



**Dear Reader,**

**Welcome to the February Issue of the PaCT Newsletter!**



Let me begin by wishing all our readers and all in the PaCT community a very happy and prosperous 2017! We at PaCT are grateful to have shared the successes of 2016 with you and look forward to further and closer collaboration throughout the New Year.

Speaking of success, we are very proud to announce that we have exceeded our original water savings target of 15 billion liters/year by almost 23%, with over 18 billion liters/year saved. We have also exceeded factory target to 215 factory engagements. On energy and GHG savings too, we have exceeded expectations. Congratulations to all partner factories, brands, consultants, and others who have made this a reality.

“ PaCT aims to expedite investment and adoption of more resource efficient and cleaner production practices along Bangladesh’s entire textile production chain. ”

I also want to share with you the good news about PaCT II, which has been approved by IFC management to go to the next stage. PaCT II expands the focus to the whole value chain - from wet dyeing and finishing, to spinning and garments. We expect to launch PaCT II in late 2017 with a gala ceremony, and will publish further details regarding the launch and activities on our website ([www.textilepact.net](http://www.textilepact.net)). We thank all our donors, factories, and partner brands for their valued contributions to PaCT, and hope to see their continued support of the partnership as we transition into PaCT II.

In response to requests from partner factories especially, Texttown, we developed worker training programs on the importance of saving water and other resource inputs as part of a new initiative at our Textile Technology Business Center (TTBC). The first training of this program was conducted in January at Texttown factory premises. If you are interested to find out more, please contact Mr. Tanvir Al-Fazal ([talfazal@ifc.org](mailto:talfazal@ifc.org)).

# PaCT Newsletter

February  
Issue

Chemical management is gaining more focus from brands, given their public commitments. PaCT has been collaborating with the *Zero Discharge of Hazardous Chemicals (ZDHC) Programme* on developing Guidelines for Wastewater treatment, which was approved in Shanghai last November. [Click here](#) to read more.

In this issue, we showcase a number of innovative approaches on water and energy savings below. Please see our case study on waste heat recovery.

PaCT has been advocating the adoption of Rooftop Solar PV as a renewable energy source and substitute for fossil-fuel based energy. The article below discusses the business case for Rooftop Solar PV in textile factories. PaCT also presented on Rooftop Solar PV at an event on renewable energy organized by H&M in November. PaCT partner factories, Zaber and Zubair and Tarasima Apparels Ltd., also showcased their experiences at the event.

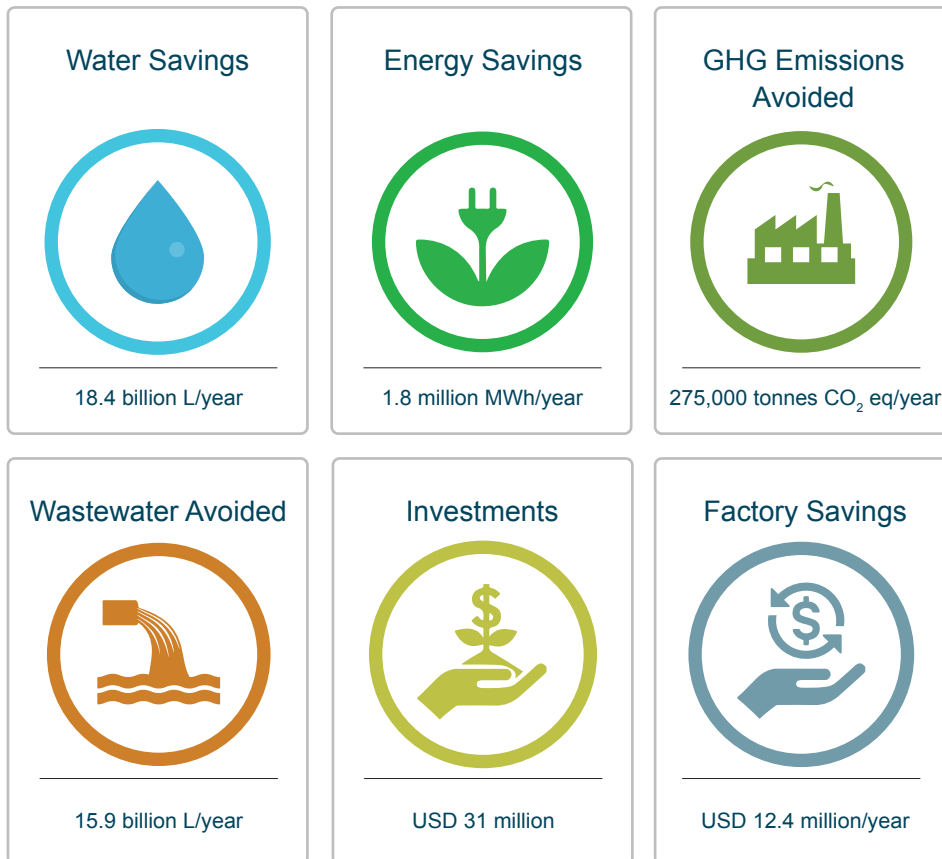
IFC and PaCT were invited by Puma to attend this year's sustainability stakeholder conference known as *Talks at Banz*. It is a testament to the role that IFC is playing in the drive towards sustainability in the global textile sector through financial instruments like the Global Trade Supplier Finance program; credit lines to banks; direct investments in factories complemented by resource efficiency programs in Bangladesh, China, and Vietnam; Bangladesh Textile Competitiveness Program; and Better Work. Currently, IFC is developing similar programs in India, Sri Lanka, and Pakistan. IFC is now also thinking about Sub Saharan Africa. If you are interested to find out more, please contact me at [mseneviratne@ifc.org](mailto:mseneviratne@ifc.org).

Respectfully,



**Mohan Seneviratne**  
Program Manager, PaCT

# Program ImPaCT through Dec 31, 2016



## PaCTIVITIES

### IFC Country Manager Visits Partner Factories and TTBC



Ms. Wendy Werner, IFC Country Manager for Bangladesh, Bhutan, and Nepal visited LEED certified factory Plummy Fashions Ltd. (PFL), and PaCT partner factory Esquire Knit Composite Ltd. (EKCL) in November.

Ms. Werner also visited the Textile Technology Business Center (TTBC) located at BGMEA. TTBC, PaCT's one-stop knowledge hub for the Bangladesh textile

sector, serves as the country's first knowledge repository that offers tailored solutions to key players of the sector (textile factories, technology suppliers, and financial institutions) through knowledge management, business promotion, and investments in resource efficiency and renewable energy. To date, the center has welcomed 176 registered members, including 120 textile factories and 56 renowned technology suppliers, and has facilitated businesses worth USD 860,000 in resource efficiency. The center regularly organizes workshops on cutting-edge industry relevant topics, and has recently introduced a Worker Training Program targeted at floor level textile factory workers. For more information, [click here](#).

# Discharging Industrial Wastewater in Harmony



(Source: [2016 Wastewater Guidelines, ZDHC](#))

In November, the Zero Discharge of Hazardous Chemicals (ZDHC) Programme published the ZDHC Wastewater Guidelines 2016, addressing the call for a unified set of standards for industrial wastewater discharge. The Guidelines, which are a harmonized set of wastewater parameters, limit values, and test methods, are established to ensure all brands and suppliers work around a common set of wastewater quality standards and limitations for both the textile and footwear industries.

The Guidelines were finalized following an extensive process of collaboration between ZDHC contributors, NGOs, suppliers, and a technical advisory committee. PaCT Program Manager, Mohan Seneviratne, is an active member of the ZDHC Technical Advisory Committee, and has worked closely in the development of the Guidelines, which are free to download from the ZDHC website.

# Opportunities in Resource Efficiency Financing

Access to finance, and cost recovery of investments are top priorities for factories and banks when discussing water and energy efficiency. Banks are particularly interested in knowing the market potential for water and energy efficiency financing, when developing credit lines. Through PaCT audit assessments, we showcase below (Figure 1) the opportunities and paybacks for investments for banks to

develop new credit lines, specifically for resource efficiency projects in textile factories. The chart shows that improvements in boiler efficiency have payback periods of less than three years. Waste heat recovery has a payback of two-plus years, while investments in smart management systems have a payback period of less than 1.5 years.

## Energy Efficiency in the Utility Division of a Large WDF Factory

(Production Capacity > 20 tonne/day)

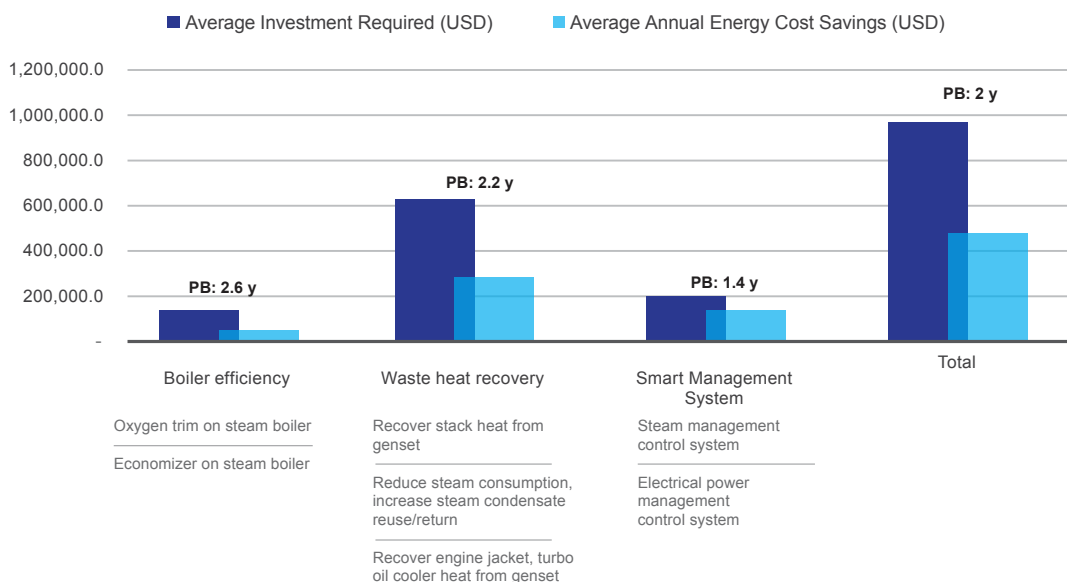


Figure 1: Investment vs. cost savings in energy based on top seven recommendations made in energy efficiency.

## Workshop on ‘Reducing Water & Recovering Heat’

As textile factories become resource efficiency-savvy, there is a growing demand among these forward-looking establishments for innovative technologies and practices that can save resources and reduce footprints. One such example is resource recovery and reuse.

PaCT and the Textile Technology Business Center (TTBC) jointly hosted a workshop on ‘Reducing Water and Recovering Heat’ in November 2016. The workshop showcased the opportunities for waste heat recovery in the textile factories, potential environmental benefits, the business case, and practical considerations for application. The event, attended by over 120 guests, was successful in bringing together leading textile factories, brands, financial institutions, industry associations, technology suppliers, industry experts, and others.

PaCT is especially thankful to the event sponsors for their support in sharing invaluable knowledge of the industry and exhibiting cutting-edge waste heat recovery products to workshop attendees. Sponsors joining the workshop included:



A pioneer in ground-breaking cotton dyeing processes, Nano-Dye showcased their latest innovation, ‘Proactive Dyeing Process’. The technology is capable of

reducing water usage by up to 75%, electricity usage by up to 90%, and removing nearly all salt, sludge and dyestuff from the effluent, thereby improving fabric quality while simultaneously reducing costs.

## MEGATEK Engineering Pte Ltd

A leading supplier of heating solutions including Diesel & Petrol Generators, exhaust gas boilers. Megatek highlighted the energy efficient Clayton and Alfa Laval Exhaust Gas Boilers.



A key importer of textile and garment machineries. SmartTech presented on ‘The Perfect Boiler’, a revolutionary incineration boiler that produces energy from solid wastes generated in the sewing, printing, washing, dyeing units. This reduces the unit’s consumption of natural gas as fuel and improves waste management.



## Using Nature’s Endless Energy Supply: Rooftop Solar PV

In a time when the demand for energy in the textile and RMG sector is escalating, and the cost of grid connected electricity is soaring high as shown in Figure 2, Rooftop Solar PV can be a viable option for textile and RMG factories to meet their energy requirement. Two Rooftop Solar PV

feasibility studies conducted by PaCT in partner factories reveal that these systems can realistically substitute around 10-15% of textile factories’ energy sources, particularly for those that use diesel fuel.

## Bangladesh Electricity Tariff Per Unit Rate for Medium Voltage General Purpose (11 KV)

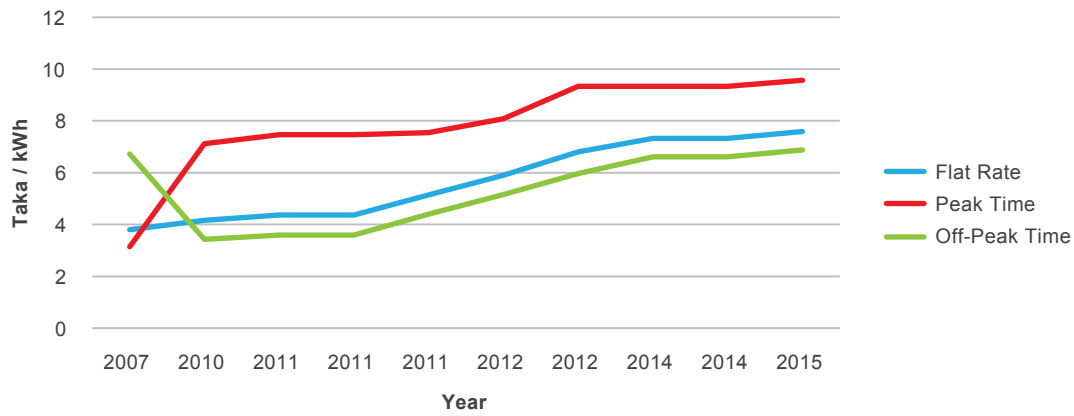


Figure 2: Price hikes in electricity for Medium Voltage General Purpose (11 KV).  
(Source: <https://knoema.com/BDET2015/bangladesh-electricity-tariff-per-unit-rate-tk-2015>)

Rooftop Solar PV systems are now gaining popularity in the Bangladesh textile sector, particularly among factories with vacant and shadow-free rooftop spaces that are either: a) looking to diversify energy sources and struggling without a grid connection, or b) are largely running on diesel generators. Moreover, the steady decrease in the installation costs of these systems, reaching USD 1 Million/MW or lower, globally is also attracting the sector to embrace this alternate energy source.

The feasibility studies showcase the comparisons between solar PV profiles in a diesel fueled factory and another using grid, natural gas for energy supply. Results of the

feasibility study (Figure 3) for Factory A show that the business case is very evident, with an equity internal return rate of 34%. It also became evident from the study for Factory B that their production pattern had a large influence on project viability because they stopped for lunch when the solar irradiance was at its peak. If not for this reason, their IRR could be higher than 8%.

PaCT is now carrying out studies in three more partner factories. If you are interested to participate, please contact Abdallah Naeefy ([anaeefy@ifc.org](mailto:anaeefy@ifc.org)).

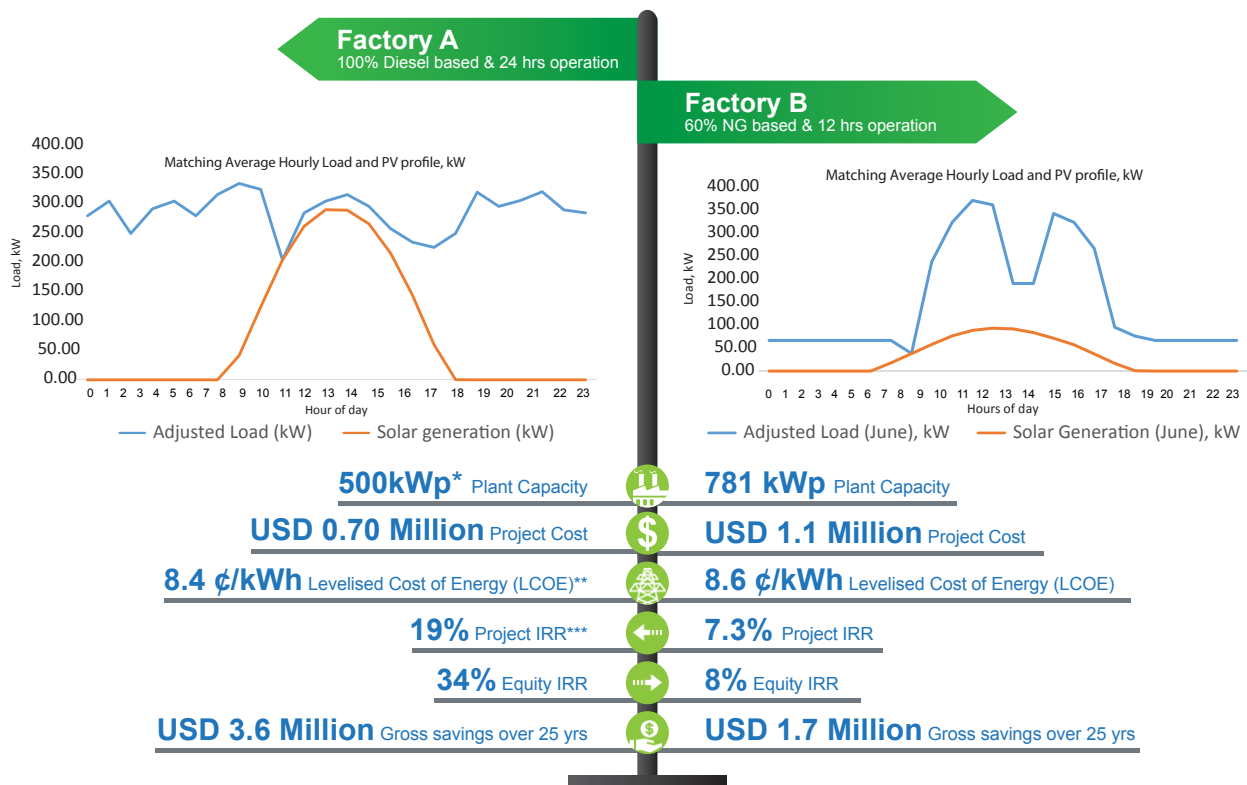


Figure 3: Comparison of feasibility studies on Rooftop Solar PV conducted for two PaCT partner factories located near Dhaka City.

\*kWp: kilowatt peak

\*\*Levelized Cost of Energy (LCOE): Total lifecycle cost of producing a kWh of power using rooftop solar PV

\*\*\*IRR: Internal Rate of Return

# Upskilling Workers in Resource Efficiency is Key to Improving Factory's Productivity

Surely, you have installed the finest machineries and equipment in your factory, and modified processes to improve resource efficiency; but is that enough? Poor working practices and/or inefficient use of resources by unskilled floor level workers, who are directly involved in every stage of production, can significantly reduce a factory's overall resource efficiency and cause losses, despite efforts.



Recognizing the need for a training program that is specifically designed for floor level workers in textile factories, and focuses on the importance of resource efficiency and best practices, the Textile Technology Business Center of PaCT program, in

collaboration with the Institute for Sustainable Communities (ISC) established a Worker Training Program targeted at textile and garment factory workers.

Texttown Ltd., a knit garment manufacturing industry and PaCT partner factory was the first to join the training in January, with more than 100 floor level workers participating in the sessions. The training was highly appreciated by the workers, who expressed that they felt more confident and aware of the importance of resource conservation.

Interested to join the training program?  
Please contact Mr. Tanvir Al-Fazal  
([talfazal@ifc.org](mailto:talfazal@ifc.org)).



## Unique Features of the Worker Training Program

- Focuses on Cleaner Production practices
- Designed for factory workers with low literacy and/or knowledge of Cleaner Production
- Sessions conducted in Bangla: interactive and picture based
- Short duration, covering 2 hours session
- Small class size of maximum 30 workers
- Can be organized on factory premises- canteen, rooftop, empty warehouses, or any other designated area

“ The Worker Training Program has helped educate our floor level workforce to understand the necessity of water conservation. I appreciate PaCT's efforts in initiating such a training program. My sincere thanks to TTBC and the trainers for their support in executing the training at Texttown. ”

**Mr. A. Ponraj**  
General Manager  
Knitting & Dyeing, Texttown Group

# Case Study

## Less Than 10 Months Payback for Exhaust Gas Boiler

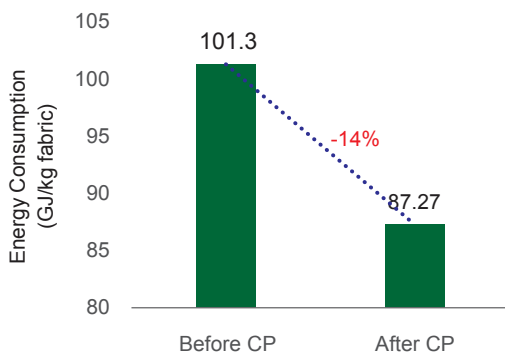
Did you know that as much as 20-50% of input energy gets wasted as exhaust gas from boilers and dryers, steam condensate, cooling water, or wastewater effluent?

This waste heat, which is characterized as low grade heat (<100°C), medium grade heat (100°C - 400°C), or high grade heat (>400°C) is an expensive resource for the textile and garment industries that has the potential to be recovered and reused.

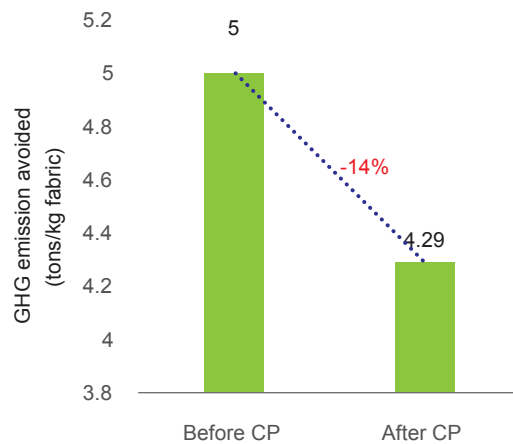
Fakir Apparels Ltd. (FAL), a PaCT partner factory located in Fatullah, Narayanganj operates four natural gas-fired generators to supply energy to its facilities. Unfortunately, these generators also emit large volumes of exhaust gases into the environment. Not only was FAL losing this valuable high-temperature energy to the environment; the factory consequently was forced to consume an inefficient amount of boiler fuel to meet the energy demand, and cause greater pollution to the environment.

To solve this problem, FAL invested in a simple but highly effective Waste Heat Recovery (WHR) system. FAL purchased an Exhaust Gas Boiler (EGB) that extracts heat from the hot exhaust gas streams, and utilizes it to produce steam that is then supplied to various units including the garment steam ironing section, dyeing, and finishing units. The results to date are impressive. The WHR system has significantly reduced FAL's resource demand, allowing the factory to reap the benefits of increased resource savings and additional profits.

FAL partnered with PaCT in 2014 with the aim to achieve resource efficiency through the adoption of best practices in its dyehouse processes. For more information, [click here](#).



FAL's Energy Consumption



GHG Emissions Avoided at FAL

### ENVIRONMENTAL BENEFIT

Inlet Temperature - 470°C  
Outlet Temperature - 125°C  
Energy Savings - 27,460 kWh/year  
Natural Gas - 2,595,840 m<sup>3</sup>/year

### FINANCIAL BENEFIT

Investment - USD 177,000  
Cost Savings - USD 208,620 / year  
Payback Period - 10 months

“ Improving resource efficiency and minimizing environmental impacts are top priorities for FAL. We are now shifting our focus on reducing the loss of valuable resources by implementing smart recovery technologies. ”

**Debasish Kumar Saha**  
Executive Director  
Fakir Apparels Ltd.



## Interesting reads on the PaCT website

- Levi's to Scale Sustainable Supply Chain Initiatives in Four Key Sourcing Locales, Sourcing Journal
- Conference on Sustainable Sourcing in the Garment Sector - Conference Report, Embassy of the Kingdom of the Netherlands
- Green Revolution in Bangladesh Garments, The Apparel Story
- 2016 Wastewater Guidelines, Zero Discharge of Hazardous Chemicals Programme
- Textile Industry Wastewater Discharge Quality Standards, Zero Discharge of Hazardous Chemicals Programme
- Report on IFC-Canada Climate Change Program assisting the textile sector in Bangladesh
- Starting at the source: Sustainability in supply chains, McKinsey & Company
- Global trends in the garment sector and opportunities for Bangladesh (Presentation) by Mr. Faruque Hassan, Senior Vice President, BGMEA
- Style that's sustainable: A new fast-fashion formula, McKinsey & Company

The Bangladesh Partnership for Cleaner Textile (PaCT) is a holistic program that supports textile wet processing factories in adopting Cleaner Production practices, and engages with brands, government, communities, financial institutions, and other stakeholders to bring about systemic, positive environmental change for the Bangladesh textile wet processing sector, its workers, and surrounding communities, and to contribute to the sector's long-term competitiveness and environmental sustainability.

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