



Supporting sustainability in the textile sector

Developing new curricula for the textile and ready-made garment industry

Promising Practice

Implemented by: Bangladesh Technical Education Board (BTEB) under the Technical and Madrasah division of the Bangladesh Ministry of Education, with technical and financial support from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Where: Bangladesh

Status: Started in July 2022, the curriculum review was completed in 2025 and is being implemented at public and private TVET providers throughout the country.

Summary: To improve competitiveness and the environmental sustainability of Bangladesh's textile and ready-made garment sector, environmental awareness and social responsibility practices were integrated into TVET curricula. Under the Higher Education and Leadership Development (HELD) for sustainable textiles in Bangladesh project, the Diploma in Textile Engineering was reformulated to develop modules on sustainability and compliance. The modules are being piloted at seven Textile Diploma Institutes¹.

¹ See, <https://www.giz.de/de/downloads/giz2024-en-factsheet-HELD.pdf>

Overview

As part of Bangladesh Vision 2041, there are aims to improve environmental sustainability and to transform the education and training sector. Commitments include incentivizing 'green' growth through innovation and adapting to increasing digitalization. Given the significant environmental impact of the textiles and ready-made garments sector and the global demand for sustainability, curricula reform has been undertaken to ensure students learn about new practices and technology. The focus on 'green' skills includes improving energy efficiency in textile production, utilizing machinery with lower energy use and improving production processes. Students are learning about sustainability and compliance initiatives and TVET teachers/trainers receive training on new skills and pedagogy.

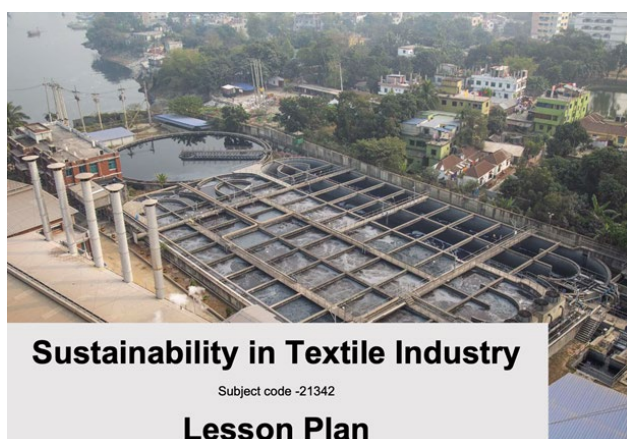


Fig 1. Image taken from the Lesson Plan document for the sustainability module for teachers²

Description

The Diploma in Textile Engineering, regulated by the Bangladesh Technical Education Board (BTEB), is a four-year/eight-semester competency-based training programme designed to prepare mid-level professionals for the textile, apparel and allied industries. The curriculum blends theoretical and practical workplace-oriented learning, including laboratory work and industrial attachments, to ensure course alignment with industry requirements and international employability.

The training programme covers the complete textile and apparel value chain, from fiber processing through manufacturing to finishing, with a strong emphasis on quality assurance, productivity, innovation, sustainability and compliance with international standards. Concepts of resource efficiency, water and chemical management, cleaner production practices, circular economy principles, environmental compliance and workplace safety are integrated across subjects to support sustainable industrial development.

Technical specializations include:

- **Yarn Manufacturing Technology (spinning):** processes for fiber preparation, yarn production, quality assessment and efficient plant operation.

- **Fabric Manufacturing Technology (weaving and knitting):** principles of fabric formation, machine technologies, fabric structures and defect control.
- **Wet Processing Technology (dyeing, printing and finishing):** eco-aware wet processing, low-impact dyeing, finishing techniques, and effluent management.
- **Apparel Manufacturing Technology:** garment production, industrial engineering, quality systems, product development and compliance with labour standards.
- **Merchandising and Marketing Technology:** product costing, sourcing, buyer relations, supply chain coordination, export documentation and ethical trade practices.
- **Fashion Technology:** design fundamentals, computer assisted design (CAD) applications, trend analysis, product innovation and sustainable fashion design approaches.
- **Jute Technology:** processing and value-added product development of jute and natural fibres, promoting biodegradable material solutions.
- **Machine Design and Elements Technology:** Textile machine components, mechanical systems, maintenance, safety and reliability.

To strengthen sustainability practices, the curriculum has been adapted to include dedicated subjects on 'Sustainability in the Textile Industry' and 'Compliance in the Textile Industry', together with revised courses on 'Industrial Management and Environmental Science'. These additions were designed following a gap analysis conducted in collaboration with the GIZ Bangladesh HELD project, aimed at aligning skill sets with environmental stewardship, industrial compliance, socially responsible practices and global market demand. Other courses to develop competencies in ecological systems, compliance frameworks and sustainable operational strategies were part of the reform.

Courses in Sustainability and Compliance in the Textile Industry together with Environmental Studies are compulsory modules within the curriculum, reflecting BTEB's commitment to preparing graduates who are not only technically competent but also environmentally conscious, socially responsible and prepared for global challenges. These courses are outlined below.

Sustainability in Textile Industry

The *Sustainability in Textile Industry* course addresses issues such as responsible material sourcing and utilizing energy efficient machinery. The course comprises 10 units (organised as 'chapters') of multiple lessons (a total of 32 lessons across the whole course). Each lesson has a recommended plan together with a PowerPoint presentation for teachers to use which include video materials and actual case studies. Readings linked to the course have been prepared for students, along with wider references and information.

The course enables students to:

1. Describe the concept of sustainability and what it means in the textile sector.
2. Interpret sustainability as it applies to the use of raw materials, dyes, chemicals and their application.

² Image taken from the lesson plan published by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

- Identify renewable resources required for sustainability practices.
- Interpret available sustainable technologies.
- Interpret concepts of circular economy.
- Interpret National and International Sustainability Standards and Certifications.
- Identify ways of incorporating sustainability into sourcing and product development.
- Implement sustainable practices in textile factories.
- Review best practice and areas for improvement in sustainable textile production.
- Identify challenges in implementing sustainability in the sector.

- Interpret different compliance audit requirements.
- Perform internal audits and assist external audits.
- Monitoring and reporting requirements in the textile sector.
- Review best practices and areas for improvement in compliance implementation in the textile sector.

Compliance in Textile Industry

Subject code:21452

Chapter 3-Certifications and platform-based codes of conduct



Sustainability in Textile Industry

Subject code:21342

Chapter 3:Responsible sourcing and product development



Fig 2. Slide from the teachers' PowerPoint for Sustainability in Textile Industry – Unit (Chapter) 3

Each of the 10 units includes wide-ranging global examples of good practice. The course materials are prepared in English and Bangla (Bengali).

Compliance in Textile Industry

The *Compliance in Textile Industry* course addresses issues such as ethical business, rights, and health and safety. This course also comprises 10 units each with a lesson plan and a PowerPoint for teachers to use, including video materials and real-life case study examples. Advance readings linked to the course have been prepared for students. The compliance course is also 32-hours in duration.

The learning outcomes for the course are:

- Describe the concept of compliance in the textile industry.
- Classify compliance types related to the textiles sector.
- Identify general and platform-based codes of conduct related to compliance standards.
- State the relevant laws and regulations.
- Identify safety, health and welfare issues in the workplace.
- Describe the grievance management system for workers in the textile sector.

Fig 1.2: Slide from the teachers' PowerPoint for Compliance in Textile Industry - Chapter 3

Environmental Studies - Improving 4R awareness on campus

An awareness course is taught to all students to apply the 4Rs (reduce, reuse, recycle and recovery) on-campus to actively integrate and adopt within their study experience. Examples include cutting waste from sewing labs, reducing paper waste and use. Students are encouraged to brainstorm on how to implement the 4Rs within their study practice and to present their ideas to their classmates and teachers. Students are assessed according to a 10-point scale in 7 criteria.

Outcomes and impact

The revised Diploma in Textile Engineering curriculum was piloted in 242³ training institutes across all regions of Bangladesh between 2023 and 2025. 97 teachers have received training on the technical content of the new curriculum and how to teach it. Approximately 4,000 students have studied the new curriculum.

These new modules have been eye-opener. They've equipped me with essential skills in sustainability, making me feel confident and ready to contribute to the textile industry.

Student
Textile Institute, Chattogram

Insights and challenges faced

Changing TVET curricula involves multiple stakeholders to implement and to deliver change. TVET providers and their teachers need to adapt the changes and adjust their teaching practices. Institutional resources must be available to support adoption and adaptation and industry must be willing to work

³ For the evaluative numbers and student quotation, see the GIZ report, 'Technical and Vocational Education and Training (TVET), Integration of Social and Ecological Sustainability Topics in the Curriculum of Diploma in Textile Engineering', <https://www.giz.de/en/projects/higher-education-and-leadership-development-sustainable-textiles-bangladesh>

with policymakers and providers to ensure that students graduate with the cutting-edge skills and knowledge to advance the sector.



Fig 1.3: Extract from a GIZ summary pamphlet on the HELD project in TVET

Adjusting to environmental sustainability issues is not a one-off event, it is a continuous process of feedback from teachers, students and industry partners to ensure the curriculum is reviewed, improved and updated. This feedback must be based on evidence collected through rigorous and regular monitoring and exploration of quantitative and qualitative data.

Learn more

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To learn more about the training curricula, regulations and official notices of the Bangladesh Technical Education Board (BTEB), see: www.bteb.gov.bd

For more information on the work of GIZ Bangladesh in the textiles and apparels sector see: <https://www.giz.de/en/regions/asia/bangladesh>

Discover other practices

The UNESCO-UNEVOC innovative and promising practices database presents successful projects tackling key themes in TVET, such as entrepreneurship, youth employment, the green transition, digitalization, private sector engagement and more.

Learn more on our website at:

<http://www.unevoc.unesco.org/promisingpractices>

Questions or comments? Contact our team at:

unevoc-pp@unesco.org

Conclusions and next steps

The revised Diploma in Textile Engineering equips students with multidisciplinary competencies, including technical, managerial, environmental and entrepreneurial skills that enhance their readiness for employment in manufacturing, quality assurance, compliance management, merchandising, product design and sustainability-focused roles across both domestic and international textile and apparel industries. The programme enables graduates to pursue higher education and professional advancement in fields within the textile, apparel and allied sectors.

Going forward, the programme will further develop master trainers to educate others within their TVET institutes and additional focus will be given to strengthening collaboration with industry.

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