



পানি প্রতিবেশ সুরক্ষাই টেকসই উন্নয়ন
Conserve Water Ecosystems towards Sustainable Development

৩য় উপকূলীয় পানি সম্মেলন ২০২৬

3rd Coastal Water Convention 2026

২৪-২৬ জানুয়ারি ২০২৬
খুলনা, বাংলাদেশ

24-26 January, 2026
Khulna, Bangladesh

Souvenir & Abstract





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প্রাক কথন

জাতিসংঘ ২০১০ সালের ২৮ জুলাই রেজুলেশন (৬৪/২৯২) এর মাধ্যমে পানি ও স্যানিটেশনকে একটি মানবাধিকার হিসেবে স্বীকৃতি দেয়। এতে বলা হয়েছে, নিরাপদ পানি জীবন ধারণ এবং অন্যান্য মানবাধিকার উপভোগের জন্য অপরিহার্য এবং এর বাস্তবায়নে আন্তর্জাতিক সংস্থাগুলোকে আর্থিক ও প্রযুক্তিগত সহায়তা দিতে আহ্বান জানিয়েছে।

বাংলাদেশের হাইকোর্ট ২০২০ সালে সুয়োমুটো রুল প্রক্রিয়ায় নিজ উদ্যোগে সিদ্ধান্ত নিতে চেয়েছিল, সকল নাগরিকের জন্য নিরাপদ পানযোগ্য পানি সরবরাহ করা রাষ্ট্রের দায়িত্ব কিনা এবং এটি নাগরিকের মৌলিক অধিকার হিসেবে ঘোষণা করা যায় কিনা। ২০২৫ সালের ২৭ ফেব্রুয়ারি উক্ত রুলের চূড়ান্ত শুনানি শেষে রায়ে আদালত উল্লেখ করেছে যে, সংবিধানের ৩২ অনুচ্ছেদের আলোকে প্রত্যেক নাগরিকের নিরাপদ ও বিশুদ্ধ পানযোগ্য পানি পাওয়া একটি মৌলিক অধিকার, এবং এই অধিকার নিশ্চিত করা রাষ্ট্রের দায়িত্ব। এর প্রেক্ষিতে গত ১ জানুয়ারি ২০২৬ তারিখে হাইকোর্টের পূর্ণাঙ্গ রায় প্রকাশের মাধ্যমে এটি সংবিধান স্বীকৃত মৌলিক অধিকার হিসেবে ঘোষিত হয়েছে। যেখানে বলা হয়েছে ২০২৬ সালের মধ্যে সকল পাবলিক প্লেসে বিনা মূল্যে নিরাপদ পানি সরবরাহ নিশ্চিত করে আদালতে প্রতিবেদন দাখিল করতে হবে। বিশেষ ভাবে উপকূলীয় ও পাহাড়ি এলাকা, আদালত এবং আইনজীবী সমিতিসহ গুরুত্বপূর্ণ স্থানগুলোতে নিরাপদ পানি সরবরাহ নিশ্চিত করতে হবে।

২০১০ থেকে ২০২৬ এই ১৬ বছরের মধ্যে মানুষের মৌলিক অধিকার, বিশেষ করে নিরাপদ পানি ও পানি প্রতিবেশ সুরক্ষার অধিকার কতটুকু বাস্তবায়িত হয়েছে তা অত্যন্ত গুরুত্বপূর্ণ একটি প্রশ্ন। এটি মোটেও তুচ্ছ বা অবাস্তব নয়। বরং, এই সময়কালে দেখা গেছে, বিশ্বের বিভিন্ন দেশ ও অঞ্চলে পানি সংক্রান্ত ঝুঁকি ও সংকট আগের যে কোনো সময়ের তুলনায় যথেষ্ট বৃদ্ধি পেয়েছে। নিরাপদ পানির সংকট, দূষণ এবং অব্যবস্থাপনার কারণে লক্ষ লক্ষ মানুষ এখনও তাদের মৌলিক অধিকার থেকে বঞ্চিত।

গত দশ বছরে বাংলাদেশের ভূগর্ভস্থ পানির স্তর প্রায় ২৪ কিলোমিটার হ্রাস পেয়েছে, এবং প্রতি বছর পানিতে সমৃদ্ধ এলাকা প্রায় ১৪ কিলোমিটার হারে কমছে। এর ফলে পানি নিরাপত্তা, কৃষি এবং জনজীবনে উল্লেখযোগ্য প্রভাব পড়ছে। জাতিসংঘের World Water Development Reprt ২০২২ অনুযায়ী, বার্ষিক ভূ-গর্ভস্থ পানির উত্তোলনে বিশ্বে বাংলাদেশের অবস্থান ষষ্ঠ। ২০৩০ সালের মধ্যে ঢাকা মহানগর অঞ্চলের ভূ-গর্ভস্থ পানির স্তর প্রতি বছর ৩-৫ মিটার হারে কমতে পারে, যা বর্তমান হারের তুলনায় প্রায় ৭০% দ্রুত। বিশেষত, দক্ষিণ এবং দক্ষিণ-পূর্ব এশিয়ার দেশগুলোতে পানি সরবরাহ কমছে যা জনসংখ্যার ঘনত্ব এবং প্রাকৃতিক ঝুঁকির প্রভাবে সামাজিক ও অর্থনৈতিক বৈষম্য আরও গভীর করেছে। পানি ন্যায্যতার মাধ্যমে নিরাপদ জীবনের অধিকার নিশ্চিত করা এখন একটি গুরুত্বপূর্ণ নীতি ও আন্তর্জাতিক সহযোগিতার বিষয় হিসেবে সামনে এসেছে।

প্রথম উপকূলীয় পানি সম্মেলন অনুষ্ঠিত হয়েছিল ২০১১ সালে, যার মূল প্রতিপাদ্য ছিল “পানি বাণিজ্যিক পণ্য নয়, অধিকার”। পরবর্তীতে দ্বিতীয় উপকূলীয় পানি সম্মেলন অনুষ্ঠিত হয় ২০১৯ সালে, যেখানে প্রতিপাদ্য ছিল “উন্নয়ন অগ্রযাত্রায় পানি ন্যায্যতা”। এর ধারাবাহিকতায় আগামী ২৪ থেকে ২৬ জানুয়ারি ২০২৬ “পানি প্রতিবেশ সুরক্ষাই টেকসই উন্নয়ন” এই প্রতিপাদ্যকে সামনে রেখে অনুষ্ঠিত হতে যাচ্ছে তৃতীয় উপকূলীয় পানি সম্মেলন। সম্মেলনের প্রধান চারটি থিমের আওতায় জমা পড়া বিপুল সংখ্যক অ্যাবস্ট্রাক্ট থেকে কারিগরি কমিটি ৭১টি অ্যাবস্ট্রাক্ট চূড়ান্তভাবে গ্রহণ করেছে।

সম্মেলনের উদ্বোধনী ও সমাপনী আয়োজনের পাশাপাশি থাকবে ১৪টি সমান্তরাল অধিবেশন, যেখানে পানি ও জলবায়ু, পানি ব্যবস্থাপনা, পানি প্রতিবেশ, এসডিজি, এবং মার্চপর্ষায়ের অভিযোজনমূলক শিখন নিয়ে আলোচনারভিত্তিতে পানি বিষয়ক সমস্যার সমাধানের উপায় খুঁজে বের করার চেষ্টা করা হবে। সম্মেলনের কী-নোট স্পিকার হিসেবে উপস্থিত থাকবেন দেশের প্রতিভাশালী জলবায়ু ও পানি বিশেষজ্ঞ ড. আইনুন নিশাত। বিভিন্ন পর্যায়ে ৬০টি বেসরকারি উন্নয়ন সংস্থা ও পবেষণা প্রতিষ্ঠান যৌথ উদ্যোগে এই সম্মেলন অনুষ্ঠিত হচ্ছে।

সম্মেলনে অংশ নেবেন ছাত্র ও শিক্ষক, গবেষক ও বিশেষজ্ঞ, জনপ্রতিনিধি, সংবাদকর্মী, উন্নয়নকর্মী এবং জলবায়ু পরিবর্তনে সরাসরি ক্ষতিগ্রস্ত জনগোষ্ঠীসহ সমাজের নানা শ্রেণি-পেশার মানুষ। এই বৈচিত্র্যময় অংশগ্রহণ সম্মেলনের আলোচনা ও সিদ্ধান্ত গ্রহণ প্রক্রিয়াকে বাস্তবসম্মত ও কার্যকর করতে সহায়ক হবে।

৩য় উপকূলীয় পানি সম্মেলন আয়োজন সফলভাবে বাস্তবায়নের জন্য সেক্রেটারিয়েটকে (অ্যাওসেড) বিভিন্নভাবে যারা সহযোগীতা করেছেন তাঁদেরকে কৃতজ্ঞতা।

আমরা দৃঢ়ভাবে বিশ্বাস করি, সম্মেলনের সক্রিয় অংশগ্রহণকারীদের দায়িত্বশীল ও গঠনমূলক ভূমিকার মাধ্যমে একটি কার্যকর, শক্তিশালী ও টেকসই পানি-এডভোকেসি প্ল্যাটফর্ম গড়ে উঠবে। তারই ধারাবাহিকতায় ভবিষ্যতে বিস্তৃত পরিসরে সকল অংশীজনের কার্যকরী ও দায়িত্বশীল সহযোগীতার মাধ্যমে “বাংলাদেশ পানি সম্মেলন” আয়োজন করা সম্ভব হবে বলে প্রত্যাশা করছি।

শামীম আরফীন

সদস্য সচিব

৩য় উপকূলীয় পানি সম্মেলন ২০২৬

নির্বাহী পরিচালক

অ্যাওসেড

Foreword

On 28 July 2010, through resolution 64/292, the United Nations recognized the human right to water and sanitation. The resolution affirms that safe drinking water is essential for the full enjoyment of life and all human rights, and calls upon international organizations to provide financial and technological assistance for its realization.

In Bangladesh, in 2020, the High Court, through a suo motu rule, initiated consideration of whether ensuring safe drinking water for all citizens is a responsibility of the State and whether it can be declared a fundamental right of citizens. Following the final hearing of the rule, the Court, in its judgment delivered on 27 February 2025, observed that, in light of Article 32 of the Constitution, access to safe and pure drinking water is a fundamental right of every citizen, and that ensuring this right is the responsibility of the State. In this context, with the publication of the full judgment on 1 January 2026, this right has been affirmed as a constitutionally recognized fundamental right. The judgment further requires the submission of a report to the Court ensuring the provision of free safe drinking water in all public places by 2026. It specifically emphasizes the need to ensure safe water supply in coastal and hilly areas, and in key locations including courts and bar associations.

Within this sixteen-year period from 2010 to 2026, a critical question arises: to what extent have fundamental human rights, particularly the right to safe water and the right to protect water ecosystems, been realized? This is neither trivial nor irrelevant. On the contrary, evidence from this period indicates that water-related risks and crises have increased significantly across countries and regions of the world compared to any previous time. Due to unsafe water, pollution, and poor management, millions of people remain deprived of their basic rights.

Over the past decade, Bangladesh's groundwater level has declined by approximately 24 kilometres, and water-abundant areas are shrinking at an estimated rate of about 14 kilometres per year. This is having significant impacts on water security, agriculture, and everyday life. According to the United Nations World Water Development Report 2022, Bangladesh ranks sixth globally in annual groundwater abstraction. By 2030, groundwater levels in the Dhaka metropolitan region may decline by 3 to 5 metres per year, approximately 70 per cent faster than the current rate.

In particular, water supply has decreased in South and South-East Asian countries, where population density and exposure to natural hazards have further deepened social and economic inequalities. Ensuring the right to a safe life through water justice has now emerged as a key policy priority and a matter of international cooperation.

The 1st Coastal Water Convention was held in 2011, under the theme “Water is not a commodity; it is a right.” Subsequently, the Second Coastal Water Convention was held in 2019, under the theme “Water Justice towards Sustainability.” Building on this legacy, the Third Coastal Water Convention will be held from 24 to 26 January 2026, under the theme “Conserve Water Ecosystems towards Sustainable Development.” Under the Convention’s four core thematic areas, the Technical Committee has finalized 71 abstracts from a large number of submissions. In addition to the opening and closing sessions, the Convention will feature 14 parallel sessions, which will seek pathways to address water-related challenges through discussions on water and climate, water management, water ecosystems, the Sustainable Development Goals, and field-level adaptive learning.

The Convention will welcome as its keynote speaker Dr. Ainun Nishat, a nationally renowned expert on climate and water. Nearly 60 non-governmental development organizations are jointly organizing this Convention, transforming it into a broad and inclusive national initiative. Participants will include students and teachers, researchers and specialists, elected representatives, media professionals, development practitioners, and communities directly affected by climate change, alongside a wide range of other groups and professions. This diverse participation will make the Convention’s deliberations and decisions more grounded and effective.

AOSED is serving as the Secretariat to ensure the successful implementation of this important and large-scale initiative. On behalf of the Secretariat, special appreciation is extended to all those who supported the Secretariat at each stage of preparation, encouraged our staff, and played an active role in the abstract submission and online registration processes. We firmly believe that, through the responsible and constructive contributions of active participants, an effective, strong, and sustainable water advocacy platform will be established. Building on this momentum, it will be possible in the future to convene the Bangladesh Water Convention on a broader scale and with deeper reflection. We call upon all of you for continued cooperation, engagement, and solidarity on this long journey.

We wish the 3rd Coastal Water Convention 2026 every success.

Shamim Arfeen
Member Secretary
3rd Coastal Water Convention 2026
Executive Director
AOSED

সম্মেলনের বিষয়বস্তু

পানি ও জলবায়ু পরিবর্তন

সংক্ষিপ্ত বিবরণ

দুর্বল পানি ব্যবস্থাপনা এবং দ্রুত জলবায়ু পরিবর্তন বাংলাদেশের উপকূলীয় অঞ্চলকে মুখোমুখি অবস্থান করছে। সমুদ্রপৃষ্ঠের উচ্চতা বৃদ্ধি, ঘন ঘন ঘূর্ণিঝড়, উজান থেকে নদীর পানি কমে যাওয়ায় লবণাক্ত পানি ভেতরের দিকে ঢুকে পড়ে ফলে অগভীর পানির স্তর ও ভূ-উপরিষ্ক পানি দূষিত হচ্ছে। গবেষণায় দেখা গেছে যে ২০২০ সালে উপকূলীয় আবাসযোগ্য কৃষি জমির প্রায় ৩৭% মাটিতে ইতোমধ্যেই লবণাক্ততার প্রভাব পড়েছে। কারণ জলোচ্ছ্বাস এবং ঘূর্ণিঝড় সমুদ্রের পানিকে ভূমিতে ঠেলে দেয়। বর্তমানে প্রায় ১.০২ লাখ হেক্টর উপকূলীয় কৃষি জমির প্রায় ৭০% জমি লবণাক্ততায় প্রভাবিত যা খাদ্য নিরাপত্তাকে ক্ষতিগ্রস্ত করছে এবং স্বাদু পানির গুণগত মান হ্রাস করছে। জলবায়ু পরিবর্তন সংক্রান্ত আন্তঃসরকারি প্যানেল (IPCC) উল্লেখ করেছে যে, নিম্ন ব-দ্বীপগুলিতে লবণাক্ত পানির অনুপ্রবেশ বৃদ্ধি পাচ্ছে এবং সমুদ্রের ক্রমবর্ধমান উচ্চতা এবং অতিরিক্ত ভূ-গর্ভস্থ পানি উত্তোলনের কারণে সমুদ্রের পানি উপকূলীয় ভূ-গর্ভস্থ পানির স্তরে প্রবেশ করছে। শুষ্ক মৌসুমে নদীতে পানির প্রবাহ কম থাকায় সমুদ্রের পানি নদী এবং খাল দিয়ে আভ্যন্তরীণ দিকে প্রবাহিত হয়। ফলে ভূগর্ভস্থ পানি ও মাটি লবণাক্ত হয়ে পড়ে যা বর্ষা আসা পর্যন্ত স্থায়ী হয়। এই প্রক্রিয়াগুলি লাখে লাখে মানুষের জন্য পানীয় জলের সরবরাহকে হুমকির মুখে ফেলছে। তাই জলবায়ু পরিবর্তন মোকাবেলা করতে হলে পানি ও সামাজিক প্রভাব বুঝতে হবে ও এই খাতে জলবায়ুসহনশীল সক্ষমতা ও দক্ষতা গড়ে তুলতে হবে।

● লবণাক্ততা অনুপ্রবেশ, সমুদ্রপৃষ্ঠের উচ্চতা বৃদ্ধি এবং উপকূলীয় বন্যা

দক্ষিণ-পশ্চিমাঞ্চলীয় জেলা যেমন খুলনা এবং সাতক্ষীরার মতো জেলাগুলিতে সমুদ্রপৃষ্ঠের উচ্চতা বৃদ্ধি, পানি প্রবাহ উজানের দিকে মোড় নেওয়া এবং জলোচ্ছ্বাস কীভাবে লবণাক্ততা বাড়াচ্ছে তার ভূতাত্ত্বিক তথ্য পর্যালোচনা করে লবণাক্ততা কমাতে প্রকৃতি-ভিত্তিক সমাধান যেমন, (ম্যানগ্রোভ পুনরুদ্ধার) এবং প্রকৌশল ব্যবস্থা (বেড়িবাঁধ পুনর্বাঁসন, নিয়ন্ত্রিত ফ্লাশিং) নিয়ে আলোচনা করতে হবে।

● ঘূর্ণিঝড়, বৈরী ঘটনা এবং পানিসুরক্ষা

ঘূর্ণিঝড়-সৃষ্ট বন্যা এবং কিভাবে দীর্ঘায়িত লবণাক্ততা সৃষ্টি করে তার যোগসূত্র পর্যালোচনা করা। পূর্ব-সতর্কীকরণ ব্যবস্থা, জলবায়ুসহনশীল পানি সরবরাহ অবকাঠামো (যেমন, বৃষ্টির পানি সংরক্ষণাগার উচু হওয়া, ঘূর্ণিঝড় সহনশীল পানির উৎস) এবং পানি ব্যবস্থাপনা, দুর্যোগ ঝুঁকি হ্রাসের বিষয় নিয়ে আলোচনা করা।

● জলবায়ুসহনশীল পানি অবকাঠামো এবং প্রযুক্তি

কমিউনিটি ভিত্তিক বৃষ্টির পানি সংরক্ষণ, সৌরশক্তিচালিত পানি লবণমুক্তকরণ প্রযুক্তি, ভূগর্ভস্থ পানির পুনর্ভরণ (Managed Aquifer Recharge) এর মতো নতুন নতুন প্রযুক্তির সাথে স্থানীয় জনসাধারণের দায়িত্বশীল অংশগ্রহণ ও নিয়মিত মনিটরিং করা যাতে প্রযুক্তিগুলি দীর্ঘমেয়াদে টেকসই হয়।

● সমন্বিত জলবায়ু এবং পানি নীতিমালা

জাতীয় নীতিমালাগুলি - যেমন জাতীয় পানি নীতিমালা ১৯৯৯ এবং ব-দ্বীপ পরিকল্পনা ২১০০ এর মতো নীতিমালায় কীভাবে জলবায়ু পরিবর্তনের পূর্বাভাস অন্তর্ভুক্ত করা যায় এবং সম্পদের ন্যায্য বন্টন নিশ্চিত করতে পারে তা পর্যালোচনা করা। পানি, কৃষি, দুর্যোগ ব্যবস্থাপনা এবং পরিবেশ, বন ও জলবায়ু মন্ত্রণালয়ের মধ্যে আন্তঃক্ষেত্র সমন্বয়ের প্রয়োজনীয়তা তুলে ধরা।

পানি ব্যবস্থাপনায় সুশাসন

উপকূলীয় ভূমি ও পানি ব্যবস্থাপনা অধিকার, ক্ষমতা, জবাবদিহিতা এবং সিদ্ধান্ত গ্রহণের পদ্ধতি অন্বেষণ।

সারসংক্ষেপ

উপকূলীয় পানি সমস্যা কেবল পানিতত্ত্বই নয়; এগুলো পানি ব্যবস্থাপনার মধ্যে অন্তর্নিহিত। সরকারি সংস্থা এবং নাগরিক সমাজের সাথে পরামর্শের পর গৃহীত বাংলাদেশের জাতীয় পানি নীতিমালা (১৯৯৯) ছয়টি উদ্দেশ্যকে সংজ্ঞায়িত করে: ভূ-গর্ভস্থ পানি এবং ভূ-পৃষ্ঠের পানির ন্যায্য ব্যবহার, উন্নয়ন, পানির সার্বজনীন প্রাপ্যতা, আইনি ও আর্থিক ব্যবস্থার মাধ্যমে সরকারি ও বেসরকারি পানি ব্যবস্থাপনা ত্বরান্বিত করা, বিকেন্দ্রীকরণকে উৎসাহিত করা এবং পানি ব্যবস্থাপনায় নারীর ভূমিকা বৃদ্ধি করে এমন প্রাতিষ্ঠানিক সংস্কার, পরিবেশগত বিবেচনা এবং বেসরকারি বিনিয়োগকে উৎসাহিত করে এমন একটি নিয়ন্ত্রক কাঠামো এবং পানি-সম্পদ ব্যবস্থাপনা উন্নত করার জন্য জ্ঞান ও সক্ষমতা বিকাশ। এই কাঠামো থাকা সত্ত্বেও বাস্তবায়নের অসংগতি রয়ে গেছে, বিশেষ করে উপকূলীয় অঞ্চলে যেখানে ওভারল্যাপিং ম্যান্ডেট, সীমিত স্থানীয় ক্ষমতা এবং দুর্বল নিয়ন্ত্রক প্রয়োগ নিরাপদ পানিতে প্রবেশাধিকারকে বাধাগ্রস্ত করে।

● আইনি কাঠামো এবং নীতিগত সমন্বয়

জাতীয় পানি নীতির উদ্দেশ্য এবং সেগুলি কীভাবে কার্যকর করা হচ্ছে তা পর্যালোচনা করা। পানি আইন ২০১৩, নিরাপদ পানি সরবরাহ ও স্যানিটেশনের জন্য জাতীয় নীতিমালা ১৯৯৮ এবং আর্সেনিক প্রশমন জন্য জাতীয় নীতি ২০০৪ এর সাথে সামঞ্জস্য পর্যালোচনা করে অসংগতি চিহ্নিত করুন (যেমন, গ্রামীণ উপকূলীয় অঞ্চলে নিরাপদ পানি সরবরাহের জন্য বাধ্যবাধকতার অভাব) এবং অধিকার এবং দায়িত্ব সুস্পষ্ট করে আইনি সংশোধন বা নতুন বিধিমালা প্রস্তাব করা।

● প্রাতিষ্ঠানিক সমন্বয় এবং বিকেন্দ্রীকরণ

ঢাকা, চট্টগ্রাম এবং খুলনা পানি সরবরাহ ও পয়ঃনিষ্কাশন কর্তৃপক্ষ, জনস্বাস্থ্য প্রকৌশল বিভাগ এবং পৌর সংস্থাগুলির ভূমিকা বিশ্লেষণ করা। বাংলাদেশ পানি উন্নয়ন বোর্ড এবং স্থানীয় সরকার প্রকৌশল বিভাগের মতো অন্যান্য সংস্থাগুলির মধ্যে ওভারল্যাপিং ম্যান্ডেট কীভাবে উপকূলীয় পানি ব্যবস্থাপনাকে প্রভাবিত করে তা আলোচনা করা। ইউনিয়ন পরিষদ এবং কমিউনিটি ভিত্তিক সংস্থাগুলিতে সিদ্ধান্ত গ্রহণের বিকেন্দ্রীকরণের জন্য স্বচ্ছতা এবং জবাবদিহিতা নিশ্চিত করুন।

● বেসরকারি খাতের সম্পৃক্ততা এবং অর্থায়ন

জাতীয় পানি নীতিমালা বেসরকারি বিনিয়োগ এবং ব্যবহারকারীর অংশগ্রহণকে উৎসাহিত করে, তবুও পানি খাতে এখনও সরকারি সরবরাহকারীদের আধিপত্যে রয়ে গেছে। এক্ষেত্রে সরকারি-বেসরকারি অংশীদারিত্বের সুযোগ চিহ্নিত করে (যেমন, ক্ষুদ্র পরিসরে পানি লবণমুক্তকরণ প্রযুক্তি, কমিউনিটি ভিত্তিক বৃষ্টির পানি সংরক্ষণ) এবং ক্রয়ক্ষমতা এবং ন্যায্যতা রক্ষা করুন।

● কমিউনিটির অংশগ্রহণ, জেভার এবং সামাজিক অন্তর্ভুক্তি

পানি ব্যবস্থাপনায় নারীর ভূমিকা বৃদ্ধির নীতির লক্ষ্যের সাথে সামঞ্জস্যপূর্ণ, প্রশাসনিক সংস্কারগুলি নারী, যুব, আদিবাসী গোষ্ঠী এবং প্রান্তিক সম্প্রদায়ের কণ্ঠস্বরকে আরও জোরদার করে তা নিশ্চিত করুন। লবণাক্ততা বিষয়ে মানুষের আধুনিক জ্ঞান পর্যবেক্ষণ, সামাজিক নিরীক্ষা এবং প্রতিক্রিয়া ব্যবস্থা প্রচার করা যাতে প্রশাসন অংশগ্রহণমূলক হয়।

● আন্তঃসীমান্ত এবং উজান-ভাটির সম্পর্ক

উপকূলীয় এলাকায় লবণাক্ততার বৃদ্ধিতে উজানের পানি প্রত্যাহারের প্রভাব এবং আন্তঃসীমান্ত পানি বন্টন ও নদী প্রবাহ নিয়ে যৌথ নদী কমিশনের ভূমিকা ও কার্যকারীতা নিয়ে আলোচনা করা। পাশাপাশি উপকূলীয় কমিউনিটিকে সম্পৃক্ত করে কূটনীতি এবং অ্যাডভোকেসি প্রক্রিয়ায় সমাধানের উপায় নিয়ে আলোচনা করা যাতে তাদের চাহিদা জাতীয় অবস্থানকে অবহিত করে।

পানি বাস্তুতন্ত্র এবং টেকসই উন্নয়ন লক্ষ্যমাত্রা

নদী, জলাভূমি, ম্যানগ্রোভ এবং মোহনাগুলিকে পানি, জলবায়ু এবং জীববৈচিত্র্য সংরক্ষণে SDG লক্ষ্যমাত্রার সাথে সংযুক্ত করা।

সারসংক্ষেপ

সুস্থ বাস্তুতন্ত্র ছাড়া পানি নিরাপত্তা অর্জন করা সম্ভব নয়। লবণাক্ততার অনুপ্রবেশ উপকূলীয় অঞ্চলে মাটি, জীববৈচিত্র্য হ্রাস, মিঠা পানির বাস্তুতন্ত্রের অবনতি ঘটাবে এবং এটি মৎস্যজীবীদের জন্য হুমকিস্বরূপ। SDG ৬-সকলের জন্য পানি এবং স্যানিটেশনের প্রাপ্যতা এবং টেকসই ব্যবস্থাপনা নিশ্চিত করা - জলাভূমি, নদী, জলাধার এবং হ্রদের মতো জল-সম্পর্কিত বাস্তুতন্ত্রগুলিকে সুরক্ষা এবং পুনরুদ্ধার করার জন্য স্পষ্টভাবে আহ্বান জানিয়েছে। বাংলাদেশ পানি ও স্যানিটেশন ব্যবস্থাপনায় অগ্রগতি অর্জন করেছে, তবুও ২০১৯ সালে জনসংখ্যার মাত্র ৪২.৬% নিরাপদে পানীয় জলের ব্যবস্থাপনা করতে পেরেছে এবং মলমূত্র ব্যবস্থাপনা এবং পানির গুণমান নিয়ে এখনো গুরুতর উদ্বেগ রয়েছে। ঝউএ ৬ অর্জনের জন্য পানীয় জল এবং স্যানিটেশন লক্ষ্যমাত্রার সাথে বাস্তুতন্ত্র পুনরুদ্ধারকে একীভূত করা প্রয়োজন।

● পানি সম্পর্কিত বাস্তুতন্ত্র এবং জীববৈচিত্র্য রক্ষা

সমুদ্রপৃষ্ঠের উচ্চতা বৃদ্ধি এবং লবণাক্ততার অনুপ্রবেশ কীভাবে ম্যানগ্রোভ বন, জলাভূমি এবং মিঠা পানির পুকুরকে হুমকির মুখে ফেলে তা তুলে ধরে সুন্দরবন এবং উপকূলীয় জলাভূমির সংরক্ষণ ও পুনর্বাসন নিয়ে আলোচনা করা। যা প্রাকৃতিক সুরক্ষা হিসেবে পানির মান উন্নত করে এবং মৎস্য ও ইকো-ট্যুরিজমের মাধ্যমে জীবিকা নির্বাহ করে। পানি ব্যবস্থাপনা পরিকল্পনায় বাস্তুতন্ত্রের পরিষেবা মূল্যায়নকে মূলধারায় অন্তর্ভুক্ত করতে উৎসাহিত করুন।

● এসডিজি-৬ লক্ষ্যমাত্রা এবং জাতীয় অগ্রগতি

প্রতিটি লক্ষ্যমাত্রা পর্যালোচনা করা (৬.১-৬.৬, ৬.ক, ৬.খ)। নিরাপদ পানীয় জল এবং স্যানিটেশন, পানির গুণমান উন্নয়ন, পরিমিত পানি ব্যবহার, সমন্বিত পানিসম্পদ ব্যবস্থাপনা এবং বাস্তুতন্ত্র সুরক্ষায় বাংলাদেশের অগ্রগতি মূল্যায়ন করা। লবণাক্ততা পর্যবেক্ষণ এবং বর্জ্য জল পরিশোধনের মতো অসংগতি চিহ্নিত করে পানি ও স্যানিটেশন ব্যবস্থাপনা প্রক্রিয়ার বাস্তুতন্ত্র পুনরুদ্ধারের সাথে সংযুক্ত করে সমন্বিত কর্মসূচি সুপারিশ করা।

● টেকসই পানির গুণগতমান এবং বর্জ্য পানি ব্যবস্থাপনা

(Pond Sand Filter) PSF, বৃষ্টির পানি সংরক্ষণ, ভূগর্ভস্থ পানির পুনর্ভরণ (Manage Aquifer Recharge) এবং কমিউনিটি ভিত্তিক পানি লবণমুক্তকরণ প্রযুক্তি গুলির মতো প্রযুক্তি অন্বেষণ করা। লক্ষ্যমাত্রা ৬.৩ পূরণের জন্য পয়ঃ ব্যবস্থাপনা বৃদ্ধি এবং বৃত্তাকার অর্থনীতির পদ্ধতি (যেমন, কৃষির জন্য বর্জ্য জল পুনঃব্যবহার) প্রচারের বিষয়ে আলোচনা করা।

● সমন্বিত পানিসম্পদ ব্যবস্থাপনা (IWRM) এবং বহু-ক্ষেত্রীয় সহযোগিতা

সকল স্তরে সমন্বিত পানি ব্যবস্থাপনা ওডজগ-বিবেচনা করে লক্ষ্যমাত্রা ৬.৫ এর আলোকে পানি, স্বাস্থ্য, কৃষি এবং শক্তির মধ্যে আন্তঃক্ষেত্র সংযোগের উপর জোর দেওয়া এবং বাস্তুতন্ত্র রক্ষার জন্য স্থানীয় সরকার, এনজিও এবং বেসরকারি সংস্থার সাথে অংশীদারিত্ব গড়ে তোলা।

● বাস্তুতন্ত্র পুনরুদ্ধারের জন্য কমিউনিটির সম্পৃক্ততা

লক্ষ্যমাত্রা ৬.খ এর সাথে সামঞ্জস্য রেখে স্থানীয় অংশগ্রহণ নিশ্চিত করার জন্য পুকুর, খাল এবং জলাভূমিতে কমিউনিটির তত্ত্বাবধানকে উৎসাহিত করুন। কমিউনিটির নেতৃত্বে ম্যানগ্রোভ রোপণ বা জলাভূমি সংরক্ষণের ফলে পানির প্রাপ্যতা এবং স্থিতিস্থাপকতা উন্নত হয়েছে এমন সাফল্যের গল্প শেয়ার করা।

অভিযোজন শিক্ষণ

অভিযোজন শিক্ষণ প্লাটফর্ম যা স্থানীয় কমিউনিটিকে অভিযোজন, মানসিকতা পরিবর্তন এবং উত্তম অনুশীলন (Good Practice) গ্রহণ করতে সহায়তা করে।

সারসংক্ষেপ

অভিযোজনমূলক শিক্ষণ হলো উপকূলী অঞ্চলের জলবায়ু পরিবর্তনজনিত দুর্যোগ ও ঝুঁকি নিরসন মোকাবেলা ও সমাধান করতে পরীক্ষা নিরীক্ষা, উত্তম অনুশীলন (এড্‌ড্‌ফ চৎধপঃঃপব) গ্রহণ করতে সক্ষমতা তৈরী করা। খুলনা এবং সাতক্ষীরার প্রকল্পগুলি থেকে আমরা দেখতে পাই যে উপকূলীয় কমিউনিটির বিশেষ করে নারী এবং কিশোরীদের অভিযোজন দক্ষতা ও সক্ষমতা জলবায়ু সৃষ্ট লবণাক্ততার ঝুঁকি হ্রাস করতে পারে। কমিউনিটির পরিবর্তন প্রবাবককে (Change Enget) দক্ষতা ও সক্ষমতা বৃদ্ধি করা হয়েছে যাতে তারা জলবায়ু সহসশীল জীবিকা এবং পানীয়-জলের উৎস ব্যস্থাপনার পরিকল্পনা, বাস্তবায়ন এবং পরিচালনা করতে পারে। স্বল্পমেয়াদী সাড়াদান এবং প্রযুক্তি নির্ভর পদ্ধতি থেকে সরে এসে কমিউনিটির মানুষ নিজেদের মালিকানা মনে করে। এর ফলে জলবায়ুসহসশীল জীবিকা বছরব্যাপী নিরাপদ পানিতে নারী পুরুষের সমান প্রবেশাধিকার এবং জলবায়ু ঝুঁকি মোকাবেলায় প্রাতিষ্ঠানিক ক্ষমতা, জ্ঞান এবং শিক্ষণ প্রতিষ্ঠিত হয়।

● জলবায়ুসহসশীল জীবিকা এবং অর্থনৈতিক বহুমুখীকরণ

লবণসহিষ্ণু ফসল চাষ, সমন্বিত জলজ-কৃষি ব্যবস্থা, ম্যানগ্রোভ বনে মৌমাছি পালন এবং ইকো-ট্যুরিজমের মতো অভিযোজন কৌশলগুলিকে প্রচার করা। নারীর অর্থনৈতিক ক্ষমতায়নকে স্বীকৃতি প্রদান করা। জলবায়ু অভিযোজন প্রকল্পগুলি থেকে আমরা দেখতে পাই কমিউনিটিতে নারী নেতৃত্ব শক্তিশালী হবে।

● জেডার সংবেদনশীল, পানিসুরক্ষা এবং সামাজিক অন্তর্ভুক্তি

পানি সংগ্রহ এবং পারিবারিক অভিযোজনে নারী ও মেয়েদের যে অসামঞ্জস্যপূর্ণ বোঝা বহন করা হয় তা মোকাবেলা করার জন্য এমন উদ্যোগগুলিকে তুলে ধরা যা সারা বছর ধরে নিরাপদ এবং নির্ভরযোগ্য পানীয় জল সমাধান প্রদান করে, নারীদের উপর সময় এবং স্বাস্থ্যের বোঝা হ্রাস করা। পানি ও স্যানিটেশন প্রোগ্রামে মাসিককালীন স্বাস্থ্য ব্যবস্থাপনা এবং প্রতিবন্ধীদের অন্তর্ভুক্ত করা।

● প্রাতিষ্ঠানিক ক্ষমতা এবং নলেজ শেয়ারিং

স্থানীয় সরকার, পানি ব্যবহারকারী সমিতি, এনজিও এবং কমিউনিটি স্বেচ্ছাসেবকদের জলবায়ু ঝুঁকি বিশ্লেষণ, পানির অবকাঠামো পরিচালনা এবং অভিযোজন অনুশীলন প্রচারের ক্ষমতা তৈরি করা। কমিউনিটি, বিশ্ববিদ্যালয় এবং নীতিনির্ধারকদের মধ্যে নলেজ শেয়ার প্লাটফর্মগুলিকে উৎসাহিত করা, যাতে সফল উদ্ভাবন (যেমন, বৃষ্টির পানি সংরক্ষণ, গৃহস্থালি পরিশোধন) অন্যদের মাঝে প্রচার করা।

● কমিউনিটি নেতৃত্বাধীন শিক্ষণ এবং লোকায়িত জ্ঞান

আধুনিক বৈজ্ঞানিক জ্ঞানের পাশাপাশি লোকায়িত জ্ঞান অনুশীলনগুলি যেমন, ভাসমান কৃষি, বৃষ্টির পানি সংরক্ষণ) স্বীকৃতি দেওয়া এবং অন্তর্ভুক্ত করা। অংশগ্রহণমূলক পর্যবেক্ষণ (যেমন, লবণাক্ততা বিষয়ে মানুষের আধুনিক জ্ঞান) তরুন প্রজন্মের কাছে স্থানীয় অভিযোজনের অভিজ্ঞতার কাহিনি শেয়ার করা।

● অভিযোজন শিক্ষণ এবং যুব সম্পৃক্ততা

জলবায়ু পরিবর্তন, পানি ব্যবস্থাপনা এবং টেকসই জীবিকা নির্বাহ বিষয়ে স্কুল পাঠ্য শিক্ষাক্রমের পাশাপাশি সহপাঠক্রম বিষয় হিসেবে অন্তর্ভুক্ত করা। ডিজিটাল সরঞ্জাম এবং সামাজিক মিডিয়া ব্যবহার করে তরুন সমাজকে জলবায়ু ও দুর্যোগের ঝুঁকি বিষয়ে সচেতনতা বৃদ্ধি ও এই কার্যক্রম পরিচালনা করার জন্য পরিবর্তনের দূত হিসেবে তাদেরকে সক্ষম করে তোলা।

3rd Coastal Water Convention 2026

Background & Rationale

Across the world, an estimated 780 million people still lack access to safe drinking water; in South Asia alone, this affects roughly 134 million people. Climate change, unsustainable extraction, pollution and destructive infrastructure are degrading water sources and reducing freshwater availability. In such a context, the south-western coastal region of Bangladesh stands out as one of the most vulnerable yet overlooked frontiers.

This region, covering about 15,118 square kilometres across six districts and home to nearly 13 million people, is shaped by a brackish water regime, tidal wetlands, rivers and canals, and the Sundarbans mangrove ecosystem. Civilisation, culture and livelihoods—fishing, farming, shrimp and crab value chains, small trade and services—are deeply tied to these natural water systems. Yet salinity intrusion, cyclones, storm surges, sea-level rise, chronic waterlogging, river and canal siltation, pollution and unplanned embankments are progressively degrading water-dependent ecosystems.

As these ecosystems deteriorate, poverty deepens, food and water insecurity grows, health risks increase and more people are pushed towards climate-induced displacement. These dynamics directly threaten Bangladesh's progress towards the Sustainable Development Goals, especially SDG 6 (clean water and sanitation), SDG 13 (climate action), SDG 14 (life below water) and SDG 15 (life on land), and intersect strongly with SDG 1 (no poverty), SDG 2 (zero hunger), SDG 5 (gender equality), SDG 10 (reduced inequalities), SDG 11 (sustainable cities and communities), SDG 16 (peace, justice and strong institutions) and SDG 17 (partnerships).

In response to these challenges, a coalition of around 60 regional, national and international development agencies, civil society networks, local government bodies and research institutions convened the 1st Coastal Water Convention in 2011 and the 2nd in 2019, with AOSED serving as secretariat. Those platforms helped place coastal water justice and ecosystem health on the agenda of government and international partners, strengthened recognition of water as a right rather than merely a commodity, and stimulated dialogue between communities, policy makers, practitioners and researchers.

However, relative to the scale and urgency of the crisis, transformational and scalable solutions remain limited. Many promising local innovations and lessons have yet to translate into systemic policy reform, long-term investment and institutionalised mechanisms for coastal water governance and ecosystem protection. Bangladesh's leadership at global forums such as the High-Level Political Forum (HLPF), alongside its national commitment to SDG 6 and climate-resilient development, offers a pivotal opportunity to move from awareness to implementation in coastal regions.

Key Problems the 3rd Convention Seeks to Address

The 3rd Coastal Water Convention is designed to build on earlier achievements but is explicitly problem-driven.

First, coastal water ecosystems are degrading rapidly. Rivers, canals and ponds are becoming saline or heavily silted; wetlands and sweet-water ponds are disappearing; and the Sundarbans mangrove ecosystem is under multiple stresses. This erosion of ecosystem health undermines targets such as SDG 6.6 on protecting and restoring water-related ecosystems, SDG 14.2 on sustainable management of marine and coastal ecosystems and SDG 15.1 on conserving terrestrial and inland freshwater ecosystems.

Second, water governance remains fragmented and inequitable. Overlapping institutional mandates, weak enforcement and limited community participation frequently result in unfair access to water services and benefits, particularly for women, the poorest households, smallholder farmers and artisanal fishers. This weak governance architecture slows progress on SDG 6.1 and 6.2 (universal and equitable access to safe and affordable drinking water and sanitation) and clashes with the spirit of SDG 16 on inclusive and accountable institutions.

Third, climate risks are outpacing current adaptation capacity. Cyclones, storm surges, tidal flooding and slow-onset changes such as sea-level rise and salinity intrusion are becoming more intense, while climate finance, risk-transfer instruments and loss-and-damage mechanisms remain difficult to access for coastal communities. Without targeted support, commitments under SDG 13, SDG 1.5 and SDG 11.5 will be hard to realise in the coastal belt.

Fourth, water-dependent livelihoods and local economies are under threat. Salinity and waterlogging contribute to crop failure; fish stocks and aquatic biodiversity are changing; and fishers and farmers often work in unsafe, poorly protected conditions. These stresses undermine progress on SDG 1 and SDG 2, as well as SDG 8 on decent work and SDG 10 on reduced inequalities.

Fifth, the people who bear the greatest burdens are often the least heard. Women, youth, people with disabilities, indigenous and marginalized groups are under-represented in spaces where water and climate decisions are made, even as they shoulder much of the work of securing water, food and care in households and communities. Indigenous and local knowledge is still insufficiently recognised and used. This gap limits progress on SDG 5, SDG 10 and SDG 16.7 on inclusive decision-making.

Finally, evidence, technology and learning are not yet systematically integrated into practice. Data, research, local innovation and digital tools are often fragmented across projects and organisations, with few sustained platforms for joint analysis, learning and scaling. As a result, opportunities to advance SDG 6.b and SDG 17 through stronger knowledge systems and partnerships are being missed.

The 3rd Coastal Water Convention aims to gather these challenges into a single, coherent agenda, and to identify practical pathways that directly support SDG implementation in the coastal context.

Legacy of Previous Conventions

The 1st Coastal Water Convention, under the theme “Water is not a commercial product, it is a right”, explored the ecological characteristics of the southwest coast, introduced integrated water resources management (IWRM), and highlighted the cultural, livelihood and disaster-related dimensions of water. It helped to frame water in coastal Bangladesh as a rights and justice issue, not only a technical one.

The 2nd Convention, under the theme “Water Justice in Development Progress”, moved this agenda forward by focusing on governance for equitable access to safe water, the roles and accountability of the private sector, the importance of appropriate and affordable technologies for vulnerable groups, and the need to conserve water ecology while adapting to climate change in line with the SDGs.

The 3rd Convention will build on this legacy by shifting from recognition and advocacy towards practical implementation: identifying scalable solutions, potential financing options, institutional reforms and multi-stakeholder mechanisms that can bridge the gap between policy commitments and lived realities in coastal communities.

Purpose of the 3rd Convention

The overall purpose of the 3rd Coastal Water Convention is to catalyze evidence-based policy dialogue, co-created solutions and investment pathways that protect coastal water ecosystems while advancing inclusive, climate-resilient development in Bangladesh's southwest and comparable delta regions. In doing so, the Convention seeks to accelerate tangible progress towards the 2030 Agenda, with particular emphasis on SDGs 6, 13, 14 and 15 and their links to equity, livelihoods and governance.

Objectives

The Convention has four interlinked objectives.

First, it will convene and align stakeholders. By bringing together government institutions, local communities, academia, the private sector and development partners, the Convention will create a shared space to discuss priorities for coastal water governance, ecosystem integrity and resilient livelihoods. This directly supports SDG 6.5 on IWRM, SDG 16 on effective, inclusive institutions and SDG 17 on partnerships.

Second, it will surface and help to scale locally led, climate-smart water solutions. These will include nature-based solutions such as mangrove and wetland restoration, resilient WASH systems, climate-smart agriculture and fisheries practices, and innovative financial and governance mechanisms, including insurance and risk-sharing tools for climate-exposed communities. Such solutions contribute to SDG 6.1, 6.2 and 6.6, as well as SDG 13.

Third, it will advance policy, regulatory and investment commitments aligned with SDG 6 and related goals. The Convention will work towards clear policy messages and recommendations that promote coherence across SDG 6, 13, 14 and 15, while also connecting to SDGs 1, 2, 5, 10, 11 and 16 in the coastal context. A central concern will be ensuring that the principle of "leave no one behind" is operationalised in water and climate planning and investment.

Fourth, it will strengthen knowledge systems and transformative learning. The Convention will highlight and connect knowledge platforms that link community experience, scientific research and policy practice. It will emphasise inclusive participation—especially of women, youth, people with disabilities and indigenous and marginalized groups—and support adaptive and transformative learning communities that extend beyond the event itself, contributing to SDG 6.b and SDG 17.

Contribution to the SDGs

The 3rd Coastal Water Convention is explicitly framed as a contribution to the SDGs.

It will directly advance SDG 6 by promoting integrated, rights-based and ecosystem-sensitive water governance, addressing coastal WASH challenges, and emphasising the protection and restoration of water-related ecosystems. Through its focus on climate-resilient water management, locally led adaptation, loss and damage and climate finance, it will contribute strongly to SDG 13.

By highlighting coastal and marine ecosystem health, Sundarbans conservation, river and canal restoration and nature-based solutions, the Convention will support SDG 14 and SDG 15. At the same time, by linking water ecosystem conservation to poverty reduction, food security, gender equality, reduced inequalities, resilient human settlements, accountable institutions and strong partnerships, it will contribute to cross-cutting goals such as SDG 1, 2, 5, 10, 11, 16 and 17.

Thematic Areas (2026)

Water & Climate Change

This track will examine how salinity intrusion, cyclones, storm surges, compound flooding and chronic waterlogging are reshaping coastal lives and landscapes. It will explore nature-based solutions such as mangrove restoration, wetland rehabilitation and climate-resilient polder management, along with climate-risk governance, early warning, and mechanisms for loss-and-damage responsive measures and climate finance. The discussions will link directly to SDG targets under 6, 13, 14 and 15.

Water Governance

This track will focus on integrated water resources management and basin/delta planning, institutional accountability, transparency and community water rights. It will address tariff and subsidy design that protects poorer households while promoting conservation, and explore public-private-community partnerships for water and WASH services in the coastal belt. The work of this track will connect to SDG 6.5 and 6.b, as well as SDG 10, 16 and 17.

Water Ecosystems & the SDGs

Here, the emphasis will be on ecosystem health metrics, biodiversity and sustainable livelihoods. The track will consider how infrastructure development, blue economy initiatives and industrialization can be designed and regulated so that they do not undermine water ecosystems. It will promote policy coherence across SDG targets related to water, climate, oceans and terrestrial ecosystems, and discuss tools and safeguards for environmental and social protection in coastal investments.

Adaptive & Transformative Learning – Lives & Livelihoods

This track will highlight locally led adaptation and community-driven planning, linkages between social protection and climate risks, and the role of women- and youth-led enterprises in water, WASH, agriculture and fisheries. It will address the safety and productivity of fishers and farmers, and examine how skills, data and digital tools can improve early warning, planning and accountability. Particular attention will be given to knowledge platforms, learning labs and youth leadership that can drive long-term transformation.

Across all tracks, gender equality and social inclusion, disability inclusion, indigenous and local knowledge, climate finance access, human rights and conflict sensitivity will be treated as cross-cutting lenses. In this way, the Convention will ensure that conserving water ecosystems is inseparable from advancing justice, dignity and sustainable development for the people of coastal Bangladesh.

Partner Organizations of 3rd Coastal Water Convention – 2026

ActionAid Bangladesh	Initiative for Right View (IRV)
An Organization for Socio-Economic Development (AOSED)	Integrated Social Development Effort (ISDE)
ASH Bangladesh	International Centre for Climate Change and Development (ICCCAD)
Ashroy Foundation	Islamic Relief Bangladesh
AVAS	Jagrata Juba Shangha (JJS)
Badabon Sangho	Local Environment Development and Agricultural Research Society (LEDARS)
Bandhan	Loving Care for the Oppressed Society (LoCOS)
Bangladesh Environment and Development Society (BEDS)	Manusher Jonno Foundation (MJF)
Bangladesh Oceanographic Research Institute (BORI)	MSSUS
Bangladesh Water Partnership (BWP)	Nabolok
BARCIK	Nari Kantho
CARE Bangladesh	Nature Conservation Management (NACOM)
CARITAS	Nice Foundation
Center for Natural Resource Studies (CNRS)	Noakhali Rural Development Society (NRDS)
Centre for Climate Change and Environmental Research (C3ER)	Pani Adhikar Committee (PAC)
Centre for Climate Society and Environment (CCSE)	Participatory Research and Action Network (PRAAN)
Climate Justice Forum – Bangladesh	Plan International
COAST Foundation	Practical Action in Bangladesh
Coastal Development Partnership (CDP)	Prantojon
Coastal Livelihood and Environmental Action Network (CLEAN)	RedOrange Communications
Coastal Voice of Bangladesh	Rupantar
Community Development Centre (CODEC)	SNV
CPF	Society of Development and Education for Small Households (SoDESH)
Christian Service Society (CSS)	Songshoptaque
Dalit	Srijony Mohila Lokkendro
Development Organization of the Rural Poor (DORP)	Sundarban Academy
Driving Human Rights Upward for the Backward and the Abandoned (DHRUBA)	Supported by Switzerland
Gana Unnayan Kendra (GUK)	Swisscontact
Helvetas Bangladesh	Udayan Bangladesh
Humanitywatch Foundation	WaterAid Bangladesh
	World Vision Bangladesh
	YPSA

Message from Keynote Speaker
Messages from Organizers





Keynote Speaker

Life in coastal Bangladesh is not just “changing with time” – it is being reshaped by a series of decisions, omissions, and unequal power relations. Salty water creeping into tubewells, crop fields abandoned to shrimp ghers, canals silted up and left uncleared, embankments repaired only after each disaster – these are not accidents of nature. They are the cumulative outcome of upstream withdrawal, weak regulation, short project cycles, and a planning culture that too often treats the coast as a backyard, not as a priority.

For coastal people, climate change sits on top of older injustices. When safe drinking water disappears, when a school remains waterlogged for months, when a woman walks several kilometres for a single pitcher of water, this is not only “climate vulnerability” – it is a sign that institutions have failed to protect basic rights. The same unions are surveyed repeatedly, consulted for reports, photographed after cyclones – yet year after year they remain at the back of the queue for durable services, accountable governance, and fair finance.

In this context, the 3rd Coastal Water Convention (CWC-2026) cannot afford to be just another event that documents suffering and then moves on. Bangladesh is entering a period of major reforms in climate finance, water governance, local government, and development planning. If these reforms do not confront the reasons why coastal communities are still excluded – fragmented mandates, politicized projects, weak enforcement, and centralized decision-making – they will reproduce the same problems under new labels. CWC-2026 aims to bring the uncomfortable questions to the centre: Who benefits from current water regimes? Who bears the cost? Whose knowledge counts when plans are made?

The Convention therefore positions itself not only as a platform for sharing good practices, but as a forum for critical reflection and accountability. It seeks to challenge token participation, demand transparency in how resources are allocated, and push for climate and water policies that are evaluated by one simple benchmark: do they actually make life safer, fairer, and more dignified for people in coastal villages and towns?

If the Coastal Water Convention is to become a trusted voice of the coast, CWC-2026 must help shift the narrative from charity to rights, from pilot projects to structural change, and from listening sessions to real power-sharing. Only then can we talk honestly about a future in which no coastal community is left behind because of its geography or its vulnerability – and in which the institutions responsible for water, climate, and development are held to that promise.

Dr. Ainun Nishat

Keynote Speaker and

Professor emeritus, BRAC University

Chair



Life of coastal Bangladesh is changing gradually. People witness drinking water turning salty, fields drying out, ponds losing their sweetness, and storms growing more intense than before.

For them, climate change is not a distant warning. It affects how they stay healthy, go to school, earn a living, and plan their future. Children walk long distances to collect safe water. Women wait in queues for a single jar. Homes are rebuilt again and again after floods and cyclones. These are the daily struggles that define life along the coast.

In this reality, the Coastal Water Convention (CWC) 2026 returns at a moment where Bangladesh is at the crossroads of numerous reforms. This Convention creates a space where realities of the coast can guide reform decisions, outline priorities, and trigger action. It brings together voices from the coast and voices from the policy table, with the intention to empower the people who live closest to the coast and are most affected by change.

WaterAid Bangladesh's country strategy puts climate-resilient and inclusive WASH services at the heart of our work, especially in coastal areas where access and dignity are most at risk. We support stronger local government, encourage community leadership, promote women's participation, and back policies that protect long-term rights to safe water and sanitation.

As this Convention grows into a trusted voice of coastal people, CWC-2026 is a chance to renew promise, share responsibility, and plan together for a fair and secure future where no one from the coast is left behind because of geography or vulnerability.

Hasin Jahan

Chairperson, 3rd Coastal Water Convention
Country Director, WaterAid Bangladesh

Co-Chair



It is an honour to serve as Co-Chair of the 3rd Coastal Water Convention, to be held in Khulna in January 2026. Practical Action has been working alongside coastal communities in Bangladesh to advance climate resilience, water security, and sustainable livelihoods through evidence-based and people-centered solutions. This Convention builds on that commitment by creating a trusted, non-political platform for civil society, practitioners, and researchers to share knowledge, elevate community voices, and shape collective action. Through dialogue, innovation, and a shared declaration, we aim to strengthen advocacy for climate justice and resilient coastal development rooted in local realities.

Ishrat Shabnam

Co-Chair of 3rd Coastal Water Convention and
Country Director, Practical Action in Bangladesh

Co-Chair



CARE Bangladesh is grateful to co-chair the 3rd Coastal Water Convention 2026 - a gathering that comes at the right time to protect our shared waters and the lives they sustain.

We know the challenges are real: climate change, rising salinity, and gaps in governance are putting water security, health, and livelihoods at risk. But we also know that solutions are possible when we move together from words to action.

Our commitment is clear. We will stand for water governance that is fair, resilient, and rooted in rights - especially for women, youth, and marginalized communities. We will bring forward evidence, amplify community voices, and build partnerships that strengthen resilience and safeguard coastal ecosystems.

This is not only about policies or programs. It is about people, dignity, and the future we share. Together, we can create solutions that are equitable, scalable, and accountable - solutions that help us advance the Sustainable Development Goals, especially SDG 6 on clean water, SDG 13 on climate action, SDG 14 on life below water, and SDG 15 on life on land.

Ram Das

Co-Chair of 3rd Coastal Water Convention and
Country Director, CARE Bangladesh

Co-Chair



I am pleased to share that the 3rd Coastal Water Convention 2026 will be held on 24–26 January 2026 in Khulna, with a strong commitment to conserving water ecosystems towards sustainable development.

The Convention will focus on critical issues of water justice and governance in the context of climate change. Access to safe and fresh water is an increasing challenge for coastal communities in Bangladesh and disproportionately affects women, leading to heavier workloads and heightened health and nutrition risks. As Co-Chair, I believe this timely platform will amplify the voices of vulnerable communities, especially women and young people, and foster dialogue, learning, and collective action. I extend my best wishes for the success of the 3rd Coastal Water Convention 2026.

I believe this platform and convention will amplify the voices of marginalised and frontline communities in coastal areas. It will foster collective action to influence policy change and mobilise increased public investment for inclusive and climate-resilient development.

Farah Kabir

Co-Chair of 3rd Coastal Water Convention and
Country Director, ActionAid Bangladesh

Co-Chair



It is a great pleasure to extend warm greetings to all participants of the 3rd Coastal Water Convention 2026, being held in Khulna from 24–26 January 2026, under the theme “Conserve Water Ecosystems towards Sustainable Development.”

Water is a fundamental resource and a requirement to the life, dignity, and environment. In a climate at-risk and coastal country like Bangladesh, the protection of water ecosystems is not only an environmental priority but a national necessity. Recent directives from the Honourable High Court of Bangladesh, recognizing safe water as a mandatory right for all citizens, further reinforce the urgency of collective action to safeguard our water resources. Till now, in the salinity-prone coastal areas, people are suffering from potable water unavailability across the year. Among them women bear the heaviest burden every day, they walk miles—sometimes crossing rivers—searching for a jar of safe drinking water. Mothers ration every drop. They drink less so their children can drink more. Many women and girls endure urinary infections and other illnesses simply because of silently.

Over the years, NGOs and the government have tried to respond to meet the gap, but the need remains overwhelming. Since 2008, Islamic Relief Bangladesh (IRB) has been working extensively in the coastal area. In recent years, IRB has increasingly focussed on Locally Led Approaches, empowering communities to design and manage context-specific solutions, including HH level rainwater reservoir, community-based pond excavation, and canal restoration. Our experience says a single rainwater tank can give a family safe drinking water for months, a restored pond or canal can transform an entire village and helps restoration of micro ecosystem with indigenous flora & fauna.

Islamic Relief Bangladesh is looking forward to a meaningful dialogue, exchange of learning, and a commitment of collaboration among the government institutions, civil society, development partners, academia, and communities. IRB remains committed to working alongside all stakeholders to protect water ecosystems and advance climate-resilient development across Bangladesh’s coastal regions.

Together, we can bring back dignity and hope to the life of the at-risk people in the coastal areas of Bangladesh.

Talha Jamal

Co-Chair of 3rd Coastal Water Convention and
Country Director, Islamic Relief Bangladesh

Co-Chair



Coastal Bangladesh stands at a critical crossroads. Multiple, overlapping pressures—salinity intrusion into freshwater sources, increasing dry-season water scarcity, stressed livelihoods, and more frequent and intense extreme weather events—are reshaping everyday life along the coast. In this context, water security is not only an environmental concern; it is fundamental to health, livelihoods, equity, and human dignity. Coastal communities are on the frontline of climate change, and their realities demand urgent, collective responses.

The 3rd Coastal Water Convention (CWC) 2026 comes at a pivotal moment. It offers a vital platform to move beyond shared concern toward coordinated action. Conserving and restoring coastal water ecosystems is central to climate justice, resilience, and sustainable development. This Convention brings together policymakers, practitioners, researchers, and communities to advance solutions that are inclusive, practical, and grounded in local realities.

We are proud to co-chair the 3rd Coastal Water Convention, reaffirming our commitment to rights-based, locally led solutions, strong partnerships, and evidence-informed dialogue. Together, we have the opportunity to turn coastal challenges into lasting commitments—protecting vital ecosystems and ensuring safe, sustainable water access for present and future generations.

Prashant Verma

Co-Chair of 3rd Coastal Water Convention and
Country Director, Helvetas Swiss Intercooperation Bangladesh



Co-Chair

Water is a fundamental necessity for all life forms and civilization. The availability of fresh water is increasingly threatened by frequent and severe climatic hazards throughout Bangladesh. However, the challenges related to water are particularly pronounced in coastal regions, where issues such as salinity intrusion, river erosion, cyclones, and tidal flooding are reshaping water systems and heightening vulnerability, especially for women, children, the elderly, individuals with disabilities, and other marginalized groups. Women and girls are disproportionately impacted by the water crisis due to prevailing patriarchal social norms and gender roles as women are solely responsible for household's water management. The climate-induced fresh water crisis exacerbates the burden of unpaid care work, gender-based violence, sexual and reproductive health issues, and time poverty in coastal Bangladesh.

It is essential to create mechanisms for accountability, transparency, coordination, and grassroots participation in decision-making to ensure that community voices are included in the planning processes at both local and national levels. Furthermore, it is crucial to recognize that water security is intrinsically linked to the health of rivers, wetlands, mangroves, and estuaries—ecosystems that shield communities from disaster risks and support livelihoods. Consequently, a thorough understanding is required on underlying causes of ecosystem degradation and the necessary protective measures.

I hope that the outcome of this convention will foster concrete understanding and commitments towards equitable access to safe water, the safeguarding of water ecosystems, gender-responsive governance, and sustainable partnerships.

Wishing you all the best for an impactful Convention.

Shaheen Anam

Co-Chair of 3rd Coastal Water Convention and
Executive Director, Manusher Jonno Foundation

Co-Chair



The 3rd Coastal Water Convention (CWC) 2026 highlights the conservation of water ecosystems for sustainable development due to growing water crisis in coastal areas, where increasing salinity and climate change are severely limiting access to safe drinking water. The Convention emphasizes urgent, coordinated action to address these challenges through sustainable, community-centered solutions. To mitigate the problems Jagrata Juba Shangha (JJS) supported and installed PSF, MAR and RO systems to ensure safe drinking water for vulnerable coastal communities. CWC 2026 calls for strengthened partnerships, innovation, and policy commitment to secure water rights, resilience, and dignity for coastal populations.

ATM Zakir Hossain

Co-Chair of 3rd Coastal Water Convention and
Executive Director, JJS

Co-Chair



On behalf of the co-chairs, I warmly welcome you to the 3rd Coastal Water Convention 2026. As Bangladesh's coastal communities face growing water scarcity and rising costs, water security has become a matter of justice, resilience, and sustainable development. This Convention brings together academia, civil society, government service providers, and local government institutions to reflect, learn, and act collectively. I am confident that our shared knowledge and dialogue will inform future national, regional, and international advocacy and help protect water ecosystems while ensuring equitable access for the most vulnerable.

Rafiqul Islam Khokan

Co-Chair of 3rd Coastal Water Convention and
Executive director Rupantar

Co-Chair



It is my pleasure to share this message for the 3rd Coastal Water Convention 2026. Coastal water governance is increasingly critical for Bangladesh as climate change intensifies challenges such as sea-level rise, salinity intrusion, flooding, and ecosystem degradation. Addressing these complex issues requires coherent policies, evidence-based planning, and meaningful engagement with coastal communities whose lives and livelihoods depend on these resources.

I have been involved in Coastal Water Convention since 2011 which was first ever Coastal Convention in Bangladesh. This Convention provides an important platform for need based dialogue among policymakers, researchers, civil society, development partners, and community representatives. We seek to promote inclusive, adaptive, and sustainable coastal water management by integrating national development priorities, local knowledge, and climate-resilient approaches. I am confident that the Convention's discussions and outcomes will strengthen policy frameworks, enhance community resilience, and contribute to a secure and sustainable future for Bangladesh's coastal ecosystems and people.

Mohammad Zobair Hasan

Co-Chair of 3rd Coastal Water Convention and
Deputy Executive Director, DORP

Co-Chair



Water has shaped the past, defines the present, and will determine the future of Bangladesh's shoreline. Today, our coastal watersheds and the communities and ecosystems they support are undergoing profound change driven by development pressures, climate impacts, and ongoing ecological degradation. In this context, the Third Coastal Water Convention stands as a timely call to move from concern to collective action.

This gathering brings together communities, researchers, practitioners, and policymakers to showcase solutions that are locally grounded, gender-responsive, and sensitive to the needs of fragile ecosystems. I am confident that the partnerships forged and the knowledge shared here will advance water justice, strengthen the resilience of coastal water systems for generations to come, and help transform evidence into effective policy.

Dr. S. M. Munjurul Hannan Khan

Co-Chair of 3rd Coastal Water Convention and
Executive Director, NACOM

Co-Chair



The crisis of safe water in Bangladesh’s coastal regions has been studied, debated, and raised as a public concern for decades. Yet the continued absence of this essential resource keeps communities trapped in chronic insecurity. Although access to safe water is a fundamental human right, the drivers of the crisis are well established: climate change impacts, human-induced pollution, and unregulated, environmentally destructive infrastructure development.

What is increasingly indefensible, however, is the persistent inaction and neglect by responsible institutions and policymakers in upholding this right, which only deepens the suffering and weakens resilience. There is an urgent need to end the harmful cycle in which coastal people and ecosystems are treated as “guinea pigs” through repetitive research, unrealistic planning, and poorly accountable interventions.

With this purpose, the Third Coastal Water Convention 2026 has been convened. The meaningful success of this three-day forum will depend on timely financial and logistical support, informed and inclusive dialogue, and practical recommendations that can be carried forward into action. We look forward to the sincere cooperation of all stakeholders to ensure the conference delivers real value for coastal communities and the environment.

Prof. Anwarul Kadir

Co-Chair of 3rd Coastal Water Convention and
Executive Director, Sundarbans Academy

Member Secretary



For more than two decades, AOSED has worked alongside coastal communities in Bangladesh, witnessing firsthand how water has become a frontline of climate injustice. Shrinking freshwater sources, contaminated ponds and canals, encroachment by commercial interests, and inadequate support systems have made life harder for farmers, fishers, women, and youth. At the same time, communities continue to innovate—through adaptive agriculture, water harvesting, ecosystem restoration, and collective advocacy.

The 3rd Coastal Water Convention aims to honour that courage and creativity. It is designed as a non-political, inclusive platform where community voices lead the conversation, and where partners can listen, learn, and co-create solutions. We invite you to walk with us—to stand with coastal people, to learn from them, and to work together for a just and resilient water future.

Shamim Arfeen

Member Secretary - 3rd Coastal Water Convention
Executive Director - AOSED

Water and Climate Change



This thematic area of the convention will examine how salinity intrusion, cyclones, storm surges, compound flooding and chronic waterlogging are reshaping coastal lives and landscapes. It will explore nature-based solutions such as mangrove restoration, wetland rehabilitation and climate-resilient polder management, along with climate-risk governance, early warning, and mechanisms for loss-and-damage responsive measures and climate finance. The discussions will link directly to SDG targets under 6, 13, 14 and 15.



Title : Desalination for a Thirsty Coast: Challenges for Reducing Water Scarcity in Coastal Bangladesh.

Author: **Tanvir Morshed Tamim**, *Jahangirnagar University*

Coastal Bangladesh is facing acute drinking water scarcity due to progressive salinity intrusion, sea-level rise, and the degradation of traditional freshwater sources, all of which are intensified by climate change. Desalination is increasingly promoted as a climate-resilient technological option; however, its implementation in low-income, dispersed coastal communities presents major technical, economic, environmental, and governance challenges. This paper critically examines these challenges through a review of existing small- and medium-scale desalination initiatives in coastal Bangladesh, techno-economic studies, and relevant policy and institutional documents. The analysis highlights high capital and operating costs, unreliable energy supply, complex operation and maintenance requirements, and environmental risks associated with brine disposal in fragile deltaic and coastal ecosystems. It also examines socio-institutional barriers, including limited affordability for poor households, weak local technical capacity, fragmented mandates among responsible agencies, and inadequate regulatory and monitoring mechanisms. The paper argues that without climate-informed planning, strong community participation, and pro-poor financing and governance arrangements, desalination is unlikely to deliver equitable and sustainable relief from climate-driven water insecurity. Therefore, desalination should be pursued selectively as part of an integrated water resources management and climate adaptation pathway, alongside demand management, protection and restoration of freshwater sources, and strengthened local service delivery systems.



Title : DRR and CCA could reduce vulnerability in coastal people

Author: **Masum Billah Imran**, *Journalist*

Climate change is increasing the frequency and intensity of disasters, threatening lives and livelihoods. Each year, many people fall into extreme poverty due to disasters and climate-related impacts. Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) can reduce vulnerability among coastal communities.

The discussants noted that climate change is adversely affecting the country's coastal belt, where storms, cyclones, tidal surges, droughts, river erosion, and waterlogging are becoming increasingly common. They further highlighted the escalating risks from sea-level rise and salinity intrusion, which are already damaging the Sundarbans, the world's largest mangrove forest, including the loss of many large trees.

The speakers made these remarks during a training titled "Capacity Strengthening on Community-Managed Disaster Risk Reduction and Climate Change Adaptation," held at the CSS Ava Center in Sadar Thana of the city.



Title : Cyclone-Driven Changes in Turbidity and Chlorophyll Concentration across the Waterbodies of Barguna

Author: **Maymuna Akther Sorna**, *Jahangirnagar University*

Co-author: **Mr. N M Refat Nasher**

Cyclone storm surges frequently combine with seasonal tides and monsoon rains, making coastal Bangladesh increasingly susceptible to compound weather hazards. This study examines how Cyclone Remal affected flooding and surface water quality in Barguna District during and after the storm. The primary objectives were to characterize changes in flood extent across post-event recovery periods and to investigate hydro-ecological relationships between biological activity and sediment suspension using remote-sensing indices.

To track flooding even under hazy conditions, time-series Sentinel-1 Synthetic Aperture Radar (SAR) imagery was used. Based on event timing, surface water was classified into three categories: post-storm residual water, abrupt floodwater, and permanent rivers. The analysis focused on the immediate, three-week, and eight-week impacts of the cyclone. In parallel, surface water quality trends were assessed using turbidity (NDTI) and chlorophyll-a proxy (NDCI) indices.

Results indicate extensive flooding following Cyclone Remal. Although the main rivers (Payra, Bishkhali, and Burishwar) remained distinguishable, floodwaters overtopped embankments and inundated large areas of villages and agricultural land. Flood dynamics showed a complex pattern: storm surges initially covered a substantial area, and waterlogging persisted even after eight weeks due to incomplete drainage. The early onset of monsoon rainfall further impeded recession of cyclone-driven floodwaters, sustaining elevated water levels. Water quality indicators shifted markedly in early June, with turbidity (NDTI) increasing to -0.008 and chlorophyll (NDCI) peaking at 0.076 . These patterns suggest that surge-driven turbulence resuspended sediments and released nutrients, triggering a short-lived increase in algal productivity before stabilizing by mid-June.

The findings underscore that Cyclone Remal's flooding created persistent water-related challenges rather than a single, short-duration event. The observed association between higher turbidity and elevated chlorophyll suggests that transient, nutrient-rich conditions induced by physical disturbance can affect ecosystem stability. Prolonged inundation also points to significant limitations in local drainage infrastructure, as floodwaters did not fully recede within eight weeks. Disaster recovery planning should therefore account for cyclone-monsoon overlap, which can extend flooding duration and delay hydro-ecological recovery.



Title : Cyclone-Driven Changes in Turbidity and Chlorophyll Concentration across the Waterbodies of Barguna

Author: **Madhab Chandra Dutta** , *SoDESH*

Co-author: **Jyothsna Karmokar**

Satkhira District, particularly Shyamnagar, Ashashuni, and Kaliganj upazilas, faces a chronic safe drinking water crisis driven by salinity intrusion, arsenic contamination in some tube-wells, and recurring cyclones and storm surges that damage embankments and freshwater sources. As a result, health risks are rising and livelihoods are being disrupted. Additional pressures include declining groundwater levels due to over-extraction and reduced rainfall, as well as the loss of natural water bodies through canal and wetland encroachment and infilling.

This abstract outlines priority response options. Government initiatives should expand household and community rainwater harvesting, strengthen and maintain embankments to reduce saline intrusion, install deep tube-wells where hydrogeologically feasible, re-excavate ponds, and scale up appropriate mini-desalination plants. NGOs and private actors can support these efforts by providing affordable water treatment technologies (such as biosand filters and pond-based purification systems), establishing community water tanks, and delivering awareness and school-based education programmes. Community actions are also essential, including adopting rainwater storage, reducing water wastage, and mobilizing to protect canals and wetlands from illegal occupation.

Stronger coordination among government, NGOs, and local communities, combined with locally suited desalination, rainwater harvesting for every household, durable embankment management, and participatory water governance, can make safe water access more resilient in Satkhira.



Title : Living with Salty Water: Women’s Lived Experiences of Water Insecurity and Reproductive Health Stress

Author: **Maysha Khan**, *Jahangirnagar University*

Coastal Bangladesh is experiencing growing freshwater scarcity due to climate-driven salinity intrusion linked to sea-level rise, reduced upstream freshwater flow, and increasingly intense cyclones and storm surges. Although salinity impacts on agriculture, livelihoods, and ecosystems are well documented, the gendered consequences of chronic water insecurity, particularly for women’s reproductive and menstrual health, remain under-examined. This study explores women’s lived experiences of water insecurity and related reproductive health stress in salinity-affected coastal communities.

Using a qualitative, community-based design, the research draws on household surveys, in-depth interviews, and focus group discussions with women of reproductive age in selected coastal unions. It examines daily water access constraints, drinking and household water sources, menstrual hygiene management under freshwater scarcity, and coping strategies during prolonged water stress. Findings suggest that chronic exposure to saline water disrupts daily routines, increases domestic and caregiving burdens, and contributes to physical discomfort, psychosocial stress, and reproductive health concerns. Many participants reported difficulty maintaining menstrual hygiene because of limited safe water, leading to fear, shame, and anxiety about long-term health effects. In the absence of adequate WASH and healthcare support, informal coping practices emerge, increasing vulnerability.

The study frames water insecurity as an under-recognized form of non-economic loss and damage and calls for gender-responsive WASH and public health interventions that address both infrastructure gaps and women’s lived realities.



Title : Community-Managed Solar Irrigation as a Water-Food-Energy Nexus Intervention in Northern Bangladesh

Author: **Nayma Akther Jahan**, *University of Liberal Arts Bangladesh*

Co-author: **Dr Shahana Chowdhury**

Northern Bangladesh faces a deepening water crisis driven by declining groundwater levels, erratic rainfall, and heavy reliance on diesel-based irrigation, with adverse impacts on smallholder agriculture, land productivity, and rural livelihoods. In districts such as Panchagarh, chemical-intensive farming and uncoordinated water abstraction further contribute to soil degradation, inefficient water use, and rising production costs. This study assesses whether community-managed solar irrigation can improve water-use efficiency, reduce fossil fuel dependence, and generate inclusive socioeconomic benefits within a water-food-energy nexus framework. Focusing on the SHIFT (Strengthening Households with Integrated Farming via Energy Transformation) project, the research examines two objectives: (i) the performance of solar-powered irrigation in reducing water stress, and (ii) socio-institutional outcomes, particularly women's and youth participation in water governance. The study uses mixed methods, including project monitoring data, farm-level household surveys, irrigation committee records, and qualitative interviews conducted over two agricultural seasons. Results show that replacing diesel pumps with solar systems reduced irrigation fuel costs by approximately 60–70% per year. Coordinated irrigation scheduling and community water-sharing rules reduced over-irrigation and contributed to a reported 20–25% decline in groundwater abstraction during peak dry periods. Farmers reported higher cropping intensity and improved yield stability for water-sensitive crops, alongside a 15–20% reduction in spending on synthetic fertilizers and pesticides due to improved soil moisture management and adoption of organic waste-based biofertilizers. Institutional outcomes were also notable: women comprised roughly 35–40% of irrigation committee members and held decision-making roles on water allocation and fee management, while trained youth operators provided maintenance services, generating local employment and reducing reliance on external technicians. Transparent monitoring and shared governance mechanisms reduced conflicts over water access. Overall, the findings suggest that community-managed solar irrigation, combined with structured scheduling and inclusive governance, can address water scarcity while advancing sustainable agriculture and equitable rural development in northern Bangladesh.



Title : Improving Safe Water Access in Low-Income Urban Areas: Kader Sarder Para Piped Network, Khulna

Author: **Naziza Afrida Khalid**, *WaterAid Bangladesh*

Co-author: **Md Zahidul Islam**

Khulna, a rapidly developing coastal city in Bangladesh, has improved urban infrastructure and service delivery, yet these gains are unevenly distributed. In low-income settlements, access to safely managed drinking water remains constrained by hydrogeological challenges, saline intrusion, limited KWASA network coverage, and unaffordable water prices. Climate-induced rural-to-urban migration has further increased demand, intensifying pressure on already stressed services.

This study documents a community-scale piped water supply intervention in Kader Sarder Para, a low-income area of Khulna with approximately 2,250 residents across 558 households. Before the intervention, the community relied mainly on a single tubewell, resulting in long queues, irregular supply, and acute shortages during peak hours and the dry season. Women, as primary water collectors, bore substantial physical and time burdens, and some collected water late at night to avoid queues, increasing safety risks. Limited water quantity and quality heightened water-related health concerns, especially for children.

To address these challenges, three decentralized piped water distribution networks were installed, delivering potable water to 206 households (about 877 people) through household connections. The system improved reliability, eliminated queues and night-time collection, reduced burdens on women and children, and lowered health risks while saving time. The results demonstrate the potential of decentralized piped networks to advance equitable water access in low-income urban areas and inform scalable solutions for rapidly urbanizing cities.



Title : Climate Stress and Resilience in Manpura: Survival Strategies in a Hazard-Prone Island Setting

Author: **Sanjida Akter Jim**, *Jahangirnagar University*

Communities on hazard-prone coastal islands face recurrent cyclones, flooding, and salinity intrusion that shape livelihoods and everyday life and also affect mental and emotional well-being. In Bangladesh, islands such as Manpura are highly exposed to climate hazards, where repeated disasters generate ongoing stress, fear, and uncertainty. While households use multiple survival strategies, including early warning responses, cyclone shelter use, livelihood adjustments, and reliance on social ties, the psychosocial dimensions of these practices receive limited attention in climate research and policy.

This study examines how survival strategies relate to mental well-being among households on Manpura Island, focusing on experiences of coping, recovery, and perceived resilience under recurring climate stress. A mixed-methods case study design combines a household survey with in-depth interviews and focus group discussions to capture both trends and lived experiences. The analysis considers household and community strategies, including preparedness, shelter use, livelihood adaptation, post-disaster recovery practices, and support networks, and assesses their association with perceived psychological well-being.

The study anticipates that preparedness, adaptive behaviors, and strong social connections can strengthen emotional coping and a sense of control during and after disasters. However, repeated shocks, asset loss, unstable livelihoods, and uncertainty about future risks are expected to contribute to persistent stress, anxiety, and emotional fatigue. Findings will support more holistic, people-centered adaptation and disaster risk reduction by integrating mental well-being into planning for vulnerable island communities.



Title : Reclaiming Freshwater for Coastal Agriculture: LoCOS Bangladesh's Farmer-Led Water Governance, Anti-Lease Advocacy, and Canal Restoration in Polder 30, Southwest Bangladesh

Author: **Deb Prasad Sarker**, *LoCOS*

Co-author: **Mr Md. Moufarsher Alam**

Agriculture in Bangladesh's southwest coastal Sundarbans region depends on an interconnected system of people, land, water, and seed. Over time, this system has been destabilized by salinity intrusion, siltation within polder rivers and canals, and governance decisions that restrict farmers' access to freshwater. Although embankments and sluices initially improved cultivation after the construction of 92 polders, sedimentation later reduced drainage and freshwater availability. In parallel, administrative leasing of flowing rivers and canals for revenue, often treated as enclosed water bodies, further limited irrigation access and intensified conflict over common water resources.

Since 2010, LoCOS Bangladesh has supported organized farmer groups in Polder 30 (Batiaghata Upazila) to secure dry-season freshwater and protect customary access to canals and rivers. Farmers introduced low-cost, seasonal, community-managed water retention measures, including voluntary construction and removal of temporary earthen barriers at strategic sluices and canal gates. These actions expanded boro rice and watermelon cultivation across Gangarampur, Batiaghata Sadar, and Surkhali unions, increasing incomes and strengthening household resilience. LoCOS also supported farmer-led advocacy and legal action to end canal and river leasing that blocked irrigation; court rulings later declared multiple watercourses free from lease, restoring access for farmers and artisanal fishers. Continued engagement with public agencies contributed to a major three-vent sluice gate and canal excavation, boosting aman and boro production and expanding vegetable cultivation. This case shows that coastal agriculture can be revitalized through farmer-led collective action, practical water retention, rights-based governance, and sustained canal restoration.



Title : Salinity, Irrigation Scarcity, and Water Governance in Coastal Bangladesh

Author: **Dr Md Ahasan Habib**, *NGO Forum for Public Health*

Co-author: **Shreya Chakraborty**

Salinity intrusion and dry-season freshwater scarcity are increasingly constraining agricultural productivity and water security in southwest coastal Bangladesh. This study presents a baseline assessment of salinity, irrigation, and water governance across four coastal polders (22, 30, 31P, and 34/2P) in Khulna District, based on mixed-methods fieldwork conducted from May to August 2025. Household surveys, focus group discussions, key informant interviews, and field observations were used to examine biophysical conditions and institutional performance.

Results indicate that 54% of households experienced crop losses due to salinity intrusion, while 52% reported severe dry-season irrigation water scarcity. Canals remain the primary irrigation source for 54% of respondents; however, 70% reported that canal and sluice maintenance is self-financed, reflecting the absence of structured operation and maintenance systems. Governance gaps are substantial: none of the surveyed polders had formally appointed sluice gate operators, and 20% of Water Management Groups functioned irregularly. Exclusion is also evident, with 78% reporting male-dominated decision-making and 96% indicating limited participation of landless farmers. Despite these constraints, 98% expressed willingness to adopt AI-based salinity forecasting and irrigation advisories.

The findings show that governance weaknesses magnify biophysical salinity risks, underscoring the need for integrated approaches that combine infrastructure rehabilitation, institutional strengthening, inclusive decision-making, and forecast-driven advisory services.



Title : Integrated Coastal Erosion Vulnerability Assessment along the Western Coast of Bangladesh using GIS

Author: **Abu Naser Sajib**, *Jagannath University*

Co-author: **Md. Rabbi Hasan**

Bangladesh lies in one of the world's most hazard-prone coastal zones and, due to its low-lying deltaic setting, is frequently exposed to cyclones, storm surges, and erosion. Along the western coast, dynamic tidal-fluvial processes, ecological degradation, and dense settlements intensify erosion risk. While many studies assess western coastal vulnerability, most emphasize physical drivers and give limited attention to socio-economic conditions within a unified spatial framework. This study develops an integrated coastal vulnerability assessment using 17 spatial indicators (nine physical and eight socio-economic) derived through remote sensing and GIS analyses in Google Earth Engine and ArcMap. Indicator weights were assigned using the Analytic Hierarchy Process (AHP), and weighted overlay analysis was used to generate integrated vulnerability maps.

Results show that 18% of the study area is very highly vulnerable, concentrated in the low-lying deltaic zones of Barguna, Patuakhali, and Pirojpur, and parts of Barishal and Jhalokathi. Moderate vulnerability accounts for 32%, while low vulnerability covers 23%. Physical variables, particularly coastal proximity, soil texture, and shoreline change, explain 74% of overall vulnerability, whereas socio-economic factors account for 0.8%. The maps provide evidence-based guidance for erosion risk management and integrated coastal planning, prioritizing embankment reinforcement, ecosystem-based protection, land-use regulation, and community-focused adaptation to strengthen resilience and support risk-informed decision-making.



Title : Psychological Stress and Vulnerabilities of Women from Water Collection in Bangladesh

Author: **Tanbi Tanaya Sarker**, *C3ER, BRAC University*

Co-author: **Mohaimin-ul-Kabir**

Household water collection can substantially increase mental stress among women, especially in contexts of resource scarcity and gendered social expectations. Women's primary responsibility for securing and managing household water, combined with time loss and constrained daily activities, is linked to psychological distress, depressive symptoms, and reduced quality of life. In Bangladesh, water scarcity, salinity intrusion, flooding, and inadequate infrastructure intensify these burdens for women who collect water. Physical strain from carrying water, including fatigue, pain, and injury, compounds stress and can increase vulnerability to water-related illness. Extended collection time also reduces opportunities for income generation, education, and rest, heightening worry about family well-being and personal progress. Safety concerns and the pressure to meet household needs can lead to frustration and loss of dignity, further limiting women's participation in economic and agricultural activities.

Climate change is worsening these challenges by degrading water sources and damaging supply infrastructure. Seasonal variability, cyclones, floods, and rising temperatures lengthen collection times, increase workload, and amplify anxiety, particularly in coastal areas where salinity forces longer travel distances and male out-migration may reduce household support. Women's coping strategies remain limited, and mental health services are constrained by stigma and low availability. The evidence underscores the need for gender-responsive, community-led water and mental health interventions that reduce collection burdens and strengthen psychosocial support.



Title : Strengthening Adaptive Technical Knowledge of HHs through Integrated Rural Approach to Coastal

Author: **Dr Suman Kumar Malaker**, *Caritas Bangladesh*

Co-author: **Ms Snigdha Mou Ghose**

Strengthening household adaptive knowledge, appropriate technologies, and access to financial and in-kind support through integrated rural approaches is essential for addressing coastal water insecurity and climate change impacts in Bangladesh. Coastal communities face growing vulnerability from sea-level rise, frequent cyclones, tidal surges, erratic rainfall, salinity intrusion, and freshwater shortages. Key challenges include scarcity of safe drinking water; limited freshwater for irrigation; malnutrition and poor health linked to inadequate WASH and menstrual hygiene management; fuel shortages; livelihood insecurity; and unemployment.

This study/project aims to identify practical strategies to secure lives and livelihoods by improving the use and management of locally available natural resources and services through adaptive systems. A participatory methodology was applied, including review of the CC-Coastal evaluation report, focus group discussions, checklists, in-depth interviews using questionnaires, field visits, and Participatory Rural Appraisal (PRA) tools. The target groups were resource-poor and disadvantaged households, including landless and marginal farmers, agricultural and day labourers, women (including divorced women and widows), orphans, youth, and ethnic minorities. Local teachers, retired government staff, and community leaders were engaged as advisory actors to strengthen local resource mobilization and link communities to public services.

Given the expansion of salinity into surface and groundwater, the study emphasizes introducing salt-tolerant crops and water-saving technologies for drinking and irrigation. Strengthened adaptive capacity can reduce vulnerability in both the short and long term and should be integrated into development planning over the next 20–30 years.



Title : Strengthening Access to Knowledge for Water Security of the South-Coastal Communities in Bangladesh

Author: **Md Ashik Sarder**, *CCDB*

Bangladesh is highly vulnerable to climate change, and the south-west coastal region is facing a severe safe drinking water crisis driven by salinity intrusion and other human-induced pressures. Households in this region spend substantial time and money to obtain safe water, reducing work opportunities and income. Water security is central to achieving the Sustainable Development Goals (SDGs), and progress is unlikely without addressing climate risks in vulnerable communities.

To examine how access to data and knowledge management can strengthen water security, a mixed-methods study was conducted in Dhankhali Village of Munshiganj Union, Shyamnagar Upazila, Satkhira District (as part of an ongoing PhD project). Findings indicate that the local freshwater layer has recently degraded and water quality is increasingly at risk. Households rely on limited water technologies, particularly rainwater harvesting systems (RWHS) and pond sand filters (PSF), but community knowledge of climate change and water security remains inadequate. About 74% of respondents emphasized the need for sensitization initiatives to strengthen knowledge, and 81% reported that sufficient information is crucial for ensuring safe water access and addressing the crisis.

The study recommends strengthening knowledge management on climate change and water security, including clear guidance on responsible authorities and service pathways. CSOs, local CBOs, climate initiatives, and water service providers can play a key role in sustaining safe water access in coastal communities.



Title : The Coastal Wellbeing Initiative

Author: **Md Emon Shahriar**, *The Sundarbans Organization*

Coastal districts in Bangladesh, particularly Khulna and Satkhira, face severe climate risks, including saline intrusion, frequent cyclones, and tidal surges. These hazards undermine water security and public health, with disproportionate impacts on women and marginalized households. Many interventions emphasize awareness but do not consistently translate knowledge into sustained household action.

The Coastal Wellbeing Initiative (CWI) is a community-led, implementation-focused model designed to close this gap by integrating water security, health, and climate education through “Coastal Schools” (children) and “Climate Schools” (youth and adults). Key interventions include context-specific, low-cost water solutions (pond sand filters, rainwater harvesting, and solar-powered desalination); WASH and health demonstration projects to support adoption of hygienic latrines, safe drainage, and point-of-use filtration; and skills-based training in saline-resilient aquaculture and disaster-resilient livelihoods. Women and youth are trained as Community Wellbeing Facilitators to lead implementation and maintain accountability through structured engagement with local government institutions.

CWI applies Participatory Rural Appraisal (PRA) for vulnerability mapping, followed by household baseline surveys. Progress is monitored using digital tools that track water quality and sanitation indicators. Early results suggest reduced waterborne disease incidence, increased youth participation in local climate advocacy, and greater confidence among women in managing household water and hygiene. CWI supports SDG 6, SDG 3, and SDG 13 and offers a scalable framework for rights-based, community-driven water governance.



Title : Salinity Intrusion, Toxic Heavy Metal Contamination, and Microbial Pollution Assessment in Shallow Aquifer in St. Martins Island Area, Southeast Bangladesh

Author: **Prof. Ashraf Ali Seddique**, *Jatya Kabi Kazi Nazrul Islam University*

St. Martin's Island, a coral-bearing offshore island ($\sim 8 \text{ km}^2$) in Bangladesh, is rich in biodiversity and has $\sim 8,000$ residents, over 90% of whom depend on groundwater. The Miocene Bokabil Formation bedrock is covered with 5-10 m thick Holocene sandy layers that form the groundwater aquifers. These unconsolidated sands are exposed to the Bay of Bengal on all sides. Rapid urbanization and tourism influx (over 700,000 visitors annually), along with domestic, aquaculture, and agricultural demands, have led to overexploitation of these shallow aquifers. This study investigated the hydrodynamics of the freshwater-saline interface, geochemical characteristics of toxic heavy metals (Fe, Mn, Pb, Ni, As), and environmental impacts in the shallow groundwater of the island. In January 2023, twenty-four groundwater samples were collected from tubewells at 5-10 m depths. ICP-MS for metals, microbiological testing for fecal coliform bacteria (*E. coli*), and stable isotopes ($\delta^{18}\text{O}$ and $\delta^2\text{H}$) were used to analyze the samples. Results showed $\sim 80\%$ of tubewells contaminated with toxic metals. Fe and Ni concentrations ranged from 0.84 to 4.19 mg/L and 0.03 to 0.12 mg/L, respectively, all exceeding WHO (2004) limits of 0.33 mg/L (Fe) and 0.02 mg/L (Ni). Pb exceeded the WHO limit of 0.01 mg/L in 33% of samples, with concentrations up to 0.023 mg/L. These metals were found in low redox potential (E_h : -38.2 to -77.2 mV) and neutral to slightly alkaline pH (6.97-7.96) conditions that enhance metal mobilization. Seawater intrusion has influenced 70% of the wells, indicated by low molar ratios of $\text{HCO}_3^-/\text{Cl}^-$ (<1.0 - 10.0) and $\text{SO}_4^{2-}/\text{Cl}^-$ (<0.01 - 0.05) compared to marine standards (1.00 and 0.05), and high EC up to 16,940 $\mu\text{S}/\text{cm}$. Bivariate plots of $\text{HCO}_3^-/\text{Cl}^-$ against TDS (291-8,478 mg/L) revealed that 22% of the tubewells as saline, where $\text{HCO}_3^-/\text{Cl}^- \leq 1.0$ and TDS $> 1,000$ mg/L. Moreover, high $\delta^{18}\text{O}$ values ($>-4.7\%$) indicated that the presence of seawater influenced the shallow groundwater. Microbial contamination was also significant, as *E. coli* was detected in $\sim 60\%$ of the samples, thus creating public health risks associated with human activities. These results reveal critical challenges from salinity intrusion, toxic heavy metal contamination, and microbial pollution, exacerbated by urbanization and tourism. Sustainable groundwater management, including controlled extraction, artificial recharge, monitoring, community awareness, and infrastructure upgrades, is urgently needed to protect the water quality. This combined hydrogeochemical and microbiological method not only offers a valuable framework but also acts as a safeguard against similar coastal island aquifers that are prone to salinity and pollution.



Title : Climate Change, Water, and Adaptation: Bangladesh’s Challenge

Author: **Momotaz Khatun**, *Ashroy Foundation*

Co-author: **Ms Momtaz Khatun**

Water underpins agriculture, food security, health, economic activity, and ecosystem stability. Yet only a small fraction of Earth’s water is accessible freshwater in rivers and lakes, making societies highly sensitive to water stress. Climate change is intensifying this pressure, particularly in low-lying coastal regions.

Bangladesh is widely recognized as highly climate-vulnerable, with its coast exposed to cyclones, storm surges, flooding, and salinity intrusion that degrade drinking water sources and reduce agricultural productivity. These challenges threaten livelihoods and amplify health and safety burdens, especially for women and marginalized households. Strengthening water security is therefore central to advancing the Sustainable Development Goals.

Nature-based solutions can complement engineered infrastructure. “Blue carbon” ecosystems such as mangroves, seagrasses, and salt marshes store large amounts of carbon and provide coastal protection benefits, while supporting fisheries and biodiversity. Conserving and restoring these ecosystems, alongside community-led adaptation, improved water governance, and climate justice, can help Bangladesh reduce risk, protect freshwater resources, and demonstrate scalable pathways for resilient coastal development.



Title : Transforming Coastal Livelihoods and Landscapes through Climate-Resilient WASH Interventions in Bangladesh

Author: **Mezanur Rahman Mezan** , *World Vission Bangladesh*

Co-author: **Prolay Banerjee Prolay**

Coastal Bangladesh is among the world's most climate-vulnerable regions, facing overlapping hazards that threaten livelihoods, food security, landscapes, and water security. Salinity intrusion, driven by sea-level rise, reduced upstream freshwater flows linked to transboundary water management, and long-standing embankment-based irrigation and drainage practices, has progressively degraded soils and freshwater resources. As a result, traditional crop-based farming systems have weakened and freshwater scarcity has intensified. Salinity now affects an estimated 30–40% of arable land across 19 coastal districts, home to about 43.8 million people, contributing to declining agricultural productivity, limited access to safe drinking water, and increased reliance on saline-tolerant crops, shrimp aquaculture, and seasonal labor migration. These shifts are also reshaping coastal landscapes through wetland degradation, changing land use, and reduced socio-ecological resilience.

Against this backdrop, safe water access remains a critical constraint for health and livelihood stability. Use of saline or contaminated sources elevates health risks, particularly for children, adolescents, and women of reproductive age, while imposing additional time and financial burdens on households. This paper examines how climate-resilient Water, Sanitation, and Hygiene (WASH) interventions implemented by World Vision Bangladesh have strengthened adaptive capacity in salinity-affected communities. Drawing on programmatic evidence from multiple coastal districts, it assesses service models designed to bypass saline groundwater and withstand climate shocks, including river-based osmosis systems, pond sand filters, and household and community rainwater harvesting. Findings suggest these interventions improve year-round freshwater access, reduce health risks, and support livelihoods by lowering collection time and strengthening resilience to flooding and waterlogging. The paper argues for integrating WASH within broader climate adaptation and coastal zone management to advance equity and long-term sustainability.



Title : Climate Change as a Multiplier of Household Water Insecurity in Coastal Bangladesh

Author: **Anupom Halder**, (*C3ER*), *BRAC University*

Co-author: **Roufa Khanum**

Anupom Halder is working as a Water Resources Management Specialist at C3ER, BRAC University, focusing on climate-resilient infrastructure and water systems. Holding an MSc in Civil Engineering, he conducts qualitative and quantitative research on climate risk & vulnerability, water resources management, river morphology, urban drainage, and natural treatment of wastewater.

Abstract: Climate change is escalating water insecurity in coastal Bangladesh, where sea-level rise, salinity intrusion, cyclones, and increased seasonal variability undermine access to safe freshwater. While national policies emphasize drinking water, household water security beyond drinking, including water for cooking, hygiene, livestock, and homestead gardening, remains underexamined despite its importance for coastal livelihoods. This study assesses climate-related impacts on household water access in three climate-vulnerable coastal unions: Chila (Mongla), Ishwaripur (Shyamnagar), and Charduani (Patharghata), and proposes recommendations to strengthen multi-use water security.

Using a mixed-methods design, the study analyzes seasonal changes in water sources, perceived quality, access constraints, and use patterns for domestic needs, livestock, and gardening. Findings show severe, multidimensional water insecurity, with climate change amplifying existing vulnerabilities. Ponds are the primary year-round source for most uses, despite reported salinity, turbidity, odor, and iron concerns. Dry-season dependence on ponds increases, while rainwater harvesting systems (RWHS) are most important in the wet season, particularly for drinking and cooking. Only 36% of households reported access to fresh water in the dry season, rising slightly to 40% in the wet season. Water for livestock and gardening is poorer, with over 75% reporting muddy or saline water and freshwater availability below 30% even during the monsoon. Pond sand filters and RWHS can improve quality but are underused due to limited coverage, weak maintenance, and inadequate storage. Tube-wells are largely abandoned because of salinity and iron contamination. Physical access is also a constraint: 32% travel more than 500 meters in the dry season, and carrying costs disproportionately burden women, children, and older people. The study recommends integrating multi-use water needs into adaptation planning, expanding climate-resilient storage and distribution, strengthening community water-quality monitoring, and aligning national policies with household realities in salinity-prone zones.



Title : Impact of Climate Change on Coastal Communities in Bangladesh: A Field Report

Author: **Asad Uzzaman**, *Bangla Tribune*

This report highlights the devastating impact of climate change on the coastal people of Bangladesh. Through field observations and interviews, it explores how rising sea levels and increasing salinity are creating a severe drinking water crisis. The study emphasizes the struggle of marginalized communities for survival and the urgent need for sustainable water management policies to protect their future.



Title : Scaling Community-Led and Gender-Responsive WASH Systems for Coastal Resilience

Author: **S M Munjurul Hannan Khan**, *NACOM*

Co-author: **Mr Abir Mahmud**

Coastal Bangladesh faces escalating water security challenges driven by salinity intrusion, arsenic contamination, climate variability, and fragile WASH infrastructure. These stressors disproportionately affect women, children, and socioeconomically marginalized groups. This paper examines a community-driven, gender-responsive WASH service delivery model implemented by Nature Conservation Management (NACOM) under the USAID-funded ECO LIFE project in Cox's Bazar. The intervention combined climate-resilient water infrastructure, institutional strengthening, and women's empowerment.

Key outputs included installation of 48 deep tubewells, rehabilitation of 10 existing wells, and deployment of rainwater harvesting systems targeting women-headed and water-insecure households. Sanitation improvements were supported through 10 community-managed WASH blocks with gender-segregated facilities designed to enhance privacy, menstrual hygiene management, and personal security. Community Management Committees were established to oversee governance, operation and maintenance, and cost recovery. Behavior change communication and capacity-building activities reinforced sustained adoption and service quality.

Reported outcomes include reduced time burdens for water collection, improved safety, increased women's participation in local decision-making, and improved health-related indicators. The ECO LIFE model demonstrates strong potential for scale, sustainability, and alignment with SDG 5 (Gender Equality), SDG 6 (Clean Water and Sanitation), and SDG 13 (Climate Action), offering a practical framework for climate-resilient WASH programming in coastal and deltaic contexts.



Water Governance:

This thematic area will focus on integrated water resources management and basin/delta planning, institutional accountability, transparency and community water rights. It will address tariff and subsidy design that protects poorer households while promoting conservation, and explore public-private-community partnerships for water and WASH services in the coastal belt. The work of this track will connect to SDG 6.5 and 6.b, as well as SDG 10, 16 and 17.



Title : Water: Women’s Vulnerability and Climate Change Impacts

Author: **Shoma Datta**, *Manusher Jonno Foundation*

Climate change is intensifying water insecurity in Bangladesh and disproportionately affecting women and girls due to social norms and structural inequalities. Sea-level rise, cyclones, storm surges, saline intrusion, erratic rainfall, and flooding are degrading surface and groundwater sources, making safe freshwater increasingly scarce. These risks intersect with entrenched gender roles, as women are primarily responsible for household water collection and management.

This study, *Water: Women’s Vulnerability and Climate Change Impact*, examines gendered responsibilities for fetching water, water-related health risks, links between water scarcity, unpaid care work, and gender-based violence (GBV), and policy and institutional gaps, with a focus on coastal districts where salinity and disaster exposure are most acute. Using mixed methods and community-level data, the research documents how water insecurity shapes women’s daily lives and well-being.

Findings show that women and adolescent girls collect water under physically demanding, time-consuming, and often unsafe conditions. Reduced freshwater availability contributes to increased unpaid care burdens, disrupted education and livelihoods, heightened exposure to harassment and domestic violence, and adverse menstrual and reproductive health outcomes. Although awareness of contamination is relatively high, household-level water treatment remains limited.

The study identifies gaps in national water and climate policies, including insufficient recognition of women’s vulnerabilities and GBV risks. It calls for gender-responsive water governance, women’s leadership in water management, and locally tailored adaptation strategies that integrate GBV prevention, health services, and economic empowerment.



Title : Policy Gaps in Water Governance and Coastal Water Safety in Bangladesh

Author: **Shakil Ahmed**, *LEDARS*

Bangladesh, with its extensive coastal zone and high climate vulnerability, faces escalating challenges in safe water access. Despite national frameworks such as the National Water Policy (1999), Coastal Zone Policy (2005), Bangladesh Delta Plan 2100, the National Adaptation Plan, and disaster management strategies, coastal communities continue to experience water insecurity due to salinity intrusion, flooding, and climate-driven extreme events. This study critically reviews water governance policies to identify gaps that impede effective management and equitable access to safe water in coastal areas.

The study uses a structured policy analysis of official documents, strategic plans, and legal frameworks related to water governance, climate adaptation, and disaster risk management. Consultations with key stakeholders, including government agencies, local authorities, and community representatives, were undertaken to assess implementation realities. A comparative review was conducted to identify inconsistencies, sectoral overlaps, and gaps in climate integration, institutional coordination, and local inclusion.

Findings indicate four major weaknesses: limited integration of climate projections into operational planning and infrastructure design; institutional fragmentation across ministries and agencies that reduces coordination and increases contamination risks; inadequate prioritization of vulnerable groups (including small-scale farmers, fishers, and women) and underuse of community-led adaptation; and insufficient regulatory and budgetary attention to water quality threats such as salinity and arsenic contamination.

The study offers actionable recommendations to align climate and water policies, strengthen inter-agency coordination, enhance local participation, and advance equitable access to safe water, thereby improving coastal resilience, public health, and livelihoods.



Title : Sustainable Development Goal 6: Budget Tracking

Author: **Mohammad Zobair Hasan**, *DORP*

Budget tracking is an approach that monitors how public funds are allocated and spent to improve Water, Sanitation and Hygiene (WASH) services and strengthen climate resilience. By comparing planned budgets with actual expenditures, it helps stakeholders understand on-the-ground realities, identify gaps, and improve implementation.

This initiative promotes transparency and accountability in WASH financing, supports evidence-based planning, and encourages efficient use of resources. Budget tracking also strengthens community participation in decision-making by making budget information more accessible and understandable. In addition, it provides a credible basis for advocacy to ensure fair and needs-based allocations, particularly for underserved and climate-vulnerable communities.



Title : Digital Twin Assessment of Encroachment-Induced Flood Risk in Chattogram

Author: **Authoy Biswas Bidda**, *Islamic University*

Rapid urbanization in Chattogram City Corporation (CCC) has accelerated encroachment on natural water bodies, undermining the city's hydrological resilience. Although many studies use static Geographic Information Systems (GIS) to map land-use change, limited research integrates multi-decadal Land Use/Land Cover (LULC) transitions within a dynamic Digital Twin framework to quantify how water body loss alters localized flood behavior. This study addresses that gap by developing a high-fidelity Digital Twin in ArcGIS to analyze the spatiotemporal dynamics of encroachment and flood vulnerability from 2005 to 2025. Multi-temporal satellite imagery was used to classify LULC and provide the spatial basis for Digital Twin simulations.

Results show a pronounced decline in natural drainage and retention areas, reflected in a rapid "blue-to-grey" transition in which built-up land has replaced wetlands and other critical water bodies. Simulations indicate that these changes have increased peak surface runoff and raised average flood depths in low-lying urban neighborhoods. The model also identifies encroachment hotspots where obstruction of natural drainage corridors has prolonged inundation compared with earlier conditions.

By linking historical spatial datasets with predictive simulation, the Digital Twin provides a practical decision-support platform for urban planning. The findings offer evidence to guide targeted restoration, drainage protection, and land-use regulation to strengthen long-term flood resilience in this coastal metropolis.



Title : Climate Change and Urban Water Management in Bangladesh: Legal Challenges and Policy Solutions for Major Cities

Author: **Naymul Hossen**, *Chittagong Independent University*

Climate change is intensifying urban water insecurity in Bangladesh through interacting hazards, including extreme rainfall and flooding, drought and heatwaves, storm surges, and salinity intrusion. These pressures are expected to worsen by 2050 and, combined with rising climate-induced displacement, will increase demand for safe water services in large cities. This study analyzes the legal, policy, and institutional constraints that limit effective urban water management in Bangladesh.

The paper identifies key climate and hydrological stressors for major cities: (i) pluvial flooding from intense rainfall, (ii) prolonged drought and heat that raise municipal and industrial water demand, (iii) sea-level rise and coastal salinity intrusion that threaten freshwater intakes, treatment facilities, and critical infrastructure, and (iv) rising temperatures that affect groundwater availability and alter river flows that support urban supply. It also reviews the suitability of four primary urban water sources, rivers, surface water bodies, groundwater, and rainwater, within existing environmental and legal frameworks.

The analysis finds that Bangladesh's urban water laws and institutions remain fragmented, as reflected in the Bangladesh Water Act 2013, WASA Act 1996, and Environment Conservation Act 1995. The study recommends integrated urban water management, climate-adaptive legal reforms, strengthened local government and service-provider capacity, and equity-focused governance. It concludes that aligning urban water policy with SDG 6 and SDG 11 is essential for resilient and inclusive cities.



Title : Water Supply Gaps in Pirojpur Pourashava: Challenges, Opportunities & Sustainable Use of Surface Water

Author: **Md. Muniad Jaman Akanda**, *DPHE*

Co-author: **Md. Koushik Ahamed**

Urban water-supply sustainability is an increasing challenge in Bangladesh due to population growth, climate variability, and degradation of traditional water sources. While most municipalities rely on groundwater, Pirojpur Pourashava is a distinct case where limited exploitable groundwater has required exclusive dependence on surface water from the Kacha River. This study assesses Pirojpur's water-supply system to identify supply gaps, evaluate surface water quality and availability, and explore options for sustainable surface water use under current and future conditions.

A mixed-methods approach was applied, combining population projection, water-demand estimation, infrastructure assessment, surface water quality review, and financial and operational analysis. Population was projected using the geometric growth method, including resident and floating populations. Demand was estimated using a design standard of 170 liters per capita per day, including non-domestic uses. Surface water quality was assessed using secondary laboratory data on physical, chemical, and microbiological parameters, including oil contamination associated with river transport. System performance was evaluated through infrastructure surveys and network modeling.

Results show major constraints, including seasonal river-flow variability, high turbidity, microbial contamination, oil pollution, and non-revenue water losses of about 23%. However, the existing treatment plant generally meets national drinking water standards for most parameters. Demand is projected to rise substantially by 2051, requiring expanded treatment capacity, distribution network rehabilitation, and loss reduction. Improved metering, service coverage, and operational efficiency are also necessary to strengthen financial viability. The study concludes that surface water can be a resilient municipal source in groundwater-constrained areas if supported by pollution control, adequate treatment, infrastructure upgrades, and integrated planning.



Title : Climate Justice, Power, and River Governance: Insights from Marginalized Fishing Communities in the

Author: **Habiba Mehjabin Topa**, *Jagannath University*

Co-author: **Dr Md. Abdul Malak**

Fishing communities along the Brahmaputra–Jamuna Basin contribute little to global emissions yet face disproportionate climate impacts. Many households have already lost homes and land to river erosion, and declining fish availability in the Jamuna is further intensifying livelihood insecurity.

This study uses a mixed-methods design to examine how gender, caste, and economic status shape access to fishing rights, government support, and participation in river governance. It also documents how fishers draw on traditional knowledge and coping practices to respond to environmental and livelihood change. Findings show that nearby beels are becoming less productive, increasing dependence on the river. Fish availability is perceived to be declining due to climate variability, population pressure, overfishing, and the widespread use of illegal nets. Although fishers possess strong ecological knowledge that guides fishing decisions, they are rarely included in river management processes. Women are largely excluded from fishing-related work and formal recognition because of restrictive social norms. Many fishers also face exploitation by local elites who depress fish prices or obstruct access to fishing opportunities. Insecurity on the river, including theft and violence leading to loss of boats, engines, and nets, further undermines livelihoods.

As catches decline, households increasingly pursue alternative livelihoods or migrate. The study argues that climate justice in the Brahmaputra–Jamuna Basin requires inclusive river governance that values fisher knowledge, reduces power asymmetries, and ensures meaningful participation of marginalized fishing communities.



Title : Integrated Water Resources Management and Climate-Resilient Public Service Provision in Bangladesh

Author: **Md Zarif Oeishik**, *WaterAid Bangladesh*

Co-author: **Md. Sydur Rahman**

Bangladesh's coastal belt faces severe climate risks; however, drought-prone regions experience distinct challenges driven by rising temperatures and erratic rainfall. This study assesses the status of Integrated Water Resources Management (IWRM) infrastructure, water availability, sectoral water demand, and policy effectiveness in Naogaon and Satkhira, two climatically contrasting districts. A baseline assessment was conducted using field surveys, household interviews, focus group discussions, key informant interviews, GPS-based infrastructure mapping, and hydrological modeling.

Findings reveal substantial regional heterogeneity in the functionality of water control structures and the severity of water stress across the two districts. Sectoral demand analysis indicates that domestic water needs will increase through 2050, while agriculture remains the dominant consumer; fisheries demand is also significant, particularly in coastal Satkhira. Water availability was estimated using a water-balance approach supported by calibrated SWAT simulations and climate scenarios for 2030 and 2050. Policy review shows partial alignment between local practices and national frameworks, but also identifies institutional constraints and structural gaps that limit effective implementation.

Based on the gap analysis, the study recommends climate-resilient actions, including restoration of water control structures, sediment removal, improved irrigation efficiency, expansion of surface water storage, and stronger institutional coordination. Overall, the results underscore the need for integrated, climate-responsive, and equitable water services to strengthen long-term water security in both drought-prone and coastal contexts.



Title : Selection of Suitable Drinking Water Technologies for Salinity-Prone Coastal Bangladesh: A Comparative Analysis

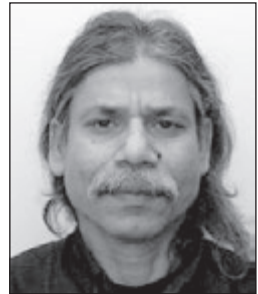
Author: **Md. Koushik Ahamed**, *Concern Worldwide*

Co-author: **Md. Muniad Jaman Akanda**

Salinity intrusion threatens safe drinking water supply in southern coastal Bangladesh, particularly in Khulna and Barishal Divisions, where climate change, sea-level rise, reduced upstream freshwater flows, and excessive groundwater abstraction have intensified salinization of surface and groundwater sources. Because hydro-climatic and socio-economic conditions vary widely, no single technology is suitable in all contexts.

This study provides a comparative analysis of drinking water technologies relevant to salinity-prone coastal Bangladesh, including conventional surface water treatment; thermal desalination (multi-stage flash, multi-effect distillation, vapor compression); membrane-based processes (reverse osmosis, nanofiltration, forward osmosis, electrodialysis/electrodialysis reversal); nature-based and hybrid options (managed aquifer recharge, bank filtration, solar distillation); rainwater-based systems (rooftop harvesting, community reservoirs); blending and source-management strategies; and emerging approaches (membrane distillation, capacitive deionization). Technologies were assessed using a Comparative Suitability Matrix (CSM) covering treatment effectiveness, energy requirements, capital and operating costs, operational complexity, environmental impacts, climate resilience, scalability, and socio-institutional feasibility. Criterion weights were assigned using expert judgment, literature, and field experience.

Results suggest that reverse osmosis and thermal desalination are effective for high salinity but are constrained by energy demand, cost, and brine disposal. Nanofiltration, electrodialysis, and forward osmosis can support moderate-scale applications. Nature-based and rainwater systems are low-cost and climate-resilient but limited by seasonality, storage, and site conditions. Blending, seasonal source switching, and hybrid systems emerge as the most robust strategies. The CSM provides a practical decision-support tool to guide context-specific, financially viable, and climate-resilient technology selection.



Title : Water struggles: Water ethnography of a coastal village in southwestern Bangladesh

Author: **Shahid Mallick**, *University of Eastern Finland (UEF)*

People's perceptions of water and responses to water-related problems are not uniform; they vary across social and cultural groups and local contexts. In Bangladesh's coastal zone, water challenges are particularly acute due to cyclones, storm surges, salinity intrusion, and the influence of embankments and sluice gates on freshwater flows. Globally, about 40% of the population lives in coastal areas, where freshwater constraints are often more severe than in inland regions. At the same time, water demand is increasing while usable freshwater supplies are finite and, in many places, declining. Water needs are therefore context-specific and shaped by livelihoods, social norms, and local institutions. Coastal water insecurity is further intensified by climate change and by local and national development plans, policies, and political dynamics that affect water access and governance. Within this setting, rainwater harvesting and conservation remain among the oldest and most widely used adaptation practices in coastal Bangladesh. These practices typically take two forms: household-level systems and community-based rainwater collection and storage.



Title : Water Accounting and Its Role in Coastal Water Governance: A Conceptual Framework

Author: **S M Manjurul Islam Sajid**, *Chandpur Science and Technology University*

Co-author: **Md. Rafiqul Islam, Md. Naimur Rahman Neamul, Md. Ibrahim Kholil**

Climate change is increasing the exposure of Bangladesh's coastal areas to salinity intrusion, tidal flooding, river erosion, and cyclones. Achieving the water-related Sustainable Development Goals (SDGs) and sustaining coastal livelihoods therefore requires more effective water resources management. This study proposes a conceptual framework to strengthen coastal water governance by improving transparency, accountability, and adaptive decision-making through the application of Water Accounting. By systematically tracking water use and distribution, water accounting offers a structured method to capture both the physical and economic dimensions of water resources.

The proposed framework includes measuring water flows, reporting costs, engaging stakeholders, recognizing environmental impacts, and aligning policies and institutional responsibilities. It illustrates how water accounting can support evidence-based decisions in climate-stressed coastal settings by integrating principles from accounting, environmental management, and water governance. Although empirical testing is beyond the scope of this paper, the framework provides practical guidance for implementation in climate-vulnerable coastal areas of Bangladesh.

Expected outcomes include more equitable and efficient water allocation, stronger financial and environmental accountability, and improved institutional capacity to respond to climate-related threats. Overall, the study demonstrates how accounting perspectives can enrich multidisciplinary approaches to coastal water governance under increasing climate risk.



Title : From Policy to Practice: Mapping Climate Finance Governance and Accountability for Resilient WASH

Author: **Zakia Naznin**, *WaterAid Bangladesh*

Co-author: **Partha Hefaz Shaikh**

Bangladesh faces extreme climate vulnerability, where salinity intrusion, floods, and cyclones increasingly threaten water, sanitation, and hygiene (WASH) security. Despite strong national frameworks, including the Delta Plan 2100 and the Climate Fiscal Framework (CFF), a governance gap persists that prevents climate finance from translating into equitable service delivery. This paper presents findings from WaterAid Bangladesh’s study, *Mapping Climate Finance Flows for WASH in Bangladesh: Architecture, Gaps, and Opportunities*. It maps the national climate finance architecture, identifies systemic bottlenecks, and examines how digital transparency tools can strengthen accountability from policy to local delivery.

The study used a mixed-methods approach, triangulating detailed financial analysis with qualitative field insights. Methods included a component-based review of UNFCCC mechanisms to identify WASH-specific allocations; analysis of ERD-managed external resources (loans versus grants); and longitudinal review of domestic budget codes using Climate Relevance Criteria (CRC) in the iBAS++ system. Findings were validated in three climate hotspots: Dhaka’s informal settlements, the drought-prone Barind Tract, and saline-exposed Shyamnagar.

Results show a “top-heavy” finance architecture in which core WASH agencies lack direct access to major climate funds. Although the Green Climate Fund is the largest source, WASH accounts for only about 6.4% of its portfolio. National execution is dominated by loans (78.4% of ERD-managed WASH finance), favoring large infrastructure over “soft” adaptation needs such as hygiene and gender inclusion. Domestic allocations also show a strong urban bias. The paper introduces the Green Accountability Monitor, a digital platform that disaggregates WASH allocations and supports corrective action. It proposes a “Green Accountability” framework, including a national WASH–climate coordination platform, integration of the Monitor into iBAS++, and mandatory equity indicators to ensure funds reach the most vulnerable



Title : Policy Gaps and Opportunities in Bangladesh’s Water Governance for Enhancing the Blue Economy

Author: **MD Harun or Rashid**, *Universiti Sains Malaysia*

Bangladesh’s coastal and marine regions are central to the national blue economy, supporting fisheries, aquaculture, shipping, ports, and emerging renewable energy. While these sectors offer strong growth potential, weak water governance and policy gaps limit the sustainable and equitable use of coastal and marine resources. Addressing these constraints is essential to improve economic productivity, protect ecosystems, and strengthen social equity.

This abstract reviews the current water governance landscape affecting Bangladesh’s blue economy and identifies key institutional and policy challenges. Overlapping mandates across agencies, fragmented regulatory frameworks, and limited coordination between national and local authorities hinder effective resource management. In addition, insufficient integration of climate adaptation, stakeholder participation, and ecosystem-based management reduces the resilience of coastal and marine systems.

The study highlights opportunities for reform through analysis of national policies and sectoral initiatives. Priority strategies include clarifying and harmonizing institutional roles, strengthening integrated water resources management, and embedding climate risk assessments into planning and investment decisions. Participatory governance models that engage local communities, women-led organizations, and youth groups are emphasized to improve accountability and equitable resource allocation. Aligning national policies with global commitments, including the Sustainable Development Goals (notably SDG 14 on life below water), can further enhance policy coherence and cooperation.

Overall, strengthening institutional capacity, transparency, and multi-stakeholder collaboration can unlock the full potential of Bangladesh’s blue economy while safeguarding marine ecosystems and sustaining coastal livelihoods.



Title : Private-Sector-Led Financing of Climate-Resilient SMART Solar Water Networks

Author: **Md Ashraful Alom**, International Development Enterprise-iDE Bangladesh

Co-author: **Md Ariful Islam**

National water policies increasingly encourage private-sector engagement and user financing to improve the sustainability of water services. However, rural water supply in many developing countries remains dominated by public provision and short-term donor-funded schemes that are highly vulnerable to climate shocks. Intensifying cyclones, tidal flooding, salinity intrusion, and longer dry seasons are disrupting conventional systems, underscoring the need for climate-resilient and financially viable service models. This paper examines how structured public-private partnerships (PPPs) can deliver climate-resilient drinking water while safeguarding affordability and equity.

The study draws on a private-sector-led SMART piped-water network in East Khalishakhali, Patuakhali Sadar, a highly climate-exposed coastal area. Baseline assessment using WHO/UNICEF JMP indicators found that only 3% of households had safely managed drinking water, and only 32% had year-round availability due to seasonal salinity, cyclone damage, and dry-season source failure. Shallow sources and community tubewells were frequently disrupted by flooding and power outages.

Under a shared-financing PPP model (51% private sector, 49% development partner), a solar-powered piped-water system was designed for 250 households. Deep borehole abstraction was selected to reduce exposure to salinity intrusion and surface contamination, while solar pumping improves continuity during grid failures. Flood-protected infrastructure, elevated storage, and HDPE pipelines further enhance reliability.

The system integrates sensors, pilot smart meters, digital payments, and a Water Safety Plan with routine and seasonal water-quality monitoring. Financial analysis suggests a capital investment of BDT 3.0 million (USD 24.6k) can reach breakeven in about three years. Tiered tariffs, targeted subsidies, and community oversight support affordability. The paper concludes that solar-powered, borehole-based piped-water PPPs offer a scalable pathway for equitable, climate-resilient rural water services in coastal Bangladesh.



Title : Quantifying Impacts of Transboundary Water Withdrawal: A Case Study of Ganges Basin

Author: **Sakib Mhamud Apu**, *Jagannath University*

Co-author: **Dr Mohammad Abdul Quader, Jinat Mohashin, Mohammad Sulayman**

The Ganges River is a lifeline for agriculture, ecosystems, and livelihoods in India and Bangladesh. However, downstream regions of Bangladesh have experienced serious climatic, agricultural, and environmental impacts following upstream water regulation, including the Farakka Barrage (commissioned in 1975) and other dams. Quantifying these downstream consequences is critical for sustainable river-basin management. This study uses multi-temporal Landsat imagery to assess downstream impacts from 1975 to 2024 using Land Use/Land Cover (LULC) classification and the Normalized Difference Vegetation Index (NDVI), validated with discharge data from the Hardinge Bridge station.

Results indicate contrasting trends: cropland expansion in upstream India coincides with declining watershed and surface-water extent, while southwestern Bangladesh (especially Khulna and Satkhira) shows reduced cropland, a sharp increase in barren land by about 500% (from 477 km² to 2,455 km²), and a decline in surface water (from 4.93% to 2.71%) over the study period. NDVI trends suggest deteriorating vegetation health in southern Bangladesh, consistent with reduced dry-season flows. Hydrological records show a 43% reduction in dry-season discharge and a 65% decrease in minimum flow, contributing to erosion, sedimentation, salinization, wetland loss, and agricultural and forest degradation in the Ganges Delta.

The findings underscore the need for equitable, climate-informed transboundary water governance, strengthened bilateral coordination, and real-time hydrological monitoring supported by geospatial tools to reduce downstream losses and guide policy action.



Title : Addressing Climate-Induced Displacement in the Coastal Area of Bangladesh: Legal and Governance Challenges

Author: **Md. Harisur Rohoman**, *University of Asia Pacific*

Co-author: **Md. Mahadi Hasan**

Climate-induced displacement is increasingly common in coastal Bangladesh, where environmental stressors undermine access to safe and sustainable water. Sea-level rise, salinization of soil and groundwater, river erosion, and flash floods are intensifying freshwater scarcity, making some coastal areas progressively less habitable. In many cases, relocation occurs not as an immediate response to a single disaster, but as a gradual decision shaped by deteriorating water security.

This paper examines climate-induced displacement in coastal Bangladesh with a focus on legal and administrative barriers in water resource management. While displacement is often framed as a humanitarian issue, the study argues that weak water governance, inadequate operation and maintenance, and fragmented institutional responsibilities can be significant drivers of water insecurity and, in turn, migration. Using a doctrinal research methodology, the paper critically reviews national water management frameworks, including relevant laws, regulations, and policies. The analysis identifies persistent gaps in implementation, inter-agency coordination, and climate responsiveness that limit the effectiveness of existing frameworks in addressing salinity, flooding, and long-term scarcity.

The paper concludes that water insecurity is not only an environmental challenge but also a legal and governance problem with direct implications for displacement. It calls for a coordinated, climate-informed, and enforceable water governance system to strengthen coastal water security and reduce displacement pressures.



Title : Politics of Access and Tenure in the Sundarbans: A Political Ecology Perspective

Author: **Tahura Farbin**, *Center for Sustainable Development, ULAB*

Co-author: **Md Sakhawat Hossain Saikat**

This study examines how conservation governance and livelihood vulnerability intersect in the Sundarbans Mangrove Forest of Bangladesh through a political ecology lens. Based on qualitative research in two forest-fringe villages, the analysis shows that seasonal bans, permit regimes, and enforcement practices often intensify livelihood insecurity and reproduce power asymmetries. These pressures are compounded by climate disruptions, salinity intrusion, and elite capture, generating vulnerability across household, community, and institutional scales.

In response, communities employ diverse adaptive strategies, including shifting from shrimp farming back to rice cultivation, expanding seasonal vegetable production, and pursuing seasonal labour migration. These strategies reflect both practical livelihood adjustments and quiet forms of resistance to restrictive access and unequal regulation. Uneven state presence and the expansion of protected areas further create differentiated politics of access, shaping who can enter the forest, under what conditions, and at what cost.

The study argues that existing co-management arrangements remain largely top-down and conservation-centric, with limited responsiveness to local livelihood realities. Drawing comparative insights from South and Southeast Asia, it proposes recommendations to support more equitable access, strengthen accountability, and improve ecological outcomes through participatory, justice-oriented governance in the Sundarbans.



Title : From Waterlogging to Resilience: Reframing Urban Water Governance through NbS in Satkhira

Author: **Nishat Tasnim**, *Practical Action in Bangladesh*

Co-author: **Tamanna Rahman**

In coastal Bangladesh, intensifying climate risks in vulnerable urban areas manifest through chronic waterlogging, salinity intrusion, cyclones, and erratic rainfall, undermining water governance, urban services, ecosystems, and livelihoods. Although adaptation initiatives increasingly recognize Nature-based Solutions (NbS) as effective pathways to resilience, their integration into urban water governance remains limited. This study examines how NbS can strengthen urban water governance and climate resilience in Satkhira Municipality, a coastal town in southwest Bangladesh that experiences prolonged waterlogging. Practical Action in Bangladesh conducted the study during 2024–2025 to understand the drivers, impacts, and governance dimensions of waterlogging and to identify locally appropriate NbS options.

A mixed-methods approach combined literature review, stakeholder consultations, transect walks, meteorological analysis, GIS and remote sensing, and community resilience assessment using the Climate Resilience Measurement for Communities (CRMC) tool. Results show that about 33% of the municipality is low-lying marshy land; 30% is built-up; 21% has green cover; and 16% consists of water bodies, largely used for aquaculture. Approximately 66% of the municipality remains inundated for 6–8 months each year, including some higher-elevation areas, highlighting governance and infrastructure failures beyond topography alone. Key challenges include inadequate drainage maintenance, encroachment and siltation of rivers and canals, unplanned land-use change driven by aquaculture expansion, weak solid waste and fecal sludge management, and limited inter-agency coordination. These conditions increase waterborne disease risk, reduce productivity, degrade ecosystems, and weaken livelihoods.

The study prioritizes three NbS interventions: restoring natural drainage channels, rehabilitating riparian vegetation, and creating green spaces along waterways. It proposes integrating NbS through locally led adaptation, a NbS community of interest, alignment with the NAP and NDCs, and mobilization of climate and development finance.



Title : Water Governance Failures and Safe Water Insecurity in Southwest Coastal Bangladesh: Evidence and Policy Signals from National and Local Media Analysis

Author: **Abu Hana Mostafa Jamal**, *Coastal Voice of Bangladesh*

Co-author: **Koushik Dey**

Safe drinking water insecurity has remained a persistent development challenge in Bangladesh's coastal belt, particularly in Khulna, Satkhira, and Bagerhat. Weak water resources management, intensifying climate impacts, salinity intrusion, and fragmented interventions have deepened the crisis. Drawing on narratives from national and local newspapers and investigative journalism, this abstract synthesizes how media evidence documents systemic governance deficits affecting drinking water service delivery and the sustainability of coastal agriculture.

Media reporting highlights recurring implementation failures, including poor maintenance of embankments and sluice gates, poorly designed or ineffective potable water projects, fund misuse, and non-transparent beneficiary selection for rainwater harvesting and water treatment initiatives. Unclear mandates across government agencies, local authorities, NGOs, and the private sector weaken coordination and accountability, creating operational gaps and community disputes over shared infrastructure.

Reports also note limitations in widely promoted technologies, including tubewells, pond sand filters (PSFs), desalination plants, and rainwater harvesting, due to high costs, technical constraints in saline settings, limited community participation, and weak operation and maintenance. Consequences include heightened health risks, with women and children disproportionately affected, and reported associations between saline water use and hypertension, kidney disease, skin conditions, and pregnancy complications. Time-intensive water collection and psychosocial stress further erode well-being, while soil salinity and freshwater scarcity reduce agricultural productivity and threaten livelihoods.

Media sources also propose solutions, including integrated water resources management, stronger institutional coordination, transparent monitoring, expanded rainwater and surface water treatment, and community-based management. This analysis argues that systematically using media-generated evidence can support more accountable, inclusive, and context-responsive water governance in Bangladesh's southwest coast.



Water Ecosystems and SDG:

Here, the emphasis will be on ecosystem health metrics, biodiversity and sustainable livelihoods. The track will consider how infrastructure development, blue economy initiatives and industrialization can be designed and regulated so that they do not undermine water ecosystems. It will promote policy coherence across SDG targets related to water, climate, oceans and terrestrial ecosystems, and discuss tools and safeguards for environmental and social protection in coastal investments.



Title : Counterfactual analysis of managing saline-free drinking water on Household

Author: **Tasnim Murad Mamun**, *Khulna University*

Co-author: **Fahmida Akter Oni**

Salinity intrusion is a critical environmental and socioeconomic challenge in southwestern coastal Bangladesh, with major implications for household welfare, health, and poverty dynamics. Beyond its biophysical effects, drinking water salinity can deepen multidimensional poverty by constraining health, livelihoods, and mobility choices among vulnerable households. This study uses a counterfactual approach to examine how access to saline-free drinking water affects multidimensional poverty, health expenditures, and migration risk in salinity-prone coastal areas.

Primary household data were collected from 12 randomly selected villages representing two salinity exposure groups. Using population lists from village representatives, 54 households were systematically sampled per village, yielding 648 households. Multidimensional poverty was measured using the Multidimensional Poverty Index (MPI), capturing deprivations in health, education, and living standards. Associations between drinking water salinity and MPI were first estimated using Ordinary Least Squares (OLS), controlling for household, environmental, and socioeconomic factors. Propensity Score Matching (PSM) was then applied to estimate the causal effect of salinity exposure by comparing exposed households with similar non-exposed households. For salinity-affected households, additional OLS models assessed how coping strategies, such as purchasing drinking water, influence health expenditures and migration risk.

Results indicate that drinking water salinity significantly increases multidimensional poverty: MPI scores among exposed households are 5–6% higher than among comparable non-exposed households. Salinity exposure also raises health expenditures due to greater incidence of waterborne and salinity-related illnesses. Costly coping strategies, particularly buying potable water, further increase financial stress and migration pressure, especially under recurrent disasters and limited access to affordable credit.

The findings show that drinking water salinity is a key driver of poverty and vulnerability. Policy priorities include sustainable freshwater options (rainwater harvesting and small-scale desalination), stronger rural health services, and livelihood diversification, implemented through coordinated water, health, and livelihood programming.



Title : Protection of coastal ecosystem using integrated river basin management: Impacts of a river system

Author: **Nusreek Rahman**, *Bangladesh University of Professionals*

Bangladesh's coastal ecosystems are increasingly degraded by local pressures, upstream morphodynamical changes, and climate change. Sea-level rise and associated hazards further amplify these impacts. In large transboundary river systems such as the Jamuna, climate-driven shifts in discharge and sediment transport alter channel morphology and sediment redistribution, reshaping downstream deltaic and coastal environments and weakening ecosystem services. Yet river-basin dynamics remain insufficiently integrated into coastal water governance.

This study examines the hydro-morphological behavior of the braided Jamuna River and explores implications for coastal ecosystem stability and water security under a changing climate. Using GIS-processed satellite imagery, hydrological records from Bangladesh Water Development Board (BWDB) annual reports, and geospatial analysis, the research assesses long-term variation in river planform characteristics, including channel division, bar formation, and island development, in relation to peak-discharge variability. These indicators are used as proxies for sediment redistribution processes that influence delta formation, coastal erosion patterns, and habitat stability.

Findings demonstrate a clear association between hydrological extremes and morphological instability, with downstream consequences for coastal ecosystems. The study supports policy-relevant evidence for more integrated, climate-responsive water governance aligned with SDG 6 (Clean Water and Sanitation), SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land). By linking hydrological science and geomorphological analysis, it offers a basis for strengthening coastal ecosystem resilience under increasing hydrological uncertainty.



Title : River-based adaptation practices and nature-based solutions (NbS) observed along major river systems across the country

Author: **Amir Hamza**, *Mekateam*

Rivers are central to Bangladesh's water ecosystems, livelihoods, and climate resilience. This study documents river-based adaptation practices and nature-based solutions (NbS) along major river systems across the country, drawing on extensive field travel from southern to northern Bangladesh and engagement with communities living along 15 rivers. The research captures locally developed strategies used by fisherfolk and other river-dependent groups to respond to climate change, environmental degradation, and livelihood stress.

A qualitative design was applied to explore community perspectives and lived experience. Data were collected through monthly focus group discussions with fisherfolk and riverbank residents, complemented by in-depth interviews with key informants, including experienced fishers, community elders, and local leaders. Secondary evidence was incorporated through a systematic review of relevant literature, policy documents, and reports on river ecosystems, climate adaptation, and NbS in Bangladesh.

Findings reveal diverse NbS practices, including sustainable fishing techniques that reduce pressure on stocks, seasonal adjustments aligned with river flows and breeding cycles, and use of natural materials for boat-making and riverbank protection. Communities also apply ecosystem-based measures such as conserving aquatic vegetation, protecting fish breeding zones, and maintaining floodplain connectivity to support biodiversity. Additional adaptive responses include livelihood diversification during lean seasons and community-led monitoring of river health. However, the study also notes harmful trends, including destructive fishing, unregulated sand mining, pollution, and infrastructure that disrupts river flows.

The study concludes that community-led NbS should be recognized and integrated into river governance and adaptation planning to strengthen sustainable water ecosystem management in Bangladesh.



Title : Degradation of coastal water ecosystem and implications for Sustainable development in Bangladesh

Author: **Khadija Akter Rima**, *University of Dhaka*

Coastal water ecosystems are essential for ecological balance, livelihoods, water availability, and food security in Bangladesh. They provide critical services such as flood regulation, water purification, protection from salinity intrusion, groundwater recharge, and broader risk reduction. However, pollution, climate change, unplanned infrastructure development, sea-level rise, and weak governance have accelerated the degradation of these ecosystems over recent decades. In already high-risk coastal settings, this degradation undermines sustainable development, particularly progress toward SDG 6 (Clean Water and Sanitation).

This paper examines how coastal water ecosystem degradation affects public health, water security, livelihoods, and social equity. As ecosystem services decline, communities face reduced access to clean water, greater exposure to polluted and saline sources, and heightened risks from flooding and waterlogging. These impacts fall disproportionately on marginalized coastal populations, deepening existing inequalities and weakening long-term development outcomes. The paper argues that sustainable development in coastal Bangladesh is unattainable without protecting the ecological foundations that support health and economic activity.

Using secondary evidence and a qualitative literature-based approach, the study applies ecosystem-services and sustainable development framework to link ecosystem degradation with governance shortcomings and development challenges. Findings indicate that prevailing strategies often prioritize short-term infrastructure over long-term ecosystem integrity, inadvertently worsening environmental risk, water insecurity, health burdens, livelihood stress, and social inequality. The paper calls for integrated, ecosystem-friendly coastal development that strengthens conservation, improves governance, and incorporates local knowledge into planning to advance SDG 6 and build climate resilience.



Title : Solid Waste Management Vulnerability based on Community Practices in Climate Vulnerable Areas

Author: **Khadiza Tul Kobra Nahin**, *WaterAid Bangladesh*

Co-author: **Saief Manzoor-Al-Islam**

Recurring climate extremes and weak local governance in Bangladesh's climate-vulnerable regions are making solid waste management (SWM) an escalating challenge. This study examines SWM practices, public awareness, and vulnerability in Naogaon and Satkhira Districts, which face contrasting environmental pressures. Using a mixed-methods design, the research draws on 1,771 household surveys to analyze relationships among community awareness, waste-management practices, and climate hazards.

Five sensitivity indicators and seven adaptive-capacity indicators, derived from established frameworks and the scientific literature, were used to classify Union Parishads (UPs) into vulnerability categories ranging from very low to very high. The Analytic Hierarchy Process (AHP) was applied to prioritize indicators and assign weights. GIS-based mapping was used to identify waste hotspots and vulnerable locations to support targeted planning.

Results indicate substantial gaps in waste collection coverage, desludging capacity, recycling, and composting in both districts. The vulnerability assessment, informed by the IPCC Fifth Assessment Report, classified 22 UPs as moderate to high vulnerability. Interestingly, some UPs located in higher climatic-risk areas showed comparatively lower overall vulnerability, reflecting differences in adaptive capacity and service provision. The findings also reveal a significant knowledge gap in climate-vulnerable rural communities, underscoring the need for localized initiatives. The study recommends decentralized, community-led, and climate-resilient SWM systems that integrate local knowledge, promote gender equity, and expand accessible infrastructure.



Title : Pollution Status in the Coastal Regions of the Bay of Bengal, Bangladesh

Author: **Abu Sharif Md. Mahbub-E-Kibria**, *Bangladesh Oceanographic Research Institute (BORI)*

Co-author: **Md Minarul Hoque**

Coastal pollution has emerged as a critical environmental challenge in the Bay of Bengal, particularly along Bangladesh's densely populated and economically important coastline. Multiple stressors, including solid waste and hydrocarbon residues, threaten coastal and estuarine ecosystems, biodiversity, and coastal livelihoods. In support of SDG 14.1 on preventing and significantly reducing marine pollution, this study presents an integrated assessment of pollution along Bangladesh's 710 km coast, focusing on plastic debris and oil-grease (OG) contamination as indicators of anthropogenic pressure.

Plastic pollution was assessed at 45 coastal sites using standardized beach transects, sediment quadrat sampling, and manta-net sampling in major rivers, complemented by polymer identification through FTIR spectroscopy. A total of 16,586 macroplastic items were recorded across 142 transects, with a mean density of 0.376 items m⁻². Clean Coast Index (CCI) results show most sites were moderately polluted, while severe hotspots occurred in tourism- and fisheries-dominated areas, including Saint Martin's Island, Parki, and Patenga. Soft plastics, expanded polystyrene (EPS), and fishing-related debris were dominant, with polyethylene and polypropylene as the most abundant polymers. Microplastics in beach sediments showed strong spatial variability, with higher accumulation in vegetated backshore zones. River observations confirm that major rivers act as key pollution pathways from inland sources to coastal accumulation.

OG contamination was evaluated through surface seawater sampling across industrial zones, ports, navigation corridors, island systems, and ecologically sensitive areas, including the Sundarbans and the Ganges-Brahmaputra-Meghna river-marine interface. Using USEPA and ASTM protocols, elevated OG concentrations (1.72–2.8 mg/L) were consistently observed near industrial and maritime activity zones, with several locations exceeding national and international thresholds. Overall, results indicate chronic pollution driven by riverine inputs, tourism, fisheries, industrial discharges, and maritime operations. The study establishes a national baseline and calls for integrated pollution management, stronger port and vessel regulation, improved river-to-coast waste controls, and long-term monitoring.



Title : Mapping and analysis of sweet water ponds in three coastal sub-districts of Khulna Division

Author: **Sanjan Kumar Barua**, *Helvetas Bangladesh*

Co-author: **Mohammad Mahmudul Hasan**

This study examines the condition and role of freshwater ponds in the coastal sub-districts of Koyra, Paikgacha, and Morrelganj, Bangladesh. In these areas, ponds are not only water sources but also critical community assets for drinking and domestic use. Using a mixed-methods approach, the research combined community insights from 15 focus group discussions and 21 key informant interviews with laboratory analysis of water quality parameters from ponds that were fully protected, partially protected, and unprotected (n = 272).

Community perspectives consistently identified ponds as a reliable, nature-based response to chronic freshwater scarcity. However, this dependence is increasingly undermined by contamination. Laboratory results show that most ponds exceeded safe limits for fecal coliform, indicating widespread microbial pollution. Elevated electrical conductivity and chloride levels also point to significant salinity intrusion, particularly in unions closer to the coast. A key finding is that ponds with physical protection and active community stewardship had better water quality, including lower fecal coliform counts and higher dissolved oxygen, than poorly maintained or unprotected ponds.

Residents reported that many ponds could be restored with targeted support. Priority actions include desludging, embankment repair, and deployment of affordable treatment options such as pond sand filters (PSFs). The study concludes that freshwater ponds are indispensable yet climate-vulnerable infrastructure. Protecting them requires a dual strategy of community-led management and rehabilitation, supported by enabling policies and climate-resilient planning. Coordinated action is urgently needed to safeguard these resources and strengthen coastal water security.



Title : From Water Ecosystem to Blue Economy: Strengthening Water Governance and Human Security for Seagoing Fishers in the Sundarbans

Author: **Md. Hedait Hossain Molla**, *Dhaka Tribune*

Traditional seagoing fishers operating in and around Dublar Char and adjacent chars of the Sundarbans are a critical yet underserved segment of Bangladesh's blue economy. Each fishing season, an estimated 25,000 fisher households and traders establish temporary settlements for nearly five months across Dublar Char, Alor Kol, Shelar Char, Narikel Baria, Majher Kella, and Office Kella. Dried-fish processing and related value chains from these sites reportedly supply around 80% of national dried-fish demand. This contribution is produced under extreme hardship, as fishers travel long distances, face cyclones and rough seas, and work in conditions that increase risks of injury, illness, and livelihood loss.

Weak water governance and service delivery failures undermine both human well-being and ecosystem integrity. Despite paying substantial revenue, communities report persistent deficits in safe drinking water, WASH facilities, emergency healthcare, storm-resilient shelters, and security. Water sources are often saline, damaged, non-functional, or contaminated, leading to waterborne illness and reliance on informal drug shops. Inadequate shelters and limited maritime safety coverage increase exposure to storm impacts, theft, intimidation, and cross-border incidents.

Based on stakeholder perspectives, this abstract proposes an integrated "water ecosystem to blue economy" response: (i) ensure safe water through protected freshwater ponds, functional wells, and routine water-quality monitoring; (ii) provide seasonal emergency health services, including mobile clinics and referral capacity; (iii) rehabilitate and maintain storm-resilient cyclone and multipurpose shelters; (iv) strengthen security through an operational naval police outpost, community reporting, and coordinated patrol and rescue protocols; and (v) establish transparent revenue-to-service reinvestment linked to verified service delivery and ecosystem safeguards.

These measures position water governance, ecosystem protection, and human security as core enablers of a resilient blue economy in the Sundarbans.



Title : A Multi-Metric Approach to Identify Vulnerable Area for Climate-Resilient Intervention in Bangladesh

Author: **Md Marjad Mir Kameli**, *WaterAid Bangladesh*

Co-author: **Ms Khadiza Tul Kobra Nahin**

This paper presents a multi-dimensional methodology combining programmatic suitability metrics and localized vulnerability indicators to prioritize Union Parishads (UPs) for climate-relevant development interventions in Bangladesh. The study employs Naogaon and Satkhira, two differently challenged climate-vulnerable districts, as case studies to create a reproducible targeting framework for the implementation of relevant interventions in climate-stressed areas. We applied mixed method approaches to rank the Union Parishads in the selected districts, based on thematic indicators relevant with socio-political dynamics, Civil Society Organisations (CSO) involvement, private sector engagement, existing line agencies, stocktaking of Water, Sanitation, and Solid Waste Management (SWM) assets etc. By identifying these indicators and assigning weights to each, the study created a ranking system to help the identification of the Union Parishads as future working areas. The final step of the study focused on ranking of the Union Parishads (UPs) using two metrics. The research clearly identified appropriate and vulnerable locations for executing development projects. This methodology can be utilised as an effective instrument for similar applications, assisting development practitioners to make better informed and strategic choices in determining their focal regions.



Adaptive and Transformative Learning

This theme will highlight locally led adaptation and community-driven planning, linkages between social protection and climate risks, and the role of women- and youth-led enterprises in water, WASH, agriculture and fisheries. It will address the safety and productivity of fishers and farmers, and examine how skills, data and digital tools can improve early warning, planning and accountability. Particular attention will be given to knowledge platforms, learning labs and youth leadership that can drive long-term transformation.



Title : Assessing Ecological Degradation Under Urban Expansion in Coastal Bangladesh

Author: **Nazmul Alam Shahed**, *Jagannath University*

Co-author: **Sakib Mhamud Apu**

In climate-vulnerable countries such as Bangladesh, rapid and often unplanned coastal urbanization is eroding the natural buffers that protect deltaic landscapes from cyclones, flooding, and salinity intrusion. Despite the ecological importance of these areas, quantitative evidence linking urbanization intensity to ecological degradation remains limited. This study assesses the spatiotemporal response of ecological quality to urbanization in Barishal Division between 2015 and 2025 using the Remote Sensing Ecological Index (RSEI) and statistical validation.

Multi-temporal Landsat 8 OLI and Landsat 9 OLI-2 imagery were processed to derive four indicators: greenness (NDVI), wetness (LSM), dryness (NDBSI), and heat (LST). Principal Component Analysis (PCA) was used to construct the RSEI, providing objective weighting and dimensionality reduction. Results were validated using Pearson correlation, linear regression, and paired t-tests. PCA confirms the stability of the RSEI framework, with the first principal component explaining 58.68% and 59.64% of total variance in 2015 and 2025, respectively.

Areas classified as very low ecological quality increased by about 315%, from 6.31% (860.18 km²) in 2015 to 26.15% (3,568.77 km²) in 2025. In contrast, very high ecological quality areas declined from 7.58% to 3.30%. The paired t-test ($p < 0.001$) indicates statistically significant degradation. Regression results show a strengthening relationship between ecological decline and urbanization: the R^2 between RSEI and NDBSI increased from 0.60 to 0.75, while the slope shifted from -0.57 to -0.86 , indicating accelerating degradation per unit of built-up growth.

The findings highlight declining ecological resilience under increasing anthropogenic pressure and underscore the urgent need to protect green-blue infrastructure and strengthen land-use regulation in line with SDG 11 and SDG 15.



Title : A Gender-Transformative Approach for Empowering Coastal Women in Climate-Resilient WASH Governance

Author: **Faruque Ahmed, Rupantar**, *Rupantar*

Co-author: **Saief Manzoor-Al-Islam**

In coastal Bangladesh, scarcity of drinking water has a direct connection to adverse issues of health, productivity, and livelihood, resulting in an array of interconnected challenges that disproportionately affect poor and marginalised communities. Women in particular are more likely to develop preeclampsia and pregnancy hypertension as a result of their sodium intake from saltwater. The WE-WE (Women Empowerment for Water Entrepreneurship) approach is a participative, gender-transformative strategy that promotes women's leadership, agency, and economic empowerment in the face of an impending catastrophe. The strategy combines capacity building, community mobilisation, and market-based procedures to increase women's participation in decision-making and service delivery chains. The WE-WE method addresses systemic gender imbalances and improves climate resilience at the household and community levels by emphasising women's roles as water resource users and managers. The framework consists of four main components: developing women's technical and entrepreneurial skills; forming and strengthening women-led groups; facilitating access to WASH-related livelihood opportunities; and influencing community norms to enhance acceptance of women's leadership. Implementation experiences indicate that the WE-WE approach improves WASH service sustainability, boosts women's earning prospects, and changes community perceptions of inclusive governance. The concept outlines a reproducible pathway for incorporating gender equality into water resource planning, climate adaptation, and local service delivery.



Title : Institution led integrated water supply model for coastal region of Bangladesh

Author: **Farah Naznin**, *WaterAid Bangladesh*

Co-author: **Md Zahidul**

Southern Bangladesh faces severe freshwater scarcity due to salinity intrusion, arsenic contamination, and climate-induced hazards. Chandkhali Union in Paikgacha exemplifies this crisis: traditional sources such as tubewells and pond sand filters are increasingly non-functional, and limited rainfall reduces the reliability of rainwater harvesting, forcing villages to depend on unsafe surface water for domestic use. To address this challenge, an integrated, climate-resilient water supply system was implemented at an educational institution, combining a 1,000 L/hour reverse The initiative uses an institution-enterprise cooperative model led by the school, which is responsible for daily operation, maintenance, and financial management. It was designed based on community demand assessments and user interest. Revenue from water sales covers operation and maintenance costs, including electricity, filter replacement, and minor repairs, supported by limited institutional cross-subsidy. Total investment was USD 16,925, with approximately 15% contributed by the institution to strengthen local ownership and sustainability.

The system serves 1,770 people, including about 300 surrounding households and 319 students and staff, providing year-round access to safe drinking water. Post-intervention testing shows that all measured parameters meet national drinking water standards.

Operational analysis indicates that RO treatment of saline groundwater yields about 50% recoverable water, while harvested rainwater achieves up to 80% recovery. Blending harvested rainwater with groundwater improves overall recovery to 65–70%, reduces brine generation, and extends RO membrane life. Reported benefits include a 50% reduction in waterborne disease incidence, improved school attendance, and reduced household time (about 1 hour/day) and costs (around 60%) for collecting water, with substantial workload reductions for women and girls.

This model demonstrates that institution-led integrated water supply systems can provide a sustainable, scalable, and climate-resilient solution for saline-prone regions of southern Bangladesh, with replication potential through partnerships with local government, development actors, and the private sector.



Title : Enduring Journeys: Exploring the Daily Struggles of Collecting Drinking Water in Coastal Bangladesh

Author: **Umme Sayma**, *Jagannanth University*

Co-author: **Sharabon Siraj**

Bangladesh receives abundant monsoon rainfall, yet coastal communities continue to face safe drinking water scarcity due to salinity intrusion, climate variability, and inadequate water infrastructure. This study examines the everyday burdens of drinking water collection in selected coastal communities, focusing on distance to water sources, time costs, physical hardship, and gendered impacts. Quantitative data were collected through a structured remote questionnaire administered to 30 respondents in Dumuria, Gabura Union, Satkhira.

Findings show that adult women are the primary water collectors in most households (86.67%). Over half of respondents (53.33%) travel 500–1,000 meters to collect drinking water, and 76.67% make 2–3 trips per day, spending more than two hours daily. The burden increases during the summer months (Choitro, Baishakh, Joishtho). Women's health outcomes are influenced by age, income, water quality, and time spent collecting water. The most commonly reported problems include chronic back, shoulder, and neck pain (96.67%) and exhaustion or fatigue (86.67%). Other reported concerns include pain in hands and legs (63.33%), hypertension (60%), and pregnancy-related complications (53.33%).

Rainwater harvesting is the dominant drinking water source (100%), followed by freshwater ponds (63.33%) and pond sand filters (PSFs) (43.33%). During periods of local scarcity, households cope by purchasing water (66.67%), walking longer distances (53.33%), reducing daily water use (50%), or using saline or otherwise unsafe water (46.67%). The burden intensifies in the dry season and after cyclones due to damaged or submerged roads and muddy terrain. While households adopt coping measures such as storing rainwater and using alum or purification tablets, these are insufficient to reduce women's daily burden and health risks. Government and NGO interventions remain limited. The study highlights the need for integrated water governance and gender-sensitive, climate-resilient infrastructure to reduce health risks and improve equitable access to safe drinking water.



Title : Paikgacha Municipality's Pioneering Effort in Overcoming Water Scarcity: A Coastal Resilience Model

Author: **Babul Bala**, *WaterAid Bangladesh*

Co-author: **Sumon Kumar Saha**

Paikgacha Municipality, located in the coastal region of Khulna, Bangladesh, faces a severe water crisis driven by challenging hydrogeographic conditions, arsenic and iron contamination, salinity intrusion, and institutional capacity constraints. Approximately 25,000 residents, many of whom depend on agro-fisheries for their livelihoods, have long experienced acute water shortages. As a result, households have relied on unsafe and unprotected sources that are costly and contribute to long-term health and economic burdens.

In response, Paikgacha Municipality, in collaboration with WaterAid and other stakeholders, introduced a sustainable piped water supply system (PWSS) in 2014. The system includes a water purification plant and distribution network with the capacity to supply 200,000 liters of potable water per day to 2,750 households. A progressive volumetric tariff structure was introduced to maintain affordability, including reduced rates for low-income households. The payment design reflects local service delivery realities and aims to promote equity across the population.

Following implementation, more than 60% of the municipal population has gained access to safe drinking water. Improvements in water quality and quantity, along with reduced collection times, have strengthened the municipality's pro-poor service delivery approach. The management model also enabled service expansion from 40% to over 60% using the municipality's own revenue from water services. These gains have contributed to better health outcomes and improved economic well-being, particularly among vulnerable groups.

This experience demonstrates that a well-managed, financially sustainable PWSS can address water scarcity and health risks in climate-vulnerable coastal municipalities, while building community and system resilience. It offers a replicable model for other coastal towns facing similar challenges.



Title : From Vulnerability to Vitality: Empowering Coastal Communities through Resilient Water, Health

Author: **Hera Lal Nath**, *SpeedTrust*

Co-author: **AHM Shamsul Islam**

Climate change in Bangladesh's coastal belt is no longer a distant risk; it is already disrupting daily life for millions. Nineteen coastal districts, covering nearly 30% of the country's land and home to roughly one quarter of its population, are increasingly exposed to cyclones, storm surges, sea-level rise, salinity intrusion, flooding, high tides, and erratic heavy rainfall. These pressures damage water, sanitation, and hygiene (WASH) services, degrade soil fertility, reduce agricultural yields, and heighten public health risks. Women and poor and marginalized households bear the greatest burden, as declining land productivity weakens livelihoods, slows investment, increases displacement, and deepens insecurity.

Coastal communities have long adapted to gradual environmental change, but the speed and uncertainty of recent climate shocks are exceeding traditional coping capacity. Since Cyclone Sidr (2007), SpeedTrust, with support from multiple donors, has worked in highly vulnerable central coastal areas to strengthen resilience through field-tested solutions. Interventions include embankment strengthening, adaptive research, short-duration and saline-tolerant high-yield crops, and improved water management through trapped-water systems and rainwater harvesting. The program is implemented with local government, DAE, and NARS, with emphasis on enterprise development, WASH, fallow-land recovery, and locally appropriate mechanization.

Three lessons emerge: (i) climate pressure on livelihoods is intensifying, driving asset loss, displacement, and food insecurity; (ii) locally designed and tested solutions outperform generic approaches for salinity, waterlogging, and shortened growing seasons; and (iii) collaboration among agencies and local agri-entrepreneurs strengthens adaptive capacity and livelihood resilience.

The experience underscores priorities for scaling research-extension-market linkages for climate-resilient crops, mobilizing structured public-private investment in embankments and drainage, strengthening community-based water management, and improving coordination among government, NGOs, researchers, and donors. Policy attention to institutional collaboration, infrastructure-focused PPPs, and research-led early warning systems is essential, with effective water management recognized as a cornerstone of climate adaptation, livelihood security, and food system planning.



Title : Assessment of Flood Susceptibility in Bhola: An Integrated GIS-AHP Approach

Author: **Md. Parvej Hossain**, *Islamic University*

Co-author: **Authoy Biswas Bidda**

Accelerated sea-level rise and intensifying monsoon regimes have made Bangladesh's deltaic coastline among the most flood-prone regions globally. Despite its strategic and highly vulnerable location at the confluence of the Meghna River and the Bay of Bengal, Bhola District remains understudied in systematic flood assessment compared with neighboring areas such as Patuakhali. This research addresses this gap by applying an integrated, GIS-based Analytical Hierarchy Process (AHP) to develop a high-resolution flood susceptibility framework for Bhola.

Twelve multidisciplinary parameters were analyzed: elevation, slope, Topographic Wetness Index (TWI), Topographic Position Index (TPI), drainage density, distance to rivers, distance to the coastline, rainfall, land use/land cover (LULC), NDVI, Stream Power Index (SPI), and soil type. Parameters were weighted using Saaty's pairwise comparison method, maintaining an acceptable consistency ratio ($CR \leq 0.10$). The results indicate a strong spatial concentration of "High" and "Very High" flood susceptibility zones across a substantial portion of the district. This pattern is explained by the combined influence of low elevation gradients, high topographic wetness, dense drainage conditions, and close proximity to both riverine and marine flooding sources, which together reduce natural drainage capacity.

By generating a five-class susceptibility map, the study provides actionable evidence to support climate-resilient spatial planning. The zonation outputs can guide the siting of flood-resilient infrastructure, prioritization of early warning and response networks, and the design of adaptive land-use policies to reduce future climate-induced flood risks in Bhola.



Title : Rainwater harvesting in coastal areas: Challenges in water quality and safe storage practices

Author: **Md Golam Rasul**, *WaterAid Bangladesh*

Co-author: **Mr Md Tahmidul Islam**

Coastal areas of Bangladesh face a severe water accessibility crisis, driven by overlapping challenges such as arsenic contamination and salinity intrusion. Although national access to safely managed drinking water is 59.1%, coverage is substantially lower in coastal zones. In Paikgacha Upazila, for example, only 14.4% of households have access to safely managed sources, forcing many to rely on unimproved surface water and increasing vulnerability to waterborne diseases. In response, rainwater harvesting systems (RWHS) have been promoted as a low-cost, sustainable option to reduce freshwater scarcity. However, concerns about water quality and household-level management limit their effectiveness.

This study assesses household RWHS water quality by testing key parameters, including pH, turbidity, total and fecal coliforms (TTC/FC), and residual chlorine. Results show that 51.1% of samples were contaminated with TTC/FC. In addition, 39.39% of samples were acidic (below the normal range) and 53.03% were alkaline (above the normal range), indicating irregular water chemistry that may pose health risks. Qualitative interviews on household water management practices identified substantial knowledge gaps, particularly in water collection, storage, and handling. Improper storage conditions and unsafe transfer practices from storage containers to drinking vessels were identified as major pathways for post-collection contamination.

The findings indicate that RWHS can contribute meaningfully to addressing coastal water scarcity, but benefits are undermined by inadequate household management and water safety practices. To improve outcomes, RWHS expansion should be paired with targeted capacity-building programs on safe collection, storage, handling, and routine maintenance. Strengthening service provider capacity for proper installation, monitoring, and user support is also essential. Overall, the study underscores the need for an integrated approach that combines RWHS infrastructure with sustained behavior change and institutional support to ensure safe and reliable drinking water in coastal Bangladesh.



Title : Women’s Leadership and Transformative Learning in Coastal Water Insecurity: From Adaptation to Change

Author: **Naimur Rahaman Tushar**, *BGC Trust University Bangladesh*

Coastal water insecurity in riverine Bangladesh is a persistent and deeply distressing reality. Safe water scarcity, salinity intrusion, and climate change impacts are worsening everyday life in coastal communities, with women bearing the most direct and intense burdens. Because women are primarily responsible for collecting water, cooking, maintaining hygiene, and caring for children and older family members, water stress shapes both their workloads and wellbeing. In this context, coastal women are emerging not only as affected populations but also as central actors in learning, adaptation, and community resilience.

This observation-based, research-informed paper analyzes women’s lived experiences, informal knowledge practices, and peer-to-peer learning processes to understand women-led adaptive learning in responding to water insecurity. Through daily practice, women develop context-specific knowledge about water usability, safe storage under scarcity, risk reduction for waterborne diseases, and necessary behavioral changes within households. This learning is largely experience-driven rather than the product of formal training.

Importantly, women share and diffuse this knowledge within families and communities, strengthening their influence in local decision-making and enabling collective adaptation. The paper argues that these processes are not only adaptive but also transformative, as they reshape women’s social roles, decision-making power, and capacity for knowledge production. Recognizing and integrating women-led learning into future policies and programs can advance climate adaptation alongside social justice and sustainable change.



Title : Coastal inundation vulnerability assessment along the western coast of Bangladesh

Author: **Md. Rohan** , *Jagannath University*

Co-author: **Ms Farjana Fahan**

Coastal regions form a transition zone between land and sea and are highly exposed to natural hazards. In Bangladesh, recurrent inundation, compounded by climate change, sea-level rise, and expanding human interventions, damages coastal resources, infrastructure, economic activities, ecosystems, and biodiversity. These impacts, together with low socioeconomic status, intensify livelihood risks and complicate sustainable coastal management. This study assesses coastal inundation vulnerability along the western coast of Bangladesh using geospatial techniques. Sixteen spatial criteria representing physical and socioeconomic drivers of vulnerability were selected. The Analytic Hierarchy Process (AHP) was applied to rank the criteria and assign weights, followed by weighted-sum overlay to generate separate physical and socioeconomic vulnerability maps. These maps were then integrated to produce a composite coastal inundation vulnerability map.

Results indicate that 39.4% of the western coastal zone (about 9,824 km²) across Bagerhat, Barisal, Gopalganj, Khulna, Patuakhali, Pirojpur, and Satkhira is highly vulnerable, particularly southern Bagerhat, Khulna, Satkhira, and south-eastern Patuakhali due to low elevation, proximity to the shoreline, and a higher concentration of vulnerable settlements. Low vulnerability covers 35.8% (8,924 km²), with Jessore showing minimal exposure because of its inland location and higher elevation. Moderate vulnerability accounts for 24.8% (6,197 km²), mainly in the central part of the study area. The findings support targeted mitigation planning and sustainable coastal management.



Title : Understanding Neighborhood Dynamics in Community Resilience of South-western Coastal Bangladesh

Author: **Sawda Yeasmin**, *Center for Sustainable Development (CSD), ULAB*

Co-author: **Md. Faisal Imran**

This research investigates how neighbourhood dynamics shape community resilience for disaster risk reduction in south-western coastal Bangladesh. The study integrates two established frameworks, the Community Capital Framework (CCF) and the Disaster Resilience of Place (DROP) model, and uses a semi-structured questionnaire for data collection. Data were gathered through six focus group discussions and four key informant interviews with relocated and non-relocated communities.

The findings reveal notable disparities between the two groups across multiple forms of community capital. Both communities face deficits in sanitation, roads and communications, and employment opportunities. However, non-relocated communities have gradually strengthened resilience by improving housing quality through local innovations, maintaining strong bonding and bridging ties with neighbours and relatives through social networks, and accessing year-round financial support from local shops as an informal self-insurance mechanism. In contrast, relocated communities gained physical infrastructure but experienced a loss of social dignity and cohesion. Key reasons include disrupted socio-cultural ties, weak access to essential services and livelihood opportunities, heightened economic insecurity, and social isolation.

Overall, the study shows that neighbourhood-level capitals can either strengthen or weaken community capacity, depending on how they are sustained and connected. The paper recommends participatory, place-based approaches that engage affected communities in designing solutions across community capitals, with particular emphasis on infrastructure, financial security, sanitation and hygiene, social ties, and the integration of youth in development programmes, supported by evidence-informed policy.



Title : Rethinking Climate Education: Adaptive Learning to Safeguard Water Ecosystems

Author: **Uttam Das**, *DHRUBA*

Co-author: **Rekha Maria Boiragi**

Climate change poses one of the greatest threats to water ecosystems worldwide. Rising temperatures, erratic rainfall, sea-level rise, floods, and droughts are disrupting rivers, wetlands, groundwater, and coastal systems, with direct consequences for livelihoods, food security, biodiversity, and human health. In this context, adaptive and transformative learning are essential for conserving water ecosystems and achieving sustainable development.

Adaptive learning helps individuals and communities understand climate risks and adjust practices accordingly. For example, farmers can adopt water-efficient irrigation, rainwater harvesting, and crop diversification to cope with drought. Communities living near rivers, wetlands, or coastal areas can strengthen preparedness through early warning systems for floods and cyclones, safe water management, and ecosystem-based adaptation practices. Such learning enhances resilience while supporting the protection of vital water resources.

Transformative learning goes further by shifting mindsets, values, and systems related to water use and ecosystem management. It promotes critical reflection on unsustainable practices such as over-extraction of groundwater, river pollution, wetland destruction, and unplanned urbanization. This perspective encourages long-term behavioral and policy change, including integrated water resources management, wetland restoration, watershed protection, and inclusive decision-making involving women and marginalized groups.

Educational institutions, community-based organizations, and policymakers can support both forms of learning by combining indigenous knowledge with scientific understanding and by promoting learning-informed governance aligned with SDG 6 and SDG 13. Overall, adaptive and transformative learning can build practical skills, reshape attitudes, and foster collective responsibility to safeguard water ecosystems for present and future generations.



Title : Urban Integration of Climate Migrants in Dhaka: Social, Cultural, and Institutional Dimensions

Author: **Dr Md. Abdul Malak**, *Jagannath University*

Co-author: **Rezwana Binte Rezvi**

Climate-induced migration is a major global concern, with millions of people displaced each year by floods, storms, and sea-level rise. Bangladesh experiences large-scale internal climate migration, with many people moving to cities such as Dhaka. However, limited attention has been given to how these migrants integrate socially, culturally, and institutionally, creating an evidence gap that weakens effective urban policy. This study investigates the integration challenges faced by climate migrants in Dhaka, focusing on social networks, cultural adaptation, community acceptance, and institutional responses. Qualitative data were collected through semi-structured interviews.

Findings indicate that migrants face multiple, interconnected barriers, including weak social ties and changing relationships with origin communities, difficulties adapting to urban norms and gaining neighborhood acceptance, inconsistent access to government support and NGO services, and vulnerabilities related to housing, healthcare, and employment. Despite these constraints, many migrants demonstrate resilience through community interaction, participation in local activities, and adaptive strategies for urban life. The study highlights the need for inclusive urban governance that addresses migrants' priorities in housing, jobs, healthcare, and social inclusion. By documenting systemic gaps and lived experiences, the paper offers evidence to inform national and city-level frameworks and supports progress toward SDG 10 (Reduced Inequalities) and SDG 11 (Sustainable Cities and Communities).



Title : Adaptive & Transformative Learning through Locally Led Copying Mechanism in Natural Resource Management

Author: **M Mujibur Rahman Mujib**, *Nice Foundation*

Nice Foundation will present the outcomes of a collaborative research study conducted jointly with Middlesex University (UK). The study examines locally adaptive coping mechanisms and the interplay of conflict and cooperation in natural resource management, focusing on how communities learn, adapt, and transform in response to environmental and climate-related challenges. The research is situated in the coastal and rural areas of Khulna, Bangladesh, where livelihoods depend on water, land, fisheries, and forest resources that are increasingly vulnerable to climate change.

The study conceptualizes coping mechanisms as dynamic social learning processes through which community members observe, adopt, and adapt practices from neighboring communities, institutions, and development initiatives. Rather than treating copying as simple replication, the research shows how these processes are shaped by local power relations, gender norms, trust, historical experiences of conflict, and unequal access to resources. Findings indicate that copying can intensify conflict when external models are imposed, benefits are unevenly distributed, or marginalized groups, particularly women, youth, persons with disabilities, and small-scale fishers and farmers, are excluded from decision-making.

In contrast, cooperative outcomes emerge when learning and adaptation are locally led, inclusive, and grounded in indigenous and local knowledge. Community-driven planning, learning labs, and informal knowledge-sharing platforms enable dialogue and collective experimentation, allowing communities to tailor practices to local conditions. The study also highlights how adaptive learning supports responses to shocks such as flooding and salinity intrusion, while transformative learning strengthens governance, accountability, and social protection linkages. Overall, the research demonstrates the value of conflict-sensitive, inclusive natural resource management for resilience, equity, and sustainable development.



Title : Rooted in Reality: Critical Contextualization of Nature-based Solution in Coastal Areas of Bangladesh

Author: **Md Faisal Imran**, *Center for Sustainable Development (CSD), ULAB*

Co-author: **Dr Haseeb Md. Irfanullah**

This study critically evaluates the effectiveness and adherence of integrated farming in coastal Bangladesh as a Nature-based Solutions (NbS) intervention using the IUCN's Global Standard for NbS. The study also evaluates quality of evidence of the implementing organization (an NGO), motivation in adopting NbS as its core strategy, and issues considered to mainstream NbS. The research employed a series of qualitative methods combining content analysis, key informant interviews (KIIs), and focus group discussions (FGDs), complemented by validation sessions. Findings reveal that the NbS intervention effectively addressed societal challenges, but there remain opportunities to improve in certain key areas, such as ensuring net gain in biodiversity. The project also lacks knowledge mobilisation for wider impact, such as assisting others in designing NbS. However, the NGO's motivation lies in contribution to global challenges, branding a new concept like NbS, taking a leadership role, and highlighting the tangible benefits. But, limited focus on biodiversity remains a critical aspect that underscores a need for place-based implementation and documentation. The study suggests that, if scientists want policymakers to choose the best evidence for a policy, they need to communicate more clearly, strategically, and frequently. Organizations also need to re-evaluate the nexus between 'society and nature' and shift in organizational commitments investing in appropriate staffing, capacity development, and adaptive management throughout the programming. Finally, we found a lack in proper guidelines adopting a new concept, like NbS, in policies and its utilization. This would enable policymakers for effective supervision, allow NGOs to implement intervention, and provide researchers to assess the effectiveness of emerging concepts.



Title : To Familiarize the Coastal People to Simple Solid Waste Management by Helping Change their Habits

Author: Sukamal Mandal

Adapting to a changing climate and environment is critical for coastal communities in southern Bangladesh. Alongside water management, greater attention is needed to awareness and practice related to solid waste and fecal sludge management (FSM). During tidal surges, storms, and flooding, solid waste and fecal sludge can spread widely, increasing environmental pollution and aggravating contamination of water sources. While FSM has improved significantly over time, solid waste management and community awareness remain weak, particularly in urban and peri-urban coastal areas. This abstract proposes practical, gender-responsive steps to strengthen household-level solid waste management by engaging both women and men.

1. Establish household garbage pits (earthen, semi-permanent, or permanent, based on household capacity) to safely dispose of organic waste and produce compost for household use or sale, prioritizing women's participation to support income generation.
2. Ensure pit designs are safe and easy for women to use by considering household layout and avoiding hazardous structures. A separate pit near the cowshed for livestock waste should be prioritized for use by male household members.
3. Engage local government and lead organizations to coordinate implementation; Union Parishads can support households with ring-slab materials where feasible.



Title : Changing Dynamics of Rural Settlements in Coastal Bangladesh: Drivers, Trends, and Implications

Author: **Tuly Rani Das**, *Jagannath University*

Co-author: **Dr Md. Abdul Malak, Rezwana Binte Rezvi, Umme Humayra**

Bangladesh, a low-lying deltaic nation on the Bay of Bengal, exemplifies the growing vulnerability of coastal regions to climate-related hazards. Recurrent cyclones, storm surges, and flooding strongly influence rural settlement patterns, driving continuous change. Despite this increasing vulnerability, limited integrated research examines how social, economic, environmental, and policy factors jointly shape settlement dynamics and related livelihood outcomes. This study draws on field observations and a structured questionnaire survey of 100 respondents in Taltoli Upazila, Barguna District, complemented by quantitative analysis of community perceptions and lived experiences. Data were processed using SPSS.

Findings indicate that coastal livelihoods remain largely dependent on fishing, but improved communication and connectivity have expanded opportunities for diversification into tourism and small-scale trade. Agricultural land is declining due to population pressure, environmental sensitivity, and salinity intrusion. Climate change is identified as the most significant constraint for future settlement planning. While community support systems remain strong and contribute to local adaptive capacity, government and NGO support is perceived as inadequate. The study offers evidence to support context-specific adaptation strategies and more resilient rural settlement planning in coastal Bangladesh.



Title : Empowering Coastal Girls as Change-Agents: Transformative Learning for Menstrual Hygiene and Climate

Author: **Zahida Sultana**, *WaterAid Bangladesh*

Co-author: **Tunazzina Haque**

In the climate-vulnerable coastal landscape of Shyamnagar, Satkhira, extreme salinity and freshwater scarcity exacerbate Menstrual Health and Hygiene Management (MHM) challenges. Historically, adolescent girls faced a dual burden of entrenched social taboos and limited access to safe water, often forcing them to wash reusable menstrual cloths with saline or contaminated water, increasing health risks. This paper presents findings from the “Stop the Stigma” (STS) project, implemented by WaterAid in collaboration with Rupantar, which applied a community-centered approach to strengthen adaptive capacity among women and girls.

A mixed-methods design was used. Quantitative data were collected through a structured household survey of 351 adolescent girls and young women. Qualitative insights were generated through 10 focus group discussions with Ananya groups and parents, and eight key informant interviews with local government officials and teachers. These findings were triangulated with an infrastructure audit of 11 school-based WASH blocks to assess climate resilience and functionality.

Results show substantial improvement: access to MHM-supportive WASH facilities increased from 39.6% (baseline) to 88.7% (endline). The project operationalized 108 peer-led Ananya groups and introduced the Ananya App, a digital knowledge platform. Despite connectivity constraints, the app reached 3,356 users; 44.1% of girls used features such as period tracking and an emergency helpline. Reported social support from male peers and parents rose from 20.2% to 85.7%, and menstruation-related school absenteeism decreased, with 94% of girls reporting regular attendance during menstruation. The paper recommends formal integration of Ananya groups into local government adolescent development programs, hybrid online-offline engagement, and women-led water enterprises to address salinity-related risks to long-term menstrual health.



Title : A Design Science Model for Climate and Water Literacy in Secondary English Education

Author: **Md. Saddam Hossain**, *Bangladesh Shishu Academy*

Co-author: **Hasan Shaikh**

Developing climate agency and water stewardship literacy among secondary learners has become an educational imperative in climate-vulnerable regions. Young people must be prepared not only to understand environmental challenges but also to act responsibly and communicate effectively within their communities. However, in Bangladesh's secondary education system, opportunities to cultivate such agency remain weakly integrated into subject curricula, particularly in English language education. This study addresses this gap by adopting a Design Science Research (DSR) approach to design, pilot, and evaluate a transformative learning framework that integrates climate and water literacy into secondary English education through structured co-curricular activities.

The study first develops a teaching-learning model that positions English language learning as a pathway to climate agency, critical awareness, and water stewardship. Drawing on communicative language teaching, transformative learning, and education for sustainable development, the model conceptualizes learners as active participants who use English to engage with real-world environmental issues. Following the DSR cycle (problem identification, artefact design, demonstration, and evaluation), the model is operationalized into two artefacts: (i) a curriculum-aligned English unit on climate change, water ecosystems, and sustainable livelihoods, and (ii) co-curricular activities including debates, storytelling, project-based learning, community investigations, and digital storytelling.

The framework will be piloted in selected secondary schools in the coastal districts of Khulna and Satkhira. Evaluation will assess linguistic and transformative outcomes, including climate and water awareness, sense of agency, communicative competence, and confidence in English communication. The pilot is expected to indicate that co-curricular, real-life learning strengthens meaningful language use while fostering responsibility for climate and water stewardship. Future research should examine longitudinal impacts and scalability across diverse contexts and national curricula. This study contributes an evidence-based model for curriculum innovation and offers policy-relevant insights for climate-responsive English education in climate-affected settings.



Title : The Blue Entrepreneurship Pipeline: Integrating Water Economy Training into Secondary Education

Author: **Hasan Shaikh**, *Khulna University*

As coastal regions face the dual crises of climate-driven water scarcity and rising youth unemployment, traditional environmental education is often insufficient to deliver systemic change. This project proposes the “Blue Entrepreneurship Pipeline,” a transformative pedagogical framework that shifts water education from passive stewardship to active participation in the circular water economy. By integrating technical training on decentralized water systems (for example, greywater reuse, nutrient recovery, and small-scale desalination) with lean startup methods, the project reimagines secondary schools as incubators for climate-resilient livelihoods.

The project will use a mixed-methods design to pilot a “Blue Curriculum” across two distinct coastal ecosystems. A core innovation is the use of digital “Circularity Trackers” and AI-supported business modeling tools that enable students to quantify the resource and economic value of recovered water. Expected outcomes include increased student agency and an estimated improvement of more than 55% in “economic hope” indicators, potentially reducing climate-related outmigration by demonstrating viable local career pathways.

To address limitations, future research should examine the long-term survival of youth enterprises after graduation and test scalability in non-coastal, water-stressed regions. By positioning youth as both ambassadors and designers of water innovation, the Blue Entrepreneurship Pipeline offers a dual-dividend approach that strengthens coastal water resilience while expanding inclusive economic opportunities.



Title : Learning to adapt, adapting to learn: How iterative, locally led learning drives transformative live

Author: **Md Lutfor Rahman**, *ICCCAD*

Co-author: **Dipok Choudhury**

Coastal Bangladesh faces accelerating climate risks that are reshaping livelihoods, social relations, and local economies. Salinity intrusion, waterlogging, erratic rainfall, and shifting market conditions mean that adaptation can no longer rely on fixed solutions or short-term projects. Instead, communities must build the capacity to learn continuously, make collective decisions, and adapt iteratively under uncertainty. This session draws on the experience of the PARIBARTAN project to demonstrate how adaptive and transformative learning, grounded in Locally Led Adaptation (LLA), can strengthen livelihoods and social resilience in coastal polder systems.

PARIBARTAN operationalizes learning as a dynamic, ongoing process rather than a one-time transfer of knowledge. Its approach applies single-, double-, and triple-loop learning, enabling farmers and water users to test technical options (single-loop), question decision-making processes and participation (double-loop), and reframe underlying assumptions, power relations, and institutional arrangements that shape adaptation pathways (triple-loop). This approach recognizes adaptation as a social and institutional challenge as well as a technical one.

The project prioritizes farmer-to-farmer and group-to-group learning, enabling practices to spread through peer exchange rather than prescriptive blueprints. Local learning groups evolve into boundary organizations that connect communities with markets, government agencies, and research institutions, creating platforms for knowledge exchange and negotiation. PARIBARTAN also supports inclusive business models that allow these groups to generate resources, reduce long-term donor dependence, and sustain adaptive learning.

A central contribution is the empowerment of women, youth, and tenant farmers as adaptation leaders. By redesigning learning spaces and governance processes to amplify marginalized voices, the project challenges entrenched power dynamics and expands who shapes livelihood futures. This session aligns with Track 4 of the 3rd Coastal Water Convention by showcasing learning labs and lived experimentation that translate LLA into practice, offering replicable insights for other climate-vulnerable coastal regions.

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