Mithun Kumar Biswas

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Sex Male | Date of birth 30/06/1988 | Nationality Bangladeshi

I am passionate about adopting a sustainable approach to product design, process optimization, and waste management based on the principles of a circular economy. I have a strong background in Material Flow Analysis (MFA) and Life Cycle Assessment (LCA), essential tools for quantifying flows and stocks and identifying environmental, social, and economic impacts within a product system. With ten years of experience in the textile and ready-made garments (RMG) manufacturing and sourcing industry, I have gained expertise working with diverse textiles and RMG industries in Bangladesh, Pakistan, and Sri Lanka. Throughout my career, I have contributed to regular production and sourcing activities and played a significant role in driving automation and corporate social responsibility (CSR) initiatives, earning recognition and rewards for my efforts. Currently, my focus lies on sustainable modelling of primary and secondary economic sectors using the principles of industrial ecology.

Academic Background

M.Sc. in Environmental Science and management
Department of Environmental Science and Management
North South University, Dhaka, Bangladesh
CGPA: 4.00 out of 4.00 (100%)
Research content: 6 credits out of 36 (17%)
Completion: 2023
Thesis title: Discerning the environmental footprint of different trims and accessories used in the readymade garments industry in Bangladesh

B.Sc. in Textile Engineering
Department of Apparel Manufacturing and Technology
Bangladesh University of Textiles
CGPA: 3.28 out of 4.00 (82%)
Completion: 2012

Higher Secondary School Certificate
Sylhet Cadet College, Sylhet, Bangladesh
GPA: 5 out of 5 (Major: Science)
Session: 2004-06

Secondary School Certificate
Sylhet Cadet College, Sylhet, Bangladesh
GPA: 5 out of 5 (Major: Science)
Session: 2004

Research interest

- Waste management and valorisation
- Industrial ecology
- Life cycle assessment
- Material flow analysis
- Circular economy
- Sustainable production and development
- Industrial symbiosis
- Textile and fashion industry

Academic and Research Experience

Research Assistant
Decoupling Lab
Department of Environmental Science and Management
North South University
Supervisor: Dr. Mohammad Sujauddin, Associate Professor, ESM, NSU
Duration: 2021-Present

Exposure in Decoupling Lab
(1) The task is evaluation of sustainable economic pathways for a sustainable and circular textiles value chain
Organization: United Nations Environment Programme (UNEP)
Funded by: European Union (EU)
Principal Investigator: Prof. Helal Ahammad
Chief investigators: Prof. Dr. M. Mosharraf Hossain, Dr. Adam McCarty and Dr. Mohammad Sujauddin
Investigator: Dr. S M Fijul Kabir and Dr. Sarif Patwary
Responsibility: Employed as the research assistant in the project. The initial responsibility was proposal writing, especially the methodology development to assess the Business as usual (BAU) scenario of global textile value chain, using the LCA tool, and compare the environmental, social and economic impacts with the alternative sustainable solutions.
Status: Proposal was submitted on 16 May, 2022 (*waiting for the final selection*)

(2) Unravelling the environmental burdens of the power industry of Bangladesh.
Duration: July, 2022 – August, 2023
Description: Bangladesh's power industry is highly depending on the Natural gas (~70%) which is depleting faster than ever. And upcoming power plants are basically based on other fuels. This research project aims to see the environmental externalities of the Bangladesh's power industry and future projection using LCA tool, IPCC, and GHG protocol guidelines. The paper will be submitted to *Journal of Industrial Ecology* by December, 2022.
Role: Appointed as the lead author by Dr. Mohammad Sujauddin
Responsibility: Data collection, methodology development, manuscript writing

(3) Assessment of the prospect of enhancing quality and efficiency of the Textile & clothing manufacturing processes adopting Industry 4.0 and Industry 5.0: A case study of Bangladesh's textile industry
Duration: September, 2022- December, 2023
Description: A systematic review and meta-analysis to see how the Industry 4.0 and Industry 5.0 concepts increase the efficiency of the textile and RMG factories and how they can be economically benefitted. It will also assess the prospects of establishing and industrial symbiosis in the entire

industry. The paper will be submitted to the *Energy Nexus* by December, 2022

Responsibility:

- Identifying various local and international sources of data and fetching information from the sources.
- Analysis and building model using R, STAN.
- Finding insights and relating them to national and international incidents.
- Collecting real time data from the textile and RMG industries and analysing the data.

(4) *Assessing the single use plastic reduction potential in the textile industry and finding the alternative sustainable and eco-friendly solutions*

Duration: October, 2021- February, 2024

Description: A huge amount of single use plastics is used during the textile and RMG manufacturing processes. This research will identify the hotspots and the potential alternatives of the single use plastics. This paper will be submitted to *The Journal of the Textile Institute* by January, 2023.

Role: Appointed as the lead author by Dr. Mohammad Sujauddin

Responsibility:

- Surveying and collecting data from the different textile and RMG factories.
- Analysis and building model using R, STAN, and Excel.
- Writing the manuscript.

(5) *DPSIR framework to analyse the impact of the micro-plastic fibres on the ecosystem generated from the textile industry of a rapidly growing industrial zone in Bangladesh*

Duration: October, 2021-October, 2023

Description: Textile dyeing, finishing and washing release a substantial amount of plastic micro fibres which are polluting the water bodies and impacting the aquatic biota. This research will quantify the micro-plastic fibre release from the textile industries, and discuss the policy management for Bangladesh. This paper will be submitted to *Journal of Environmental Management* by December, 2022.

Role: Appointed as one of the lead authors of the paper.

Responsibility:

- Developing the methodology and collecting primary and secondary data from both the industries and literatures.
- Writing the manuscript along with the other co-authors.

(6) *Life cycle inventory framework for wovenwear production*

Duration: September, 2021- August, 2023

Description: Country specific life cycle inventory development for Bangladesh's wovenwear (denim and non-denim) industry and proposing sustainable management policy for Bangladesh. This paper will be submitted to *Journal of Cleaner Production* by March, 2023.

Role: Appointed as a research assistant and the lead author of the article by Dr. Mohammad Sujauddin

Responsibility:

- Collecting production data (raw material, input-output, energy consumption) from weaving mills and wovenwear (denim and non-denim) manufactures and analysing the data.
- Accessing multiple local and global data sources and obtaining information from those.
- Analysis and building model using R, STAN, Excel, and E-Sankey.

(7) *A holistic overview of the environmental externalities of the entire textile value chain with the lens of Life Cycle Assessment: A case study of Bangladesh's textile industry*
Duration: September, 2022- September, 2023
Description: A compilation of all the research on the textile sub-sectors from the decoupling lab and identification of the actual hotspots in the value chain and discussion on their potential solutions. This paper will be submitted to *One Earth* by June, 2023.
Role: Research assistant to Dr. Mohammad Sujauddin and the lead author.

(8) *Assessment of the water quality of the adjacent rivers of Dhaka city and analysis of the key factors of the high pollution loads*
Duration: January, 2022- November, 2023
Description: A statistical and geo-spatial analysis of the season wise water quality of five major rivers around Dhaka city and identification of the major polluting zones and the sources of the pollutions.
Role: Research assistant to Dr. Mohammad Sujauddin and the lead author.

Published articles

- **Biswas, M. K.**, Al Alam, M. A., Mahiat, T., Chowdhury, R. B., Biswas, K. F., Hossain, M. M., & Sujauddin, M. (2023). Taking stock of the share of global environmental burden of knitwear production in Bangladesh: Constructing the life cycle inventory. *Journal of Cleaner Production*, 137376.
  https://doi.org/10.1016/j.jclepro.2023.137376
- Mridul, D. B., Azad, A. K., **Biswas, M. K.**, Datta, A., & Risty, K. M. R. U. (2021). Current Scenario of Solar Energy Production in Bangladesh and Future Potentiality. *International Journal of Scientific & Engineering Research*, *12*(04), 1234–1241.
  https://doi.org/10.14299/ijser.2021.04.08
- Datta, A., Rashid, T., & **Biswas, M. K.** (2021). Sequestration and Storage Capacity of Carbon in the Mangrove Vegetation of Sundarban Forest, Bangladesh. *International Journal of Scientific & Engineering Research*, *12*(02), 1098–1101.
  https://doi.org/10.14299/ijser.2021.02.04
- **Biswas, M. K.**, Risty, K. M. R. U., & Datta, A. (2019). A proposal of sustainable and integrated plant for jute fiber extraction in an eco-friendly manner. *International Journal of Scientific & Engineering Research*, *10*(1), 801–809.
  https://doi.org/10.14299/ijser.2019.01.08

Under review

- Azad, A.K., **Biswas, M. K.**, Datta, A., Dutta S., Roy, S., Chopra, S. S. (2023). Developing GHG emission inventory for Bangladesh's textile and readymade garment industries and discerning the implications of the ESG disclosure in the emission reduction strategies. *Renewable and Sustainable Energy Reviews*

Teaching assistant

I am serving as Teaching Assistant (TA) to Dr. Mohammad Sujauddin in the Department of Environmental Science and Management, North South University since Spring 2021. I am dealing two advanced level undergraduate and one graduate courses. I usually lecture 2-3 classes in these courses:

- ENV 414: Waste Management
- ENV 418: Conservation and Sustainable Development
- ENV 501: Fundamentals of Environmental Science and Management

Employment experience

Senior Merchandiser- Carrefour Global Sourcing Asia Ltd.

August, 2016- Present

- Sourcing new suppliers to enhance the strength of the Supply Chain.
- Developing new products, quoting prices and confirming the business with suppliers.
- Following up the smooth execution in product cycle including sampling, approvals, risk analysis, production planning etc.
- Negotiating with suppliers to minimize raw material, manufacturing, packaging and transportation costs.
- Training the suppliers regularly to let them cope with the company process & system and to ensure the product quality, on time delivery.
- Solving both business & technical problems coming from both suppliers & Buying units.

Merchandiser- Iris Fabrics Ltd.

January, 2015- August, 2016

- Managed the product development, price quotations and communication with buying team
- Handled several brands like Lindex (Sweden), Cotton On (Australia), Brand BQ (Poland).
- Managed all the fabric, Trims & accessories bookings and sewing production follow up.
- Ensured the product quality & security manuals.
- Conducted inspections and ensured smooth delivery.

Assistant Merchandiser- Promoda Textiles Ltd.

May, 2012- December, 2014

- Worked for several brands like Cubus (Norway), Falabella (Brazil) & Modis (Russia) etc.
- Developed products, quoted prices and confirmed the business with suppliers.
- Kept the tracking and record of all the samples & approvals related information.
- Looked after the market intelligences for customers.

Skills and expertise

Research based skills

- Arc GIS 10.3
- E-sankey
- R programing language
- Python
- Sima Pro 9.3
- Google Earth Engine (GEE)

Computer skills

- MS Word
- MS Excel
- MS PowerPoint
- G-suit applications

Communication skills

Good communication skills gained through my experience as Merchandiser because this is the key responsibility of this profession. I need to act as a bridge among all the internal parties (Buying units, internal collaborators, suppliers, manufacturers etc) and external parties (Inspectors, raw material suppliers etc).

Organizational and managerial skills
- Well skilled in event management. Organized several cultural programs and workshops.
- Related with different socio-cultural organizations. Former Vice president of "Youth against Hunger" (Japan based voluntary organization), BUTEX unit (2011-2012).
- Former president of University cultural club.
- Good skill over various sports. Worked as the manager of my University's football team.
- Leadership (currently responsible for 11 different teams of supplier bases)

Professional expertise
- Good command of RMG production and quality control processes (One of the current job responsibilities).
- Good command on Fashion trend analysis & forecasting.
- Skill on Enterprise resource planning (ERP), Product life cycle management (PLM) Software.
- Skill on Transformation to automation (industrial and sourcing).
- Well skilled in data analysis and business forecasting.
- Acquired intensive knowledge on Textile production process and technologies.
- Intensive knowledge on Corporate Social responsibility (CSR), Environment, Social & Governance (ESG), Techno-economic Assessment (TEA).

Additional information

Professional projects
- *Carrefour GS Textile Automation Project (2019 - 2020)*
  - Automation in Textile development and data collection process with the help of Artificial Intelligence. It reduced the workload of the stake holders and produced a common platform for the Seasonal negotiations.
- *Industrial Plastic waste reduction Project (2020 – 2021)*
  - Identification of key plastic waste, especially Single Use plastics, producing points in Textile manufacturing industries from onsite visits and surveys. Categorization of the manufacturers according to the plastic waste generations.
  - Introducing alternative packaging methods in Tier 2 supplier base to deliver accessories, trims and other materials. And implementation of Polybag free sample transportations from Tier 1 suppliers to Buying office. Which will reduce around 1.6 Tonnes of CO_2 eq. emission per year so far.
- *Jute and Jute based biodegradable and affordable composites (2020 - present)*
  - Preparation of Heavy Knit apparels from 100% Jute conventional yarn.
  - Jute/PLA composites and their application in Textile Packaging.
  - Techno Economic Assessment of Eco-friendly fibre extraction Plant
- *Energy efficiency in textile production and carbon neutral project (2021 – present)*
  - Preparation of Carbon audit manual in the supplier textile industries.
  - Penetration of energy efficient technologies and familiarize renewable energies in production
  - Energy efficient product proposals

Workshops & Seminars
- Seminar on "Sustainable environment and management, necessity of efficient ETP'- organized by Dye Star (World renowned Dye Staff brand) (2012)
- Workshop on Organic Cotton, it's necessity and impact on the business; organized by Control Union (Netherland based worldwide certification authority) (2016)
- Workshop on 'How to increase the work efficiency'- organized by Carrefour Bangladesh.

English Proficiency

Medium of instruction during undergraduate (Bachelor degree) and graduate (Master's degree): English
IELTS Overall Band score: 7.5

Referees

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