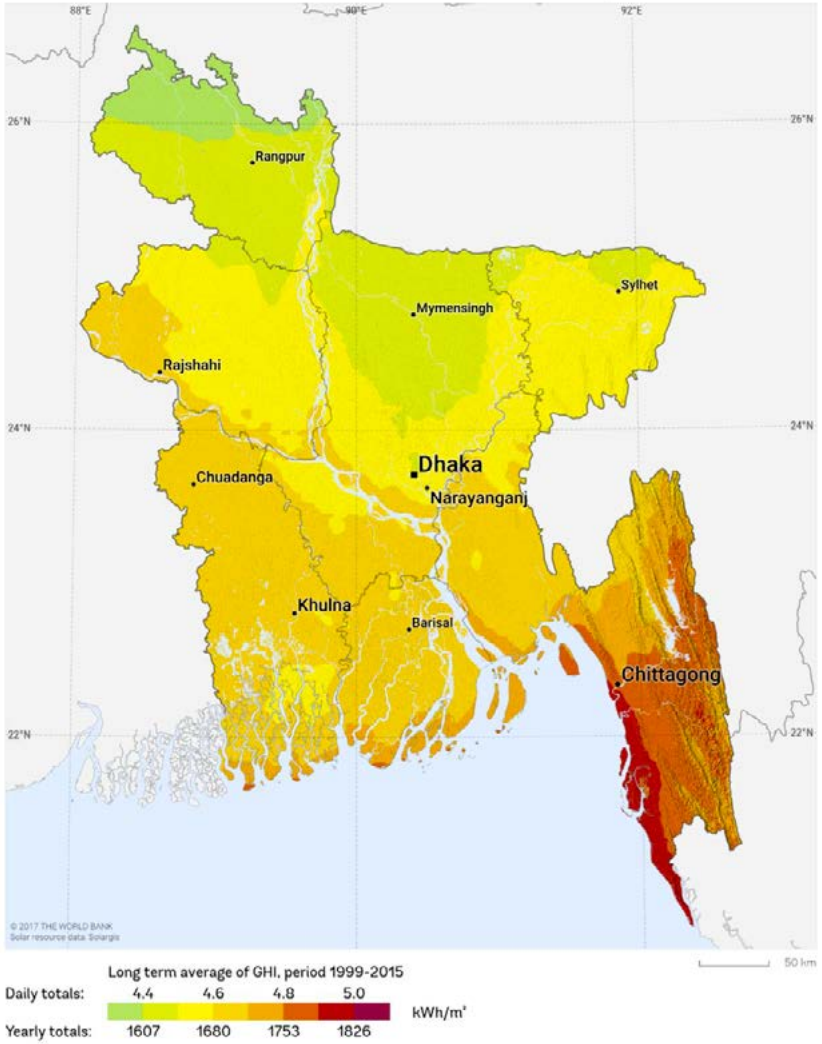
Bangladesh, a low-lying South Asian country bordered by India, Myanmar and the Bay of Bengal, spans 147,570 sq km and lies within the Ganges-Brahmaputra-Meghna delta. Its fertile floodplains support a dense population, but the region is highly vulnerable to floods, cyclones and sea level rise. The monsoon season provides about 80% of annual rainfall, sustaining agriculture (Sieghart & Rogers, 2015)[3] Bangladesh has three major sea ports: Chattogram, Mongla and the newly operational Payra Port. These ports are crucial for Bangladesh's economy.

3 Sieghart, L., & Rogers, D. (2015, May 19). Bangladesh: The challenges of living in a delta country. Retrieved from World Bank Blogs: https://blogs.worldbank.org/en/endpovertyinsouthasia/bangladesh-challenges-living-delta-country, Accessed on 21 May 2025

1.3 Solar irradiance in Bangladesh

According to the Global Solar Atlas shown in Figure 2, Bangladesh receives average daily solar irradiance (GHI) of between 4.33 and 4.95 kWh/m², with 3.2 to 3.9 effective solar hours per day. According to SREDA, PV systems show an IRR of ~20% when replacing grid electricity and ~12% when replacing gas-based power.

FIGURE 2. Global horizontal irradiance in Bangladesh



Source: World Bank Group, 2019, https://www.researchgate.net/figure/Global-horizontal-solar-irradiation-in-Bangladesh-56_fig3_336720254

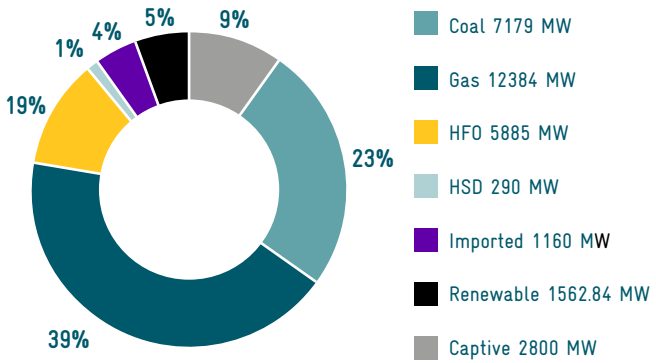
1.4 Energy sector overview

In Bangladesh, as Figure 3 shows, natural gas and LNG account for a share of 39%, coal 23% petroleum oil (both heavy fuel oil (HFO) and high-speed diesel (HSD)) 20% of the energy mix. The remaining sources are imported energy, captive generation and renewable energy. Bangladesh's total installed electricity generation capacity stands at approximately 27,424 megawatts (MW) (Bangladesh Power Development Board, 2025)[4]. Bangladesh is confronting a severe summer power crisis primarily due to unpaid dues to independent power producers (IPPs) and fuel suppliers, who are threatening to reduce electricity production by 3,500 to 4,000 MW amid rising demand (Dhaka Tribune, 2025)[5] .In key industrial zones such as Gazipur, Narayanganj and Dhaka Export Processing Zone (DEPZ), factories are experiencing frequent power outages and gas shortages. This has led to a 30-40% reduction in production capacity.

1.4.1 National energy and policy landscape

Bangladesh is transitioning from domestic natural gas to a diversified energy mix due to declining reserves. The Integrated Energy and Power Master Plan (2023) sets three goals:

FIGURE 3. Bangladesh energy mix



Source: SREDA, 2025, https://doi.org/10.1016/j.esr.2025.101829

1. Energy security: Diversify sources (LNG, coal, renewables), strengthen grid storage and boost cross-border trade.
2. Energy efficiency: Target inefficient technologies with audits and replace them.
3. Clean energy to increase to 20% by 2023 and 30% by 2041: Push solar, wind, hydro, biomass, nuclear and imports to meet nationally determined contribution (NDC) targets – despite setbacks, progress continues via decentralised solutions and investments. Table 2 provides an overview of the key regulatory and policy institutions and major stakeholders.

TABLE 2. Key regulatory and policy institutions/major stakeholders

Institution	Role	Relevance to process heat technologies
Bangladesh Energy Regulatory Commission (BERC)	Regulates energy pricing, licensing and disputes	Regulates gas and electricity tariffs, shaping the cost competitiveness of process heat solutions like boilers, WHR and fuel switching
Sustainable and Renewable Energy Development Authority (SREDA)	Promotes energy efficiency and renewable energy	Key driver of low-carbon heat tech through audits, standards and policy support; contact point for foreign clean heat solution providers
Boiler Board	Regulates industrial boilers and pressure vessels	Approves installation and retrofitting of boilers; compliance with safety and technical standards for heat technology
Ministry of Power, Energy and Mineral Resources (MoPEMR)	Oversees national energy policy and planning	Sets strategic direction via Integrated Energy and Power Master Plan (IEPMP); crucial for aligning clean process heat solutions with national goals and unlocking policy support

4 Bangladesh Power Development Board. (2025, April 30). Present Installed Generation Capacity (MW) as on 30th April 2025. Retrieved from Bangladesh Power Development Board: https://bpdb.gov.bd/site/page/e7f4aaea-7605-4588-a705-e615c574cb88/-, Accessed on 30 May 2025

5 Dhaka Tribune. (2025, February 2). Bangladesh faces deepening summer power crisis amid payment issues. Retrieved from Dhaka Tribune: https://www.dhakatribune.com/bangladesh/power-energy/372537/bangladesh-faces-deepening-summer-power-crisis, Accessed on 30 May 2025

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed

1.5 Trade relations with Germany

In 2024, bilateral trade between Germany and Bangladesh reached USD 9.81 billion (Dhaka Tribune, 2025)[6] , with Bangladesh exporting mainly garments and importing machinery and renewable energy equipment. Germany's technological expertise and commitment to climate action align with Bangladesh's energy transition goal of ensuring maximum transition to a low carbon economy by the year 2050 (United Nations, 2024)[7]. Table 3 highlights the growing volume of Bangladesh–Germany bilateral trade (2022–2024), driven by Bangladesh's exports of RMG and home textiles, and imports of machinery.

1.6 Political stability

Bangladesh gained independence from Pakistan in 1971, but faced early political instability with military coups and autocratic rule. Democracy was restored in 1991 under a parliamentary system, dominated by two rival parties: the Awami League (AL) and the Bangladesh Nationalist Party (BNP). Their rivalry has often blocked bipartisan cooperation.

In 2018, Prime Minister Sheikh Hasina's AL won a landslide victory, securing 96% of seats amid allegations of voter suppression and the imprisonment of BNP leader Khaleda Zia. In January 2024, the AL again won over 220 of 300 seats after the BNP boycotted the election, citing unfairness.

Tensions peaked in August 2024 when nationwide student protests demanded Hasina's resignation. She stepped down and fled to India, marking a historic political shift. Dr Muhammad Yunus, a respected academic reformist, was appointed interim leader. Political uncertainty has eased somewhat with the announcement of new elections scheduled for February 2026. Nevertheless, German SMEs should continue to monitor the evolving environment closely, as ongoing tensions between the military, opposition, and civil society may still influence regulations, investment conditions, and risk factors in this strategically important market.

TABLE 3. Bangladesh-Germany bilateral trade (USD billion)

Year	Total trade	Exports from Bangladesh	Imports to Bangladesh	Main export items	Main import items
2022	8.2	7.45	0.75	Ready-made garments (RMG), textiles	Machinery, chemicals, industrial equipment
2023	9.1	8.3	0.8	RMG, jute products	Machinery, renewable energy equipment
2024	9.81	9.0	0.81	RMG, footwear, home textiles	Machinery, renewable energy equipment

Source: Dhaka Tribune, 2025, https://www.dhakatribune.com/bangladesh/foreign-affairs/378381/germany-bangladesh-a-strategic-partner-in-trade, Accessed on 30 May 2025, Bangladesh Export Promotion Bureau (2023–24)

6 Dhaka Tribune. (2025, April 10). Germany: Bangladesh a strategic partner in trade, investment, sustainable development. Retrieved from Dhaka Tribune: https://www.dhakatribune.com/bangladesh/foreign-affairs/378381/germany-bangladesh-a-strategic-partner-in-trade, Accessed on 30 May 2025

7 United Nations. (2024, February 17). Bangladesh: Bangladesh's energy transition journey so far. Retrieved from United Nations: https://bangladesh.un.org/en/260959-bangladesh%E2%80%99s-energy-transition-journey-so-far, Accessed on 30 May 2025

2

Market Opportunities

2.1 Business climate and market entry conditions

Bangladesh allows foreign investment, with restrictions in freight forwarding and advertising requiring local ownership. The One Stop Service (OSS) platform offered by the Bangladesh Investment Development Authority (BIDA) eases approval processes. Special Economic Zones (SEZs) offer tax holidays, infrastructure support and 0–25% import duties. German SMEs benefit from profit repatriation, Everything But Arms (EBA) access and regulated energy sector entry (Garmendia, 2024).

Table 4 summarises the key factors for foreign investors, including Bangladesh's strategic location that offers access to markets, detailed labour wage rates by sector, tax holiday incentives of up to 15 years for renewable energy and VAT exemptions on renewable energy equipment imports.

TABLE 4. Key considerations for foreign investors

Factors	Considerations for foreign investors
Strategic geographic location	Strategic access to South and Southeast Asia, including India, China and ASEAN via seaports
Labour costs	Minimum wages range from BDT 7,100–12,500 across sectors (garments, pharma, steel, etc.) (Minimum Wages Board, 2025)
Tax holiday	10-year tax holiday in SEZs/EPZs; 15-year exemption for renewable energy investments
VAT exemptions	VAT and import duty waived for renewable energy equipment (Policy 2025).

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed and (Minimum Wages Board, 2025), https://mwb.portal.gov.bd/sites/default/files/files/mwb.portal.gov.bd/page/8157a5ff_d278_4cbe_92ba_8b010a3b6851/2025-05-14-09-05-5415139abc59257053676cfda2b0ea4b.pdf, Accessed on 21 May 2025

2.2 Policy and regulatory framework

There is no dedicated regulation for processing heat, but several laws and instruments govern its safety, efficiency and environmental impact.

2.2.1 Boilers Act 1923 (amended 2021)

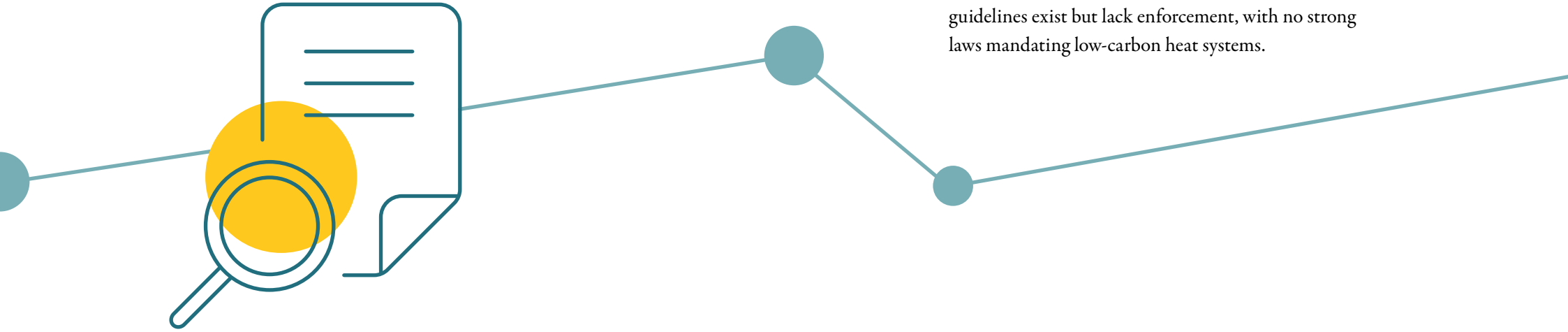
This act mandates equipment registration, periodic inspection and operator licensing for industrial boilers to ensure safety. However, it does not contain any energy/emission standards.

2.2.2 SREDA's Energy Efficiency and Conservation Rules (2016)

Introduced under the mandate of SREDA, the Energy Efficiency and Conservation Rules of 2018 require energy audits for consumers of more than 1,000 TOE annually. These audits cover thermal systems such as boilers, furnaces and dryers, and are designed to identify inefficiencies.

2.2.3 Environmental and sectoral regulations

Process heat systems fall under the Environment Conservation Act of 1995 (Department of Environment, 1995), requiring Environmental Clearance Certificates to ensure compliance with emission standards for pollutants. While these regulations limit environmental impact, they don't enforce decarbonisation or energy efficiency. Thermal efficiency guidelines exist but lack enforcement, with no strong laws mandating low-carbon heat systems.



2.2.4 Analysis of key regulations relevant to process heat in Bangladesh

Table 5 outlines key regulations in Bangladesh related to process heat, listing the responsible authorities, their scope – such as boiler safety, energy audits, emission limits and renewable energy targets – and noting their limitations, including lack of binding efficiency standards, sector-specific emission caps or mandates for thermal energy transition.

TABLE 5. Key regulations relevant to process heat in Bangladesh

Regulation / policy	Authority	Scope and relevance	Limitations
Boilers Act, 1923 (amended 2021)	Office of the Chief Inspector of Boilers (MoI)	Boiler registration, safety compliance	Focuses on safety; no efficiency/emission mandates
Energy Efficiency and Conservation Rules, 2018	SREDA	Energy audits for large users; promotes thermal efficiency	No binding standards or retrofit obligations
Environment Conservation Act, 1995 and Rules 1997	Department of Environment (DoE)	ECC requirement; emission limits; cleaner tech promotion	No sector-specific emission caps or heat decarbonisation
Renewable Energy Policy 2008 (2023 draft update)[8]	Power Division / SREDA	Renewable energy targets (40% by 2041)	Focus on electricity only, excludes thermal
Net Metering Guidelines (2018)[9]	SREDA / Power Division	PV export to grid for C&I users	Applies only to electricity, no thermal mechanisms
Electricity Act, 2018[10]	Ministry of Power, Energy and Mineral Resources (MoPEMR)	Power sector modernisation	No mandates on heat system transition or emissions
The Renewable Energy Policy, 2025	Ministry of Power, Energy and Mineral Resources (MoPEMR)	Promotion of renewable energy technologies	Lacks heat system transition mandates

8 Metropolitan Chamber of Commerce and Industry, Dhaka (MCCI), 2008, Draft 2023)
9 Net Metering Guidelines, 2018
10 Ministry of Power, Energy and Mineral Resources, 2018

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed

2.2.5 Key findings relating to gaps in process heat policy and regulation

Table 6 highlights gaps in Bangladesh's process heat policies and regulations which include, for example, the absence of mandatory efficiency standards as well as of specific emissions limits for heat-intensive processes, specific renewable thermal policies, decarbonisation targets or a dedicated legal framework for the heat market, alongside limited availability of financing for clean heat solutions.

2.2.6 National carbon reduction commitments related to process heat

Bangladesh's 2021 NDC commits to a 6.73% unconditional GHG reduction by 2030, rising to 21.85% with support. Energy and industry, including process heat, are key focus areas, highlighting the country's drive for climate change mitigation via efficiency and cleaner technologies.

Industrial heat-specific targets stipulated in the Energy Efficiency and Conservation Master Plan (EECMP)

The EECMP published by SREDA targets a 20% industrial energy intensity reduction by 2030, promoting efficient boilers, heat recovery, renewable heat and fuel-switching from coal and gas.

TABLE 6. Gaps in process heat policy and regulation

Regulatory area	Current status	Key gaps
Process heat efficiency	Energy audits encouraged for large users	No mandatory efficiency or performance standards
Emissions regulations	Covered under general industrial emissions	No CO_2/GHG limits or incentives for cleaner fuels
Renewable thermal policies	No targeted policies	Focus limited to electricity; no renewable heat support
Heat decarbonisation targets	Not in national plans	No sector-specific heat emission reduction targets
Financing/incentives	Limited green finance access	No dedicated subsidies or financing for clean heat
Legal framework for heat market	Embedded in general energy regulations	No standalone heat market regulation or tariffs

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed

2.3 Price hike in fossil fuels and new opportunity for renewable solutions

In a major policy shift, Bangladesh has introduced a differentiated gas tariff structure that distinguishes between existing and new industrial consumers. Under this framework, existing industrial users continue to receive natural gas at subsidised rates, approximately BDT 11.98 per cubic metre, preserving their historical cost advantages. In contrast, industrial connections are subject to market-based pricing, which can range from BDT 30 to BDT 42 per cubic metre (BDT 30 for existing, BDT 40 for new connections, and new captive users will have to pay BDT 42 per cubic metre), up from BDT 31.5. depending on the supply arrangement. This steep rise in fuel costs for new entrants significantly increases the operational expenses associated with conventional, gas-based process heat systems such as steam boilers and furnaces.

This evolving cost structure presents a compelling market opportunity for renewable and low-carbon heat solutions, particularly for new or expanding industrial facilities. Technologies such as solar thermal systems, biomass boilers, waste heat recovery units and electrified process heat (powered by renewable electricity) can now offer not only environmental benefits but also competitive economic returns in comparison with high-cost gas systems. For German technology providers, project developers and investors, this creates a favourable entry point to introduce advanced, fuel-independent heat technologies that align with Bangladesh's growing industrial energy demand while supporting decarbonisation targets.

Table 7 compares local selling prices for four fuel products – diesel, kerosene, octane and petrol – between 2020 and June 2025, showing significant price increases ranging from approximately 50% to 88% over a period of five years.

TABLE 7. Price comparison 2020 to 2025 (five years)

Product name	Local selling price (Tk/L) 2020	Local selling price (Tk/L) (1 June 2025)	Price increase
HSD (diesel)	59.74	102	70.74%
SKO (kerosene)	60.79	114	87.53%
HOBC (octane)	81.11	122	50.41%
MS (petrol)	78.81	118	49.73%

Source: Centre for Policy Dialogue (CPD), 2025, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5191714#:~:text=1.-,INTRODUCTION%20%26%20OBJECTIVES,under%20the%20IMF%20loan%20condition.

Adoption of market based pricing

In March 2024, Bangladesh launched an automated pricing mechanism aligned with the International Monetary Fund (IMF) for petrol, diesel, octane, kerosene, jet fuel and gas that is adjusted monthly based on global benchmarks. Earlier fluctuations during the 2021–2023 global energy crisis led to lagged domestic increases, often with insufficient downward adjustment.

3

Target group for the German energy industry

3.1 German SMEs in heat supply and process heat solutions

German companies are recognised leaders in renewable process heat solutions, offering solar thermal systems (concentrating and non-concentrating), biomass boilers, heat pumps and CHP systems powered by renewable fuels. Their technologies are valued for high thermal efficiency, smart automation and system integration. Thermal efficiency – measuring how effectively fuel energy is converted to useful heat – is typically expressed in %. Efficiencies above 75% mean less energy is wasted. In Bangladesh, 20% of surveyed EPC firms offer solutions exceeding 65% efficiency, with 80% focused on further improvements, reflecting a strong innovation trend.

Four firms have already adopted renewable heat solutions, and four out of five use waste heat recovery. According to SREDA, 30 EPC firms are listed for renewable energy solutions, indicating strong market entry potential for German SMEs. Key industry associations – such as BCMA (30 companies, ~40 cement plants), BSMA (38 steel companies) and BTMA (1,854 textile mills) – represent a large and organised industrial base (BTMA, 2025). Accordingly, German SMEs can gain access to these factories through collaboration with these associations that are highly interested in collaborating with German suppliers of renewable process heat solutions.

3.2 Demand for heat supply and process heat solutions

Industrial processes can be matched with appropriate heat supply solutions based on the specific temperature ranges they require. The survey revealed the heat demand by sector as shown in the following table.

Table 8 outlines key industrial sectors in Bangladesh, their primary heat-related processes, suitable renewable heat technologies and the typical temperature ranges required. It helps identify the technology that offers the best fit for decarbonising thermal energy use.

Solar thermal technologies (flat plate and concentrating) are the most preferred, chosen by 54.55% of the factories surveyed – mainly from the textiles, pharmaceuticals and food processing sectors. There is also rising interest in electric boilers and heat pumps, especially in the textiles and pharmaceutical sectors (45.45%). In contrast, biomass boilers (18.18%) and biogas boilers (9.09%) have limited uptake, indicating possible awareness gaps. Heavy industries such as steel and paper and pulp prefer CHP systems and WHR for better efficiency and cost savings. Besides technological choices, 63.64% of factories identified environmental compliance and carbon reduction as major drivers, while 45.45% cited lower operational costs. Moreover, 18.18% – including the textiles and steel sectors – stressed the need for government incentives to support investment in renewable heat solutions.

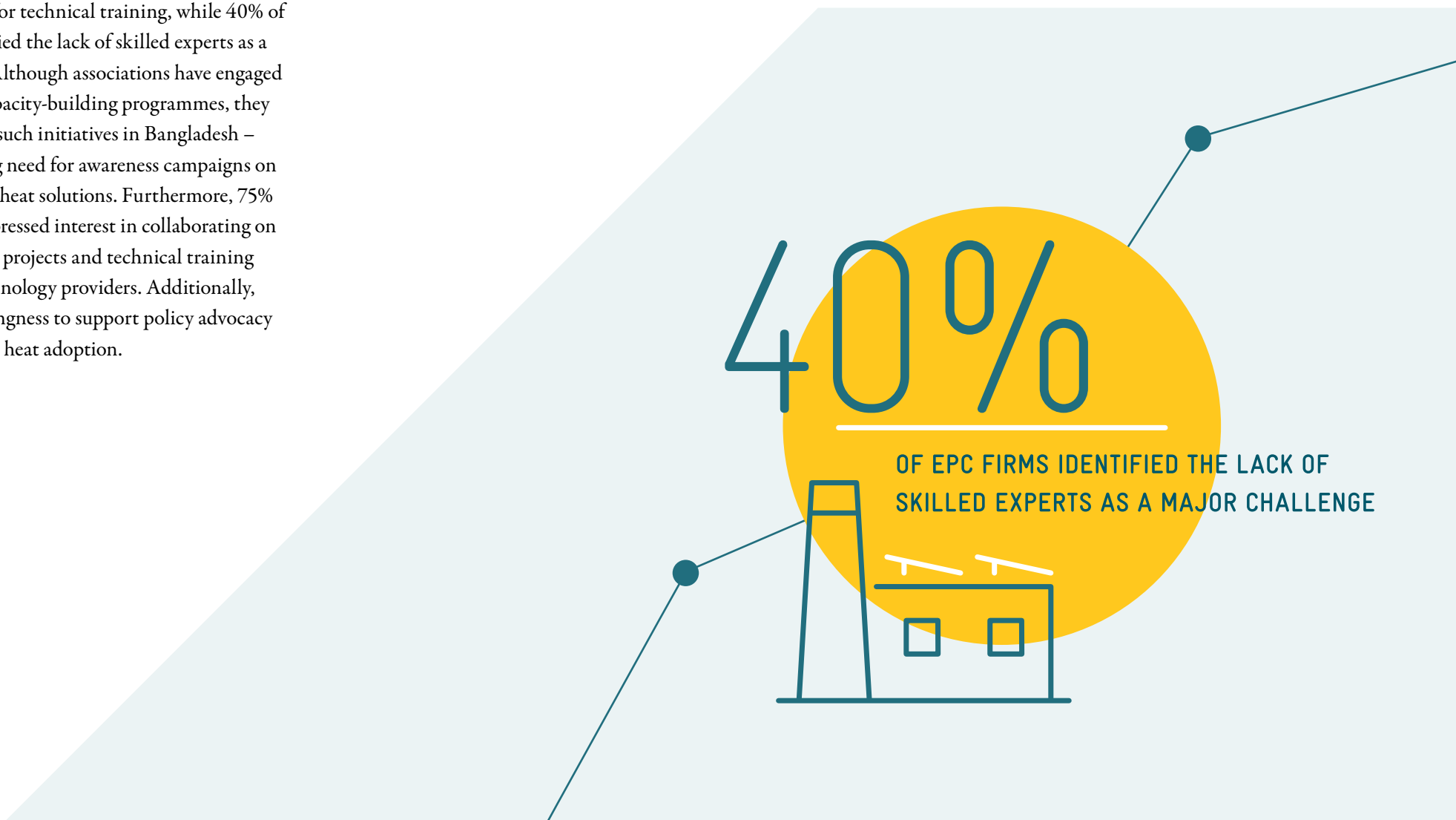
TABLE 8. Demand for heat supply and process heat solutions

Sector	Key thermal processes	Recommended technologies	Temperature range
Garments (RMG)	Washing, drying, dyeing, steam	Solar thermal, heat pumps, biomass boilers, WHR, CSTs	Low to medium (<100–400°C)
Food and beverage	Pasteurisation, hot water, sterilisation	Solar thermal, electric heaters, heat pumps	Low (<100°C)
Paper	Drying, steam processes	Biomass boilers, WHR, CSTs	Medium (100–400°C)
Healthcare	Washing, sterilisation	Solar thermal, electric heaters, heat pumps	Low (<100°C)
Education and government	Space/water heating, cooking	Solar thermal, heat pumps, electric heaters	Low (<100°C)
Steel	Forging, melting, calcination	WHR, hybrid furnaces, electric kilns, hydrogen systems	High (>400°C)
Ceramics	Kiln firing, glazing, drying	Hybrid kilns, WHR, biomass/gas furnaces, electrified systems	High (>400°C)
Leather	Drying, steaming, water heating	Solar thermal, biomass boilers, heat pumps	Low to medium (<100–150°C)
Fertilizer	Steam, chemical processing	WHR, gas boilers, hybrids, solar-assisted preheating	Medium to high (150–400°C)
Glass	Melting, annealing, reheating	Electric/hybrid furnaces, hydrogen-ready systems, WHR	High (>800°C)

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed and survey

3.3 Experience and know-how in demand

The survey involving five EPC firms, eleven factories and six financial institutions highlighted significant skills gaps among EPC firms as well as regulatory hurdles. Notably, 83.33% of financial institutions stressed the need for technical training, while 40% of EPC firms identified the lack of skilled experts as a major challenge. Although associations have engaged in solar-related capacity-building programmes, they reported a lack of such initiatives in Bangladesh – indicating a strong need for awareness campaigns on renewable process heat solutions. Furthermore, 75% of associations expressed interest in collaborating on data sharing, pilot projects and technical training with German technology providers. Additionally, 50% showed willingness to support policy advocacy for cleaner process heat adoption.



4

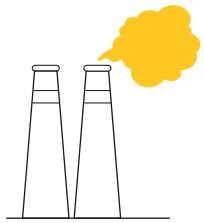
Detailed market opportunities of the heat supply and process heat sector

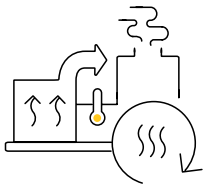
4.1 General framework and conditions for current heat supply and process heat for industrial processes in Bangladesh

4.1.1 Commercial and industrial heat systems in Bangladesh

In Bangladesh, both commercial and industrial sectors use a mix of traditional and modern heat supply technologies, ranging from coal- and wood-fired boilers to gas-fired boilers, thermal oil heaters, and absorption heat pumps. The industrial sector, especially in garments, food and beverage, steel, ceramics, leather, paper, fertilizer, glass and healthcare, relies heavily on thermal energy for process heat. Heat supply systems are dominated by fossil fuels, although renewable options such as solar thermal and biomass boilers are emerging. However, biomass potential is limited due to land constraints, low fuel density and high collection costs, yielding only 300–400 GWh/year (SREDA, 2023). While technologies like Waste Heat Recovery and renewables show promise, adoption is still low due to technical, financial and awareness barriers. The following table summarises the heat supply technologies currently in use, based on SREDA's study on energy efficiency in thermal systems.

Table 9 summarises the status and applicability of various process heat supply solutions in Bangladesh, highlighting both conventional fossil-fuel-based systems and emerging renewable and efficient technologies across key industrial sectors.





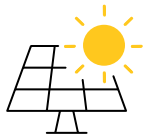


TABLE 9. Stakeholder power-interest analysis

Conventional fossil fuel-based systems
Boilers and steam systems: • Most widely used heat generation system in Bangladesh • Fired using coal or natural gas. Due to outdated technology, poor maintenance and improper insulation the efficiency of boilers is below the optimal operating range of 65–85%
Industrial furnace: • Primarily used in steel, ceramic and glass manufacturing • Many furnaces operate at lower-than-optimal conditions due to poor maintenance and lack of automatic controls. This leads to high energy consumption and GHG emissions
Industrial efficient technology
Waste heat recovery (WHR) • A significant untapped opportunity • The concept is acknowledged, and some pilot projects exist in Bangladesh • Wide-scale adoption of this technology is constrained by lack of awareness, technical capacity and limited financing options • Cement, steel and food processing sectors are technically suitable for WHR implementation
Renewable heat technologies
Solar water heaters • Have been piloted in the textiles and agro processing sector
Biomass boilers • Are also being used, but not to a significant extent
Solar thermal systems: • Particularly evacuated tube collectors, have demonstrated attractive ROIs when replacing fossil-fuel-based systems, especially in water heating applications

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed and survey

Heat market structure in the commercial and industrial sector

Bangladesh lacks a centralised or regulated thermal heat market. Heat is generated onsite by industrial consumers on demand with varying production volumes, primarily using:

- Natural gas and diesel-fired boilers
- Coal kilns and furnaces
- Biomass (agro-processing)
- Electric heaters (smaller commercial applications)

There is no utility-scale heat infrastructure; nearly all systems are decentralised and vary widely in efficiency and emissions.

Table 10 provides an overview of process heat demand across major sectors in Bangladesh, detailing market size, export share, company and employment scales, primary energy sources, temperature needs, suitable technologies and the estimated share of heat costs in total energy expenditures.

TABLE 10. Process heat demand by sector in the Bangladeshi market

Sector	Market size (2024/25)	Export share	Company sizes	Employment	Energy mix (main)	Heat demand	Applicable technologies	Heat cost share (%)
Garments (RMG)	USD 19bn → 29bn (2033)	High (85%)	Small to large (e.g., Ha-meem)	4m+	Gas, electricity, biomass	100–180°C	Solar thermal, biomass, heat pumps, CHP	35–45
Food and beverage	USD 4bn (beverages: USD 129m)	Low (e.g., tea)	Medium to large (e.g. PRAN)	Thousands	Gas, electricity, biomass	60–150°C	Same as RMG	30–40
Steel	Not specified	Minimal	Medium to large (e.g. BSRM)	Thousands	Coal, gas, electricity	>600°C	Gas/biomass/ hydrogen boilers	60–70
Ceramics	USD 883m → 2.2bn (by 2030)	Growing	Medium to large (e.g. RAK)	Thousands	Gas, electricity	800–1,200°C	Gas/biomass/ hydrogen boilers	60–70
Leather and tanning	USD 1.5bn (exports)	Moderate (60%)	Small to large (e.g. Apex)	0.5–1m	Gas, electricity, biomass	60–100°C	Solar thermal, biomass, heat pumps	35–45

Sector	Market size (2024/25)	Export share	Company sizes	Employ-ment	Energy mix (main)	Heat demand	Applicable technologies	Heat cost share (%)
Paper and pulp	USD 0.8–1.2bn	Minimal (regional)	Small to medium (e.g. Bashundhara)	50k–100k	Gas, electricity, biomass	100–200°C	Boilers, solar thermal, heat pumps	35–45
Fertilizer	USD 1.5–2bn	Negli-gible	Medium to large (e.g. BCIC)	10k–20k	Gas, electricity	200–400°C	Boilers (gas/ biomass/hydro-gen), CHP	50–60
Glass manufac-turing	USD 0.3–0.5bn	Small, growing	Medium to large (e.g. PHP)	20k–50k	Gas, electricity, coal	1,000–1,500°C	Biomass/hydro-gen boilers	60–70
Health-care and hospitals	USD 2–3bn	Domestic only	Small to large (e.g. Apollo)	100k–200k	Electricity, gas	60–120°C	Solar thermal, heat pumps, CHP	20–30
Education and govern-ment buildings	USD 1–1.5bn	None	Small to large (e.g. DU)	200k–300k	Electricity, gas	60–120°C	Solar thermal, heat pumps, CHP	15–25

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

4.1.2 Technology adoption status

The adoption of renewable heat supply technologies in Bangladesh is shaped by policy, financial and market drivers. A survey of regulators and financial institutions was conducted to identify the key factors influencing their uptake.

Drivers for the adoption of renewable heat supply solutions

Most regulators – including Power Cell, SREDA, BPDB, BERC and NWPGCL – agree that Bangladesh's renewable energy policy needs updating. In fact, a major update was introduced in 2025 with the adoption of the Renewable Energy Policy 2025, replacing the 2008 framework and setting new targets and implementation mechanisms. A total of 90% believe heat supply solutions can significantly support national carbon reduction targets. Bangladesh Bank expressed strong interest in financing these technologies, noting that its Sustainable Finance Policy is flexible and open to including new, bankable green products. The bank currently operates three refinance schemes: Green Product Projects (BDT 1,000 crore), Green Transport Fund (BDT 5,000 crore) and Technology Upgradation Fund (BDT 1,000 crore). Among financial institutions, 83% cite lack of awareness, technical expertise and policy support as key financing risks, while 66.7% highlight high capital costs as a major barrier.

4.2 End user technology adoption behaviour and adequacy of investment support

Industry associations – including BKMEA, BSMA, BTMA and BCMA identified high capital costs as the main barrier to adopting renewable process heat technologies such as solar thermal collectors, industrial heat pumps and biomass boilers. Around 75% cited a lack of technical expertise, highlighting the need for awareness and training. All associations recommended pilot or demonstration projects to build trust. Some 83% of financial institutions confirmed that the industries lack the requisite technical knowledge for these technologies. Adoption is mostly driven by global buyer requirements (e.g. LEED, Higg Index). While clean thermal technologies are gaining attention, the current financing and implementation environment is not yet ready for large-scale deployment.

- Availability of green financing: Bangladesh Bank has shown flexibility under its Sustainable Finance Policy, with three key refinancing schemes for green products.
- Policy flexibility: Bangladesh Bank confirmed that new technologies can be proposed for inclusion in the green product list, provided they are bankable and technically viable.
- Limited uptake by financial institutions: Despite available green finance schemes, only 67% of the financial institutions surveyed manage relevant portfolios, with renewable thermal energy projects rarely prioritised over PV systems or efficient lighting.

4.2.1 Companies' investment capacity and willingness to invest

Insights from the factory survey

A survey of 11 factories across various sectors in Bangladesh assessed demand for renewable heat supply technologies. The textiles sector was most engaged, with three factories (27.3%) involved in wet processing, bleaching, dyeing and dry finishing. The pharmaceuticals, pulp and paper and government/educational/commercial institutions sectors were each represented with two factories. Only one beverage company based in Chattogram disclosed a willingness to invest BDT 10 crore in renewable heat solutions; others did not specify their CAPEX limits.

Insights from the EPC survey

Among the EPC contractors surveyed, 60% operate as both EPC and heat supply solution providers, offering engineering, procurement and construction services. All have collaborated with foreign suppliers or investors. Low interest rates are seen as a crucial incentive by all firms, while 80% prioritise tax exemptions and 60% highlight grants or subsidies as necessary government interventions. Additionally, 40% stress the need for streamlined regulatory processes.

Insights from the association survey

All associations identify low awareness and high costs as the main barriers to adopting renewable heat supply technologies. Some 75% also cite inadequate policies, incentives and lack of technical know-how as significant challenges. Due to this knowledge gap, manufacturers struggle to assess expected returns, which leads to uncertainty about investments. Associations emphasise the need for industry-wide awareness campaigns, transparent investment plans and sustainable, affordable solutions to boost adoption.

Insights from the financial institutions survey

All surveyed financial institutions have financed energy efficiency or renewable energy projects, with 20% funding energy-efficient boilers and waste heat recovery. With respect to renewable heat technologies, 67% have financed biomethane or natural gas boilers, and 50% have supported electric boilers. Some also funded solar combined heat and power (CHP) systems, evidencing their active implementation in Bangladesh. Dhaka Bank, Premier Bank, City Bank and IDCOL manage green financing schemes, while UCB PLC and Prime Bank currently do not, indicating room to expand heat supply financing. Key project evaluation criteria include creditworthiness, IRR, collateral, technology maturity, environmental impact, payback period and developer experience. Major risks identified are a lack of policy support, limited expertise and high capital costs. Survey participants included Dhaka Bank, Premier Bank, City Bank, UCB PLC, Prime Bank and IDCOL.

4.2.2 Roof space and ground space, and high heat demand favourable to heat supply and process heat solutions

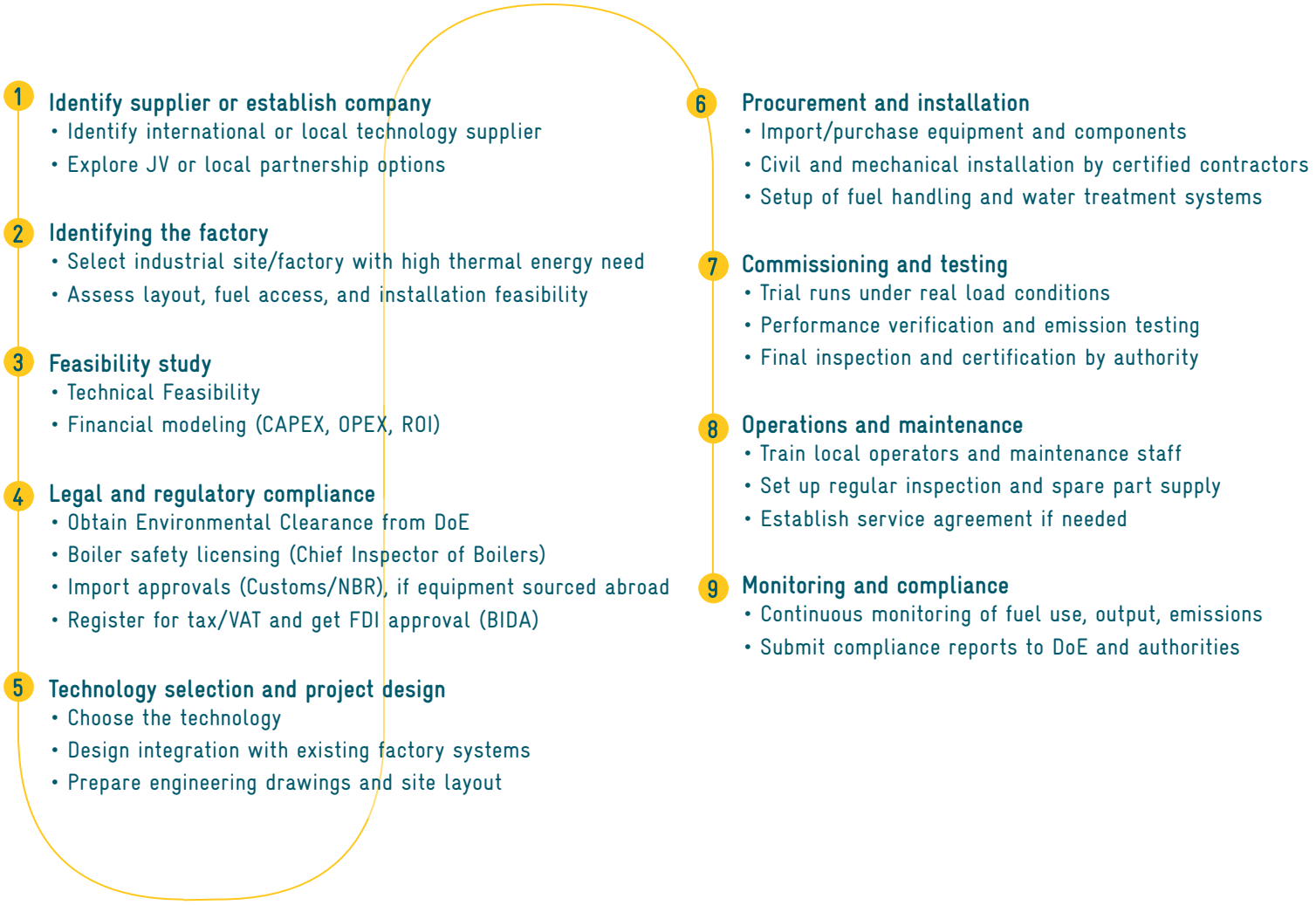
The demand for heat from sectors such as garments, food and beverage, steel, ceramics, leather, paper, fertilizer, glass manufacturing and healthcare is high in Bangladesh. Due to land scarcity, open industrial spaces are limited, but many industries have rooftop areas – especially textile and RMG, tannery and ceramics – that are suitable for solar thermal systems requiring ample space for installation and storage. Some are already using rooftops for solar energy generation

4.2.3 Guidance for the entire project development process

The following process ensures technical, financial and regulatory readiness for successful deployment of heat supply solutions at individual factories in Bangladesh.

Figure 4 illustrates the comprehensive business development process flow, from identifying suitable technology suppliers and factory sites to feasibility studies, legal compliance, technology selection, procurement, commissioning, operations and ongoing monitoring.

FIGURE 4. Process flow of business development



Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed

5

Market opportunities and challenges for climate-friendly energy solutions in heat supply and process heat solutions

5.1 Financing landscape and sectoral context

5.1.1 Competitive landscape

Bangladesh's industrial sectors – particularly garments (RMG), food and beverage, steel, ceramics, leather and tanning, paper and pulp, fertilizer, glass manufacturing, and healthcare – have high heat demands, traditionally met by fossil fuels such as natural gas and diesel. But rising fuel prices, unreliable gas supply and stricter environmental regulations are driving a shift towards cleaner, more sustainable heat options.

This change is creating new openings for EPC (engineering, procurement and construction) firms. Technologies such as biomass boilers and waste heat recovery systems are increasingly being preferred for their long-term energy and cost benefits. Industries are now seeking affordable, scalable systems that meet global sustainability standards.

While local EPCs still manage most conventional installations, many are not yet ready for renewable technologies. International EPCs, with proven green solutions and technical expertise, are gaining a foothold.

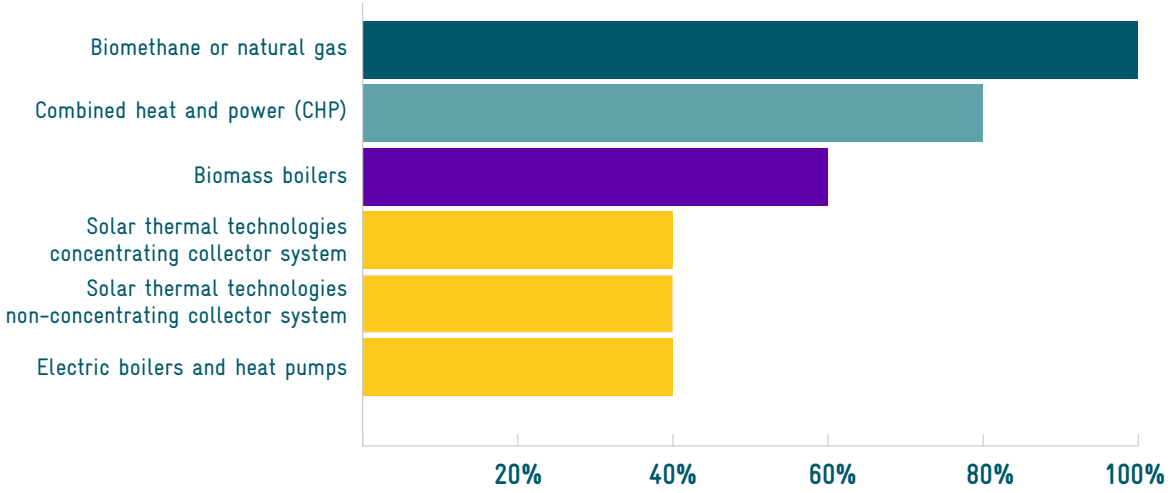
Support from development partners, green finance and pressure from global buyers are accelerating adoption. For EPC firms with innovation, regulatory understanding and pilot-ready solutions, this is an ideal moment to help shape the future of industrial energy in Bangladesh.

5.1.2 Current supplier status

In Bangladesh, all surveyed EPC firms (100%) currently work with natural gas boilers, indicating that they are the most established heat supply technology. Additionally, 80% are engaged in combined heat and power (CHP) systems, and 60% implement biomass boilers; indicating strong momentum towards efficient, sustainable solutions. Solar thermal technologies (both concentrating and non-concentrating) are used by 40% of firms, while 40% also include electric boilers and heat pumps in their portfolios, reflecting a gradual shift toward electrification.

Figure 5 illustrates the percentage of EPCs that include various clean heat technologies in their portfolios, with biomethane/natural gas and CHP showing the highest adoption rates.

FIGURE 5. Heat technologies included in EPCs' portfolio



Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

5.2 Financing and potential for business partnerships among these actors

- Bangladesh Bank actively supports green initiatives and has allocated BDT 7,000 crore under three refinance schemes, offering funds at 5% interest; participating banks may charge an additional 1–2%.
- IDCOL is a key financing partner for renewable projects, providing highly attractive terms with interest rates between 5% and 7%.
- Commercial banks can offer low-cost financing (5.5%–7%) if the project qualifies under the refinance scheme. Otherwise, rates revert to standard commercial lending, averaging 13% annually.
- Apart from Bangladesh Bank's schemes, most banks do not have dedicated green finance funds, and loans are typically issued as general term loans.

5.2.1 Financing landscape from a borrower's perspective

- High CAPEX as a barrier: 66.7% of financial institutions cited high upfront investment as a key hurdle for adopting solar thermal, biomass boilers and industrial heat pumps, highlighting the need for soft loans or refinancing support.
- Operational concerns: Despite lower O&M costs for solar thermal systems, for example, banks expressed concerns over the lack of local service providers and limited technical capacity for troubleshooting and maintenance.
- Attractive payback: Factories investing in solar thermal or biomass boilers for process heat can achieve payback periods of 3–7 years, largely influenced by the cost of the replaced fuel (e.g. diesel or natural gas).
- Cost savings and reliability: Renewable heat systems offer long-term savings and reduce dependence on fossil fuel supply chains, shielding businesses from gas price volatility and disruptions.
- Measurement challenges: 33.3% of banks flagged difficulty in assessing ROI due to limited performance data, indicating a need for standardised energy audits and robust technical proposals.

5.2.2 Financing landscape from the perspective of lenders, banks and NBFI

Grace period and repayment period

All surveyed financial institutions offer grace periods for renewable heat projects. Prime Bank grants 6 months to 2 years; Premier Bank and City Bank allow 6 to 12 months; and IDCOL offers up to 2 years.

Typical repayment periods range from 5 to 10 years for 72% of institutions, including Dhaka Bank, Premier Bank, UCB PLC and Prime Bank. City Bank offers shorter terms of 3 to 5 years, while IDCOL stands out with more flexible options, including terms exceeding 10 years.

Figure 6 shows that the majority (72%) of financial institutions offer repayment periods of 5–10 years, while shorter (<3 years) and longer (>10 years) terms are offered by only 14% of institutions in each case

Eligibility criteria for loan grant

In addition to collateral, banks require a history of good business performance and positive net worth as key eligibility criteria, which are assessed by their credit risk management (CRM) departments using standard creditworthiness measures. For accessing Bangladesh Bank's refinancing scheme, an energy audit by a certified auditor is mandatory. Commercial banks typically require borrowers to maintain a clean Credit Information Bureau (CIB) record, demonstrate strong repayment capacity, and, in some cases, secure prior approval from SREDA for the proposed technology.

Cost of debt or interest rate

Annual interest rates for energy project loans range from 6% to 15%, with IDCOL offering the lowest (6–12%) and banks including Dhaka Bank (13.55%) and Prime Bank (12–15%) on the higher end. Most institutions provide floating rates, influenced by factors such as cost of funds (Dhaka Bank), financial mid-rates (City Bank) or regulatory revisions (Prime Bank), while IDCOL bases rates on credit line agreements or cost plus margin. Only Premier Bank and UCB PLC offer fixed interest rates.

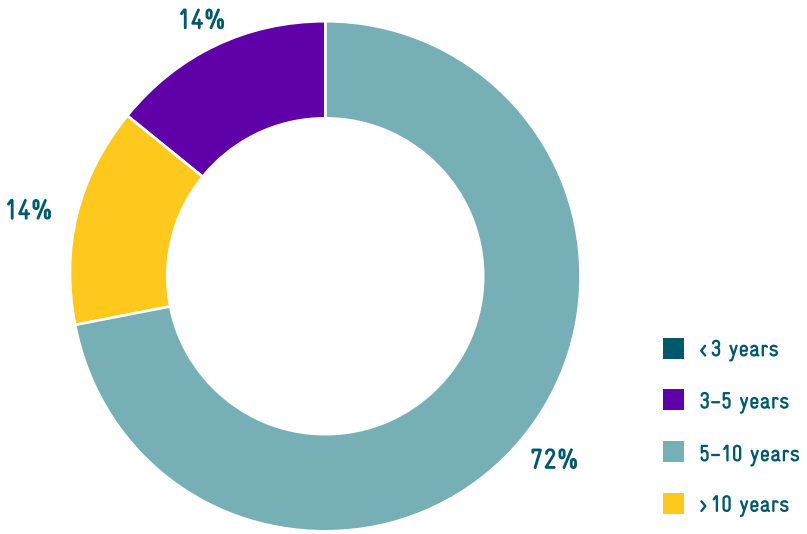
Expected average loan repayment periods

The expected average loan repayment periods for financing heat supply equipment vary across institutions: Dhaka Bank offers 7 to 10 years, Premier Bank 5 to 10 years, City Bank 3 to 5 years, and UCB PLC around 5 years. IDCOL provides a broader range of 5 to 15 years. Prime Bank did not specify a repayment period.

Maximum allowable repayment period

Maximum repayment periods for heat supply equipment financing are typically up to 10 years for Dhaka Bank, Premier Bank and UCB PLC, shorter for City Bank (5 years) and Prime Bank (5–7 years) and the longest for IDCOL, which offers up to 15 years.

FIGURE 6. Repayment periods offered by financial institutions



Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

Allowable minimum and maximum loan amount

Allowable loan amounts for heat supply projects vary across institutions: Dhaka Bank requires 20–30% borrower equity; Premier Bank bases loan size on the customer's business scale; City Bank finances 70–90% of project costs, with 30–70% eligible for refinancing; UCB PLC offers loans between BDT 50 lakh and 1,000 lakh; and Prime Bank provides BDT 50 to 150 million, potentially extending up to the single borrower exposure limit depending on the project.

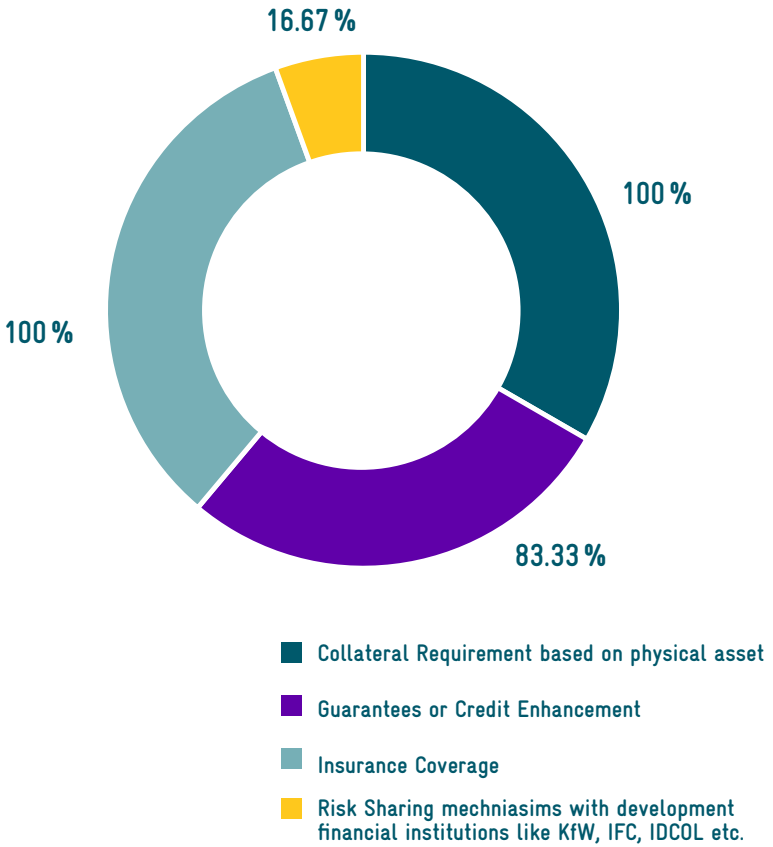
Collateral/security and other risk management tools

As illustrated in Figure 7, all financial institutions interviewed (100%) require collateral based on physical assets and mandate insurance coverage as part of risk management. A high proportion of 83.33% also use guarantees or credit enhancements; however, only 16.67% currently engage in risk-sharing mechanisms with development financial institutions such as KfW, IFC, ADB etc.

Open to co-financing or syndication with foreign investors

A majority of 67% of the financial institutions surveyed are open to co-financing or syndication with foreign investors. However, 33% of the respondents indicated that their decision will depend on project size and value.

FIGURE 7. The % of interviewed financial institutions require following security/collateral institutions interviewed institutions



Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

5.3 Competitive landscape

Bangladesh's industries – garments, textiles, food, steel and chemicals – rely heavily on fossil fuels for heat. However, rising fuel costs, unreliable gas and stricter regulations are driving demand for cleaner alternatives. This shift opens up opportunities for EPC firms to provide efficient, eco-friendly solutions such as biomass boilers and waste heat recovery, which offer long-term savings. While local EPCs dominate the market for traditional installations, many lack expertise in renewables, allowing international EPCs with ready green technologies and technical know-how to gain ground.

Support from donor programmes, green finance and global buyer pressure are accelerating this transition. EPCs combining innovation, regulatory understanding, incentives and local insight, supported by pilot projects, are well positioned to lead Bangladesh's industrial energy future.

5.3.1 Current supplier status

All surveyed EPC firms (100%) currently work with biomethane or natural gas boilers, the most established technologies in Bangladesh's heat supply sector. Additionally, 80% engage in combined heat and power (CHP) systems and 60% implement biomass boilers, indicating strong progress towards efficient, sustainable solutions. Solar thermal technologies (both concentrating and non-concentrating) are supported by 40% of firms, reflecting growing interest in solar energy. Similarly, 40% include electric boilers and heat pumps in their portfolios, showing a gradual shift toward electrification.

In terms of business models, direct purchase remains dominant among EPC contractors. Leasing and performance-based contracts are gaining traction. Companies also provide pay-per-use options, signalling emerging innovative financing. Public-private partnerships (PPP) are rare but of strategic significance, with only limited number of companies are actively participating in such collaborations.

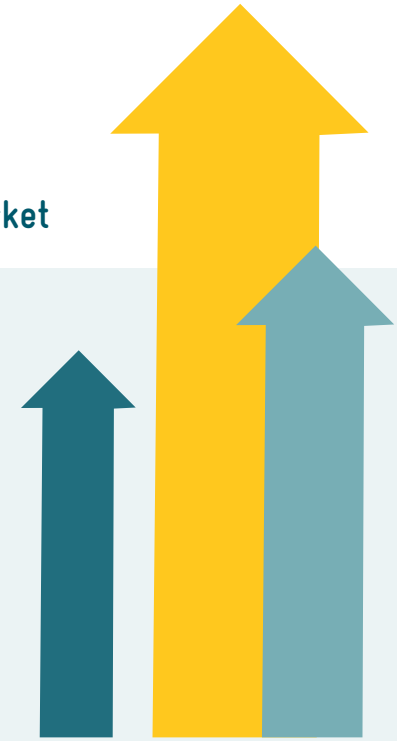
Market challenges and opportunities for technology suppliers

High upfront costs are a major barrier for 60% of EPC firms implementing renewable heat solutions, while 40% cite a lack of skilled experts and 20% point to policy and regulatory challenges. Lengthy approval processes further complicate adoption. Despite this, EPCs remain eager to adopt efficient technologies and are exploring flexible financing options such as leasing, heat-as-a-service (HaaS) and public-private partnerships (PPP). Notably, all surveyed firms (100%) are interested in piloting renewable heat projects and 60% would be more willing to engage with technical support from German providers.

5.4 Prospective technologies and business models

Based on the surveys conducted, this sector analysis provides a forecast of industrial heat technology adoption across sectors, showing varied market shares for nine technologies. High-temperature heat pumps lead in paper and pulp, pharmaceuticals and leather due to suitable medium-temperature processes, but have low uptake in steel and in food and beverage. Low-temperature heat pumps are most used in textiles, with moderate use in paper and pharma. Use of electric boilers is highest in pharma, leather, chemicals and textiles, driven by electrification, while they are less relevant in high-temp sectors like steel and glass. CHP systems are favoured in sectors with steady thermal and electrical needs, such as paper and pulp or cement. Renewable fuel boilers are gaining traction in the energy-intensive steel and ceramics sectors, while biomass boilers dominate in the cement industry due to thermal demand. Natural gas boilers remain common in textiles and food owing to their reliability. Solar thermal systems are split between concentrating types for high-temp steel and pharma applications and non-concentrating types in textiles, tannery and pharma. Overall, adoption aligns with sector-specific heat demand, operations and decarbonisation readiness.

5.4.1 Prospective technology for the Bangladeshi market



Heat pump (high temp)

Adoption is strongest in the paper and pulp, pharmaceuticals and tannery sectors (each 14.08%), followed by ceramics, glass, cement and chemical/fertilizer industries (10.56%). Sectors such as food and beverage (2.82%), textiles (9.15%) and steel (3.52%) show lower but notable demand, suggesting potential for hybrid integration. High-temperature heat pumps are promising for energy-intensive sectors that require 100–150°C or more.

Heat pump (low temperature)

Textile and RMG leads with 16% of demand, followed by paper and pulp and pharmaceuticals (13% each) and food and beverage (8%). The ceramics, glass and tannery sectors each show 10% adoption. These results highlight broad applicability in light to medium industries with <100°C heat requirements.

Electric boiler

High adoption is seen in textile and RMG, pharmaceuticals, tannery/leather and chemicals/fertilizers (each ~15%), driven by needs for clean, mid-temp heat. Lower uptake in steel, cement and glass (5–7%) reflects limitations in high-temp applications. Early adopters prioritise precision, cleanliness and environmental compliance.

Combined heat and power (CHP) systems

Uptake is concentrated in paper and pulp (20%), cement (17%) and chemicals/fertilizers (15%), where simultaneous thermal and electrical output provides efficiency gains. Moderate adoption is seen in textiles (12%), pharma (11%) and food and beverage (11%), while lower interest (<5%) is noted in steel, ceramics, glass and tannery.

Boiler (renewable fuel)

Most demand comes from heavy industries: steel, ceramics, paper and pulp and glass (each 19%). These sectors align with the high-temp output and fuel flexibility of RF boilers. Light industries (e.g. textiles, pharma, F&B) show limited uptake (3–6%) due to logistical and temperature mismatch.

Boiler (biomass)

Cement leads with 60% of installations, followed by food and beverage (21%) and textiles (4%). Other sectors show minimal adoption (<3%), limited by technical and fuel logistics constraints. Cement's dominance reflects high heat needs and flexibility for biomass-based fuels.

Boiler (biomethane / natural gas)

Textiles and RMG (23%), food and beverage (18%), pharma (15%) and chemicals/fertilizers (13%) exhibit the highest demand, favouring reliable, cleaner combustion. Heavy industries like cement, steel and ceramics show lower uptake (4–6%), potentially due to economic or infrastructure limitations.

Solar thermal – concentrating collector system

Adoption is most prominent in steel (17%), tannery (13%) and pharmaceuticals (11%), with moderate demand (10%) in cement, ceramics, paper and pulp and in glass. These sectors benefit from the high-temp capacity of concentrating solar systems.

Solar thermal – non-concentrating collector system

Steel (17%) and tannery (13%) lead adoption, with strong presence in pharma and cement (11% each). Textile and food and beverage show early uptake (7%), with hot water and low-temp heat used for cleaning, pre-heating or surface treatment.

5.5 Blueprints for renewable process heat solutions

The estimations and amounts given below compare renewable or new German process heat technologies with conventional solutions, using a standard 10 MWth natural gas boiler operating 8,000 hours annually as the baseline.

Table 11 presents comparative blueprints for renewable process heat solutions, highlighting investment and operational costs, expected savings and sector suitability. Solar thermal and CHP systems offer the highest OPEX savings. Suitability of the process heat solutions ranges from garments to heavy industries.

TABLE 11. Blueprints for renewable process heat solutions

Technology	Investment cost (CAPEX)	Operational expenses (OPEX)	Expected savings/ benefits compared with conventional system	Expected OPEX saving in %	Applicable context / most suitable sectors
Solar thermal – non-concentrating collector system	EUR 15,000,000	EUR 250,000	EUR 2,075,154	89.25%	Garments (RMG), Food and beverage, Leather and tanning, Furniture
Solar thermal– concentrating collector system	EUR 15,000,000	EUR 400,000	EUR 1,925,154	82.80%	Any sector with high temperature demand and free of land restraints
Combustion – boiler (biomethane/natural gas)	EUR 5,000,000	EUR 855,000	EUR 1,470,154	63.23%	Garments (RMG), Food and beverage, Leather and tanning, Furniture
Combustion – boiler (biomass)	EUR 7,000,000	EUR 710,000	EUR 1,615,154	69.46%	Any sector with low-to-medium-temperature demand
Combustion – boiler (renewable fuel)	EUR 9,000,000	EUR 830,000	EUR 1,495,154	64.30%	Steel, Ceramics, Brick industry
Combustion – combined heat and power (CHP)	EUR 15,194,790	EUR 436,500	EUR 1,888,654	81.23%	Steel, Ceramics, Brick industry
PtH – boiler (electric)	EUR 1,750,000	EUR 1,155,000	EUR 1,170,154	50.33%	Any sector with low-to-medium temperature demand
PtH – heat pumps (low temperature)	EUR 8,750,000	EUR 920,000	EUR 1,405,154	60.43%	Garments (RMG), Food and beverage, Leather and tanning, Furniture
PtH – heat pumps (high temperature)	EUR 8,750,000	EUR 925,000	EUR 1,400,154	60.22%	Any sector with medium temperature demand

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey.

5.6 Technology ranking

A two-axis framework using benefit-to-cost ratio (BCR) and practical viability helps prioritise renewable heat technologies. Natural gas/biomethane boilers and waste heat recovery are top priorities, while technologies such as solar thermal and CHP face implementation challenges.

Table 12 presents a matrix comparing heating technologies based on their financial return (benefit-to-cost ratio) and practical viability, helping to identify options that are both cost-effective and feasible to implement.

TABLE 12. Matrix for financial return and practical viability

		FINANCIAL RETURN (BCR)	
		High (BCR above 1.30X)	Low (BCR below 1.30X)
PRACTICAL VIABILITY	High	• Solar thermal – non-concentrating collector system-BCR 1.73X • Combustion – combined heat and power (CHP)-BCR 1.38X	• PtH – boiler (electric)-BCR 1.09X • PtH – heat pumps (low temperature)-BCR 1.04X • PtH – heat pumps (high temperature)-BCR 1.04X"
	Low	• Combustion – boiler (biomass)-BCR 1.53X • Solar thermal – concentrating collector system-BCR 1.45X • Combustion – boiler (biomethane / natural gas)-BCR 1.41X	• Combustion – boiler (renewable fuel)-BCR 1.16X

Quadrant I: High return and high viability – top candidates:

- Solar thermal – non-concentrating collector system-BCR 1.73X
- Combustion – combined heat and power (CHP)-BCR 1.38X

Quadrant II: Low return but high viability – niche or subsidy-required

- PtH – boiler (electric)-BCR 1.09X
- PtH – heat pumps (low temperature)-BCR 1.04X
- PtH – heat pumps (high temperature)-BCR 1.04X

Quadrant III: High return but low viability – pilot only

- Combustion – boiler (biomass)-BCR 1.53X
- Solar thermal – concentrating collector system-BCR 1.45X
- Combustion – boiler (biomethane / natural gas)-BCR 1.41X

Quadrant IV: Low return and low viability – exclude or watchlist

- Combustion – boiler (renewable fuel) -BCR 1.16X

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey.

5.6.1 Technology scoring on a 1–5 scale

Table 13 below presents the financial viability scoring for each technology along with the underlying basis for the scoring. The top three technologies with a financial score of 5 as a result of the internal rate of return (IRR) and the payback period (PBP) are solar thermal – non-concentrating collector system, combustion – boiler (biomethane / natural gas) and combustion – boiler (biomass).

TABLE 13. Financial viability scoring for each technology

Technology	BCR	IRR	PBP	BCR (Score)	IRR (Score)	PBP (Score)	Financial Score	Justification
Solar thermal - non-concentrating collector system	1,73 X	17,41%	6,83 Y	5	5	5	5	Financial Score (1-5) derived from the average(rounded) score of most commonly used following three profitability measuring indicators. IRR scoring method: IRR>15%= 5, IRR>13.5%=4, IRR>12%=3, IRR>10.5%=2, IRR<10.5%=1 BCR scoring method: BCR>1.5x=5, BCR>1.35=4, BCR>1.20=3, BCR>1.05=2, BCR<1.05=1 PBP scoring method: PBP<7=5, BPB<9=4, PBP<11=3, PBP<13=2, PBP>15=1
Solar thermal - concentrating collector system	1,45 X	15,22%	7,84 Y	4	5	4	4	
Combustion - boiler (biomethane / natural gas)	1,41 X	19,50%	6,41 Y	4	5	5	5	
Combustion - boiler (biomass)	1,53 X	19,35%	6,32 Y	5	5	5	5	
Combustion - boiler (renewable fuel)	1,16 X	12,97%	9,45 Y	2	3	3	3	
Combustion - combined heat and power (CHP)	1,38 X	14,51%	8,22 Y	4	4	4	4	
PtH - boiler (electric)	1,09 X	14,54%	10,50 Y	2	4	3	3	
PtH - heat pumps (low temperature)	1,04 X	10,90%	11,10 Y	1	2	2	2	
PtH - heat pumps (high temperature)	1,04 X	10,77%	11,21 Y	1	2	2	2	

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

Table 14 provides a practical viability score (out of 5) for various heating technologies, with underlying factors including land requirements, technology availability, fuel supply, cost and infrastructure in Bangladesh.

TABLE 14. Practical viability scoring for each technology

Technology	Technical score	Reason
Solar thermal - non-concentrating collector system	5	Process heat could be acquired in smaller space, technology know-how available, technical set-up/labour available in BD
Solar thermal - concentrating collector system	2	Land restraints, technology know-how unavailable, technical set-up/labour available in BD
Combustion - boiler (biomethane / natural gas)	3	Technology know-how available, fuel supply unsteady, consumers reluctant to take risk
Combustion - boiler (biomass)	2	Technology available in BD, fuel supply unsteady & hiked over last decade, increased CO_2
Combustion - boiler (renewable fuel)	1	Fuel supply unsteady and total fuel handling infrastructure unavailable
Combustion - combined heat and power (CHP)	4	technology know how available, technical set up/labor available in BD, but installation cost is high
PtH - boiler (electric)	3	Technology know-how available, technical set-up/labour available in BD, but installation cost is high and over-dependency on grid power supply
PtH - heat pumps (low temperature)	4	Technology know-how available, technical set-up/labour available in BD, but installation cost is low
PtH - heat pumps (high temperature)	2	Technology know-how available, technical set-up/labour available in BD, but installation cost is high

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

5.6.2 Top 3 most viable technologies

As a supplement to the previous ranking of technologies based on benefit-to-cost ratio (BCR) and technical feasibility, this sub-section introduces a deployability lens. This includes real-world factors that influence implementation success in Bangladesh, such as availability of local suppliers, ease of obtaining permits, compatibility with existing infrastructure and support services.

The deployability score evaluates technologies on a scale of 1 to 5, with 5 indicating high ease of deployment with minimal barriers.

Comparing the deployability score set out in Table 15 with the financial and technical viability already covered in this section, we can identify the most immediately actionable technologies for Bangladesh's C&I sectors:

1. Electric boilers: Simple installation and minimal barriers make this technology ideal for fast implementation.
2. Low-temperature heat pumps: Emerging as a long-term option with high efficiency; ecosystem development needed.
3. Solar thermal – non-concentrating: High ROI, low OPEX and strongest real-world deployability.

These technologies are best suited for early deployment and targeted support to maximise renewable heat adoption.

TABLE 15. Combined scoring (financial and practical viability) for each technology

Technology	Deployability score (1–5)	Barrier level	Reason
Solar thermal – non-concentrating	2	High	Proven tech, local installer base, strong ROI, but limited deployment due to rooftop PV saturation
Electric boiler	5	Low	Easy to retrofit, minimal permitting
Heat pump – low temp	4	Medium	Rising awareness, needs more local service capacity
CHP – biomass/ natural gas	3	High	Large systems, technical integration, permits needed
Biomass boiler	3	High	Inconsistent biomass availability and logistics
Solar thermal – concentrating	3	Medium	Needs space and tracking systems
Heat pump – high temp	3	High	Technology emerging, not mature locally
WHR	2	High	Custom solutions, dependent on plant conditions
Biogas/ biomethane boiler	2	High	No scalable market infrastructure or regulation

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

5.6.3 Economically viable solutions per sector

Using six weighted criteria – heat demand intensity, tariff exposure, export orientation, infrastructure readiness, space availability and growth trajectory – we ranked sectors to identify those most aligned with the deployment potential of the shortlisted technologies from the previous section.

Based on the factors heat intensity, tariff pressure, export orientation, infrastructure readiness, space availability and growth potential, Table 16 shows a scoring matrix by sector that helps to identify priority sectors for thermal energy technology deployment.

Low-temperature sectors like RMG and leather are well-suited for heat pumps and solar thermal systems, while high-temperature industries such as steel and ceramics require combustion-based solutions including biomethane boilers, renewable fuels and CHP.

Table 17 (next page) outlines the most economically viable thermal energy solutions for each sector, matching technologies like heat pumps, solar thermal systems and various combustion options to sector-specific temperature needs, operational costs and infrastructure constraints.

TABLE 16. Sector scoring matrix

Sector	Heat intensity	Tariff pressure	Export orientation	Infra readiness	Space availability	Growth potential	Total score
Garments (RMG) 	5	5	5	4	2	4	25
Ceramics 	5	4	2	3	3	5	22
Leather and tanning 	4	3	4	3	2	4	20
Food and beverage 	4	4	3	3	2	3	19
Steel 	5	3	1	2	3	3	17

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

TABLE 17. Economically viable solutions in each sector

Sector	Suitable technologies	Explanation/remarks
Garments (RMG)	1. PtH – heat pumps (low temperature) 2. Solar thermal – non-concentrating collector system 3. Combustion – boiler (biomethane/natural gas)	• Heat pumps: 60–100°C range, COP 3.5 reduces electricity cost (EUR 0.14–0.16/kWth/year), ideal for dyeing/finishing. • Solar thermal: Free fuel, suits low-temp needs, but intermittent (storage needed). • Biomethane/natural gas: Reliable for peak demand, OPEX of EUR 234/kWth/year, but gas decline limits long-term use.
Food and beverage	1. PtH – heat pumps (low temperature) 2. Solar thermal – non-concentrating collector system 3. Combustion – boiler (biomethane/natural gas)	• Heat pumps: 60–120°C fits pasteurisation/cooking, low OPEX (EUR 92/kWth/year). • Solar thermal: Renewable, cost-effective for low-temp processes. • Biomethane/natural gas: Stable supply for high-volume needs, but OPEX of EUR 234/kWth/year is higher.
Steel	1. Combustion – boiler (biomethane/natural gas) 2. Combustion – boiler (renewable fuel) 3. Combustion – combined heat and power (CHP)	• Biomethane/natural gas: 1,200–1,500°C achievable with advanced burners, OPEX of EUR 234/kWth/year. • Renewable fuel: Hydrogen-based, suits high-temp needs, EUR 180–240/kWth/year, but import-dependent. • CHP: Cogenerates power/heat, viable if gas available, EUR 86–129/kWth/year, but CAPEX (EUR 1,519/kWth) is high.
Ceramics	1. Combustion – boiler (biomethane/natural gas) 2. Combustion – boiler (renewable fuel) 3. Combustion – combined heat and power (CHP)	• Biomethane/natural gas: 600–1,200°C for firing, reliable but costly (EUR 234/kWth/year). • Renewable fuel: Hydrogen supports high temps, EUR 180–240/kWth/year, aligns with renewable push. • CHP: Efficient for heat/power, EUR 86–129/kWth/year, but gas decline is a risk.

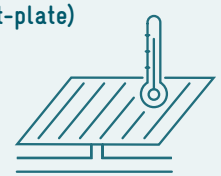
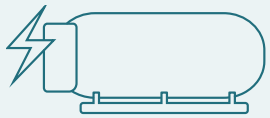
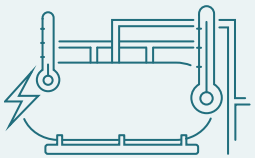
Sector	Suitable technologies	Explanation/remarks
Leather and tanning	1. PtH – heat pumps (low temperature) 2. Solar thermal – non-concentrating collector system 3. Combustion – boiler (biomethane/natural gas)	• Heat pumps: 60–80°C for dyeing/drying, low OPEX (EUR 92/kWth/year), energy-efficient. • Solar thermal: Free fuel, suits low-temp needs, storage mitigates intermittency. • Biomethane/natural gas: Backup option, EUR 234/kWth/year, but less sustainable.
Paper and pulp	1. PtH – heat pumps (medium temperature) 2. WHR – flue gas economiser/steam recovery 3. Combustion – boiler (biomethane/natural gas)	• Heat pumps: Useful for pre-heating processes, COP 2.5–3.0. • WHR: Recovers steam condensate, reduces energy input, supports circular use. • Biomethane/natural gas: Reliable for continuous drying, OPEX of EUR 234/kWth/year.
Fertilizer	1. Combustion – combined heat and power (CHP) 2. WHR – process gas heat exchanger 3. Combustion – boiler (biomethane/natural gas)	• CHP: High temp and electricity needs met simultaneously, EUR 86–129/kWth/year. • WHR: Recovers energy from ammonia synthesis and reforming. • Biomethane/natural gas: Conventional baseline, increasingly costly.
Glass manufacturing	1. Combustion – furnace (hydrogen/natural gas mix) 2. PtH – heat pumps (high temperature) 3. WHR – flue gas recovery	• Hydrogen/natural gas: Achieves >1,400°C, EUR 180–240/kWth/year. • Heat pumps: Useful for pre-heating processes. • WHR: Reduces fuel needs, recovers high-temp flue gases.
Healthcare and hospitals	1. PtH – heat pumps (low temperature) 2. Solar thermal – non-concentrating collector system 3. Electric boilers	• Heat pumps: 60–90°C for sanitation, COP 3.0+, efficient. • Solar thermal: Ideal for hot water supply; storage ensures reliability. • Electric boilers: Backup option, higher OPEX but easy to maintain.
Educational institutions and government buildings	1. PtH – heat pumps (low temperature) 2. Solar thermal – non-concentrating collector system 3. Electric boilers	• Heat pumps: Effective for heating/cafeteria needs, low OPEX. • Solar thermal: Offsets electricity/fossil cost, best with storage. • Electric boilers: For urban schools/hospitals with limited space.

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

5.6.4 Strategic prioritisation

The matrix given in Table 18 below illustrates the operational compatibility between the top 3 technologies and priority sectors, factoring in temperature range, fuel context and infrastructure suitability.

TABLE 18. Technology–sector matching matrix

Technology	Garments (RMG)	Ceramics	Food & beverage
Solar thermal (flat-plate) 	✗ Useful for pre-heating; rooftop limitations due to PV	✓ Ground-mount or pre-heat	✗ Only suitable for pre-heating (<90°C)
Electric boiler 	✓ Easy retrofit for low-pressure steam	✓ Not viable – high-temp kilns	✓ Clean steam for food-grade use
Heat pump – low temp 	✓ Good fit for <100°C processes	✓ Insufficient temp range	✓ Well-suited for pasteurisation, drying

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

5.6.5 Entry criteria for each technology–sector match

To facilitate actionable project identification, the following table outlines preconditions that must be met for each viable technology–sector pairing:

Table 19 defines entry criteria for matching specific heating technologies to sectors such as garments, ceramics and food and beverage based on factors including temperature needs, space availability, energy reliability and process suitability.

These entry criteria are not rigid thresholds, but rather indicative filters to guide early-stage lead identification. Each project opportunity should be validated on the basis of site-specific feasibility studies, audits or discussions with technical managers.

TABLE 19. Entry criteria for each technology–sector match

Technology–sector match	Suggested entry criteria
Solar thermal (garments)	Facilities with 300–800+ kWth hot water demand (e.g. washing/dyeing), ≥800 m² roof space not fully occupied by PV, engaged in low-temp processes (<100°C). Best suited for multi-shift operations seeking long-term fuel cost savings.
Electric boiler (garments)	Suitable for factories with grid reliability >95%, aging gas boilers (≥10 years) and CSR/export-driven compliance targets. Retrofit-friendly in units using low- to medium-pressure steam (<10 bar).
Heat pump (garments)	Ideal for sites with process temperatures ≤100°C (e.g. dyeing, drying), especially where cooling plus heating demand coexist. More viable if the company is open to pilot projects and staff training for maintenance.
Solar thermal (ceramics)	Applicable for water-based pre-heating or ancillary processes, provided ≥1,000 m² ground space is available. Sun exposure of ≥5 hours/day enhances efficiency. Not suited for main kiln operations.
Electric boiler (F&B)	Best for food processors needing clean steam (<150°C) for hygienic applications, with stable power supply and access to concessional or soft loans. Works well where boiler redundancy is needed.
Heat pump (F&B)	Facilities with heat loads between 60–120°C (e.g. pasteurisation, drying) and sufficient indoor or outdoor space for unit placement. Firms targeting OPEX reduction or green certification (e.g. HACCP/LEED) are prime candidates.

Source: Authors' own compilation, EQMS Consulting Limited (2025) based on documents reviewed, calculation and survey

5.7 Prospective business models

To effectively deploy process heat solutions across Bangladesh's diverse industrial segments, four distinct business models are proposed, each strategically aligned with the operational scale and needs of specific target groups:

1. DIRECT OWNERSHIP:

This model is designed for large industrial groups, factories and entities within economic zones that prioritise full asset control and long-term operational benefits. It allows these capital-ready entities to directly own and manage their process heat infrastructure.

2. LEASING:

Aimed at mid-sized factories, this model provides access to advanced process heat technology without requiring large upfront capital investment. Customers benefit from using the equipment based on regular lease payments while avoiding ownership responsibilities.

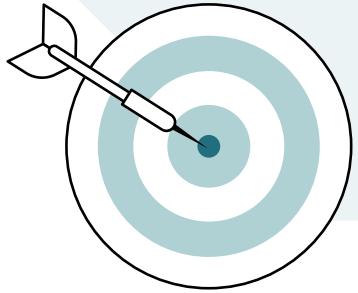
3. HEAT-AS-A-SERVICE (HAAS):

This third-party ownership model is tailored to individual SMEs as well as SMEs operating in clusters. A specialised provider owns, operates and maintains the equipment, delivering heat as a measurable service. This eliminates upfront costs and technical management burdens for SMEs, providing predictable operational expenses.

4. SHARED SAVINGS EPC:

Ideal for projects in Export Processing Zones (EPZs) and Bangladesh Small and Cottage Industries Corporation (BSCIC) areas, this performance-based model involves an Energy Service Company (ESCO) implementing efficiency upgrades. Compensation is directly tied to verified energy savings achieved, aligning incentives between the provider and client.

These models ensure process heat solutions are accessible and operationally viable across all industrial segments – from large economic zone operators to clustered SMEs – by aligning ownership structures, risk allocation and service delivery with each group's specific capabilities and needs.



5.7.1 Exploring innovative financing structures to lower barriers to adoption for commercial and industrial stakeholders

Table 20 outlines four business models – direct ownership, leasing, heat-as-a-service and shared savings EPC – each tailored to different industry sizes and zones, with typical financing structures and interest rates ranging from 5% to 13%, where applicable.

TABLE 20. Business models

Business model	Suggested target group	Financing structure	Borrowing rate
Direct ownership	Large industrial groups / factories, economic zones	Debt financing: 50% to 70% Equity investment: 30% to 50%	5.00% to 13%
Leasing	Mid-sized factories	Debt financing: 50% to 70% Equity investment: 30% to 50%	5.00% to 13%
Heat-as-a-service	SMEs in clusters	Debt financing: n/a Equity investment: n/a Note: Service providers may finance as follows: Debt financing: 50% to 70% Equity investment: 30% to 50%	n/a
Shared savings EPC	EPZ and Bangladesh Small and Cottage Industries Corporation (BSCIC) areas	Debt financing: 50% to 70% Equity investment: 30% to 50%	5.00% to 13%

Source: Authors' own compilation, Infratec Environmental Technologies (2025) based on International Finance Corporation (IFC) (2021)

6

Market entry strategies and risks

6.1 Summary of market entry strategy and risk

Bangladesh presents a promising landscape for renewable process heat technologies, especially in energy-intensive industrial sectors like RMG, steel manufacturing, textiles, food processing, ceramics and pharmaceuticals. A successful market entry strategy for German solution providers hinges on integrating technology leadership with contextual adaptation. Bangladesh's industrial base is receptive to decarbonisation and energy efficiency solutions but constrained by capital intensity, policy gaps and technological unfamiliarity. To address these, companies must:

- Prioritise pilot demonstration projects in high-impact sectors such as RMG.
- Form local joint ventures or strategic alliances with Bangladeshi EPC firms and industrial groups.
- Leverage concessional financing instruments from development banks (e.g. KfW, DEG, ADB).
- Engage with Special Economic Zones (SEZs) and Export Processing Zones (EPZs) where government incentives are most robust.
- Maintain flexibility in business models to include leasing, heat-as-a-service (HaaS) or energy savings contracts.

Risks include administrative hurdles, insufficient availability of skilled human resources, policy inconsistency, currency volatility and limited bankability of SMEs.

6.1.1 Recommended collaboration before market entry

1. **GoB –** close coordination with government entities is essential for navigating regulatory processes and benefiting from available incentives.
2. **SREDA –** for technical cooperation and alignment with the Energy Efficiency and Conservation Master Plan.
3. **BIDA –** for investment facilitation, including foreign investment registration and regulatory approvals.
4. **Ministry of Power, Energy and Mineral Resources (MPEMR) –** for alignment with national energy goals and securing long-term sectoral visibility.
5. **Bangladesh Bank –** collaborate with Bangladesh Bank through the German Government to support an increase in green funds and allocation of a specific portion of green funds for efficient process heat supply solutions in a specific industry.
6. **Associations –** German technology providers should collaborate with industry stakeholders to deliver the latest technology expertise, build trust and align offerings with end-user demand. A few examples of associations are:
   - **BGMEA and BTMA –** for outreach in RMG and textiles industries.
   - **BSMA, BCMEA and Bangladesh Association of Pharmaceutical Industries (BAPI) –** for collaboration in steel, ceramics and pharmaceutical manufacturing associations.
   - **Federation of Bangladesh Chambers of Commerce and Industry (FBCCI) –** for general policy dialogue and business matchmaking.
   - **BGCCI:** Bangladesh-German Chamber of Commerce and Industry
   - These partnerships are critical for scaling pilot projects and gathering user-specific technical requirements.
7. German Government – leverage German bilateral institutions to facilitate entry and de-risk early investments:
   - **GIZ –** for project identification, technical assistance and matchmaking.
   - **KfW and DEG –** for accessing climate-aligned financing.
   - **German Embassy Dhaka –** for diplomatic support and advocacy with local authorities.
8. **G2G collaboration to set milestones –** bilateral institutional frameworks can be established to:
   - Define shared decarbonisation milestones
   - Align industrial policy and market access
   - Co-develop innovation hubs or centres of excellence for process heat

6.1.2 Facilitate financing for end-users

The absence of accessible financing is the principal barrier to technology uptake. A coordinated financial facilitation strategy is essential. A few ways out are outlined below:

1. Bangladesh Bank's re-financing scheme:

The central bank of Bangladesh, Bangladesh Bank supports projects and industries that contribute to sustainability and technological development. Below are some key refinancing opportunities available through Bangladesh Bank (Bank, 2022):

Table 21 summarises three refinancing schemes by Bangladesh Bank – GRS, TDF and GTF – each offering low-interest, long-term loans to support green initiatives, industrial modernisation and renewable energy investments in export-oriented sectors.

TABLE 21. Bangladesh Bank's re-financing schemes

Schemes	Green Refinancing Scheme (GRS)	Technology Development / Up-gradation Fund (TDF)	Green Transformation Fund (GTF)
Brief description of scheme	A revolving refinancing facility of **BDT 1000 crore,** introduced by Bangladesh Bank to encourage financing for environmentally friendly projects and products.	A revolving scheme of **BDT 1000 crore,** introduced by Bangladesh Bank to promote the modernisation of export-oriented industries and the development of new technologies.	A revolving scheme of **BDT 1000 crore,** introduced by Bangladesh Bank to promote the modernisation of export-oriented industries and the development of new technologies.
Interest rate	5.00%	5.00%	5.00%
Loan tenure	3 to 10 years	3 to 10 years	3 to 10 years
Minimum debt-equity ratio	70:30 on project	70:30 on project	70:30 on project
Maximum loan per client	n/a	n/a	BDT 200 crore
Major eligible products	1. Renewable energy 2. Energy-efficient machinery 3. Alternative energy solutions 4. Liquid and solid waste management 5. Recycling and manufacturing 6. Environmentally friendly brick kilns 7. Green agriculture 8. Green CMSME (climate-smart micro, small and medium-sized enterprises) 9. Socially responsible finance	1. Capital machinery 2. Renewable energy products 3. Fire safety products 4 Waste management equipment 5. Effluent treatment plants (ETP) / water treatment plants (WTP)	1. Capital machinery 2. Renewable energy products 3. Fire safety products 4. Waste management equipment 5. Effluent treatment plants (ETP) / water treatment plants (WTP)

Source: Authors' own compilation, Infratec Environmental Technologies (2025) based on International Finance Corporation (IFC) (2021)

2. Green/climate fund access:

Engage multilateral climate finance institutions to establish tailored funds or refinancing lines through local banks:

- **Green Climate Fund (GCF) –** support for capital cost reduction in industrial decarbonisation.
- **Global Environment Facility (GEF) –** for technical assistance and grants.
- **ADB Clean Energy Program –** for concessional debt and risk guarantees.
- **KfW and GIZ –** for blended finance and technical assistance.

3. Reduce financing cost through EU green fund: German SMEs can benefit from EU-wide green financing instruments to offer more attractive terms:

- **EU green fund and horizon Europe –** for innovation and deployment financing.
- **Blended finance structures –** combining grants, concessional loans and private capital.

4. Develop end-user-friendly payment policy:

Introduce models that reduce capital expenditure pressure on Bangladeshi SMEs:

- Arrange more flexible grace period
- Reduce cost of debt and extend repayment period
- Pay-as-you-save (PAYS)
- Heat-as-a-service (HaaS)

6.2 Developing business and financial models and running pilot projects

6.2.1 Business value proposition

The transition towards climate-friendly and efficient heat supply solutions in Bangladesh offers a compelling business case for international technology providers – particularly German SMEs with proven expertise in renewable thermal systems. Rising fossil fuel prices, policy shifts towards decarbonisation and growing demand for sustainable industrial practices have created favourable conditions where well-designed solutions can deliver both environmental and economic value.

German providers bring a distinct competitive edge through modular, high-efficiency and automated systems – such as solar thermal collectors, electric boilers and industrial heat pumps. These technologies are well-suited to the needs of Bangladesh's heat-intensive sectors, including garments, food and beverage, ceramics and pharmaceuticals. German engineering is also synonymous with reliability and long-term cost savings, two key decision factors for local industries.

The business case is further strengthened by flexible implementation models such as heat-as-a-service (HaaS) and leasing, which reduce upfront investment barriers and enable scalable adoption for both SMEs and large manufacturers.

Bangladesh's regulatory landscape – though still developing – shows a clear orientation towards low-carbon solutions, backed by agencies such as SREDA and Bangladesh Bank. Green credit lines and bilateral cooperation offer additional entry points, while active industry associations can support market access and pilot implementation.

For German companies, Bangladesh represents both a new export market and a strategic platform to lead the country's industrial heat transition – through a combination of technical innovation, local engagement and financing partnerships.

Table 22 presents prospective business models and financing structures for thermal energy solutions, outlining ownership, leasing as well as service-based and performance-based approaches, each with target user groups and typical debt-equity splits and interest rates.

6.2.2 Pilot project in the sector offering the most potential (RMG)

The readymade garments sector is the ideal choice for piloting due to high thermal load, brand-driven sustainability goals, global visibility and traceability pressure as well as factory readiness for green certifications. Proposed interventions include solar thermal systems for washing/dyeing processes and biomass boilers for steam generation.

TABLE 22. Prospective business models and financing structures

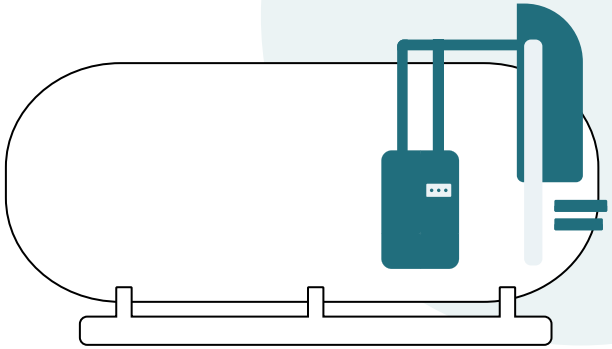
Business model	Description	Suitable for (target group)	Financing structure	Borrowing rate
Direct ownership	Full investment by user	Large industrial groups	Debt financing: 50% to 70% Equity investment: 30% to 50%	5.00% to 13%
Leasing	Monthly lease fee; third-party ownership	Mid-sized factories	Debt financing: 50% to 70% Equity investment: 30% to 50%	5.00% to 13%
Heat-as-a-service	Payment per unit of heat delivered	SMEs in clusters	Debt financing: n/a Equity investment: n/a Note: Service providers may finance as follows: Debt financing: 50% to 70% Equity investment: 30% to 50%	n/a
Shared savings EPC	Returns based on verified energy cost savings	Retrofit and modernisation	Debt financing: 50% to 70% Equity investment: 30% to 50%	5.00% to 13%

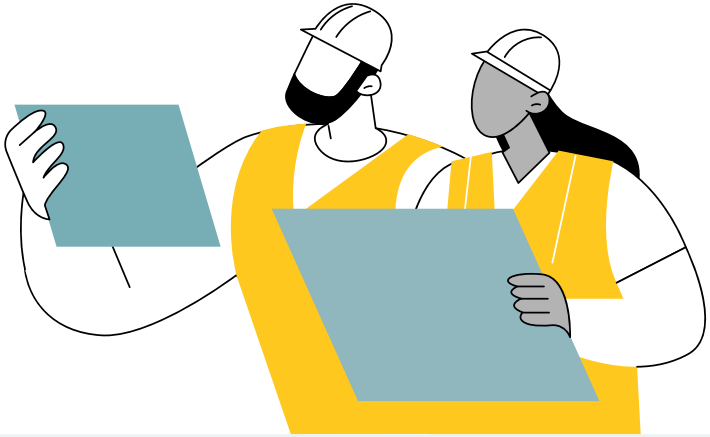
Source: Authors' own compilation, Infratec Environmental Technologies (2025) based on International Finance Corporation (IFC) (2021)

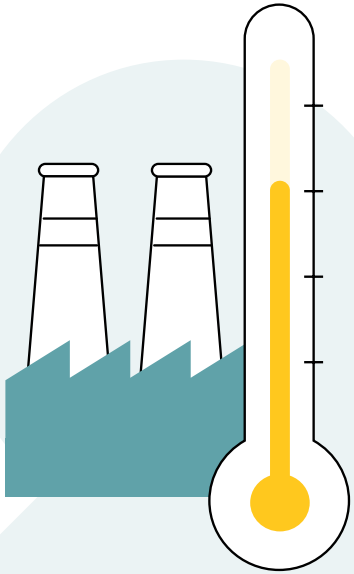
6.3 Internal institutional knowledge and awareness of heat supply and process heat solutions in Bangladesh

During the interviews with factories (end users), suppliers, regulators and business associations, it became apparent that knowledge of the technologies – such as concentrating or non-concentrating collector systems in solar thermal, boilers fired using biomethane/natural gas, biomass or renewable fuel, combined heat and power systems (renewable fuel), electric boilers or heat pumps (low or high temperature) – is limited to the factory (end user), supplier and association. There is little knowledge about how the technology works, its sustainability benefits, investment cost, product life cycle, efficiency or about calculating the requirements of the services and practical project visits are rare. Capacity building training, presentation and live project visits can enrich the related technological understanding.

Targeting stakeholders for knowledge and awareness: The stakeholders related to the process heat and heat supply solutions include the factories, suppliers or EPCs, business associations, regulator bodies and financial institutes.







6.4 Bottlenecks in the implementation and operation of heat supply and process heat solutions in Bangladesh

The adoption of heat supply and process heat solutions in Bangladesh faces several challenges, which can be categorised into technology-specific and sector-specific bottlenecks. Addressing these barriers is critical for successful deployment.

1. Technology-specific bottlenecks

1. Solar thermal systems (non-concentrating and concentrating collectors)

- Rooftop structural limitations: Many industrial rooftops lack the structural integrity to support solar thermal installations, requiring costly reinforcements.
- Space constraints: High land-use competition in industrial zones restricts large-scale solar thermal deployment.
- Intermittency and storage challenges: Lack of cost-effective thermal storage solutions reduces reliability for continuous process heat demand.

2. Biomass-based heat solutions

- Fuel quality and consistency: Variability in biomass moisture content and composition affects combustion efficiency.
- Supply chain disruptions: Seasonal fluctuations and inadequate logistics lead to unreliable biomass feedstock availability.
- Emission control issues: Lack of advanced filtration systems results in non-compliance with air quality standards in dense industrial areas.

3. Renewable fuel-dependent systems (biogas, biofuels, etc.)

- Feedstock scarcity: Limited availability of high-energy-density renewable fuels (e.g. biogas, biodiesel) for industrial-scale applications.
- Conversion efficiency: Low-efficiency boilers and gasifiers reduce the economic viability of these systems.

2. Sector-specific bottlenecks

1. Knowledge and awareness barriers

- Limited technical expertise in designing, installing and maintaining renewable heat systems.
- Lack of awareness among industries about long-term cost savings and environmental benefits.

2. Financial and regulatory challenges

- Absence of feasibility studies demonstrating return on investment (ROI) at factory level.
- No fiscal incentives (e.g. subsidies, tax breaks) to offset high upfront costs.

3. Market and infrastructure limitations

- Insufficient number of reliable local suppliers or service providers for installation and after-sales support.
- Scarce pilot projects to demonstrate operational success and build stakeholder confidence.

4. Cross-cutting technical barriers

- Inadequate grid integration for hybrid systems (e.g. solar-biomass).
- Lack of standardised performance benchmarks for different technologies.

7

Recommendations and Conclusion

7.1 Key findings

- Bangladesh remains highly reliant on natural gas, despite rising costs and declining domestic supply – underscoring the urgent need for cost-stable, alternative heat sources.
- Out of nine renewable heat technologies assessed, electric boilers, low-temperature heat pumps and non-concentrating solar thermal systems emerged as the most viable for near-term deployment in light industries. Biomass and CHP systems also hold promise for high-heat, large-scale applications, although biomass faces supply and sustainability issues.
- The garments, ceramics and food and beverage sectors show the highest potential for renewable heat, driven by factors such as high heat demand, export orientation and infrastructure readiness. Technology-sector matching considered process temperatures, space availability, fuel logistics and the condition of existing systems.
- Solar thermal systems show strong alignment with garments, F&B and institutional users, but deployment is often limited by PV crowding on rooftops. Low-temperature heat pumps suit sub-100°C water-based processes in garments, leather and healthcare, offering long-term savings despite high upfront costs. WHR remains underutilised in energy-intensive sectors due to technical complexity.
- Although financing options exist (e.g. Green Transformation Fund), there is room to expand green bonds or create new lines for thermal systems. Regulatory bodies have recognised the policy vacuum and are calling for updated standards and performance metrics.

7.2 Strategic recommendations for stakeholders

To scale renewable heat adoption, a coordinated push is needed:

- Policymakers should integrate thermal energy into energy efficiency and renewable energy policies, set efficiency standards, and simplify approvals.
- Financial institutions must include renewable heat in green financing, offer concessional loans and accept thermal equipment as collateral.
- Industry associations should drive awareness, shared infrastructure and pilot programmes.
- German SMEs can partner with local EPCs to deploy proven, scalable solutions through models such as heat-as-a-service or leasing.
- Development partners should fund pilot projects, provide technical support and embed thermal energy in decarbonisation planning.

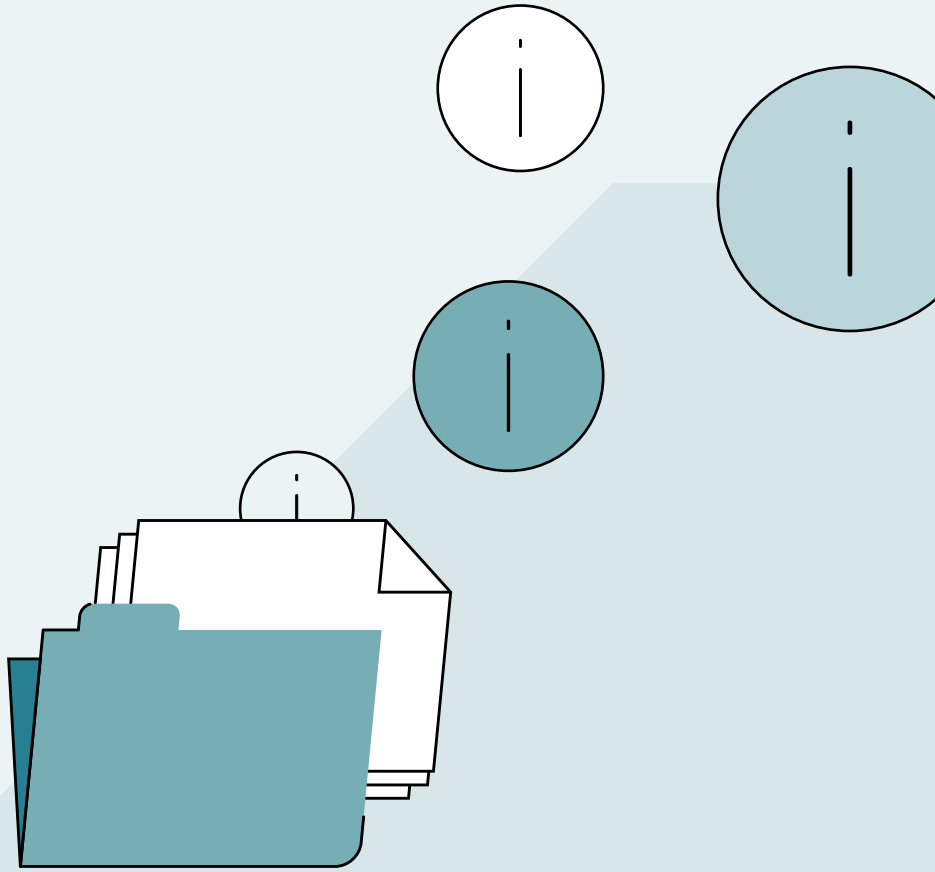
7.3 Business value proposition

German solution providers can tap into a growing market by offering clean, efficient heat technologies aligned with Bangladesh's volatile fuel market, export-driven decarbonisation push and evolving green finance space. Early-mover technologies include flat-plate solar thermal, electric boilers and heat pumps, especially for garments and food. CHP and high-efficiency gas boilers are relevant for ceramics, steel and fertilizer industries. Modular and service-based models lower barriers to entry and accelerate adoption.

7.4 Outlook – a forward-looking perspective

Rising gas prices and ESG-driven buyer pressure are pushing industries to reconsider heat supply strategies. Technologies such as solar thermal, heat pumps and electric boilers are likely to lead adoption in textiles, food and ceramics. Hybrid systems combining CHP or WHR may follow in the steel and fertilizer sectors. For success, the market needs policy clarity, tailored finance, robust supply chains and demonstration projects. German clean heat firms are well-positioned to lead this shift with impactful, cost-effective solutions.

Annexes



Annex 1 Leading actors in heat supply and process heat solutions

TABLE 23. Leading actors in heat supply and process heat solutions in Bangladesh

Name	Headquarters	Key Business/Function
1. Solar thermal		
No active supplier in Bangladesh to date		Solar thermal is still a very niche area in Bangladesh. But Solaric, Rahimafrooz, Solshare and Asian Age could be interested in doing projects based on solar thermal technology if market demands.
2. Biogas and biomass boiler manufacturer		
Bangladesh Biogas Development Foundation	Dhaka, Bangladesh	A non-profit organisation promoting biogas technology and rural clean energy, focused on household digesters and community-level biogas infrastructure. It is basically an association consisting of the MDs and CEOs of multiple EPC firms based on biogas plant set-up with vast experience in the commercial and industrial sectors.
Grameen Shakti	Dhaka, Bangladesh	A pioneer in renewable energy for rural Bangladesh, Grameen Shakti has installed thousands of biogas plants and promotes clean cooking and electricity access through biogas solutions both in the commercial and the industrial sector.
Saif PowerTec	Dhaka, Bangladesh	A diversified engineering firm offering biomass boiler systems for industrial heating, with growing capabilities in green energy project execution and EPC services.
3. Heat pump suppliers and distributors		
LG/Butterfly	Dhaka, Bangladesh	Butterfly Group is the official distributor of LG appliances in Bangladesh, including energy-efficient heat pump water heaters and air-conditioning systems for homes and commercial buildings.
Wattson Engineering & Consultants	Dhaka, Bangladesh	An engineering firm supplying industrial-grade heat pumps, chillers and HVAC solutions tailored for commercial, textiles and process industries.
Modern Erection Ltd (MEL)	Dhaka, Bangladesh	An EPC company offering industrial heating solutions including heat pumps, boilers and absorption chillers, with integration expertise for energy recovery systems.
Global Cynax Bangladesh	Dhaka, Bangladesh	Specialises in industrial engineering systems including hot water heat pumps, compressed air systems and boiler automation for energy optimisation.

Name	Headquarters	Key Business/Function
3. Heat pump suppliers and distributors		
BOSCH Thermo-technology	Wetzlar, Germany	Through local distributors, Bosch provides premium-grade European heat pump systems and commercial HVAC solutions for buildings and industrial clients.
Siemens	Munich, Germany	An EPC company offering industrial heating solutions including heat pumps, boilers and absorption chillers, with integration expertise for energy recovery systems.
Global Cynax Bangladesh	Dhaka, Bangladesh	Specialises in industrial engineering systems including hot water heat pumps, compressed air systems and boiler automation for energy optimisation.
4. Waste heat recovery system (WHRS) developers		
Modern Erection Ltd (MEL)	Dhaka, Bangladesh	Provides turnkey WHRS design and installation services for the cement, steel and textiles industries, integrating with boilers and power systems.
Thermax Limited	Pune, India	An international energy and environmental solutions provider active in Bangladesh, Thermax supplies WHRS units, captive power plants and process heat systems.
Atlas Copco	Nacka, Sweden	Offers high-efficiency waste heat recovery systems integrated with industrial air compressors, enhancing energy recovery and sustainability for processing industries.
Confidence Infrastructure Ltd	Dhaka, Bangladesh	A part of Confidence Group, this company has experience in power plant construction and offers WHR solutions integrated into industrial power generation systems. Its projects often involve energy-efficient systems, heat recovery boilers and co-generation facilities tailored to large industrial setups.
Ensysco Engineering Ltd.	Dhaka, Bangladesh	Ensysco offers complete EPC services for industrial utility systems including WHR units, thermal energy storage and hybrid boiler systems. The company's expertise lies in designing customised heat recovery solutions for textiles, ceramics and food processing industries, with a focus on energy cost reduction and sustainability.

Annex 2 Data analysis

TABLE 24. Key drivers to promote renewable heat supply solutions in Bangladesh

Stakeholder	Survey question	Related driver	Insight
Regulator	How effective do you think the current regulatory framework is in promoting renewable heat technologies?	Policy and regulatory support	Majority of regulators including Power Cell, SREDA, BPDB, BREB, RNPL/RPCL, BERC, NWPGCL believe that renewable energy policy needs to be updated.
	Are there any national targets or commitments for reducing carbon emission in the industrial heat sector?	Government climate targets / national commitments	90% of the regulators surveyed believe that heat supply solutions can significantly impact on meeting national target of reducing carbon emission.
Bangladesh Bank	Are there any ongoing initiatives to review or update the Sustainable Finance Policy to incorporate new technologies aligned with emerging national climate strategies such as NAP 2023-2050?	Alignment with climate strategies / green finance	Bangladesh Bank is highly interested in adopting these technologies. It responded that Sustainable Finance Policy is a dynamic policy, and these technologies will be included if they are bankable products and financially viable.
	Do you think process heat technologies (solar thermal collector systems, industrial heat pumps, biomass boilers) could be added under Energy and Resource Efficiency or any other category to widen green product scope?	Expansion of green product eligibility	According to BB, the bank is open to incorporate any green products suggested by stakeholders under Green Finance Products
	Are there any dedicated refinance schemes or concessional funds which factories could access to finance renewable heat supply solutions under the existing green product framework?	Availability of green financing / refinance	All green products fall under the existing refinance scheme. Currently BB has three refinance schemes for green products. These are Green Product Projects and Initiatives with a value of BDT 1,000 crore, the Green Transportation Fund with a value of BDT 5,000 crore and Technology Upgradation Fund with a value of BDT 1,000 crore.

Stakeholder	Survey question	Related driver	Insight
Financial institutions	What risks could be associated with financing process heat/thermal energy technologies?	Investment barriers	A majority of 83% of the respondents believe that limited knowledge about technology, lack of technical experts and lack of policy support or incentives could be the major risks in financing these technologies. Some 66.67% consider high capital expenditure as major risk factor.
	Are you managing any dedicated green financing schemes for clean energy technologies?	Institutional readiness	A share of 67% of respondents indicated that they are managing a green finance scheme for several projects related to renewable energy and energy efficiency sectors and they believe a heat supply solution can also be included.

TABLE 25. Repayment, rate and other terms by bank

Name of financial institution	Re-payment period	Maximum allowable repayment period	Grace period	Interest rate (Annualised)	Floating or fixed rate
Dhaka Bank Plc	5-10 years	10 years	6-12 months	With re-finance: 6%-7% Without re-finance: 13.55%	Floating rate, revised yearly or in compliance with regulatory instruction
Premier Bank	5-10 years	10 years	6-12 months	With re-finance: 5%-7% Without re-finance: 14%-15%	
City Bank	3-5 years	5 years	6-12 months	With re-finance: 6%-7% Without re-finance: 14%	
UCB PLC	5-10 years	10 years	3-6 months	With re-finance: 5%-7% Without re-finance: 12%-14%	
Prime Bank PLC	5-10 years	7 years	6-24 months	With re-finance: 5%-7% Without re-finance: 12%-14%	
IDCOL	5-10 years	15 years	6-24 months	6-12%	Usually specified in the related credit line agreement. Otherwise, the bank's CoF plus margin

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