



কোনো পণ্য যখন আর ব্যবহারের উপযোগী থাকে না তখন যেখানে সেখানে ফেলে না দিয়ে পরিকল্পনামাফিক সেটাকে রিসাইক্লিং করাই উত্তম। আধুনিক প্রযুক্তিতে রিসাইক্লিং করে প্লাস্টিক বর্জ্য থেকে জুতা, কার্পেট, নতুন বোতল, এমনকি রাস্তাসহ নানা সামগ্রী তৈরি হচ্ছে। প্লাস্টিক গলিয়ে জ্বালানি তেলও তৈরি সম্ভব হচ্ছে। এছাড়া প্লাস্টিক রিসাইক্লিং প্রক্রিয়ার মাধ্যমে অপরিশোধিত জ্বালানি তেলের ব্যবহার কমানো সম্ভব।

প্লাস্টিক দূষণ রোধে 3R নীতি একটি পরিবেশবান্ধব আধুনিক অর্থনৈতিক মডেল। এই প্রক্রিয়া 'বৃত্তাকার অর্থনীতি' নামেও পরিচিত। 3R নীতির কার্যকর প্রয়োগে সম্পদের সাশ্রয় যেমন সম্ভব তেমনি ল্যান্ডফিলের ওপর চাপ কমিয়ে পরিবেশের ভারসাম্য রক্ষা করা যায়। এছাড়া সামুদ্রিক জীববৈচিত্র্য রক্ষা ও রিসাইক্লিং প্রক্রিয়ায় কর্মসংস্থানেরও সুযোগ সৃষ্টি সম্ভব।

২। দূষণ রোধে বৈজ্ঞানিক প্রযুক্তি: গবেষণায় বিজ্ঞানীরা এমন কিছু ছত্রাক ও ব্যাকটেরিয়া (যেমন: Ideonella sakaiensis) আবিষ্কার করেছেন যা প্রাকৃতিকভাবে প্লাস্টিককে ভাঙতে বা হজম করতে সক্ষম। আখ, ভুট্টার স্টার্চ ও সামুদ্রিক শৈবাল থেকে এখন বায়ো-প্লাস্টিক তৈরি করা হচ্ছে। এসব বায়ো-প্লাস্টিক স্বাভাবিক প্লাস্টিকের মতোই। যা ব্যবহার শেষে মাটিতে ফেললে কয়েক মাসের মধ্যে ব্যাকটেরিয়ার সাহায্যে মাটিতে মিশে যায়। যদিও বায়ো-প্লাস্টিকের উৎপাদন খরচ সাধারণ প্লাস্টিকের চেয়ে বেশি! সাধারণত রিসাইক্লিং করলে প্লাস্টিকের মান কমে যায়। ফলে তা ব্যবহারের উপযোগীতা হারায়। গবেষকরা এমন আধুনিক কেমিক্যাল আবিষ্কার করেছেন যার মাধ্যমে রিসাইক্লিং প্রক্রিয়ায় প্লাস্টিককে উচ্চ তাপে ভেঙে পুনরায় মূল উপাদানে ফিরিয়ে নেওয়া সম্ভব। বিজ্ঞানীরা বিশেষ ধরনের চৌম্বকীয় ন্যানো কণা তৈরি করেছেন যার সাহায্যে ক্ষতিকারক প্লাস্টিক কণা আকর্ষণ করে মাইক্রোপ্লাস্টিক ফিল্টার করা সম্ভব।

৩। সিঙ্গেল-ইউজ প্লাস্টিক নিষিদ্ধকরণ: প্লাস্টিক দূষণের জন্য সিংহভাগ দায়ী পলিথিন ব্যাগ ও সিঙ্গেল-ইউজ প্লাস্টিক। একবার ব্যবহারযোগ্য বা সিঙ্গেল-ইউজ প্লাস্টিকের ব্যবহার অস্বাভাবিক গতিতে বেড়েই চলেছে। সিঙ্গেল-ইউজ প্লাস্টিক সব সময়ের জন্য ক্ষতিকর। যেসব প্লাস্টিক পণ্য একবার ব্যবহার শেষে আর কোন কাজে লাগে না বা ফেলে দেওয়া হয় সেগুলোই সিঙ্গেল-ইউজ প্লাস্টিক হিসেবে পরিচিত। বহু ধরনের সিঙ্গেল-ইউজ প্লাস্টিক পণ্য এখন হাতের নাগালে। এসবের মধ্যে রয়েছে প্লাস্টিকের কাপ, চামচ, স্ট্র, প্লেট, গ্লাসসহ আরও অনেক ধরনের পণ্য। রেস্টুরেন্ট, আবাসিক হোটেল, এয়ারলাইন্স, সুপারশপ, চায়ের দোকান ও বিশেষ অনুষ্ঠানে সিঙ্গেল-ইউজ প্লাটিকের ব্যবহার বেশি হচ্ছে। চায়ের দোকানগুলোতে এখন সিঙ্গেল-ইউজ প্লাস্টিক কাপের ছড়াছড়ি। বিয়ে বাড়িতেও এখন একবার ব্যবহারযোগ্য প্লাস্টিকের ব্যবহার হচ্ছে। সিঙ্গেল-ইউজ প্লাস্টিকের ক্ষতিকর প্রভাব না জেনেই হরহামেশাই সাধারণ লোকজন প্লাস্টিকের কাপে চা পান করছে। এই প্লাস্টিক পণ্যের ব্যবহার ব্যাপকহারে বেড়ে যাওয়ায় তা মানবস্বাস্থ্য ও পরিবেশের ওপর ভয়াবহ প্রভাব ফেলছে। গবেষণার তথ্য মতে, প্লাস্টিকের কাপে থাকা টক্সিক পদার্থ মুখ ও লিভারের ক্যানসারের বিশেষ কারণ। এই ক্ষতিকর পদার্থ গরম পানির সাথে সহজেই মিশে যায়। নারী-পুরুষের হরমোন কার্যকারিতায় বাধা প্রদান করে। এ ছাড়া হার্ট, স্তন, মস্তিষ্ক ও ত্বকের ক্ষতি বয়ে আনে। মানবদেহে ক্যানসার হওয়ার বিভিন্ন কারণের মধ্যে উল্লেখযোগ্য কারণ হলো প্লাস্টিক দূষণ। তাই সময় এসেছে সিঙ্গেল-ইউজ প্লাস্টিককে 'না' বলার। পরিবেশ সংরক্ষণ আইন প্রয়োগের মাধ্যমে সিঙ্গেল-ইউজ প্লাস্টিকের উৎপাদন, আমদানি ও বিপণন সম্পূর্ণভাবে নিষিদ্ধ করতে হবে।

৪। পরিবেশবান্ধব বিকল্প পণ্যের প্রসার: পলিথিন বা প্লাস্টিক নিষিদ্ধ করার পাশাপাশি পরিবেশবান্ধব ও সাশ্রয়ী বিকল্প জনসাধারণের হাতের নাগালে রাখতে হবে। পলিথিনের বিকল্প হিসেবে কাগজের ঠোঙা, কাপড়ের ব্যাগ, পাটের ব্যাগ, মাটির তৈজসপত্র, কাঁচ, বাঁশ কিংবা অন্য কোন পরিবেশবান্ধব ব্যাগ সহজপ্রাপ্য ও সাশ্রয়ী করতে হবে।

তাহলে ক্রেতা ও বিক্রেতা উভয়ই পরিবেশবান্ধব এইসব ব্যাগ ব্যবহারে উৎসাহিত হবেন। প্রয়োজন হলে পরিবেশ রক্ষার স্বার্থে পরিবেশবান্ধব বিকল্প পণ্যের প্রসারে সরকারিভাবে কর ছাড় ও প্রণোদনা দিতে হবে।

৫। বর্জ্য উৎসে পৃথকীকরণ: বর্জ্য যেখানে উৎপত্তি হয় সেই উৎসস্থলেই বর্জ্য আলাদা করতে হবে। পচনশীল (গৃহস্থালি) ও অপচনশীল বর্জ্য আলাদাভাবে রাখার অভ্যাস গড়ে তুলতে হবে। পচনশীল বর্জ্য দিয়ে বিদ্যুৎ উৎপাদন ও অচনশীল প্লাস্টিক সংগ্রহ করে তা রিসাইক্লিং করার মাধ্যমে কার্যকর বর্জ্য ব্যবস্থাপনায় পরিবেশের ভারসাম্য রক্ষা সম্ভব।

৬। EPR নির্দেশিকা চালু: EPR বা Extended Producer Responsibility এমন একটি নির্দেশিকা বা সিস্টেম যার মাধ্যমে যে সকল কোম্পানি প্লাস্টিকের পণ্য বা বোতল বাজারজাত করে, ব্যবহার শেষে বাজার থেকে সেই প্লাস্টিক পণ্য ফিরিয়ে নিয়ে রিসাইক্লিং করার পুরো প্রক্রিয়া তাদের উপরেই বর্তায়। বড় বড় কোম্পানিগুলো তাদের ব্যবসার মাধ্যমে পরোক্ষভাবে পরিবেশে ক্ষতিকর প্লাস্টিক ছড়িয়ে দেওয়ার নেতিবাচক প্রভাব এড়াতে পারে না। ইউরোপ, আমেরিকাসহ পৃথিবীর বিভিন্ন দেশে EPR নির্দেশিকা/নীতিমালা চালু আছে। এই আইন প্লাস্টিক দূষণ কমাতে উৎপাদককে প্রভাবিত করে। উৎপাদক, সরকার ও জনসাধারণ সচেতন হলে প্লাস্টিকের ক্ষতিকর দূষণ এড়ানো সময়ের ব্যাপার।

৭। আইনের কঠোর বাস্তবায়ন: পরিবেশ আইনের কঠোর বাস্তবায়নই পারে প্লাস্টিকের গ্রাস থেকে মুক্তির পথ দেখাতে। পৃথিবীর অনেক দেশে পরিবেশ সংরক্ষণ আইন থাকলেও বাস্তবায়নের অভাবে প্লাস্টিকের ভয়াবহ দূষণ রোধ করা সম্ভব হচ্ছে না। নিষিদ্ধ পলিথিন ব্যাগের উৎপাদন ও বাজারজাতকরণ বন্ধে কঠোর হতে হবে। তার পূর্বে বাজারে পলিথিনের বিকল্প পণ্যের যোগান অবশ্যই রাখতে হবে। দরকার হলে পাইলট প্রকল্প হিসেবে শুরুতে একটি উপজেলায় বা জেলায় নিষিদ্ধ পলিথিনের বিরুদ্ধে 'জিরো টলারেন্স' প্রয়োগ করা যেতে পারে। চালসহ অনেক পণ্যে প্লাস্টিকের মোড়ক নিষিদ্ধ হলেও তা মানা হচ্ছে না। আইন অমান্যকারী উৎপাদনকারী, ব্যবসায়ী ও যত্রতত্র প্লাস্টিক ফেলে রাখা জনসাধারণকে শাস্তি ও জরিমানা নিশ্চিত করতে হবে। নিয়মিত বাজার মনিটরিং ও ভ্রাম্যমাণ আদালত পরিচালনা করতে পারলে যেকোন আইনের প্রয়োগ সম্ভব।

দূষণ রোধে আমাদের করণীয়: প্লাস্টিকের গ্রাস থেকে মুক্তি পেতে শুধু সরকারি পদক্ষেপের দিকে চেয়ে থাকলে চলবে না। সহজলভ্য হওয়ায় জনসাধারণ তথা ভোক্তা প্লাস্টিক বা পলিথিন অনায়সেই ব্যবহার করছে। আবার সেই জনসাধারণই প্রত্যক্ষ ও পরোক্ষভাবে প্লাস্টিক দূষণের শিকার হচ্ছে। তাই নাগরিক হিসেবে আমাদেরও দূষণের বিরুদ্ধে সামিল হতে হবে। বাজারে যাওয়ার পূর্বে বাড়ি থেকে পাটের বা কাপড়ের ব্যাগ সাথে নিয়ে যেতে হবে। প্রয়োজনে মাটির পাত্রও সাথে নিতে হবে। দোকানদারের দেওয়া পলিথিন ব্যাগকে 'না' বলতে হবে। যেখানে সেখানে বর্জ্য না ফেলে পচনশীল ও অপচনশীল প্লাস্টিক নির্দিষ্ট স্থানে আলাদাভাবে রাখতে হবে। পরিবার, কর্মক্ষেত্র ও শিক্ষাপ্রতিষ্ঠান পর্যায়ে প্লাস্টিক ও পলিথিনের ক্ষতিকর দিক সম্পর্কে সচেতন করতে হবে। 3R নীতি বাস্তবায়নে যার যার অবস্থান থেকে এগিয়ে আসতে হবে। প্লাস্টিকের রিসাইক্লিং প্রক্রিয়া ও সমুদ্র থেকে প্লাস্টিক পরিষ্কার করার মতো কাজ বেশ প্রশংসনীয়। তবে মনে রাখতে হবে, সবার আগে প্লাস্টিকের ব্যবহার কমাতে হবে। অন্যথায় রিসাইক্লিং করেও প্লাস্টিক দূষণ রোধ করা সম্ভব হবে না।

প্রকৃতিতে আমরা জীবন ধারণ করি। প্রকৃতিকে বিষাক্ত প্লাস্টিক দিয়ে ভরিয়ে দেওয়ার আত্মঘাতী প্রবণতা বন্ধ করতে হবে। বিজ্ঞানসম্মত উপায় ও ব্যক্তিগত সচেতনতাই পারে এই সংকট থেকে মুক্তি দিতে। ভবিষ্যৎ প্রজন্মের জন্য বাসযোগ্য পৃথিবীর সন্ধানে 3R নীতি আমাদের প্রতিদিনকার জীবনযাত্রার অংশ বানাতে হবে। একটি সুন্দর, সবুজ ও দূষণমুক্ত পৃথিবীর স্বার্থে প্লাস্টিককে 'না' বলার এখনই সময়।

তথ্যসূত্র:

পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়: 'কঠিন বর্জ্য ব্যবস্থাপনা বিধিমালা, ২০২১' এবং প্লাস্টিক বর্জ্য হ্রাসকরণ মহাপরিকল্পনা।
বাংলাদেশ পরিবেশ আন্দোলন (বাপা): 'বাংলাদেশে প্লাস্টিক দূষণ: বর্তমান পরিস্থিতি ও নাগরিক ভাবনা' শীর্ষক গবেষণাপত্র।
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বৃক্ষ

কেয়া আক্তার*

বৃক্ষ, তোমার সামনে সবুজ
ভিতর ভরা ক্ষত,
রাত্রিবেলা একা একা
কাঁদো তুমি কত।

ক্ষতগুলো মোছে যখন
ভোরের কুয়াশারা,
সূর্য এসে শুকিয়ে দেয়
নীরব অশ্রুধারা।

কান্না মুছে ভোরের আলোয়
হাসো আপন মনে,
পথিক এসে ছায়ায় বসে
পরশ লাগায় প্রাণে।

ক্লান্ত পথিক গাছের তলে
শান্তি খুঁজে পায়,
পাতাগুলো শীতল হাওয়ায়
মমতা হয়ে যায়।

ঝড়ের সময় নীরবে তুমি
সহো ব্যথার দাহ,
তবু সবার জীবনজুড়ে
শীতল সুবাস চাহো।

এমনি করেই বৃক্ষ, তোমার
শেষ হয়ে যায় বেলা,
তবুও যেন শেষ হয় না
দুঃখসুখের খেলা।

* নমুনা সংগ্রহকারী, পরিবেশ অধিদপ্তর

English Articles

Solid Waste Management: An Integrated Approach from Policy to Implementation

Mohammad Navid Safiullah*

Every day, thousands of tons of waste silently accumulate across streets, riversides, open spaces, and urban drainage systems. What was once seen as a basic cleanliness and municipal service issue has now become one of the most pressing governance, environmental, and public health challenges of the 21st century. In today's rapidly urbanizing world, solid waste management reflects not only urban cleanliness but also institutional capacity, planning efficiency, environmental responsibility, and civic behaviour.

This global challenge is equally relevant to Bangladesh. Urban areas generate around 25,000–30,000 tons of solid waste daily, with a major share being organic. However, rising plastic, medical, industrial, and electronic waste, combined with weak source segregation and limited processing capacity, is intensifying pollution and public health risks.

Addressing this requires an integrated approach combining waste reduction, strong local governance, modern technology, circular economy practices, and waste-to-resource initiatives.

International best practices also reinforce this direction. Sweden's Waste-to-Energy model demonstrates how waste can be converted into energy, reducing landfill pressure, while Japan's strict source segregation system highlights the importance of disciplined household-level waste separation and civic responsibility.

Together, they show that sustainable waste management depends on both technological innovation and behavioural change.

Bangladesh is grappling with multiple challenges, including lack of engineered landfill systems, transfer stations, and segregation infrastructure, along with institutional fragmentation, financing constraints, and limited technology adoption. Although strong laws such as the Environmental Conservation Act 1995 and the Solid Waste Management Rules 2021 exist, enforcement remains weak.

An effective system must ensure full-chain management—from source segregation to collection, recycling, composting, engineered disposal, and Waste-to-Energy solutions—supported by the circular economy approach of turning waste into resources like compost, recycled materials, and energy.

Improved coordination among ministries, Public-Private Partnerships, and digital tools such as GIS and IoT can enhance efficiency and transparency. However, citizen participation remains the most critical factor, especially through source segregation, reduced plastic use, and awareness-driven behavioural change.

Eventually, solid waste management is both a technical and governance challenge. Its success depends on integrated action across policy, institutions, technology, private sector engagement, and citizen responsibility to transform waste from an environmental burden into a valuable resource for sustainable development.

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Climate Finance for a Resilient Bangladesh: Pathways, Progress, and Priorities

Md. Mahmud Hossain*

1. Introduction

Bangladesh is one of the most climate vulnerable countries in the world, although its contribution to global greenhouse gas (GHG) emissions is less than 0.5 percent (MoEFCC, 2025). Rising temperatures, sea level rise, salinity intrusion, cyclones, floods, and droughts are already affecting millions of people. These climate impacts threaten food security, water resources, public health, and the country's long term development. As a result, climate finance has become one of the most important tools for Bangladesh to protect its people, economy, and ecosystems.

Climate finance whether domestic or international, public or private plays an important role in enabling Bangladesh to respond to these escalating climate risks. It is not merely about funding isolated projects; rather, it is about strengthening national resilience, reducing climate-induced losses, and safeguarding sustainable development gains. Over the years, Bangladesh has developed strong policies, institutions, and innovative financing mechanisms to address climate change, demonstrating its commitment to building a climate-resilient future.

2. Climate Vulnerability and the Need for Climate Finance

Bangladesh's geography makes it highly exposed to climate hazards. The country is located in a delta formed by the Ganges, Brahmaputra, and Meghna rivers. Much of the land is low lying and close to sea level. According to the Climate Risk Index 2026 (Germanwatch, 2025), Bangladesh ranks 13th among the most climate vulnerable countries.

Sea level rise is one of the biggest threats. A DoE study (2023) shows that sea levels along the Bangladesh coast have been rising at 3.8-5.8 mm per year over the last 30 years. By the end of this century, 12-18 percent of coastal areas may be submerged. SLR alone may reduce rice production by 5.8-9.1 percent (MoEFCC, 2022). The IPCC (2022) warns that 26 million people in coastal Bangladesh are already exposed to high salinity.

Salinity affects drinking water, agriculture, and aquaculture. By 2050, freshwater river areas in the southwest may shrink from 40.8 percent to 17.1 percent (MoEFCC, 2022). Bangladesh faces frequent floods, flash floods, and cyclones. In 2017, floods damaged 220,000 hectares of nearly ready to harvest paddy, causing a 30 percent price increase (MoEFCC, 2022). Droughts force farmers to use more irrigation, increasing production costs. Cyclones including Sidr, Aila, and Amphan, have caused billions of USD in damage.

The Asia Pacific Climate Report (ADB, 2024) projects that Bangladesh will face severe long term economic losses due to climate change. Under the high emission scenario (SSP5 8.5, comparable to RCP8.5), Bangladesh could lose up to 77.9% of its GDP by 2100. Under a moderate mitigation scenario (RCP4.5), the projected GDP loss is 41.1%. Even under a strong mitigation scenario (RCP2.6), which assumes rapid global emission reductions, Bangladesh may still experience a 24.5% GDP loss by the end of the century.

3. National Climate Policies and Financing Needs

Bangladesh has developed strong policy frameworks to guide climate action. The major climate policies and regulations are:

(a) National Adaptation Plan (NAP)

Bangladesh submitted its NAP to the UNFCCC in 2022. The NAP identifies 113 priority interventions across eight sectors, including water resources, agriculture, disaster management, urban development, and biodiversity (MoEFCC, 2022). The estimated cost of implementing the NAP is USD 230 billion by 2050, which is equivalent to USD 8.5 billion per year.

(b) Third Nationally Determined Contributions (NDC 3.0)

Bangladesh submitted its Third Nationally Determined Contribution (NDC 3.0) in 2025, setting enhanced mitigation ambitions aligned with the Paris Agreement. The NDC commits to reducing emissions by 6.39% unconditionally and an additional 13.92% conditionally by 2035 compared to the business as usual scenario. To achieve these targets, Bangladesh will require USD 116.18 billion, of which USD 25.95 billion is required for unconditional actions and USD 90.23 billion for conditional actions dependent on international support. The NDC prioritizes key mitigation areas such as renewable energy expansion, energy efficiency improvements, electric mobility, clean brick technologies, and waste to energy initiatives, reflecting the country's commitment to a low carbon development pathway (MoEFCC, 2025).

(c) Bangladesh Climate Change Strategy and Action Plan (BCCSAP)

The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 was the country's first comprehensive framework for addressing climate risks, making Bangladesh the first developing nation to formulate such an action plan. Built upon six thematic pillars and 44 priority actions, the BCCSAP outlines national strategies for climate-resilient development across key sectors, including food security, disaster management, infrastructure, mitigation, research, and institutional capacity. To operationalize these actions (MoEF, 2009).

3.1 Domestic Climate Finance: Budget Allocation and Fiscal Tools

Bangladesh has integrated climate finance into its national budgeting system. The Climate Fiscal Framework (CFF) guides climate related public financial management.

(a) Bangladesh Climate Change Trust Fund (BCCTF)

The Government of Bangladesh established the Bangladesh Climate Change Trust Fund (BCCTF), the first domestically financed climate fund established by any developing country. Since 2009-2010, the BCCTF has financed more than 1,000 projects worth approximately USD 500 million, demonstrating Bangladesh's strong commitment to locally driven climate resilience.

(b) Climate Fiscal Framework

The Finance Division (FD) formulated the Climate Fiscal Framework (CFF) in 2014 and later updated in 2020 to guide climate responsive public financial management in Bangladesh. The CFF provides principles and tools for identifying the demand and supply of climate finance, improving transparency, and ensuring long term fiscal sustainability (MoF, 2020). It supports the tracking of climate related expenditures and the estimation of long term financing needs, while aligning costed and prioritized climate actions within the Medium Term Budget Framework (MTBF). By strengthening fiscal governance and creating an enabling environment, the CFF enhances Bangladesh's ability to mobilize international climate finance and manage national climate funds effectively.

(c) Climate Budget Tagging

Bangladesh introduced Climate Budget Tagging in FY 2017-18 and has since published an annual Climate Budget Report covering 25 ministries and divisions. In FY2025-26, 51.81% of the total budget of these ministries was identified as climate-relevant, while 10.07% constituted direct climate-specific expenditure (MoF, 2025). The CBT system enables the government to systematically track climate-related public spending, enhance fiscal transparency, and identify financing gaps, thereby strengthening the alignment between national budgeting processes and climate policy priorities.

(d) Tax Incentives and Green Financing

Bangladesh Bank promotes green financing through its Green Transformation Fund, various refinancing schemes, and the implementation of sustainable finance policies, all aimed at accelerating low carbon investment. Complementing these efforts, the Government of Bangladesh has introduced a 10 year tax exemption for renewable energy projects, offering 100% exemption for the first five years, 50% for the next three, and 25% for the final two years for power plants commencing commercial operations between 1 July 2025 and 30 June 2030. Together, these fiscal and financial incentives are designed to scale up private investment in clean energy and support the country's transition to a greener economy.

3.2 International Climate Finance: Support and Gaps

Bangladesh has access to resources available from the Global Environment Facility (GEF), Green Climate Fund (GCF), Least Developed Countries Fund (LDCF), the Adaptation Fund (AF), and other bilateral and multilateral funds. However, international financial resources are insignificant compared to our requirements. A scenario of international climate finance received by Bangladesh is as follows:

SL.	Funding Source	No. of Approved National Project	Amount of Fund (million USD)	
			Grant	Loan
1.	Green Climate Fund (GCF)*	07	168.30	250.00
2.	Least Developed Countries Fund (LDCF)	07	34.41	-
3.	Adaptation Fund (AF)**	02	19.99	-
4.	Global Environment Facility (GEF) ***	08	26.45	-
5.	Climate Bridge Fund	-	30.00	-
		Total	**279.15**	**250.00**

* *Considering only national projects (there are also 03 regional projects)*
** *Considering only national project (02 more projects with 10.0 million USD has also been approved under LLA and Innovation windows under the AF)*
*** *Considering projects under the climate change thematic areas only*

3.3 Bangladesh Climate and Development Partnership (BCDP)

The Bangladesh Climate and Development Partnership (BCDP) was launched at COP28 in December 2023 as a collaborative platform between the Government of Bangladesh and its development partners, including multilateral and bilateral agencies, civil society, and the private sector. The BCDP aims to mobilize climate finance, support policy reforms, strengthen project development, and enhance monitoring and evaluation. Four working groups including Climate Finance (Domestic), Climate Finance (External), Policy, Knowledge and Capacity Building, and Project Development Support, Monitoring and Evaluation were established to operationalize these objectives.

3.4 Loss and Damage Finance: A New Priority

Loss and Damage (L&D) refer to climate impacts that cannot be avoided through mitigation or adaptation, and Bangladesh faces some of the world's most severe L&D risks, including permanent land loss, salinity intrusion, forced displacement, livelihood erosion, and ecosystem degradation. Bangladesh plays a significant role in shaping global L&D negotiations. The establishment of the Fund for Responding to Loss and Damage (FRLD) marks a major milestone in advancing international support for vulnerable countries. Bangladesh is currently developing national frameworks and piloting projects to access L&D finance, aiming to strengthen institutional readiness and channel resources toward communities experiencing irreversible climate impacts.

3.5 Community Level Climate Finance and Adaptation

Community-level climate finance is essential for ensuring that resources reach the populations most exposed to climate risks in Bangladesh. The country has developed strong experience in locally led adaptation, supported by long-standing practices in community-based disaster management, nature-based solutions, and other grassroots innovations. Approaches such as climate-resilient housing, floating agriculture, and stress-tolerant crop varieties demonstrate how local knowledge and adaptive practices can effectively reduce vulnerability.

4. Bangladesh's Priorities for International Climate Finances

Bangladesh's priority in international climate finance is to secure adequate, predictable, and grant-based resources that reflect the country's high vulnerability, limited fiscal space, and growing adaptation and resilience needs. Bangladesh reiterates that developed countries must fully deliver past commitments, including the USD 100 billion goal, while advancing an ambitious, needs-based New Collective Quantified Goal (NCQG) that responds to the scale of climate impacts faced by developing countries.

Bangladesh emphasizes that the NCQG must provide at least 50% of public climate finance for adaptation, delivered primarily as grants and through direct access modalities, ensuring that resources reach the most vulnerable communities. The goal must be structured around country needs, equity, and common but differentiated responsibilities, and supported by clear pathways for scaling up long-term finance.

Bangladesh prioritizes streamlined, simplified, and harmonized access to climate finance across all funds, including the GCF, GEF, Adaptation Fund, LDCF, SCCF, and FRLD. Application, approval, and reporting processes must be proportionate, transparent, and country-driven, reducing administrative burdens and accelerating disbursement.

Bangladesh emphasizes the importance of strengthening national institutions through enhanced readiness and capacity-building support, enabling more LDCs and SIDS to access finance directly and maintain accreditation. Reducing reliance on loans especially for adaptation is essential to prevent worsening debt vulnerabilities.

Bangladesh highlights that improved transparency, accountability, and MRV integrity in climate finance reporting are essential for rebuilding trust. Climate finance must be tracked using UNFCCC-mandated methodologies, ensuring consistency, comparability, and avoidance of double counting.

Securing timely, accessible, and high-quality climate finance is essential for Bangladesh to implement its NAP, NDC, and long-term resilience strategies, and to protect vulnerable communities from escalating climate impacts.

5. Challenges and Opportunities in Mobilizing Climate Finance

Mobilizing climate finance is essential for Bangladesh to implement its adaptation, mitigation, and loss-and-damage priorities in the face of escalating climate risks. Despite progress in national systems and policy frameworks, significant gaps persist between financing needs and available resources. At the same time, emerging instruments and innovative mechanisms offer important opportunities to expand and diversify climate finance for a more resilient development pathway.

5.1 Challenges in Mobilizing Climate Finance

Bangladesh continues to face substantial challenges in mobilizing the scale of climate finance required to address its growing climate vulnerabilities. International support remains far below national needs, with the NAP estimating a requirement of USD 230 billion, while actual external finance flows remain limited and unpredictable. Accessing major global funds such as the GCF, AF, and GEF is further constrained by complex proposal requirements, stringent fiduciary standards, and lengthy approval processes, which slow down project implementation and create bottlenecks for ministries and local governments.

Private sector participation in climate action is also insufficient due to high perceived risks, limited incentives, and the absence of strong blended-finance mechanisms capable of de-risking investments. Institutional capacity gaps persist across several ministries and local authorities, particularly in project formulation, climate budgeting, and monitoring and evaluation, reducing the efficiency of climate finance utilization. At the same time, Bangladesh faces the escalating challenge of climate-induced displacement, with projections of 19.9 million internal climate migrants by 2050, creating significant financial demands for relocation, housing, and livelihood restoration. These interconnected challenges underscore the need for more predictable, accessible, and grant-based climate finance to support Bangladesh's adaptation and resilience priorities.

5.2 Opportunities for Scaling Up Climate Finance

Despite these constraints, Bangladesh has considerable opportunities to expand climate finance through innovative mechanisms and strategic reforms. Blended finance instruments, such as risk sharing facilities, green bonds, concessional loans, and public private partnerships offer strong potential to attract private investment, particularly in renewable energy, resilient infrastructure, and green industries.

Engagement with international carbon markets under Article 6 presents another major opportunity. Bangladesh has already registered 7 CDM projects for transition and is preparing new initiatives in areas such as AWD irrigation, mangrove restoration, waste to energy, non fired bricks, and solar cooking systems, which can generate carbon credits and mobilize new financial flows. Locally Led Adaptation (LLA) provides a pathway for channeling finance directly to vulnerable communities through community based adaptation, local climate funds, and women led resilience initiatives.

Nature based solutions including mangrove restoration, wetland conservation, riverbank stabilization, and urban green spaces can attract international funding while delivering co benefits for biodiversity and livelihoods. Additionally, the development of digital climate finance systems, including real time dashboards and digital MRV platforms, can enhance transparency, strengthen donor confidence, and improve the efficiency of climate finance mobilization and tracking. Together, these opportunities position Bangladesh to significantly scale up climate finance and accelerate its transition toward a climate resilient development pathway.

6. The Way Forward: A Climate-Resilient Bangladesh

Bangladesh has demonstrated strong leadership in climate finance, adaptation planning, and institutional innovation, yet the scale and urgency of climate risks demand a more ambitious and coordinated approach. Building a climate-resilient future will require strengthening domestic climate finance systems particularly through climate budget tagging, domestic climate funds, and enhanced fiscal frameworks to ensure that public resources are effectively aligned with national adaptation and mitigation priorities. At the international level, Bangladesh must continue to mobilize larger volumes of predictable, grant-based finance by preparing high-quality project proposals, expanding direct access capacities, and engaging strategically with global climate funds and development partners.

A resilient Bangladesh will also depend on unlocking private sector investment through targeted incentives, blended-finance instruments, and risk-sharing mechanisms that can catalyze capital for renewable energy, resilient infrastructure, and green industries. Operationalizing the FRLD is essential to support communities already experiencing irreversible climate impacts, particularly in coastal and disaster-prone regions. At the same time, investments in technology, data systems, and digital MRV platforms will strengthen climate risk management and enhance transparency in climate finance flows.

Locally led adaptation must remain at the center of Bangladesh's resilience strategy, ensuring that climate finance reaches vulnerable communities and supports context-specific solutions such as climate-resilient housing, nature-based interventions, and livelihood diversification. Strengthening institutional capacity across ministries, local governments, and national implementing entities will be essential for scaling up climate action and improving the efficiency of resource utilization. Finally, integrating climate finance with national development planning through the NAP, and NDC will help ensure long-term sustainability and coherence across sectors.

Bangladesh's journey from vulnerability to resilience is ongoing. With strong policies, innovative financing mechanisms, and deepening global partnerships, the country is well positioned to build a safer, greener, and more prosperous future for its people.

7. Conclusion

Bangladesh stands at a critical juncture where climate finance, policy innovation, and institutional readiness must converge to safeguard its people and economy from escalating climate risks. The country has made significant progress through strong national policies, domestic financing mechanisms, and active engagement with global climate funds, yet the scale of required investment far exceeds current resources. Bridging this gap will demand sustained international support, enhance private sector participation, and strengthen national capacities to design, implement, and monitor climate-resilient development initiatives.

As Bangladesh advances its NAP, and NDC, climate finance will remain essential to achieving long-term resilience and prosperity. Continued leadership in adaptation, loss and damage, and community-driven solutions will be essential for protecting vulnerable communities and ecosystems. With robust institutions, innovative financing pathways, and strong global partnerships, Bangladesh is well positioned to transform climate challenges into opportunities and build a safer, greener, and more resilient future for generations to come.

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Carbon Markets and Climate Action:

Unlocking Climate Finance for Low-Carbon and Resilient Development in Bangladesh

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ABSTRACT

Bangladesh stands at a defining moment in its climate journey. With per capita emissions of about 0.6 tCO2e – among the world's lowest – yet exposure to climate risks among the highest, the country must mobilise unprecedented finance to meet its Third Nationally Determined Contribution (NDC 3.0) target of reducing greenhouse gas emissions by 20.31% below business-as-usual by 2035. Carbon markets – under Article 6 of the Paris Agreement and complementary voluntary mechanisms – offer one of the most promising results-based finance instruments to help meet its USD 116.18 billion NDC 3.0 implementation cost (2025-2035), of which the USD 90.23 billion conditional component depends on international support (GoB, 2025). This article traces Bangladesh's journey from the Clean Development Mechanism (CDM) under the Kyoto Protocol to the pre-launch of its National Carbon Market Framework at COP30 in Belém in November 2025. It examines the global architecture, the country's legal and institutional readiness, sectoral opportunities, persistent risks, and the safeguards needed to ensure environmental integrity, equitable benefit-sharing, and protection of national interest in the new carbon market era.

1. Introduction: A Mechanism Reborn

Carbon credits – tradable certificates representing the verified avoidance, reduction, or removal of one tonne of carbon dioxide equivalent (1 tCO2e) – have evolved from a niche compliance instrument under the Kyoto Protocol into a central pillar of post-Paris climate finance architecture. For a climate-vulnerable least developed country (LDC) like Bangladesh, the question is no longer whether to engage with the carbon market but how to do so on terms that secure environmental integrity, national mitigation ambition, and tangible benefits for frontline communities.

The adoption of the rulebook for Article 6 of the Paris Agreement at COP29 in Baku in 2024 (UNFCCC, 2024) and the subsequent operationalisation of the Paris Agreement Crediting Mechanism (PACM) have re-energised the global market. According to the World Bank's State and Trends of Carbon Pricing 2026, 87 direct carbon pricing instruments – comprising 47 carbon taxes and 40 emissions trading systems – were in force across 47 countries and the European Union, covering approximately 29% of global greenhouse gas emissions (World Bank, 2026). The report estimates that the global carbon credit market recorded approximately US$ 535 million in traded value in 2024, and that capital committed in 2025 to future carbon credit projects is US$ 12–16 billion. Bangladesh, through the Department of Environment (DoE), Ministry of Environment, Forest and Climate Change (MoEFCC), acting as the Designated National Authority (DNA)

Secretariat, pre-launched its National Carbon Market Framework on 19 November 2025 at COP30 in Belém, Brazil, signalling to the global community its clear intent to participate (DoE, 2025a).

This article situates Bangladesh's carbon market strategy within the global Article 6 architecture, reviews lessons from two decades of CDM engagement, maps sectoral opportunities, identifies risks of premature or imprudent engagement, and proposes safeguards to ensure that the carbon market becomes a vehicle for – not an extraction from – Bangladesh's climate-resilient development.

2. The Global Architecture: From Kyoto Protocol to Article 6 of the Paris Agreement

2.1 Clean Development Mechanism (CDM): The Kyoto-era International Carbon Trading Mechanism

Established under Article 12 of the Kyoto Protocol (1997) and operational from 2005, the CDM became the world's first international project-based compliance crediting mechanism. It allowed Annex I (developed) countries to meet a portion of their emission reduction obligations by financing projects in developing countries, generating Certified Emission Reductions (CERs) each equal to one tonne of CO2e. By the end of the Kyoto compliance period, the CDM had registered approximately 8,000 projects across 111 host countries and issued more than 2.35 billion CERs, making it the largest project-based crediting programme in history (UNEP-CCC, 2025).

Yet the gains were unevenly distributed. A 2022 peer-reviewed analysis in PLOS Climate, covering 3,311 CDM projects between 2005 and 2020, found that actual emission reductions were 16% below the ex-ante targets (Calel et al., 2022) – and the LDCs, including Bangladesh, captured a disproportionately small share of revenue relative to the dominant role of large emerging economies such as China, India, and Brazil.

2.2 Article 6 of the Paris Agreement

Article 6 of the 2015 Paris Agreement provides the new market and non-market architecture for international cooperation on mitigation. It contains three operational provisions of direct relevance to Bangladesh:

- Article 6.2 – Cooperative Approaches: enables bilateral or plurilateral arrange ments under which countries transfer Internationally Transferred Mitigation Outcomes (ITMOs) to one another, subject to UNFCCC guidance, corresponding adjustments to avoid double counting, and authorisation by each Party.

- Article 6.4 – Paris Agreement Crediting Mechanism (PACM): a centralised, UNFC CC-supervised mechanism that registers mitigation activities and issues units (A6.4ERs), with mandatory contributions of a share of proceeds to the Adaptation Fund and an OverallMitigation in Global Emissions (OMGE) cancellation. PACM is the formal successor to the CDM.

- Article 6.8 – Non-Market Approaches: provides a framework for cooperation that does not involve trading carbon credits, such as joint adaptation–mitigation actions, technolog transfer, and capacity building. Critically, unlike the CDM – which operated in a world where only developed countries had binding targets – Article 6 functions in a regime where every Party, including Bangladesh, has its own NDC. This single legal change transforms the calculus: every credit Bangladesh authorises for international transfer must be deducted from its own ledger through a "corre sponding adjustment." The ques tion of which emission reductions to keep and which to sell is therefore a strategic ques tion of sovereign climate accounting, not merely a commercial transaction.

Table 1. From CDM to Article 6: what changed for host countries, like Bangladesh

Feature	Clean Development Mechanism (CDM)	Article 6 / PACM
Legal basis	Kyoto Protocol (1997); operational 2005–2020	Paris Agreement (2015); rules finalised at COP29 (2024)
Who holds emissions reduction targets	Only Annex I (developed) countries	Every Party, including Bangladesh, has an NDC
Unit issued	Certified Emission Reduction (CER)	ITMO (6.2); A6.4ER (6.4 / PACM)
Double-counting control	None required of the host	Mandatory corresponding adjustment by the host country
Adaptation finance	Limited (2% levy on some activities)	Mandatory share of proceeds to the Adaptation Fund (under A6.4) (except the LDCs)
Effect on host NDC	None	Authorised credit transfers deducted from the national GHG account

Source: adapted from UNFCCC (2024).

3. The Bangladesh CDM Legacy: Lessons from Two Decades

Bangladesh ratified the Kyoto Protocol in 2001, and the Designated National Authority (DNA) function was vested in the Department of Environment in 2003. According to the UNFCCC CDM Database for PAs and PoAs, Bangladesh hosted only a small share of global CDM activity, a total of 21 registered projects (10 PAs and 11 PoAs). The country's total reductions were estimated at approximately 19.28 million tonnes of CO2e, equivalent to roughly 0.78% of global CDM reductions (UNFCCC CDM Registry, 2026, estimated by the author).

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3.1 Flagship CDM Projects

Despite the modest scale, Bangladesh built useful early experience across several signature interventions:

- Solar Home Systems (SHS) Programme – implemented by Infrastructure Development Company Limited (IDCOL) with development partners. The programme installed more than 4 million off-grid solar home systems and reportedly generated around 2.07 million CERs under the CDM registry, becoming one of the largest off-grid solar deployments in the world (UNFCCC CDM Registry, 2026). The program later transitioned to

- Improved Cookstoves and Biomass Efficiency – projects targeting rural household com bustion emissions and indoor air pollution – generated around 4.7 million CERs.

- Brick Kiln Modernisation – 3 projects to convert Fixed Chimney Kilns (FCKs) toZigzag, clean Hybrid Hoffman Kilns (HHK), Zigzag and Vertical Shaft Brick Kilns (VSBK), with each modernised kiln estimated to generate up to 5,500 CERs per year.

- Composting of Organic Waste – one of the first implemented CDM projects on compost ing of organic waste in Dhaka.

3.2 CDM to Article 6 Transition Projects

With the end of the second commitment period of the Kyoto Protocol on 31 December 2020, the Clean Development Mechanism (CDM) entered a transition phase. To maintain continuity in international carbon market cooperation, eligible CDM project activities and Programmes of Activities (PoAs) that fulfilled the required conditions were allowed to request transition to the mechanism established under Article 6.4 of the Paris Agreement. From Bangladesh, seven CDM projects/PoAs that met the applicable requirements have already been registered as CDM activities in transition, as approved under the Article 6.4 Supervisory Board process.

In parallel, IDCOL's flagship CDM project under the Solar Home Systems (SHS) Programme has transitioned to the Standardized Crediting Framework (SCF), a simplified crediting standard developed with support from the World Bank to facilitate the issuance of mitigation outcomes from energy access programmes. Under the SCF, the SHS Programme has already generated about 1.5 million credits for the period 2021–2024, of which the World Bank-hosted Carbon Initiative for Development (Ci-Dev) has purchased around 1.02 million credits, valued at approximately USD 1.5 million.

3.3 Lessons Learned

Bangladesh's CDM experience yields five lessons that must inform Article 6 readiness:

- Capacity asymmetry: high transaction costs, complex methodologies, and limited domestic expertise concentrated projects in a few well-connected institutions. Small-scale projects were systematically disadvantaged.

- Price volatility: the collapse of CER prices after 2012 – from over USD 20/tCO2e to less than USD 1 – left many projects financially stranded, exposing the danger of over-reliance on a single offtake market.

- Co-benefits often undervalued: gender, livelihood, health, and biodiversity benefits were rarely monetised, even when central to project legitimacy.

- Weak benefit-sharing: rural communities hosting projects often received minimal or no direct revenue compared to project developers and intermediaries.

- Limited domestic spillover: knowledge transfer and technology localisation did not occur at the scale envisaged by Article 12 of the Kyoto Protocol.

4. Bangladesh's Legal and Institutional Framework

4.1 Constitutional and Statutory Foundations

Bangladesh's commitment to environmental protection is anchored in Article 18A of the Constitution, which directs the State to protect and improve the environment and preserve and safeguard natural resources, biodiversity, wetlands, forests, and wildlife for present and future citizens. The carbon market function rests on this constitutional mandate and several principal statutes, including:

- The Bangladesh Environment Conservation Act, 1995 (and subsequent amendments)
- The Environment Conservation Rules, 2023 (and subsequent amendments)
- The Bangladesh Climate Change Trust Act, 2010
- The Forest Act, 1927 (amended) and the Forest and Tree Conservation Act 2026
- The Sustainable and Renewable Energy Development Authority (SREDA) Act, 2012, governing renewable energy expansion that underpins energy-sector credits.

4.2 The Designated National Authority and Governance

The Department of Environment (DoE) serves as the Article 6 Designated National Authority. The DoE is supported by the Climate Change and International Convention Wing, under the guidance of the Ministry of Environment, Forest and Climate Change (MoEFCC), with broader coordination across the Economic Relations Division, the Ministry of Finance, the Ministry of Power, Energy and Mineral Resources, and sectoral line ministries.

4.3 The Bangladesh National Carbon Market Framework

On 19 November 2025, at COP30 in Belém, Bangladesh pre-launched its first National Carbon Market Framework – a governance document that defines the rules of engagement for both Article 6 (6.2 and 6.4) and authorised voluntary carbon market transactions. Key features include:

- Scope: Article 6.2 cooperative approaches, Article 6.4 PACM, and voluntary carbon market standards where credits are authorised for NDC, international mitigation, or other international mitigation purposes.

- Eligibility tiering through a Positive List (mitigation activities proactively prioritised– including renewable energy, electric mobility, brick kiln modernisation, methane reduction in rice, afforestation, blue carbon, and waste-to-energy) and a Negative List (activities not eligible for ITMO/A6.4ER authorisation).

- A national registry under development with World Bank Partnership for Market Implementation (PMI) support.

- Provisions on corresponding adjustments, benefit-sharing, fee structures, and contributions to adaptation and overall mitigation.

- Alignment with NDC 3.0: mitigation activities under the conditional component of NDC 3.0 will be the primary pool considered for Article 6 authorisation; activities beyond NDC commitments must still appear in the latest Biennial Transparency Report (BTR) national GHG inventory sectors.

This framework, approved by the Article 6 DNA Governing Board on 17 February 2026, forms the operational backbone of all sovereign carbon market engagement.

5. NDC 3.0 and the Mitigation Finance Gap

Bangladesh submitted its NDC 3.0 to the UNFCCC in September 2025, raising ambition and explicitly identifying international carbon markets as a means of implementation (GoB, 2025). The headline numbers below frame why carbon finance has become a strategic priority.

Table 2. Key indicators of Bangladesh's NDC 3.0

Indicator	NDC 3.0 Value (Bangladesh)
Reference year	BAU baseline, target year 2035
Total projected emissions by 2035 (BAU)	418.4 million tCO2e
Unconditional reduction target	6.39% below BAU by 2035 (approx. 26.74 MtCO2e avoided)
Conditional reduction target	Additional 13.92% below BAU (approx. 58.23 MtCO2e), contingent on international support
Combined reduction ambition	20.31% below BAU by 2035 (approx. 84.97 MtCO2e)
Total finance need (2026 – 2035)	USD 116.18 billion
Unconditional finance need	USD 25.95 billion
Conditional finance need (international support)	USD 90.23 billion
Per capita GHG emissions	~0.6 tCO2e (well below LDC average of 2.2 tCO2e)
Share of NDC targets envisaged via carbon trading	40% – 50% (indicative estimate)

Source: NDC 3.0 (GoB, 2025).

Table 3. Sectoral emission-reduction targets under NDC 3.0 (below business-as-usual, 2035).

Sector	Reduction below BAU by 2035
Energy	26.46%
Industrial processes	7.71%
Agriculture, forestry & other land use	11.46%
Waste	5.06%
Economy-wide (all sectors)	20.31% (6.39% unconditional + 13.92% conditional)

Source: NDC 3.0 (GoB, 2025).

The arithmetic is stark. If even one-third of NDC 3.0's conditional ambition is funded through carbon market revenue at a conservative average price of USD 10-15 per tCO2e, the gross inflows could amount to several hundred million US dollars between now and 2035. The same arithmetic, however, also shows that selling reductions abroad through corresponding adjustments is not free finance – it transfers ownership of the underlying mitigation outcome.

6. Sectoral Opportunities for Carbon Credits in Bangladesh

Bangladesh's Positive List, set out in the National Carbon Market Framework, identifies a clear set of priority sectors. A scientifically grounded assessment of mitigation potential, co-benefits, and risks follows.

6.1 Energy: Renewables and Electric Mobility

Renewable energy is the largest and most mature opportunity. Bangladesh's installed grid-connected renewable capacity remains modest (around 1.7 GW out of ~32.3 GW total installed capacity in 2026), with solar accounting for the lion's share. The Renewable Energy Policy 2025 envisages substantially higher renewable penetration by 2040. Carbon-credited project types include utility-scale solar, rooftop solar, floating solar on freshwater bodies, agri-voltaics, wind in coastal districts, and waste-heat recovery in industry.

Electric mobility is one of Bangladesh's largest transport-sector mitigation opportunities. An estimated 3-4 million battery-powered three-wheelers (e-rickshaws and easy bikes) already serve roughly 25 million passenger trips daily, but most still rely on informal lead-acid batteries that are inefficient and polluting (SMEP, 2024). Formal integration of standardised lithium-ion battery-swapping networks can significantly cut per-vehicle electricity consumption and eliminate lead exposure compared with the prevailing informal model (SMEP, 2024). Coupled with grid-emission-factor displacement through utility-scale and rooftop solar Power Purchase Agreements (PPAs) – credited against Bangladesh's published grid factor of about 0.62 tCO2e/MWh (DoE, 2025b) – these activities offer scalable, methodologically mature credit streams. NDC 3.0 commits to a 26.46% reduction in energy-sector emissions by 2035, with road-transport electrification a flagged mitigation pathway (GoB, 2025).

6.2 Forestry, Mangroves, and Blue Carbon

The Sundarbans – the world's largest contiguous mangrove forest – is among Bangladesh's most valuable blue-carbon assets, with soil carbon stocks of roughly 200 t C/ha in the top metre and annual sequestration of 4.7–6.5 t C/ha (Uddin et al., 2023). REDD+ activities (avoided deforestation, sustainable management, forest enhancement) are eligible under Article 6 and standards such as Verra's VCS and ART's TREES (Verra, 2024; ART, 2021). Inland Sal forests, social forestry, hill-tract reforestation and coastal greenbelts are also candidates – each requiring robust safeguards on permanence, leakage and FPIC of forest-dependent and Indigenous communities (ICVCM, n.d.).

6.3 Agriculture: Rice, Soil Carbon, and Methane

Agriculture is a major source of Bangladesh's non-CO2 greenhouse gas emissions, dominated by methane from flooded rice cultivation and nitrous oxide from fertiliser use (GoB, 2025; IPCC, 2022). Being the country's largest single agricultural mitigation opportunity, Alternate Wetting and Drying (AWD) can cut methane by 30%–70% per hectare and irrigation water use by 20%–30% (IRRI, n.d.-a, n.d.-b); a 2024 global meta-analysis of 437 datasets confirms a mean methane reduction near 47% without yield loss (Gao et al., 2024). Direct Seeded Rice, the System of Rice Intensification, and site-specific nitrogen management (e.g., urea deep placement) deliver further reductions (IRRI, n.d.-a; IPCC, 2022). However, robust MRV and equitable farmer benefit-sharing are essential for carbon-market integrity (CCAC, 2024).

6.4 Waste and Circular Economy

Municipal solid waste, faecal sludge, and industrial wastewater are significant methane sources. Project types include landfill gas capture and flaring/utilisation, anaerobic digestion of food and market waste, waste-to-energy (with rigorous environmental and social safeguards on emissions, ash management, and informal-sector workers), composting, biogas systems for poultry and dairy, and circular-economy interventions in the textiles value chain.

6.5 Brick Kilns, Industry, and Cooling

Bangladesh has more than 7,000 brick kilns producing roughly 27 billion bricks annually, accounting for roughly 17% of the country's annual CO2 emissions (around 3% of total GHG emissions) and a major share of urban air pollution (World Bank, 2025; GoB, 2025). Transition from Fixed Chimney Kilns to cleaner Tunnel, Hybrid Hoffman, and Vertical Shaft technologies and progressively to non-fired alternatives such as compressed stabilised earth blocks and concrete blocks represents a high-impact mitigation opportunity with co-benefits for air quality and respiratory health. Industrial energy efficiency in textiles, cement, fertiliser, and steel, refrigerant management under the Kigali Amendment to the Montreal Protocol, and hydrofluorocarbon (HFC) destruction also offer credit-generating pathways.

Table 4. Priority sectors on Bangladesh's carbon-market Positive List, with indicative activities and safeguards

Sector	Illustrative activities	Key safeguard / risk
Energy & mobility	Utility-scale, rooftop and floating solar; coastal wind; e-mobility and battery-swapping	Grid-factor accuracy; PPA additionality
Forestry & blue carbon	Sundarbans REDD+; mangrove and coastal afforestation; social forestry	Permanence, leakage, FPIC, land tenure
Agriculture	AWD, DSR and SRI rice; livestock and manure methane management	MRV of non-CO2 gases; smallholder inclusion
Waste & circular economy	Landfill gas, anaerobic digestion, waste-to-energy, composting	Emissions/ash safeguards;informal workers
Brick kilns & industry	Cleaner kilns and non-fired blocks; efficiency; HFC management	Air-quality co-benefits; baseline rigour

Source: Positive List, National Carbon Market Framework (DoE, 2025a).

7. Environmental Integrity and the National Interest

Carbon markets are not climate action in themselves – they are an accounting mechanism layered on top of on-the-ground physical mitigation. Whether they deliver real climate benefit depends entirely on the integrity of the underlying activity and the rigour of the accounting. The risks for an LDC such as Bangladesh fall into five clusters.

7.1 Double Counting and Corresponding Adjustments

Double counting takes three forms: double issuance (more than one credit issued for the same outcome), double claiming (both host and buyer count the same reduction toward their NDCs), and double use (the same credit used more than once). Article 6 addresses this through mandatory corresponding adjustments – when Bangladesh authorises an ITMO transfer to another country, it must add an equivalent quantity back to its emissions inventory. This is the central safeguard, but operationalising it requires an interoperable national registry, accurate GHG inventories and disciplined reporting through Biennial Transparency Reports (BTRs) under the Enhanced Transparency Framework.

7.2 Selling the Cheapest Reductions First

A well-documented risk is that countries authorise their lowest-cost reductions (the so-called "low-hanging fruit") for international transfer, leaving only expensive options to meet their own NDCs. Over successive five-year cycles, in which the Paris Agreement requires progressive enhancement of ambition, this can leave host countries with progressively tighter targets and progressively more expensive marginal abatement. The principle of separating unconditional NDC mitigation (kept for national accounts) from clearly designated additional activities (potentially authorised for transfer) is therefore central and is reflected in Bangladesh's framework.

7.3 Additionality and Baseline Inflation

The CDM era demonstrated how easy it is to inflate baselines or credit business-as-usual investments (Cames et al., 2016). Article 6.4 sets stricter additionality standards; Bangladesh should mirror these in its national methodology approval process and resist pressure to approve weak baselines for momentarily attractive projects.

7.4 Permanence, Leakage, and Reversal Risk in NbS Credits

Nature-based credits – afforestation, mangrove restoration, soil carbon – carry intrinsic reversal risk from cyclones, salinity intrusion, sea-level rise, fire, pests, and land-use change. Buffer pools, insurance instruments, and long-term monitoring (typically more than 30 years) are essential. For a high-population-density country where 80% of the land lies within the Ganges–Brahmaputra–Meghna delta, reversal risk is non-trivial and must be priced into project design.

7.5 Community Rights, Land Tenure, and Benefit-Sharing

Mitigation activities frequently take place on lands inhabited by forest-dependent communities, indigenous peoples of the Chittagong Hill Tracts, coastal fishers, and smallholder farmers. The Free, Prior and Informed Consent (FPIC) principle, equitable benefit-sharing (with a meaningful share – internationally, often 40%–60% – flowing to host communities), grievance redress, and gender-responsive design are not optional add-ons. They are conditions of social licence and, increasingly, of buyer-side eligibility under standards such as the Integrity Council for the Voluntary Carbon Market's Core Carbon Principles (CCP) and ICAO's CORSIA criteria (ICVCM, n.d.).

8. Persistent Challenges

- Institutional capacity: the DNA and supporting institutions remain under-resourced relative to the technical demands of registry operations, methodology review, MRV oversight, and contract negotiation.

- MRV and data systems: the national GHG inventory, while improving, still, in most sectors, relies on Tier 1 IPCC default emission factors; higher-tier, country-specific data is needed to support baselines and credit volumes.

- Price risk and revenue volatility: the CDM experience is a cautionary tale; pricing exposure should be hedged through diversified buyer agreements, results-based finance, and floor-price provisions where feasible.

- LDC graduation: Bangladesh is scheduled to graduate from least developed country status on 24 November 2026, although in February 2026 the Government requested the UN Committee for Development Policy to consider extending the preparatory period under its crisis-response provision (CDP, 2026). Graduation will narrow access to concessional finance and LDC-specific support; carbon market revenue, properly governed, can partially cushion this transition.

- Coordination across ministries and tiers of government, including with local government institutions where projects are physically located.

- Investor opportunism: rapid bilateral approaches from buyer-country governments and intermediaries can lead to unfavourable terms if Bangladesh negotiates from a position of incomplete preparation.

9. Policy Recommendations

To convert pre-launch ambition into durable national benefit, the following measures are recommended for the consideration of the Department of Environment and the Ministry of Environment, Forest and Climate Change.

9.1 Legal and regulatory

- Promulgate a Carbon Market Rules instrument under the Bangladesh Environment Conservation Act, 1995, to give the framework binding legal force, define the carbon credit as a property right, and clarify ownership, taxation, and dispute-resolution arrangements.

- Adopt a transparent Positive List / Negative List with publicly available criteria, and reserve all unconditional NDC mitigation outcomes for domestic accounting unless explicitly authorised.

9.2 Institutional and capacity

- Establish a fully resourced Article 6 Unit within the Department of Environment with dedicated technical staff for methodology review, registry operation, MRV oversight, BTR preparation, and contract negotiation.

- Build a national pool of accredited validators, verifiers, and methodology experts through partnerships with universities and international training providers.

- Operationalise an interoperable national carbon registry, linked to the national GHG inventory and BTR processes.

9.3 Environmental integrity safeguards

- Mandate Free, Prior and Informed Consent (FPIC) for projects affecting forest, coastal, indigenous, and customary lands.

- Establish a minimum benefit-sharing floor for local communities (% of net revenue from authorised credits) and a transparent benefit-sharing audit mechanism.

- Require a precautionary buffer pool of at least 10% for Nature-based Solution credits, calibrated to climate-disaster reversal risk.

- Adopt a national Share of Proceeds – beyond the mandatory Article 6.4 contribution to the Adaptation Fund – to fund adaptation programs ensuring climate justice for the most climate-vulnerable households.

9.4 Strategic and economic

- Negotiate from a portfolio position: avoid early sole-source bilateral agreements; build a queue of authorised activities, then competitively allocate to multiple buyers under Article 6.2 to discover the true price.

- Set a national floor price for authorised ITMOs and A6.4ERs, reviewed annually, to prevent value leakage during periods of weak market demand.

- Develop a domestic compliance carbon-pricing instrument (modest carbon levy or sectoral ETS pilot) calibrated to LDC realities – generating domestic revenue, supporting MRV maturity, and demonstrating climate leadership ahead of LDC graduation.

9.5 Transparency, accountability, and learning

- Publish all authorised mitigation activities, buyers, prices, volumes, and benefit-sharing flows in an open, machine-readable national registry.

- Mandate annual public reporting on the carbon market portfolio and its alignment with NDC 3.0 and the National Adaptation Plan (NAP).

10. Conclusion: A Just and Strategic Carbon Market for Bangladesh

The carbon credit mechanism is neither a silver bullet nor a trap – it is a tool whose value depends on how carefully it is wielded. For Bangladesh, the World Environment Day 2026 theme of Climate Action is more than a slogan; it is the lived reality of a delta nation negotiating its survival in a warming world. The pre-launch of the National Carbon Market Framework at COP30, the operational rules adopted at COP29 for Article 6, the rising bilateral interest from Japan, the Republic of Korea, Singapore, Switzerland, Sweden, and others (A6IP, 2025), and the country's elevated NDC 3.0 ambition together open a genuine window of opportunity.

Seizing that window will require the Department of Environment, working with line ministries and the wider climate community, to move with both urgency and restraint – urgency to build institutional readiness before international buyers move on, and restraint to ensure that no transaction undermines the country's sovereign right to mitigate, adapt, and develop on its own terms. Environmental integrity, the rights of frontline communities, and disciplined alignment with the NDC must not be traded away for short-term revenue. If those guardrails hold, carbon markets can complement – never substitute for – the unconditional public finance, grant-based adaptation support, and historical loss and damage redress that Bangladesh continues, justly, to demand from the international community.

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Government Initiatives for Sustainable Tourism Development in Bangladesh

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Tourism is the second-largest economic sector in the world after petroleum. This sector was contributing significantly with 9% of global GDP and jobs in 2023. About 1.3 billion international tourists were travelling worldwide in 2023. Tourism is contributing as an important source for sustainable development in an area. Many countries in the world are now considering tourism as a vital component for achieving Sustainable Development Goals (SDGs). Moreover, tourism is the main contributing economic sector for about 56 countries around the globe.

Bangladesh is the treasure of thousands of tourist attractions, such as natural beauties, water bodies, forests, beaches, wildlife, historic and archaeological sites, rural, indigenous and tribal life, cultural and religious heritages, festivals, sports games, handicrafts, and food, which are attracting tourists from home and abroad. The longest sea beach and the largest mangrove forest are situated in this country. The country is the host of World Ijtema, the second largest gathering of Muslims and has a glorious history of Mother Language Movement (21 February, 1952), and Liberation War (1971). The capital of the country is about 400 years old and is called 'City of Mosque'. The country is the land of about 700 rivers, 373 wetlands, 166 tea gardens, 710 kilometers of coastal areas, 53 protected areas, 200 migratory bird sites, and 2500 archaeological sites. Moreover, the country is covered with 18% and 10% forest and hilly areas, respectively. 54 indigenous communities are living in this country with their diverse cultures, languages, and traditional lifestyles, values, and beliefs. Furthermore, three UNESCO World Heritage Sites and two RAMSAR Sites are situated in the country. The domestic tourist amount is about 20 million, whereas 0.65 million international tourist arrivals in 2023, with a contribution of 3% in GDP. About 4.5 million of the workforce is engaged in tourism employment, which is 4% of total employment. The tourism receipts were 273 million in 2021.

The Government of Bangladesh (GOB) has declared tourism as a thrust sector for the economic development of the country. The country has emphasized on tourism sector due to branding the country, highlighting hospitality, cultural exchange opportunities, focusing on religious harmony, economic enhancement, attracting foreign investment, infrastructure development, building up connectivity, preserving natural attractions, and creating employment opportunities. Three predominant segments of tourism, such as nature, culture and religion, have been selected for sustainable tourism development in the country.

The GOB has taken several initiatives in terms of formulating rules, regulations, policies, financial, and promotional supports for sustainable tourism development in the country. Bangladesh Tourism Board (BTB) has formulated the Tourism Master Plan (TMP) for developing the tourism sector through utilizing the potentialities of the country in a sustainable manner.

About five hundred tangible cultural sites have been declared as preserved "Archaeological Sites" by the Department of Archaeology (DOA) for maintaining and preserving these sites and operating sustainable tourist activities. Three heritage sites of the country, namely, Sundarbans Mangrove Forest, Sixty Dome Mosque at Bagerhat, and Buddhist Vihara at Paharpur, have been included as UNESCO World Heritage Sites. Furthermore, another five archaeological sites have been nominated in the tentative list for World Heritage Sites. Moreover, some intangible heritage of the country, namely Baul songs, Jamdani weaving, Mangal Shobhajatra on Pahela Baishak, and Shital Pati weaving, have been listed as UNESCO intangible cultural heritage.

The GOB has prioritized the tourism sector for achieving the SDGs by 2030. The tourism sector has been contributing directly to the achievement of SDG-8, SDG-11, SDG-12, SDG-14, and SDG-15 for Bangladesh. National Tourism Policy 2010 has emphasized the participation of the marginal group of society, and necessary support to tourism SMEs for promoting sustainable and inclusive economic growth, and productive employment in the country. BTB has formulated 'National Tourism Human Capital Development Strategy for Bangladesh: 2021-2030' to identify the required workforce and necessary initiatives in the tourism and hospitality sector by 2030 through prioritized decent work opportunities, particularly for the youth and women. The TMP highlighted that the county will create opportunities for 4.3 million direct tourism-related employment and 3 million tourism-supporting employment by 2030. Moreover, the TMP has identified 22 key training programs for supplying skilled human resources in the tourism sector.

National Tourism Policy 2010 highlighted tourism-friendly urban development and arranged fair, exhibitions, and events to highlight the tourism potential. The capital of the country has been declared as 'OIC City of Tourism' for the year 2019. Gazipur is the host city to arrange 'World Ijtema' for gathering about 5 million Muslims every year. Furthermore, a noticeable number of foreign businessmen are visiting the main cities of the country due to the Ready-made Garments (RMG) industry every year. The GOB is facilitating the sustainable visit of foreign tourists through various initiatives in the cities. National Tourism Policy 2010 emphasized the participation of relevant stakeholders for promoting responsible tourism in the country. The Medium-Term Budget Framework has identified some initiatives for sustainable tourism development, such as infrastructure development, coordinating with tourism-related organizations to improve management, and capacity building in the tourism industry. The present government have included some commitments in their election manifesto, including formulating tourism-friendly policy, tour guide training and development, and potential tourism segments development, namely ecotourism, rural tourism, community-based tourism, culinary tourism, ethnic tourism and water-based tourism.

Bangladesh has an entitlement to 118,813 square kilometers of sea areas with three marine protected areas in the Bay of Bengal- 'Swatch of No Ground', 'Middle Ground and South Patches' and Saint Martin's Island. The GOB has planned to establish special zones for sustainable marine tourism development at Cox's Bazar. Furthermore, the Bay of Bengal has

been highlighted as a special destination for 'Blue Tourism' through promoting the iconic features- coral reef, adventure experience, and tourist activities. The GOB is providing training to volunteer groups and tour guides for the promotion and conservation of sustainable tourism development in the marine areas.

Bangladesh is the country of an ecological and biological hub of diverse landscapes, species and wildlife. There are 50 forest-based Protected Areas, 13 Ecological Critical Areas (ECAs), and one swamp forest (Ratargul) situated in the country. The Wildlife Conservation and Protection Law 2012 highlighted several terms, including sanctuary, Eco Park, ecotourism, botanical garden, corridor, community conservation area, wetland, national park, wildlife, biodiversity, and protected area. Bangladesh is one of the places with tigers in the world. The GOB is providing special attention to increase the number of tigers in the Sundarbans through trained community members for conservation activities. Bangladesh secured 11th position for wild elephants in the world. There are 15 elephant corridors and 7 sanctuaries to conserve elephants in the country. The GOB has formulated the 'Bangladesh Elephant Conservation Action Plan (2018-2027)' for ensuring sustainable living places for Elephants. The GOB is working with international organizations like UNDP and IUCN for enhancing conservation and co-management activities with the communities. Furthermore, a total of 27,717 square kilometers of the Sylhet and Khulna regions were declared as 'Vulture Safe Zones'. About 500,000 migratory birds in 320 species arrive in the country during the winter season every year. Six sites of the country are included in the East Asian- Australian (EAA) Flyway Partnership. The GOB has included 650 species as 'Protected Birds' and declared one year in prison for killing migratory birds.

The GOB has emphasized effective coordination of government agencies for formulating and implementing policies, regulations, and plans for sustainable tourism development in the country. Moreover, related international organizations, tourism stakeholders, civil societies, NGOs, and educators are also included in this regard. The GOB encourages the relevant stakeholders to arrange campaign and awareness, promotional activities through digital platforms, social media, online tools, television and radio advertisements for sustainable tourism development in the country. Furthermore, the government agencies are arranging special events for observing days, weeks, and seasons to promote sustainable tourism in the country.

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Biodiversity Conservation Efforts in Bangladesh in line with Global Commitment

Mst. Papia Sultana*

Introduction: Bangladesh is blessed with diverse ecosystems due to its geographic location, lower edge topography, temperate weather, seasonal variability and abundance of water bodies. These natural features support floral and faunal diversity to enrich and have given rise to the largest mangrove world heritage and Ramsar Site, the Sundarbans, along with many other important ecosystems. A functional and healthy ecosystem is also the greatest reservoirs of biodiversity and significant store of Carbon.

Ecosystems face enormous threats across the world. Scientific evidence has shown that the planet is now losing species at 1,000 times the natural rate of one to five per year. If it continues on the same trajectory, we approach a future where 30–50% of all species may be lost by the middle of the 21st century. The loss of biodiversity and climate change is inter-related. According to the IPCC Special Report 2018, a significant impact on land biodiversity and ecosystems including species loss and extinction are happening with the increase of temperature from 1.5 C to 2C. Over time, the ecosystems have become threatened due to increased population, urbanization, industrialization, pollution and climate change. IUCN Red list Data book 2015 presents the status of species under seven groups of wildlife (Mammals, Reptiles, Amphibians, Birds, Freshwater Fishes, Crustaceans and Butterflies) for red listing. The Red Listing covered a total of 1,619 species that included 138 mammals, 566 birds, 167 reptiles, 49 amphibians, 253 freshwater fishes, 141 crustaceans and 305 species of butterflies when vast majority of the invertebrates and estuarine and marine fishes are left out.

Global Commitments to Biodiversity Conservation:

If we look at the conservation approach of the global community, we find that journey started from the first of the major global conference regarded as The Stockholm Conference of 1972. It adopted Stockholm Declaration known as principle 21 which later reaffirmed at the 1992 Rio Conference. The World Commission on Environment and Development (WCED) and its 1987 report entitled ”Our Common Future” (known as the Brundtland Report) defined the concept of sustainable development. At the United Nations Conference on Environment and Development (UNCED) held in Rio in 1992, sustainable development concept gained broad international support and gave birth Convention on Biological Diversity along with other conventions and commitments.

Bangladesh started its journey to conserve biodiversity through signing the convention in 1992 and ratified it in 1994. The Convention has two protocols: (1) the Cartagena Protocol on Biosafety and (2) the Nagoya Protocol. Bangladesh signed the Cartagena Protocol in 2000 and ratified it in 2004. Nagoya Protocol on Access and benefit Sharing ratified on 5 April 2023. Over the past decades, biodiversity has lost remarkably in spite of various global commitments. The Strategic Plan for Biodiversity 2011-2020 is the remarkable approach that framed the 20 Aichi Biodiversity Targets around five Strategic Goals towards conservation of biodiversity.

An assessment was carried out towards understanding the level of status of the Aichi Biodiversity targets and let us to set the path to reach the 2050 vision. The global biodiversity outlook 3 demonstrates the status of the achievement of Aichi Biodiversity targets where most of the targets are not achieved completely. Biodiversity is important not only the 2030 Agenda for Sustainable Development but also the Paris Agreement

under the United Nations Framework Convention on Climate Change adopted in 2015. At around one-third of the net reductions in greenhouse gas emissions required to comply the Paris Agreement's goals can be possible through 'nature-based solutions'. Many of the indicators of the Sustainable Development Goals (SDGs) comes from the Aichi Biodiversity Targets. Biodiversity is bluntly highlighted in SDGs 14 (Life Below Water) and 15 (Life on Land), it also embraces a much wider set of Goals. Food security and improved nutrition (SDG 2) and access to clean water (SDG 6) can be ensured through the functional ecosystems. Ecosystem services also support agricultural productivity, for example through pollination, pest control and soil fertility. Conversely, the performance of the Sustainable Development Goals contributes to the conservation and sustainable use of biodiversity, such as climate change (SDG 13), pollution (SDGs 6, 12 and 14), overexploitation (SDGs 6, 12, 14 and 15) as well as the sustainable consumption and production (SDG 12).

Considering the potential impacts on, and the significance of ecosystem, United Nations Decade on Ecosystem Restoration (hereafter the "UN Decade" 2021-2030) declared to halt, prevent and reversing the degraded ecosystem. There are a lot of key steps to protect the earth and uphold the natures wildness. But the ecosystems are declining in an alarming rate in compare to any time of the history. So an ambitious and effective instruments has become crucial to achieve the nature positive, time bound goals and targets by 2030. Parties are agreed to develop global biodiversity framework in December 2022. The global community adopted the Kunming Montreal Global Biodiversity Framework (Global Biodiversity Plan) with an ambitious goal restoring the ecosystem and halting the species loss to achieve the 2050 vision of Living in Harmony with Nature. This initiative would be a milestone in the trajectory of ecosystem restoration and biodiversity conservation. Bangladesh being a party to the Convention on Biological Diversity (CBD) expresses solidarity towards a stronger Global Biodiversity Framework (GBF) to 'bend the curve' on biodiversity loss for the benefit of humans and all life on Earth.

National Efforts for Biodiversity Conservation:

Environment Conservation has got one of the ten priorities towards achieving Sustainable Development Goals in the country. The Constitution of the People's Republic of Bangladesh has recognized biodiversity and nature conservation as a fundamental principle of the state governance. The National Adaptation plan 2023-2050 has focused on nature-based solutions and biodiversity conservation to protect from climate change and disasters to attain sustainable development. The second perspective plan 2021-2041 of the Government of the Bangladesh sets the targets to increase environmental spending to 3.5% compared to 1.0% in 2018. Bangladesh is one of the few countries that enacted Bangladesh Biological Diversity Act 2017 to fulfil the three objectives of the Convention on Biological Diversity.

We have also promulgated the Wildlife (conservation and protection) Act, 2026 for conservation and protection of biodiversity, forest and wildlife. Under this act, a total of 58 protected Areas covering 818920.046 ha has been declared. More than 60,000 ha of degraded forest land have been rehabilitated through afforestation and reforestation, prioritizing native and climate-resilient species. Studies on invasive alien plant species (IAS) have been completed in five Protected Areas (PAs). A strategic action plan has been developed to control 17 priority IAS species across those PAs. At present, a total of 669 fish sanctuaries, including six Hilsha fish sanctuaries are declared in different selective water bodies. A gazette notification has also been issued imposing a ban on Sucker fish to control invasive species. Moreover, several legal instruments are in place to prevent the introduction of invasive alien species. Bangladesh has taken initiatives for Other Effective area-based Conservation Measures identifying primarily 6 OECMs.

Country is working to identify Key Biodiversity Areas (KBAs) as per global standard for identification of KBAs that are of high importance for the conservation of nationally and globally significant biodiversity. Bangladesh has declared 13 ECAs (384,529 ha) under the section 5 of the Bangladesh Environment Conservation Act,1995, the area is about 2.60% of the total country. Sixth National Biodiversity Report 2019 has shown that about 6 percent (5.74%) of area of the country has been declared as Protected Areas including Ecologically Critical Areas. In addition, about 6 percent (6.20%) of marine area in respect of total marine has been declared as Marine Protected Area. Now the area of marine protected area is 9,694 km², equivalent to 8.64% of Bangladesh's Exclusive Economic Zone (EEZ). Whereas, the country is planning to achieve its target in line with the global biodiversity plan restoring at least 15% of each degraded area of terrestrial, inland water, and coastal and marine ecosystems, and conserving 10% marine and coastal areas.

The agro-ecosystems of Bangladesh supports a very rich diversity of agricultural varieties of rice and crops. Different agro-horticultural crops including indigenous, local, exotic and wild relatives are maintained in ex-situ conservation in the gene banks of different institutions. A good number of vascular plant and faunal diversity is documented. However, excessive use of chemicals are posing threats to ecosystem and biodiversity. To meet the food demand of the growing population minimizing environmental impacts, the use of Diammonium Phosphate (DAP) is promoted to reduce excessive use of nitrogen fertilizer. A total of 154 pesticide batches are banned and farmers are encouraging to use of organic fertilizers. The use of Antibiotic in animal feed is legally prohibited.

Being a party to the CBD, every four years country is updating National Biodiversity Strategy and Action Plan (NBSAP) in line with the Global commitment and setting its targets to fulfil the commitment and national obligation. Bangladesh is also implementing Bangladesh Biosafety Rules 2012, Biosafety Guidelines, 2008 and National Biosafety Framework, 2006 to ensure biosafety in case of research and development and transboundary movement of GMOs. The National Biosafety Policy 2024 developed to ensure biosafety in the field of research and development of modern biotechnology.

A GMO detection lab has been established in the Department of Environment which require adequate skilled manpower and technological support to make it fully operationalize. A specific wing should be established to facilitate those issues within the Department of Environment that requires specific attention to implement the Convention on Biological Diversity and regulatory frameworks on Biodiversity in Bangladesh. Moreover, to accelerate biodiversity conservation actions, a dedicated and sufficient fund should be established. The values of ecosystem goods and services should be integrated into the national accounting system. Valuing ecosystem will strengthen conservation efforts and help build climate-resilient community.

Conclusion: Overall, we need to respect nature, follow its laws and conserve it. While the impact of climate change is one of the main causes to decline biodiversity, Nature Based Solution and valuation of ecosystems can play the vital role to ensure long-term environmental sustainability, as well as addressing climate change. We need to find a way for human being and nature to live in harmony, balancing economic development and ecological protection, and work together to build an environment-friendly prosperous planet.

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Comfort Today, Crisis Tomorrow: Why Good Intentions AreProducing Bad Environmental Outcomes in Urban Areas of Bangladesh

Ratul Ghosh*, Akib Ahmed Talukder**

Executive Summary

The urban areas of Bangladesh have been confronting the frontline of climate stress, while 'Dhaka' would be considered on the point of specific concern. It has been witnessed among the cities which are facing stronger heat, flooding, air pollution and disease outbreaks every year (World Bank, 2023; WHO, 2023). Responding to these anomalies of environmental condition, the inhabitants implement several adaptation measures considering their comfort-driven aspects only, which include; use of air-conditioners to survive extreme heat, drilling deep tube wells, relying on bottled drinks and packaged food, using private vehicles to avoid congestion, running generators and spraying chemicals to fight mosquitoes.

The solutions considering the adverse environmental condition, provide comfort and make life easier only for short term. Whereas, the concerning issue is that these adaptive measures bring hidden environmental costs which are not always visible to the consumers. Air conditioners increase electricity demand and heat output, deep wells are draining groundwater faster than it can be replenished, plastic consumption is blocking drainage systems and chemical mosquito control is weakening effectiveness while harming the environment (Tabassum et al.,2024).

Therefore, while people are trying to survive the problems of today, these coping strategies may actually be making the situation worse for tomorrow. The fearsome consequences of everyday “comfort solutions” considering the urban regions of Bangladesh has been critically discussed to understand how daily choices, when multiplied across millions of people, can create long-term consequences for the whole city. There have been feasible & practical suggestions mentioned aiming better urban planning to smarter household habits which can help Bangladesh adapt to climate change without increasing future damage.

1. Introduction

Bangladesh has been widely known as one of the most climate-vulnerable countries in the world (Climate Change 2022: Impacts, Adaptation and Vulnerability, n.d.). The urban areas have already been experiencing summers with unbearable temperature-rise, heavier rainfall, waterlogging and rising health risks. Specifically, Dhaka has become a pressure cooker of heat, population, traffic and pollution.

Considering such conditions, the inhabitants naturally try to find ways to make life more bearable. Households install air conditioners, businesses rely on generators, families buy bottled water and many people prefer private transport over crowded buses. During mosquito outbreaks, chemical sprays and coils become a daily routine. These are not luxury choices, rather these refer survival responses.

However, the concerning issue is that these responses are often individual and short-term, while the problems addressed are collective and long-term. For example, cooling one room with an AC might feel necessary, but when millions do the same, the entire city becomes hotter considering thermal condition of the environment (Tabassum et al., 2024). Pumping groundwater can solve the water need of today but contributes to the shortage of tomorrow (Roy & Zahid, 2021). Plastic packaging makes food convenient but clogs drainage and worsens flooding.

The above-mentioned measures create a quiet but serious paradox: efforts to adapt to urban stress are slowly increasing the stress itself. It is important to be clear that this is not about blaming citizens but reacting logically to the uncomfortable living conditions and weak public systems.

2. Why Urban Bangladesh Depends So Heavily on Adaptation

The urban regions are growing rapidly. Population density has increased sharply over the past two decades, while open green spaces, wetlands and natural cooling areas have been reduced consequently. As a result, built-up areas trap heat, create urban heat islands and city temperatures remain several degrees higher than surrounding rural areas.

At the same time, infrastructure has not been developed evenly. Drainage systems are often clogged or insufficient, causing waterlogging during monsoon rains. Public transport has become crowded and uncomfortable. Furthermore, waste management is still not fully efficient.

Because of these gaps, people have been relying on personal & temporary solutions. Whether the temperature of the city being unbearable, they would consider artificial way of cooling indoor temperature. If transport being unreliable, people would choose private vehicles or ride-sharing. If mosquitoes spread disease, authority would implement chemical repellents.

In other words, adaptation in urban Bangladesh is not optional rather it has been forced by necessity. But when millions of individuals adapt in isolated ways, the combined impact can unintentionally damage the environment further.

3. Everyday Adaptation and Its Hidden Environmental Costs

3.1 Cooling Indoor While Heating the Outdoor

Air conditioners have become conventional in homes, offices and shops. While ACs provide immediate comfort, they consume large amounts of electricity, most of which still generated from fossil fuels. This eventually results in higher carbon emissions and more heat released into the atmosphere.

On top of that, many modern buildings use glass-heavy designs. These look attractive but not suitable for hot climates. They trap heat inside, increasing cooling demand even further. Over time, the urban areas are becoming trapped in a vicious cycle: more AC use leads to more heat, which leads to even more AC use. Traditional climate-friendly designs like open courtyards, shaded windows and natural ventilation have been slowly disappearing and replaced by sealed with air-conditioned spaces.

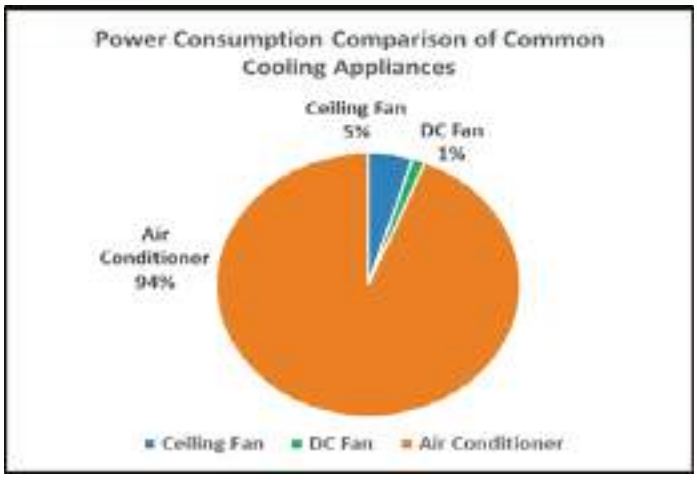


Figure: Typical Power Usage

3.2 Solving Water Problems by Overusing Groundwater

Water availability has been another major issue in Dhaka. There has been a large portion of the urban areas which depends on groundwater and millions of cubic meters are pumped every day through deep tube wells.

The concerning issue remains in the fact that this water is not replenishing fast enough. Due to this reason, groundwater levels have been falling year after year. Consequently, water tables have dropped by more than 60 meters over recent decades in some areas (Roy & Zahid, 2021b).

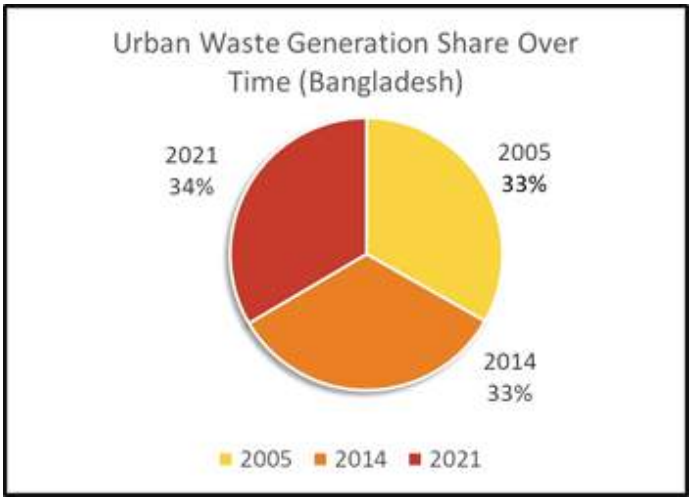
Rainwater harvesting and surface water systems exist as alternatives, but they are not being widely used in urban areas. At the same time, filling wetlands and covering land with concrete reduces natural water recharge, exacerbating the situation even worse.

3.3 Convenience Culture and Plastic Waste

Modern urban life has prioritized convenience on a significant scale. Food delivery, bottled water, online shopping and packaged goods are part of daily life in urban areas.
Nevertheless, the conveniences have severe costs. Urban waste generation has been increased dramatically over the years, with a large portion generating from plastics and single-use materials. Plastic use per person has also increased sharply with a specific concern in city areas. In spite of implementing recycling initiatives & approaches, it is not enough to handle the volume of waste being produced.

3.4 Fighting Mosquitoes Using Chemicals

Dengue outbreaks have made mosquito control a daily concern in urban Bangladesh (Item, 2023). People use sprays, coils and fogging to protect themselves from mosquito bites. However, the chemical-based approach has limitations. Mosquitoes are becoming resistant to many common insecticides, rendering them less effective over time. At the same time, repeated chemical use can harm human health, air quality and fatal to other insects which are important for the ecosystem.



Fundamentally, spraying only kills adult mosquitoes temporarily but does not remove breeding sites. Therefore, the problem continues to appear on a repetitive cycle which depicts another form of maladaptation, solving one problem in a way that weakens long-term solutions.

3.5 Private Comfort and Public Pollution

Considering the growth in income, more people prefer private vehicles instead of public transport. While this reduces personal discomfort, it increases traffic congestion, fuel consumption and air pollution in contrary.

Similarly, backup generators have been widely used during power outages. They provide essential electricity but also release harmful emissions into the air. Even excessive lighting in shops and advertisements includes to energy demand without real necessity.
From an individual perspective, these choices make life easier. However, on a city-wide scale, they increase pollution and energy demand across the entire city.

4. The Bigger Issue: Adaptation Without Awareness

Providing an overview of all these examples together, there has been a clear pattern observed. People are adapting but mostly in isolated ways without considering long-term environmental effects. According to experts it can be termed as maladaptation, when solutions reduce immediate risk but increase future vulnerability (Climate Change 2022: Impacts, Adaptation and Vulnerability, n.d.).

The key issue has been based on timing. The benefits of these adaptations are immediate and personal: cooler rooms, cleaner water, easier transport. Whereas, the costs are delayed and shared by everyone: higher temperatures, lower groundwater levels, polluted air and damaged ecosystems.

Considering this gap, people do not always comprehend the connection between their actions and the wider environmental impact. Therefore, the challenge has not been solely focused on stopping adapting but to adapt more wisely.

5. Moving Toward Smarter and Sustainable Adaptation

The solution is not complicated but it would require coordination between individuals, communities and government.

At the personal level, small changes like using fans more efficiently, replacing air conditioners with natural cooling techniques with architectural modifications, recycling plastic wastage & replacing them sustainable alternatives and saving electricity can make a difference when adopted widely.

At the community level, apartment buildings and neighborhoods can introduce rainwater harvesting, tree planting, waste separation and mosquito control methods that focus on removing breeding sites instead of chemicals.

Urban planning also needs to focus more on green spaces, shaded streets and climate-friendly infrastructure that reduces heat instead of trapping it.

6. Conclusion

Urban Bangladesh is facing a difficult reality. The city areas are becoming hotter, denser & more stressful and people are naturally trying to adapt in whatever ways possible. But many of these coping strategies, while effective in the short term, are quietly increasing long-term environmental pressure.

The main lesson from this discussion is simple: comfort today should not come at the cost of crisis tomorrow. People are not the problem; they are responding to real challenges. The real issue is that adaptation is happening without enough environmental awareness and planning. Shifting towards smarter, more coordinated and climate-friendly adaptation, would eventually provide urban life both comfortable and sustainable outcome. Otherwise, the solutions of today may slowly turn into the problems of tomorrow.

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Climate Change: A Silent Threat to Human Health

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Climate change is no more an unfamiliar word, rather it has been a buzz word to all the corners of the world. Consequently, defining climate change might be an issue of exaggeration now a day. Moreover, climate change refers to long-term shifts in temperatures and weather patterns, primarily due to human activities like burning fossil fuels (coal, oil, and gas), which increase greenhouse gas emissions.

It introduces not only the human diaspora throughout the world, but also it instigates the diseases or crises of inner or outer physique considering the location or other circumstances! And locating at the mouth of Bay of Bengal, at the very Foothill of the great Himalaya, we have neither a way to escape from the climate change issue nor the impacts induced by that natural phenomena! A simple but crucial instance might be that 'Erratic weather conditions played a key role in the 2019 dengue outbreak in Dhaka city, where 77 percent of the country's total dengue-related deaths occurred. That year, Dhaka recorded more than three times the average February rainfall followed by high temperature and humidity between March and July (World Wank, October 7, 2021)'.

Rising temperatures and changing rainfall patterns can boost mosquito and tick populations and make it easier for them to spread harmful pathogens to people. 'Between 2003 and 2023, more than 1 million cases of vector-borne diseases were reported in the United States (source-*https://www.cdc.gov/ncezid/topics-programs/climate-infectious-disease.html*)'. 'The number of extreme climatic events such as floods, heat waves, droughts, intense storms and tidal surges in Asia and the Pacific grew from 617 in the 1980s to 667 in the 1990s, 12 or an 8% increase. During the same period, however, the number of deaths attributable to such events increased over 5-fold, from 90,000 to 500,000 (Source- Asia-Pacific Human Development Report Background Papers Series 2012/16, UNDP)'. This growing intensity of the impacts of human being is a matter of concern for sure!

Due to climate change, heat wave has been a common issue now a days that either takes away many of our lives through stroke or spreads cardiovascular diseases. High temperature causes droughts and that leads to food insecurity, malnutrition, and psychosocial stress. Besides, air pollution due to the changes in climate is responsible for infectious disease, asthma, chronic obstructive pulmonary disease and lung cancer. As a riverine low-lying country, we the Bangladeshi people are quite used to flood or even flash flood and that natural calamities not only causes economic losses but also disrupt health services, displacement and shortages of safe water, mental and physiological health, food insecurity and malnutrition etc.

Surprisingly, the mean temperature in Bangladesh has increased by 0.5°C between 1976 and 2019. In terms of mental health conditions, while temperature is negatively correlated to depression, anxiety among individuals those live at increase with temperature and humidity. And so, irrespective of the season, morbidity and mental health issues are highest in densely populated urban hubs such as Dhaka and Chattogram compared to other areas.

Government of Bangladesh feels for the climatic, economic and human losses due to climate change. And so National Adaptation Plan of Bangladesh (2023-2050) has been published where the changes in human along with livestock health have been addressed. 'Extreme heat events impact people and animals in various ways. The productivity of laborers declines, disease outbreaks occur and heatstroke increases. Cattle, poultry and fish suffer heavily from extreme heat and their mortality increases. Crop production is very susceptible to extreme heat. As plants maintain all physiological processes within temperature thresholds, sudden temperature changes hamper important activities like flowering, germination etc. (NAP 2023-2050)'.

Economic losses due to climate change is visible, but the non-economic losses is invisible to some extent! Increased extreme climatic events not only causes the infrastructural damages, but also it makes a footprint to a family or generation causing physical causality instantly or in the long run. From the societal perspective, we need to address the mental health as like as physical health and at the same time we ought to focus more intensively to the non-economic losses; like- the human health. A sound health in an optimum climatic environment can bring the best of one to build a prosperous nation.

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Climate Resilient City: Building a Walking and Cycling Friendly Dhaka

Naima Akter*

1.Introduction

Dhaka is one of the most densely populated megacities on earth, home to over 21 million people squeezed into roughly 300 square kilometers. It is also one of the most climate-vulnerable urban centers in South Asia, facing rising temperatures, seasonal flooding, air pollution, and a transport system buckling under its own weight. Yet within this crisis lies an underused tool, the human-scale city. A Dhaka built for walking and cycling would be not only more livable but fundamentally more resilient to the climate shocks that are accelerating every year.

2.Dhaka's Current Reality

2.1 Air Pollution

Dhaka is facing a severe air pollution crisis. Real-time data from IQAir in January 2024 frequently ranked Dhaka as the world's most polluted city, with PM2.5 levels more than 17 times higher than WHO guidelines. Major traffic areas such as Tejgaon, Mirpur, Mohammadpur, Motijheel, and Mohakhali remain persistent pollution hotspots due to heavy dependence on motorized vehicles. Nearly 48% of Bangladesh’s air pollution-related deaths occur in Dhaka and Chattogram. Rapid growth in motorized vehicles, increasing from 73,605 in 2011 to over 140,766 in 2025 in the Dhaka Metro area, has worsened the situation. The World Bank's Bangladesh Country Environmental Analysis 2024 estimates that health costs caused by pollution and unplanned urban growth amount to billions of takas annually.

2.2 The Urban Heat Island Effect

Dhaka's rapid and largely unplanned urbanization has created severe urban heat island (UHI) effects. The loss of green space, water bodies, and tree cover, replaced by concrete, has driven up surface and ambient temperatures. For pedestrians and cyclists, this is not only uncomfortable but it is dangerous, particularly for the urban poor who have no choice but to move through the city on foot or by non-motorized transport (NMT).

2.3 The State of Walking Infrastructure

Dhaka's footpaths are functionally unusable. Busy areas, including Farmgate, New Market, Gulistan, Mirpur have footpaths occupied by hawkers, illegally parked vehicles, and construction materials. Motorcyclists routinely mount and ride along footpaths, often directly in front of traffic police. Pedestrians, regardless of age or physical ability, are forced to navigate this obstacle course with extreme caution. Ramps for persons with disabilities exist in theory but are rarely functional. Traffic laws require vehicles to yield to pedestrians at zebra crossings, but compliance is virtually non-existent. Half of all road accident victims in Bangladesh are pedestrians; a critical indictment of how the public realm has been surrendered to motorized traffic.

2.4 The State of Cycling

Cycling in Dhaka is difficult and unsafe due to poor infrastructure, fast-moving traffic, and hazardous road conditions. Existing bicycle lanes are often short, disconnected, and blocked by parked vehicles, hawkers, debris, or motorcycles. Most cycling facilities are concentrated in wealthier areas with lower demand, while densely populated low-income neighborhoods remain underserved. Climate-related challenges such as extreme heat, heavy rain, and flooding further increase risks for cyclists. Additionally, cyclists lack proper legal protection and regulation, as there are no dedicated policies from the Bangladesh Road Transport Authority for non-motorized transport.

3.The Climate and Health Case

3.1 Active Mobility as Climate Action

Walking and cycling generate no greenhouse gas (GHG) emissions and provide significant benefits for both climate mitigation and public health. A 2025 global study covering 11,587 cities across 121 countries found that redesigning streets and promoting compact urban development can significantly increase active travel. The research also showed that extreme weather conditions are not the main obstacle to cycling; instead, political commitment and proper infrastructure are the key factors influencing cycling adoption.

3.2 The Heat–Transport Feedback Loop

Dhaka is caught in a cycle where increasing numbers of motorized vehicles worsen heat, emissions, and air pollution, pushing more people toward air-conditioned transport and further increasing vehicle dependence. Breaking this cycle requires reducing the dominance of motorized vehicles and creating a more people-centered city through walking and cycling infrastructure. Studies highlight that heat-safe active mobility infrastructure is essential for protecting public health in warming cities like Dhaka. Research from Columbia University found that strategic tree planting along only 1.5% of cycling routes could reduce cyclists' heat exposure by 19%, lowering thermal stress by about 4°C.

3.3 Equity and Inclusion

Buses already carry about 47% of total passengers; when autorickshaws and cycle-rickshaws are included, non-private transport accounts for roughly 88% of all trips, a modal share that many high-income cities can only dream of. The city's street design has perversely dispossessed the majority. The poor walk and cycle but are denied safe, dignified infrastructure to do so, while the minority who own cars have captured ever-larger shares of road space.

4.International Lessons

Several global cities demonstrate how strong cycling and non-motorized transport policies can transform urban mobility, climate resilience, and public health.

The Netherlands is often cited as the world's most successful example of a cycling-centered transport system. Dutch cities such as Amsterdam, Utrecht, and Groningen have built dense, interconnected networks of protected cycle tracks, traffic-calmed streets, and bicycle-priority intersections that make cycling safe, convenient, and socially inclusive. Today, cycling accounts for more than a quarter of all trips nationwide, and in cities like Utrecht the share exceeds 50 percent. The Netherlands demonstrates that when cities make cycling safe, comfortable, and efficient, people across all ages and income groups choose it as a primary mode of transport, delivering major benefits for climate mitigation, congestion reduction, and public health.

Copenhagen is considered the global model for cycling urbanism, with extensive protected bicycle infrastructure and nearly 45% of residents cycling daily for work or education. Its success shows that continuous investment in cycling infrastructure increases ridership, public support, and long-term environmental and health benefits.

Bogotá offers a more relevant example for Dhaka due to its similar density and socioeconomic conditions. The city has developed 590 km of cycling infrastructure and introduced the famous Ciclovía program, which closes streets to cars on Sundays and holidays. Temporary car-free events encouraged more residents to cycle regularly and created demand for permanent cycling facilities.

Addis Ababa provides one of the most applicable examples for Dhaka among Global South cities. Through its NMT Strategy, the city is expanding footpaths, cycle tracks, bike-sharing systems, and public transport connections. Its experience shows that even resource-constrained cities can successfully promote active mobility when cycling and walking are treated as issues of climate, health, and social equity rather than only transportation.

5. A Roadmap for Dhaka

The following recommendations are grounded in Dhaka's specific context, its climate vulnerabilities, urban form, governance structure, and socioeconomic realities, as well as the evidence from international practice.

5.1 Adopt a Unified Active Mobility Policy Framework:

The Government of Bangladesh, in coordination with Dhaka North and South City Corporations, should adopt a formal Active Mobility and Non-Motorized Transport (NMT) Policy that designates cycling and walking as primary modes of urban transport, not residual ones. This policy must be embedded in the national Nationally Determined Contribution (NDC) framework and aligned with the Climate Resilient Infrastructure Roadmap. Health and environment ministries must have equal standing alongside transport authorities.

5.2 Reclaim and Redesign Footpaths:

- Launch a city-wide "People's Pavement" program to reclaim footpaths for pedestrian use. This should include:

- Physical redesign of major corridors with minimum 3-metre clear pedestrian walkways, raised crossings, and bollards to prevent motorcycle encroachment.

- Universal design requirements: all new and rehabilitated footpaths must comply with accessibility standards for persons with disabilities and elderly users, including functional ramps, tactile paving, and level surfaces.

- Canopy planting: shade trees planted systematically along all footpaths as a mandatory climate-adaptation measure. Research confirms this is the single most cost-effective intervention to reduce outdoor heat exposure.

- Formalized hawker zones adjacent to but not obstructing the pedestrian right-of-way, providing livelihoods without compromising pedestrian safety.

5.3 Build a Protected Cycling Network:

Commit to an initial 100 km protected cycling network within four years, focused on corridors connecting residential neighborhoods to major transit nodes and economic centers. Lanes must be physically separated from motorized traffic and not just painted. Each lane must be continuous, connected, and free from encroachments.

5.4 Integrate Active Mobility with the Metro Rail System:

Every metro station should be a mobility hub, safe cycle parking (minimum 100 spaces), secure bicycle lockers, and a bike-share station. Cities like Tokyo and Amsterdam have demonstrated how transit-cycling integration multiplies the impact of both systems.

5.5 Launch a Dhaka Ciclovía and Car-Free Streets on Designated Days:

Inspired by Bogotá's Ciclovía, designate a monthly car-free corridor program on Fridays on major streets. These events, managed by city corporations in partnership with health, sports, and community organizations, serve multiple purposes like building a cycling culture, demonstrating political commitment, gathering ridership data, and generating public support for permanent infrastructure.

5.6 Implement a Green Corridor Strategy:

Develop 15–20 km of green cycling and walking corridors that integrate cycling infrastructure with tree planting, bioswales, and urban greenery, particularly along canal banks, lake edges, and railway buffers. Green corridors provide comfortable, shaded active-travel routes and act as urban cooling infrastructure, directly addressing Dhaka's urban heat island crisis. They also help manage monsoon ooding through improved drainage.

5.7 Regulate and Incentivize Cycling:
Develop a dedicated legal framework for cyclists within the Bangladesh Road Transport Act, setting rules, protections, and priorities. Simultaneously, introduce fiscal incentives like tax relief on bicycle purchases, employer-sponsored cycle commuting schemes for RMG workers and office employees, and preferential parking policies for bicycles at commercial and government buildings.

5.8 Mainstream Climate-Responsive Design: All walking and cycling infrastructure in Dhaka must be designed with climate resilience at its core, such as:

- Flood-resilient surfaces that drain rapidly and do not become impassable during monsoon.
- Heat-resilient canopies and shade structures at intersections and waiting areas, particularly near transit stops.
- Cool pavement materials to reduce surface heat absorption.
- Emergency shelter points along major cycling corridors during extreme weather events.

5.9 Funding Equitably and Sustainably:
Establish a dedicated Active Mobility Fund drawing on international climate finance, a portion of vehicle registration fees, and congestion-linked road pricing revenues. Active mobility infrastructure is demonstrably cost-effective. A km of protected cycle track costs a fraction of a km of flyover, yet yields greater benefits for the majority of users.

6. Conclusion

Dhaka does not need to wait for the perfect conditions to begin its transformation. The conditions it already has, such as high non-motorized trip demand, a culture of cycling and rickshaw travel, dense mixed-use neighborhood, and growing awareness of the climate emergency, are in many ways ideal starting points. What is missing is political will, institutional coordination, and a commitment to place people before vehicles.

A walking and cycling friendly Dhaka is not a utopia, but a strategic climate adaptation choice. A choice that reduces emissions, cools the city, improves public health, saves lives, and gives back the streets to the majority of Dhaka's residents who have always moved through them on foot, by rickshaw, and by bicycle. The time to act is now.

References from: IQAir 2024 World Air Quality Report; MDPI Environmental Pollution Study on Dhaka (2025); World Bank Bangladesh Country Environmental Analysis 2024; Proceedings of the National Academy of Sciences: Walking and Cycling Study (2025); Copenhagenize Index 2025 (EITUrban Mobility); ITDP Cycling Cities Reports 2024–2025; Columbia University Targeted Cooling Study (2025); C40 Cities — Copenhagen Case Study; PLOS Climate — Urban Climate-Resilient Cyclists (2025); World Economic Forum — Ciclovía at 50 (2024); ITDP — Addis Ababa NMT Strategy (2025

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River Health and the Imperative for Integrated River Basin Management in Bangladesh

Nazmun Naher*

River health is not optional—it is foundational to water security, ecological stability, and long-term development in Bangladesh. As a deltaic country, Bangladesh depends on its rivers for agriculture, fisheries, navigation, drinking water, industry, and critical ecosystem services. Many of these rivers are transboundary, linking the country with upstream nations. Yet, despite their central role, rivers are steadily degrading due to unregulated abstraction, pollution, encroachment, and fragmented management. Rivers function as interconnected ecological systems, but they continue to be governed as isolated sectoral assets by multiple institutions, with weak coordination and no single point of accountability for overall river health.

This is not a peripheral technical issue; it is a governance failure. The question is no longer whether rivers should be managed, but who is responsible for safeguarding river health—and under what institutional arrangement.

At present, multiple institutions hold partial and overlapping mandates. The Ministry of Water Resources (MoWR) sets policy direction; WARPO leads planning and coordination; BWDB focuses on flood control, drainage, and irrigation infrastructure; LGED manages small-scale water systems; BIWTA oversees inland navigation; and the National River Conservation Commission is tasked with protection but lacks enforcement power. Alongside these, sectoral agencies such as BADC, WASA, the Department of Fisheries, and energy utilities depend heavily on river systems. Despite this extensive institutional landscape, no single entity is explicitly mandated, structurally empowered, or held accountable for maintaining river health as a national priority.

This fragmented arrangement creates a structural flaw: divided responsibility without unified accountability. Each institution advances its own priorities—irrigation, fisheries, navigation, urban supply—while the river itself has no dedicated custodian. As a result, ecological integrity is compromised and long-term sustainability is undermined.

This must change. Water governance in Bangladesh must be reorganized around a single, non-negotiable objective: the protection, restoration, and sustainable management of river and basin health. Institutional mandates must align with this objective, not operate in isolation.

A river basin is the entire area of land where rainwater, streams, and small rivers flow into one main river and eventually reach the sea. It is not a place where water simply stays, like a haor or beel. Instead, it is a connected system where water moves across land—from higher areas through fields, villages, canals, and streams—until it joins a river.

Because all parts of the basin are connected, what happens in one area affects others. For this reason, rivers cannot be managed in isolation. Integrated river basin management must become the central approach. This means establishing basin-level institutions with clear authority over specific river systems, responsible for coordinating all water uses within that basin. A nationally coordinated system that covers all major river basins would ensure better planning, reduce conflicts among different users, and support decisions based on scientific evidence.

The concept is not new. Bangladesh has experimented with integrated approaches through initiatives such as the National Water Management Plan and coastal polder management. However, these efforts have remained limited and have not evolved into a fully institutionalized basin governance system. The lesson is clear: when rivers cut across administrative and institutional boundaries, governance must follow hydrological realities—not bureaucratic divisions. Without this shift, coordination will remain weak and degradation will continue despite multiple interventions.

In a basin-based system, coordination is not an add-on—it is the core function. Irrigation planning and infrastructure development must be aligned with river flow and ecological limits. Fisheries management must reflect basin-wide ecosystem requirements. Urban water supply systems, navigation infrastructure, and energy use must operate within defined environmental flow thresholds. Sectoral decisions cannot override basin sustainability.

To deliver this mandate, basin institutions must be equipped with clear functional capacities. These should include units for hydrology and water allocation, irrigation coordination, river ecology, fisheries management, and water quality monitoring. Gender and social inclusion must be embedded at the core to ensure that vulnerable and river-dependent communities are identified, their needs assessed, and their voices reflected in decision-making.

Effective governance will depend on robust data systems. An integrated platform must consolidate hydrological, environmental, and socio-economic data, supported by updated baselines, GIS mapping, and real-time monitoring. This requires sustained investment in technical capacity, reliable financing, and institutional autonomy to ensure transparency and evidence-based decisions.

Accountability mechanisms are equally critical. A formal grievance redress system must allow stakeholders to raise concerns over water allocation and environmental impacts. Clear operational procedures, independent audits, and oversight structures must be institutionalized to prevent misuse of authority and ensure performance.

Given the scale and complexity of Bangladesh's river systems, implementation should follow a decentralized model. A central authority would set policy direction, standards, and oversight, while basin-level institutions would be empowered to plan and manage within their jurisdictions.

This transition should begin with carefully selected pilot basins. Testing institutional design, coordination mechanisms, data systems, and accountability frameworks in one or two rivers will generate practical lessons for national scaling.

This is not a routine administrative reform—it is a structural transformation. Without it, river degradation will accelerate, eroding development gains and intensifying environmental risks. With it, Bangladesh can establish a coherent, accountable, and science-based system to protect and restore its rivers.

The choice is stark: continue managing fragments, or start governing systems. Only the latter will secure the future of Bangladesh's rivers.

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Save the River Meghna Before It's Too Late

Tasnuva Tasneem Soha*

The Meghna is one of the three major rivers in Bangladesh that forms the Ganges delta. The Meghna is the widest river of our country characterized by strong currents, high depths and tidal bores that can reach as high as 6 meters. The river originated in the Himalayas and is formed by the confluence of Surma and Kushiara river in Kishoreganj district near Bhairab Bazar.

Significance of the Meghna River:

The Meghna plays a crucial role in our economy and development. It is a vital waterway of Bangladesh for carrying goods. It carries a huge sedimentary load and makes the soil fertile for agricultural cultivation. Meghna river sustains the livelihood of tens of thousands of people who live in the regions of Dhaka, Narsingdi, Narayanganj, Munshiganj, Comilla and Chandpur. The river also has important environmental aspects as it nurtures number of diverse ecosystems.

Most importantly, Meghna River is one of the major sources of fresh drinking water. It is not only the primary source of drinking water but also serves as the most dependable water source for industrial activities around the area of Narsingdi, Narayanganj and Munshiganj. The thermal power plant and the fertilizer factory in Ashuganj is also located on the bank of this river. Dhaka city is gradually shifting towards a future where we heavily depend on the Meghna River.

As the Meghna is the only remaining viable freshwater source capable of supplying the Dhaka city, Dhaka WASA was bound to shift its focus to the Meghna to secure a sustainable, long term surface water source reducing extreme reliance on rapidly depleting groundwater (which was falling by 2 to 3 meters annually).

Core Reasons for the Shift to the Meghna River:

- **Groundwater Depletion:** Dhaka relies on groundwater for around 70% of its supply, but it is unsustainable in the long run as the ground water levels are depleting and underground water sources are drying up.
- **Heavy Pollution of Local Rivers:** Industrial chemical pollution and urban untreated sewage have already choked the water quality of the rivers surrounding Dhaka city: the Buriganga, Turag, and Balu and Sitalakhaya. The pollution is so severe that standard pre-treatment units are not enough to purify the water.

So, it is very clear that the Meghna River plays crucial role in securing fresh water supply. However, the Meghna River has been facing severe degradation because of all kind of pollutants from different point and non-point sources due to rapid urbanization, industrialization and agriculture as well as, absence of solid and sewage waste management system.

Key sources of pollution:

- **Haphazard Industrialization:** There has been a rapid expansion of factories, tanneries, and battery recycling plants along the riverbanks which dump toxic chemicals and heavy metals directly into the watercourse.
- **Industrial Effluent:** Small and medium enterprises frequently operate without proper Effluent Treatment Plants (ETPs), discharging untreated waste through tributaries like the Bishnandi Canal.
- **Municipal and Domestic sewage:** It is one of the key contributors to the pollution of the Meghna River as untreated sewage water is discharged the Meghna via connected canals. Expanding settlements (such as in Munshiganj and surrounding catchment zones) severely elevate Biological Oxygen Demand (BOD) and lower Dissolved Oxygen.

Concrete steps to be taken to protect the Meghna River:

A holistic approach of management system ensuring meaningful engagement of all the stakeholders needs to be in place to protect the Meghna River from the on-going and upcoming pressures of pollution loads. The following steps are urgent to establish an operational management system to this end:

1. Identify and map all the point and non-point pollution sources to enhance the decision-making process with regard to environmental management of the ecosystem of the Meghna River
2. Develop a network of on-line reporting-based management system involving all the major actors to monitor the ecosystem health of the Meghna River
3. Monitoring and Enforcement actions from the part of the DoE need to be enhanced under the Environment Conservation Act
4. The DoE needs to make it sure that all the industries operating in the catchment of the Meghna River have functional and effective Effluent Treatment Plants (ETPs)
5. The industry owners should come up with all the efforts to maintain effluent quality within the Standards set under the Environment Conservation Rules 2023 and move forward towards ensuring installation of the machineries and logistics of tertiary treatment to achieve the targets of the Zero Liquid Discharge and re-use of the treated and filtered water
6. Key water quality parameters– such as Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Dissolved Solids (TDS), Nitrate (NO_4^-), (PO_4^-) and p^H of the Meghna and its tributaries must be monitored by DoE and DWASA, regularly, in representative points of the Meghna River to represent the water quality of the whole stretch of the river.
7. Industrial Associations like BGMEA, BKMEA, BTMA, Paper Industries Association, Chemical Industries Associations should have concrete programs towards technological shift on cleaner production and waste prevention to be implemented by each and every industry those are channeling wastewater to the river Meghna.

8. To address the pollution from the sewage and solid waste dumping from the municipal sources, the Local Government Institutions (LGIs) should gear up their activities on employing best environmental practices including adoption of the 4Rs of waste management—*Refuse, Reduce, Reuse and Recycle*.

9. To save the river Meghna, the authorities need to implement the *Meghna River Master Plan* and take up required investment projects on waste minimization and waste prevention covering the municipalities and the growth centers contributing pollution to the river.

10. Mass awareness campaign with active participation of the stakeholders is needed to promote the importance and economic value of the conservation of ecosystem of the river

Some ongoing projects of DWASA to protect Meghna:

To facilitate this shift under the Dhaka Environmentally Sustainable Water Supply Project, major infrastructure is underway:

- **Gandharbpur Plant:** The project has initial target to extract and treat 50 crore (500 million) liters of water per day from the Meghna (at Araihazar/Gandharbpur).
- **Saidabad Phase III:** Backed by international partners including Germany, the project features a raw water intake and pumping station at Haria on the Meghna, tied to a 26 km transmission pipeline. Saidabad Phase III aims to supply 450 million liters of treated surface water per day to Dhaka.

Conclusion:

Unabated industrial pollution and urban waste might turn the Meghna River unsuitable for treatment towards water supply to the Dhaka city. The consequence of degradation of the River Ecosystem and the Water Quality will put the very costly DWASA project of potable water supply to the millions of people at risk. Only the combined effort of all the actors could save the onslaught of pollution to the Meghna River. If we fail to do so, the inhabitants of Dhaka and our country as a whole will face a grim future attributing to fresh water crisis.

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Drowning in Plastic: Bangladesh's Fight to Save its Rivers and Sea

Sudha Barua*



Once the lifeline of Dhaka-a river so full of fish and life that an entire city grew up on its banks over centuries. Boats, trade, water, community. Today, if you stand at its edge and look down, you do not see water. You see a slow-moving carpet of polythene bags, bottles, wrappers, and foam. The river hasn't gone anywhere. It is just buried under our garbage.

And the Buriganga is not alone. The same story plays out along the Turag, the Shitalakkhya and dozens of other rivers threading through Bangladesh. The plastic that doesn't stay in the river moves on carried by the Ganges, the Brahmaputra and the Meghna down toward the Bay of Bengal, one of the most polluted coastal waters on the planet.

Bangladesh produces around 3,000 tonnes of plastic waste every day. Of this, approximately 73,000 tonnes end up in rivers and the sea each year. Bangladeshis also use around 45.55 billion polythene bags annually nearly all of them used once and thrown away without a second thought. Bangladesh now ranks sixth in the entire world for the amount of plastic entering the ocean through rivers and canals.

Marine fish harvests have fallen to their lowest level in nine years. The catch per artisanal fishing boat has dropped nearly 70 percent over two decades from 13 tonnes per boat in 2000 to barely 4 tonnes by 2020. Fishermen are not catching less because they are working less. They are catching less because the fish are disappearing, and plastic pollution is a significant reason why.

The bag we cannot seem to quit

In 2002 Bangladesh did something genuinely historic. It became the first country in the world to ban plastic shopping bags. The bags had been blocking drainage channels during the catastrophic floods of 1988 and 1998 making flooding worse and recovery slower.

And then, slowly the ban unraveled. Without consistent enforcement, without alternatives available at scale and without sustained public will, the polythene bag

kept back onto every market stall and kitchen counter in the country. By 2020, per capita plastic consumption in urban Bangladesh had tripled compared to fifteen years earlier.
The lesson is important: declaring something banned is not the same as ending it.

Government authority tried again and again to stop using polythene and polypropylene bags in major retail stores and physically sending officials to supermarkets to enforce compliance. The reception was mixed. Customers complained. Shopkeepers pushed back. Some welcomed the change. The public struggle was visible which is perhaps the most honest thing about it: changing a habit that touches every person's daily life is genuinely difficult. That doesn't mean it is impossible. It means it requires far more than a ban alone.

The Sonali Bag: Bangladesh's best-kept secret



Bangladeshi scientist named Dr. Mubarak Ahmed Khan invented a fully biodegradable bag made from jute; Bangladesh's own golden fiber back in 2017. He named it the Sonali Bag. It looks and feels remarkably like a plastic bag. It is strong enough to carry groceries. It breaks down naturally after use, leaving nothing harmful behind. It is quite simply, almost exactly what this country needs.
For years, the invention went nowhere significant. Funding was limited. The Sonali Bag sat in a laboratory while rivers continued to fill with polythene. Then in January 2025, the government allocated 1 billion taka roughly 8.2 million US dollars to scale the project. The target is to produce 7 to 8 tonnes of Sonali Bags per day. This is the kind of investment that can actually move the needle if it is followed through with discipline and accountability.

Jute is not a foreign material to Bangladesh. It is woven into the country's identity historically called "golden fiber," it was once the nation's greatest export crop. Somewhere along the way, cheap plastic pushed jute aside. Bringing it back not as a sentimental gesture but as a genuine industrial solution is one of the smartest moves available to Bangladesh right now. The raw material grows here.

Traditional cloth bags, cotton totes and woven baskets things our grandmothers carried to market for generations also deserve a deliberate comeback. They are not primitive or backwards. They are durable and reusable.

Stop the flow before it starts



The most powerful solution to plastic pollution is also the most straightforward: use less plastic to begin with. Single-use plastic; the bag used once, the straw used for five minutes, the foam container used for a single meal. It is designed to be thrown away and when thrown away by millions of people in cities with inadequate waste collection systems it finds the river.

The shift away from single-use plastic must happen at multiple levels simultaneously. Shops and restaurants need to stop offering it. Markets need affordable alternatives readily in stock. Producers need to be held accountable for what they put into circulation in the first place. In October 2025 Bangladesh took a meaningful symbolic step when the government banned single-use plastics inside the Bangladesh Secretariat itself signaling that the state is willing to hold itself to the same standard it demands of ordinary citizens.

But the real shift happens in daily life. It happens when a woman going to the kitchen market brings her own bag not because she was fined for not doing so but because she has personally decided that the river matters more than convenience. It happens when a street food vendor switches from foam plates back to banana leaves and palm leaves. It happens when a school teaches its students not just the scale of the problem but the specific, concrete actions every individual can take starting today.

Recycling: The incomplete answer we still cannot ignore

Recycling is not the solution to plastic pollution on its own. But it is a necessary part of the solution and right now Bangladesh is doing far too little of it.

In Dhaka alone roughly 646 tonnes of plastic waste are collected daily. Of that only 37.2 percent is actually recycled. Nationally the figure is even more discouraging only 31 percent of the roughly 977,000 tonnes of plastic consumed across

Bangladesh was recycled. The rest went to landfills, open dumps, roadsides and inevitably the rivers.

Around 300 small-scale businesses across the country are currently engaged in plastic recycling collecting bottles, processing waste, converting it into reusable material. These entrepreneurs are doing genuinely important work with very little institutional support. They deserve more: better access to financing, clearer regulations that make recycling economically sustainable and collection infrastructure that actually brings plastic to them rather than to the nearest canal.

The government's National Action Plan for Sustainable Plastic Management set a target of recycling 50 percent of plastic waste by 2025 and 80 percent by 2030. Whether those targets are ever met depends entirely on what follows the written plan real infrastructure, real investment, and real accountability for results.

For ordinary citizens, recycling also carries personal responsibility. Separating waste at home is a start. Not burning plastic in the backyard- a widespread practice that destroys any possibility of recovery and releases toxic fumes is essential. Returning bottles, participating in whatever collection systems exist in your neighborhood and demanding better systems when they are absent: these are not small things.

What the Government must do - Consistently

Bangladesh has a difficult habit of passing good laws and then declining to enforce them. The 2002 plastic bag ban. The 2010 Jute Packaging Act, which legally requires jute sacks for rice, wheat and other essential commodities routinely ignored by industry. The 2019 High Court order banning single-use plastic in coastal areas largely unenforced. The laws have been adequate. What has been missing is the sustained collective will to make them real in practice.
Enforcement matters; not dramatic one-time raids on supermarkets but consistent, predictable consequences for producers and retailers who continue to manufacture and sell banned products. A factory openly making single-use polythene bags in defiance of the law should not be able to operate for years without consequence.

Extended Producer Responsibility a policy principle that holds the companies producing plastic accountable for its end-of-life management is a tool that has delivered results in other countries and urgently deserves adoption in Bangladesh. If a corporation floods the market with single-use packaging, it should be legally and financially required to fund the collection and recycling of that packaging. The

burden must not fall entirely on the rivers and the poor communities who live beside them.

Investment in waste management infrastructure, particularly in major cities and along riverbanks, is not optional or aspirational. Functional bins, regular waste collection and processing capacity are prerequisites for any serious approach to this crisis not luxuries to be considered when funds allow.

What each of us can do right now?

None of this works without the participation of people. Policy creates conditions. Infrastructure enables options. But habit is where change actually lives day after day. Carry a bag when you leave the house. A cloth bag, a jute bag, a woven basket anything that can be used many times over. Keep one folded in your pocket or purse. When the shopkeeper reaches for a polythene bag, decline it. You are not being inconvenient. You are protecting the river that your city was built beside.

At home choose products with less packaging where you have a choice. Separate your waste. Keep plastic away from drains because whatever enters a Dhaka drain does not stay in that drain it travels inevitably toward water. Talk to your children about this not to frighten them but to make environmental responsibility feel normal, ordinary and expected. A generation that grows up treating rivers as something worth protecting will make very different choices than one that never thought about it at all.

The river is still there

Bangladesh did not create this crisis alone. Transboundary rivers carry waste from across the region Bangladesh's waterways receive roughly 24 times more plastic from neighboring countries than they generate domestically. The global plastic system is broken and smaller countries at the mouth of great river systems bear an unfair share of the consequences.
But Bangladesh has never been a country that waited passively for the world to solve its problems. It was the first nation on earth to ban the plastic bag. It produced the Sonali Bag. It has the laws, the science, the innovation, and the people. What it needs now is the follow-through sustained, serious and shared equally between government, business and every person who lives near a river. In Bangladesh, that is nearly everyone.

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আলোকচিত্রে
পরিবেশ অধিদপ্তরের কার্যক্রম

স্মৃতির পাতা থেকে...



বিশ্ব পরিবেশ দিবস ৫ জুন ২০০২-এর উদ্বোধনী অনুষ্ঠানে বক্তব্য রাখছেন সাবেক মাননীয় প্রধানমন্ত্রী বেগম খালেদা জিয়া



বিশ্ব পরিবেশ দিবস ৫ জুন ২০০২ উপলক্ষে আয়োজিত শিশু-কিশোর চিত্রাংকন প্রতিযোগিতার বিজয়ীদের পুরস্কার বিতরণ করছেন সাবেক মাননীয় প্রধানমন্ত্রী বেগম খালেদা জিয়া

মাননীয় প্রধানমন্ত্রীর সাথে মতবিনিময় সভা



০৬ জুন ২০২৬: গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের মাননীয় প্রধানমন্ত্রী জনাব তারেক রহমান, এমপি-এর সাথে পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়ের মাননীয় মন্ত্রী জনাব আবদুল আউয়াল মিন্টু, এমপি; সম্মানিত সচিব জনাব মোঃ রায়হান কাওছার, মাননীয় প্রধানমন্ত্রীর মুখ্য সচিব জনাব এ বি এম আব্দুস সাত্তার; পরিবেশ অধিদপ্তরের মহাপরিচালক ড. মোঃ লুৎফর রহমান, বন অধিদপ্তরের প্রধান বন সংরক্ষক জনাব মোঃ আমীর হোসাইন চৌধুরী ও পরিবেশ অধিদপ্তরের অতিরিক্ত মহাপরিচালক জনাব মোঃ জিয়াউল হক একটি মতবিনিময় সভায় মিলিত হন। উক্ত সভায় মাননীয় প্রধানমন্ত্রী পরিবেশ ও প্রতিবেশ সুরক্ষা, দূষণ নিয়ন্ত্রণ ও বৃক্ষ রোপনের উপর বিশেষ গুরুত্ব আরোপসহ এ বিষয়ে করণীয় সম্পর্কে প্রয়োজনীয় দিকনির্দেশনা প্রদান করেন



৮-৯ মে ২০২৬ তারিখে তুরস্কে অনুষ্ঠিত "TURKİYE'S ROAD TO COP31: RESILIENT CITIES" সম্মেলনে পরিবেশ, বন জলবায়ু পরিবর্তন মন্ত্রণালয়ের মাননীয় মন্ত্রী জনাব আবদুল আউয়াল মিন্টু, এমপি



বিশ্ব মরুময়তা ও খরা প্রতিরোধ দিবস ২০২৬ উদযাপন উপলক্ষে আয়োজিত কর্মশালায় বক্তৃতা করছেন পরিবেশ, বন ও জলবায়ু-পরিবর্তন মন্ত্রণালয়ের মাননীয় মন্ত্রী জনাব আবদুল আউয়াল মিন্টু, এমপি



পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়ের নবনিযুক্ত মাননীয় মন্ত্রীকে ও প্রতিমন্ত্রীকে বরণ করছেন পরিবেশ অধিদপ্তরের মহাপরিচালক



শব্দদূষণ নিয়ন্ত্রণে সমন্বিত ও অংশীদারিত্বমূলক প্রকল্পের (৩য় সংশোধিত) সমাপনী কর্মশালায় ৬৪ জেলায় শব্দের মানমাত্রা নির্নয় সংক্রান্ত জরিপ প্রতিবেদনের মোড়ক উন্মোচে পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়ের মাননীয় মন্ত্রী, মাননীয় প্রতিমন্ত্রী, সম্মানিত সচিব ও প্রকল্প পরিচালকসহ অন্যান্য অতিথিবৃন্দ



২২ এপ্রিল ২০২৬ তারিখে পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়ের মাননীয় প্রতিমন্ত্রী জনাব শেখ ফরিদুল ইসলাম, এমপি ঢাকার আমিনবাজার ল্যান্ডফিল্ডে "ওয়েস্ট টু এনার্জি পাওয়ার প্লান্ট" শীর্ষক প্রকল্পের সাইট পরিদর্শন করেন



আন্তর্জাতিক শব্দসচেতনতা দিবস ২০২৬ উদযাপন উপলক্ষে আয়োজিত কর্মশালায় বক্তব্য রাখছেন পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়ের মাননীয় প্রতিমন্ত্রী জনাব শেখ ফরিদুল ইসলাম, এমপি

Launching Ceremony of PlasticPath Website and Mobile App



Photo: Mr. Mohammad Rayhan Kawsar, Secretary, Ministry of Evironment, Forest and Climate Change is delivering a speech at the PlasticPath Website and Mobile App Launching Ceremony



Photo: PlasticPath Website and Mobile App Launching Ceremony inaugurated by **Mr.Mohammad Rayhan Kawsar Secretary, Ministry of Evironment, Forest and Climate Change**, and Chaired by **Dr. Md Lutfor Rahman, Director General, Department of Environment**



গত ১৩ জুন ২০২৬ তারিখে ঝিনাইদহ জেলার কালীগঞ্জ উপজেলায় অনুষ্ঠিত মরজাত বাঁওড়ের প্রাকৃতিক সম্পদের ব্যবস্থাপনা ও টেকসই ব্যবহার নিশ্চিতকরণের লক্ষ্যে স্থানীয় জনগোষ্ঠীর সাথে জেলা ও উপজেলা ইসিএ কমিটির মতবিনিময় সভায় প্রধান অতিথি হিসেবে উপস্থিত ছিলেন পরিবেশ অধিদপ্তরের মহাপরিচালক ড. মোঃ লুৎফর রহমান



ড. মোঃ লুৎফর রহমান, মহাপরিচালক, পরিবেশ অধিদপ্তর ও জনাব মোঃ জিয়াউল হক, অতিরিক্ত মহাপরিচালক, পরিবেশ অধিদপ্তর গত ১৩ জুন ২০২৬ তারিখে ঝিনাইদহ জেলার কালীগঞ্জ উপজেলায় মরজাত বাঁওড় পরিদর্শন করেন

বিশ্ব পরিবেশ দিবস ২০২৬ উপলক্ষে
শিশু-কিশোর চিত্রাংকন প্রতিযোগিতা ২০২৬



বিশ্ব পরিবেশ দিবস ২০২৬ উপলক্ষে শিশু-কিশোর চিত্রাংকন প্রতিযোগিতার সম্মানিত বিচারকমন্ডলী



চিত্রাংকন প্রতিযোগিতা পরিদর্শনের মাধ্যমে শিশুদের উৎসাহিত করছেন পরিবেশ অধিদপ্তরের সম্মানিত মহাপরিচালক, অতিরিক্ত মহাপরিচালক ও পরিচালক (বর্জ্য ও রাসায়নিক পদার্থ ব্যবস্থাপনা)

বিশ্ব পরিবেশ দিবস ২০২৬ উদযাপন উপলক্ষে শব্দসচেতনতামূলক সমাবেশ



বিশ্ব পরিবেশ দিবস ২০২৬ উদযাপন উপলক্ষে শব্দসচেতনতামূলক সমাবেশে বক্তব্য রাখছেন পরিবেশ অধিদপ্তরের সম্মানিত মহাপরিচালক



বিশ্ব পরিবেশ দিবস ২০২৬ উদযাপন উপলক্ষে শব্দসচেতনতামূলক সমাবেশ

পরিবেশ অধিদপ্তরের কর্মকর্তাদের ১০ম বুনিয়াদি প্রশিক্ষণ



পরিবেশ অধিদপ্তরের কর্মকর্তাদের সক্ষমতা বৃদ্ধির জন্য আয়োজিত ১০ম বুনিয়াদি প্রশিক্ষণে প্রশিক্ষণার্থীদের সাথে পরিবেশ অধিদপ্তরের মহাপরিচালক ড. মোঃ লুৎফর রহমান



পরিবেশ অধিদপ্তরের কর্মকর্তাদের সক্ষমতা বৃদ্ধির জন্য আয়োজিত ১০ম বুনিয়াদি প্রশিক্ষণে প্রশিক্ষণার্থীদের সাথে পরিবেশ অধিদপ্তরের মহাপরিচালকসহ পরিবেশ অধিদপ্তরের অন্যান্য কর্মকর্তাবৃন্দ

নদ-নদী ও প্লাবনভূমি সুরক্ষা বিষয়ক কর্মশালা



নদ-নদী ও প্লাবনভূমি সুরক্ষা বিষয়ক কর্মশালায় পরিবেশ অধিদপ্তরের সম্মানিত মহাপরিচালক ড. মোঃ লুৎফর রহমান, অতিরিক্ত মহাপরিচালক মোঃ জিয়াউল হক ও অন্যান্যরা



নদ-নদী ও প্লাবনভূমি সুরক্ষা বিষয়ক কর্মশালায় অংশগ্রহণকারীগণের একাংশ

বিশ্ব পরিবেশ দিবস ২০২৬ উপলক্ষে আয়োজিত আন্তঃবিশ্ববিদ্যালয় পরিবেশ বিতর্ক প্রতিযোগিতা



বিশ্ব পরিবেশ দিবস ২০২৬ উপলক্ষে পরিবেশ অধিদপ্তর কর্তৃক আয়োজিত আন্তঃবিশ্ববিদ্যালয় পরিবেশ বিতর্ক প্রতিযোগিতায় পরিবেশ অধিদপ্তরের মহাপরিচালক ড. মোঃ লুৎফর রহমান



বিশ্ব পরিবেশ দিবস ২০২৬ উপলক্ষে পরিবেশ অধিদপ্তর কর্তৃক আয়োজিত আন্তঃবিশ্ববিদ্যালয় পরিবেশ বিতর্ক প্রতিযোগিতা

বিশ্ব পরিবেশ দিবস ২০২৬ উদযাপন উপলক্ষে
শিশু-কিশোর চিত্রাংকন প্রতিযোগিতায় বিজয়ীদের অঙ্কিত চিত্র



ছবি: বিশেষ চাহিদাসম্পন্ন গ্রুপ (অনূর্ধ্ব ১৮ বছর) শ্রেষ্ঠ স্থান: কানিজ ফাতেমা ঐশি



ছবি: ক-গ্রুপ (৮ থেকে অনূর্ধ্ব ১২ বছর) শ্রেষ্ঠ স্থান: মেহজাবিন ইসলাম রূপকথা



ছবি: খ-গ্রুপ (৮ থেকে অনূর্ধ্ব ১২ বছর) শ্রেষ্ঠ স্থান: সৌভিক সাহা



ছবি: গ-গ্রুপ (১২ থেকে অনূর্ধ্ব ১৬ বছর) শ্রেষ্ঠ স্থান: প্রত্যয় পাল রাজ