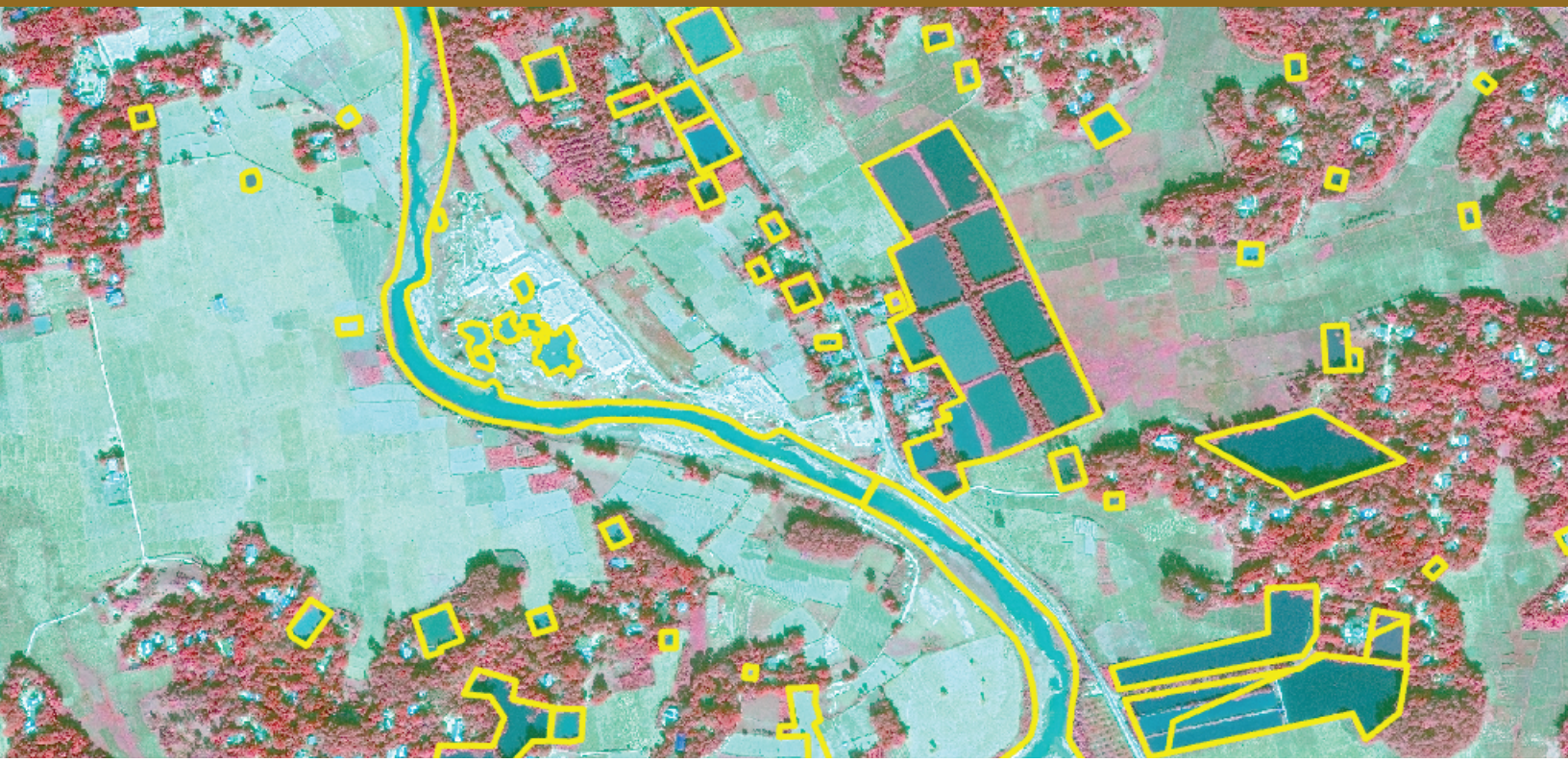
Natural Resources Accounts

Land



June 2025

Strengthening Environment, Climate Change
and Disaster Statistics (ECDS) Project
Bangladesh Bureau of Statistics
Statistics and Informatics Division
Ministry of Planning
Government of the People's Republic of Bangladesh

Natural Resources Accounts (NRA)-Land

June 2025

বাংলাদেশ পরিসংখ্যান ব্যুরো
পরিসংখ্যান ও তথ্য ব্যবস্থাপনা বিভাগ
পরিকল্পনা মন্ত্রণালয়

Bangladesh Bureau of Statistics
Statistics and Informatics Division
Ministry of Planning

Natural Resources Accounts (NRA)-Land

Prepared by

Strengthening Environment, Climate Change and Disaster Statistics (ECDS) Project
Bangladesh Bureau of Statistics

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Director General
Bangladesh Bureau of Statistics

Preface

The **Bangladesh Bureau of Statistics (BBS)** has prepared the **Natural Resource Accounts (NRA)-Land** for the first time, in alignment with the United Nations System of Environmental-Economic Accounting (SEEA) framework. This report presents detailed information on land use and land cover based on the SEEA classification. It includes data on various land categories such as agricultural land, forest land, built-up areas, wetlands, and other natural land types. By organizing land-related information in a standardized and internationally comparable format, the report provides a clear picture of how land resources are utilized and distributed across the country.

The report is significant as it supports evidence-based land management, spatial planning, and policy development. It helps policymakers and researchers understand land dynamics, monitor land degradation and urban growth, and promote sustainable land use. By integrating environmental and economic data, it also aids in tracking progress toward national development goals and the Sustainable Development Goals (SDGs).

I extend my sincere thanks and gratitude to the Secretary, Statistics and Informatics Division (SID) for supporting and encouraging us to conduct this baseline study and publish this report in a stipulated time frame. My appreciation goes to the ECDS team led by Project Director who actively coordinated the baseline study and got the final report prepared. Special thanks are also due to distinguished members of the Project Steering Committee, Project Technical Committee, Project Implementation Committee, Editors Forum and Report Review Committee for their contributions to the analytical improvement of the report.

I believe that the results of the report will excite feelings and passions with strong interest regarding natural resources related statistics among policy-makers, researchers, academics, students and other stakeholders. Any suggestions and recommendations for further improvement of the report would be highly appreciated.

Dhaka

June 2025

Mohammed Mizanur Rahman

Project Director
ECDS project
Bangladesh Bureau of Statistics

Acknowledgement

This is a Baseline Report on Natural Resource Accounts (NRA)-Land in line with United Nations System of Environmental-Economic Accounting (UN-SEEA). The objective of the NRA is to explore possibilities using UN-SEEA Methodology and to know the data gaps that happens towards implementation a full account of natural resources, its changes over time and to measures their contribution to the economy and society. I do believe that this report will provide opportunities for more in-depth research and monitoring of the effects of environmental issues and depletion of natural resources at the grassroot level. I hope that the findings of the report will stir up strong interest regarding natural resources among policy-makers, researchers, academics, students and other stakeholders.

My deep gratitude and sincere thanks to the Secretary of the Statistics and Informatics Division, Ministry of Planning, for the support and guidance to publish this report on time. I would like to extend my sincere thanks to Mr. Mohammed Mizanur Rahman, Director General of BBS for his prudent guidance and all-out assistance in the preparation of this report.

It would be an injustice to them if I did not mention the advice I received at various stages of the project from Dr. A. K. Enamul Haque, Director General of Bangladesh Institute Development Studies (BIDS), member of the Project Steering Committee (PSC), Project Implementation Committee (PIC), Project Technical Committee (PTC), SID Report Review Committee, and Editors Forum of BBS for their participation in a series of meetings to review and provide feedback on the report.

Special thanks are due to Mr. Md. Rafiqul Islam, Director, National Accounting, Mr. Md. Nazmul Hoque, Deputy Director, Mr. Surangit Kumar Ghosh, Assistant Project Director (APD), Mr. Aminur Rahman Khan and other members of ECDS project team for their outmost sincerity in bringing out this report on time.

Comments and suggestions for further improvement of the report will be highly appreciated.

Dhaka
June 2025

Mohammad Saddam Hossain Khan

Acronyms

APD	Assistant Project Director
BBS	Bangladesh Bureau of Statistics
BIDS	Bangladesh Institute Development Studies
CEGIS	Centre for Environmental and geographic Information Services
CF	Central Framework
CVI	Climate Vulnerability Index
DDG	Deputy Director General
DG	Deputy Director General
DRR	Disaster Risk Reduction
ECDS	Environment Climate Change Disaster Statistics
EUROSTAT	Statical Office of the European Communities
GHG	Greenhouse Gas
GIS	Geographic Information System
LCCS	Land Cover Specification
NCA	Natural Capital Accounts
NRA	Natural Resources Accounts
NSDS	National Strategy for Development of Statistics
OECD	Organization of Economic Cooperation and Development
PEA	Poverty Environment Accounts
PEN	Poverty Environment Nexus
PSC	Project Steering Committee
PTC	Project Technical Committee
SDGs	Sustainable Development Goals
SEEA	System of Environmental Economic Accounting
SID	Statistics and Informatics Division
SN	The System of National Accounts
UN	United Nations
UNEP	United Nations Environment Program
UNISDR	United Nations International Strategy for Disaster Reduction
UNSD	United Nations Statistics Division
WRI	World Resource Institute
WWF	Worldwide Fund for Nature

Executive Summary

Executive Summary

নির্বাহী সারসংক্ষেপ

This report presents Bangladesh's first land account based on the System of Environmental-Economic Accounting (SEEA) framework. In this context, land is considered a critical environmental asset that plays an essential role in determining the location of economic activities and environmental processes. Through land accounting, changes in land cover over time have been highlighted. The land account has been prepared by distinguishing between the major land cover classes in Bangladesh. This account follows a total of 14 land cover classification categories, including Artificial Surface (such as urban and surrounding areas), Herbaceous Crops, Grassland, Mangrove Forest, Tree-covered Areas, and Inland Water Bodies, in accordance with the Central Framework (CF) of the SEEA. This land account will serve as an important guide for land management and environmental planning in Bangladesh.

The policy relevance of the land account lies in its effectiveness as a tool for monitoring and analysing changes in Bangladesh's land cover from 2015 to 2023. This information plays a vital role in spatial planning and policymaking at the national, divisional, and district levels. In addition, this land account serves as a foundational basis for the development of other SEEA-based accounts, such as forest resource accounts, ecosystem extent accounts, analysis of ecosystem services supply and use, and carbon and biodiversity accounts. To prepare this land account, a Technical Working Group (TWG) was actively engaged, comprising representatives from the Bangladesh Bureau of Statistics (BBS), the Forest Department, and the Centre for Environmental and Geographic Information Services (CEGIS).

In developing the land account for Bangladesh, the Technical Working Group (TWG) followed the internationally recognized guidelines of the System of Environmental-Economic Accounting Central Framework (SEEA-CF). Specifically, the

এই প্রতিবেদনে সিস্টেম অব ইনভায়রনমেন্টা-ইকোনমিক একাউন্টিং (SEEA) পদ্ধতির ভিত্তিতে বাংলাদেশের প্রথম ল্যান্ড একাউন্ট প্রস্তুত করা হয়েছে। এখানে ভূমিকে একটি বিশেষ পরিবেশগত সম্পদ হিসেবে বিবেচনা করা হয়েছে, যা অর্থনৈতিক কার্যক্রম এবং পরিবেশগত প্রক্রিয়াগুলোর অবস্থান নির্ধারণে গুরুত্বপূর্ণ ভূমিকা রাখে। ভূমি হিসাবের মাধ্যমে সময়ের সাথে সাথে ভূমি আচ্ছাদন (ল্যান্ড কাভার) এর মাধ্যমে ঘটে যাওয়া পরিবর্তনগুলো তুলে ধরা হয়েছে। বাংলাদেশের প্রধান ভূমি আচ্ছাদন (ল্যান্ড কাভার) শ্রেণীগুলোর মধ্যে পার্থক্য নির্ধারণ করে এই ল্যান্ড একাউন্টটি প্রস্তুত করা হয়েছে। এই একাউন্টে কৃত্রিম পৃষ্ঠতল (যেমন শহরে ও আশেপাশের এলাকা), ভেষজ ফসল, তৃণভূমি, ম্যানগ্রোভ বনভূমি, বৃক্ষ-আচ্ছাদিত এলাকা, অভ্যন্তরীণ জলাশয়সহ মোট ১৪টি শ্রেণীবিভাগ অনুসরণ করা হয়েছে, যা SEEA (সিস্টেম অব ইনভায়রনমেন্টাল ইকোনোমিক একাউন্টিং) এর সেন্ট্রাল ফ্রেমওয়ার্ক (CF) অনুযায়ী নির্ধারিত। এই ল্যান্ড একাউন্ট বাংলাদেশের ভূমি ব্যবস্থাপনা ও পরিবেশগত পরিকল্পনায় একটি গুরুত্বপূর্ণ দিকনির্দেশক হিসেবে কাজ করবে।

ল্যান্ড একাউন্ট এর নীতিগত প্রাসঙ্গিকতা হলো, এটি ২০১৫ থেকে ২০২৩ সাল পর্যন্ত বাংলাদেশের ভূমি আচ্ছাদন (ল্যান্ড কাভার) এর পরিবর্তন পর্যবেক্ষণ ও বিশ্লেষণের একটি কার্যকর মাধ্যম হিসেবে কাজ করে। এই তথ্য জাতীয়, বিভাগীয় ও জেলা পর্যায়ে স্থানিক পরিকল্পনা ও নীতিনির্ধারণে গুরুত্বপূর্ণ ভূমিকা পালন করে। এছাড়াও, এই ল্যান্ড একাউন্ট অন্যান্য SEEA ভিত্তিক হিসাব যেমন বন সম্পদ হিসাব, বাস্তুতন্ত্রের আয়তন নির্ধারণ, বাস্তুতন্ত্র সেবার সরবরাহ ও ব্যবহার বিশ্লেষণ এবং কার্বন ও জীববৈচিত্র্য সংক্রান্ত একাউন্ট প্রণয়নের জন্য একটি ভিত্তি হিসেবে কাজ করে। এই ভূমি হিসাব প্রস্তুতের জন্য বাংলাদেশ পরিসংখ্যান ব্যুরো (BBS), বন বিভাগ এবং সিইজিআইএস (CEGIS)-এর প্রতিনিধিদের সমন্বয়ে গঠিত একটি টেকনিক্যাল ওয়ার্কিং গ্রুপ (TWG) সক্রিয়ভাবে কাজ করেছে।

বাংলাদেশের জন্য ল্যান্ড একাউন্ট প্রণয়নে টেকনিক্যাল ওয়ার্কিং গ্রুপ (TWG) আন্তর্জাতিকভাবে স্বীকৃত সিস্টেম অব ইনভায়রনমেন্টা-ইকোনমিক একাউন্টিং-সেন্ট্রাল ফ্রেমওয়ার্ক (SEEA-CF) এর নির্দেশিকা অনুসরণ করেছে। বিশেষভাবে,

TWG utilized various maps and relevant spatial datasets to prepare the land account. Spatial information related to land cAover and land use served as the primary sources for this account, providing reliable data for analysing land changes and management.

Some of key findings from the account can be stated here specially those are increased likewise artificial surfaces (including urban and associated areas) 2.82%, Woody crops 44.60%, grassland 53.83%, Tree covered areas 1.99%, Mangroves 1.27%, Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded 16.40%, inland water bodies 5.94% between 2015 and 2023. On the other hand, some of classes decreased likewise Herbaceous crops 3.75%, Shrub-covered areas 19.86% and terrestrial barren land 21.33% at the same tenure.

As a component of natural capital, the land account will have a significant impact on Bangladesh's national development planning. This land account will support the implementation of government policies, strategies, and programs. It will play a vital role in enhancing land productivity, agricultural expansion, and urban and rural development planning. The account will also aid in analysing the relationship between natural changes (such as shifts in rainfall patterns) and human-induced land cover changes (such as urbanization and the expansion of irrigation-dependent agriculture), which directly affect environmental sustainability. Furthermore, this land cover-related account will strengthen climate change mitigation policies. For example, by determining the carbon sequestration rates of various plant types, it will be possible to estimate the value of related ecosystem services. This will, in turn, support the future economic valuation and commercialization in the international carbon market.

Finally, the land account serves as a vital tool for tracking progress toward the United Nations Sustainable Development Goals (SDG) 2030

TWG ল্যান্ড একাউন্ট প্রস্তুতের জন্য বিভিন্ন মানচিত্র ও সংশ্লিষ্ট স্থানিক ডেটাসেট ব্যবহার করেছে। ভূমি আচ্ছাদন (ল্যান্ড কাভার) ও ভূমি ব্যবহার সম্পর্কিত স্থানিক তথ্য এই ল্যান্ড একাউন্টে প্রধান উৎস হিসেবে ব্যবহৃত হয়েছে, যা ভূমির পরিবর্তন ও ব্যবস্থাপনা বিশ্লেষণে নির্ভরযোগ্য তথ্য সরবরাহ করেছে।

এই বিবরণ থেকে প্রাপ্ত কিছু গুরুত্বপূর্ণ তথ্য এখানে উল্লেখ করা যেতে পারে, বিশেষ করে সেগুলো হলো ২০১৫ থেকে ২০২৩ সালের মধ্যে কৃত্রিম পৃষ্ঠতল (শহুরে এবং সংশ্লিষ্ট এলাকা সহ) ২.৮২%, কাঠের ফসল ৪৪.৬০%, তৃণভূমি ৫৩.৮৩%, বৃক্ষ আচ্ছাদিত এলাকা ১.৯৯%, ম্যানগ্রোভ ১.২৭%, গুল্ম এবং/অথবা ভেষজ উদ্ভিদ, জলজ বা নিয়মিত প্লাবিত ১৬.৪০%, অভ্যন্তরীণ জলাশয় ৫.৯৪% বৃদ্ধি পেয়েছে। অন্যদিকে, একই সময়ে কিছু শ্রেণী যথা ভেষজ ফসল ৩.৭৫%, গুল্ম আচ্ছাদিত এলাকা ১৯.৮৬% এবং স্থলজ অনুর্বর জমি ২১.৩৩% হ্রাস পেয়েছে।

প্রাকৃতিক মূলধন হিসাবে ল্যান্ড একাউন্ট বাংলাদেশের জাতীয় উন্নয়ন পরিকল্পনায় গুরুত্বপূর্ণ প্রভাব ফেলবে। এই ল্যান্ড একাউন্ট সরকারি নীতিমালা, কৌশল ও কর্মসূচি বাস্তবায়নে সহায়তা করবে। বিশেষ করে ভূমি উৎপাদনশীলতা বৃদ্ধি, কৃষি সম্প্রসারণ, নগর ও গ্রামীণ উন্নয়ন পরিকল্পনার ক্ষেত্রে এই একাউন্টটি গুরুত্বপূর্ণ ভূমিকা রাখবে। এ একাউন্টটি প্রাকৃতিক পরিবর্তন (যেমন বৃষ্টিপাতের ধরণে রূপান্তর) এবং মানবসৃষ্ট ভূমি আচ্ছাদন (ল্যান্ড কাভার) পরিবর্তন (যেমন নগরায়ন ও সেচ নির্ভর কৃষির বিস্তার) এর মধ্যকার সম্পর্ক বিশ্লেষণে সহায়তা করবে, যা পরিবেশগত স্থিতিশীলতার উপর সরাসরি প্রভাব ফেলে। তদুপরি, ভূমি আচ্ছাদন (ল্যান্ড কাভার) সংক্রান্ত এই একাউন্টটি জলবায়ু পরিবর্তন মোকাবেলায় গৃহীত নীতিমালাকে আরও শক্তিশালী করবে। উদাহরণস্বরূপ, বিভিন্ন ধরণের উদ্ভিদ থেকে প্রাপ্ত কার্বন শোষণের হার নির্ধারণের মাধ্যমে সংশ্লিষ্ট বাস্তুতন্ত্র সেবার পরিমানও অনুমান করা সম্ভব। যা মূলত ভবিষ্যতে আন্তর্জাতিক কার্বন মার্কেটে অর্থনৈতিকভাবে মূল্যায়ন ও বাণিজ্যিকীকরণে সহায়তা করবে।

পরিশেষে, ল্যান্ড একাউন্ট জাতিসংঘের টেকসই উন্নয়ন লক্ষ্যমাত্রা (SDG) ২০৩০-এর অগ্রগতি পর্যবেক্ষণে একটি

particularly Goal 11: Sustainable Cities and Communities, Goal 12: Responsible Consumption and Production, Goal 13: Climate Action, and Goal 15: Life on Land. Advancements in these key areas lay a strong foundation for achieving Goal 1: No Poverty and Goal 2: Zero Hunger in the long run, supporting a more equitable, resilient, and sustainable future for all.

গুরুত্বপূর্ণ হাতিয়ার হিসেবে বিবেচিত হয়। বিশেষ করে লক্ষ্যমাত্রা ১১: টেকসই শহর ও জনপদ, লক্ষ্যমাত্রা ১২: দায়িত্বশীল ভোগ ও উৎপাদন, লক্ষ্যমাত্রা ১৩: জলবায়ু পরিবর্তনের মোকাবিলা, এবং লক্ষ্যমাত্রা ১৫: স্থলজ জীববৈচিত্র্য ও বাস্তুতন্ত্র সংরক্ষণ এই ক্ষেত্রগুলোতে উন্নয়নের গতিধারা নিরীক্ষায় এটি সহায়ক ভূমিকা পালন করবে। এই লক্ষ্যগুলোর বাস্তবায়ন অগ্রগতির মাধ্যমেই দীর্ঘমেয়াদে লক্ষ্যমাত্রা ১: দারিদ্র্য দূরীকরণ এবং লক্ষ্যমাত্রা ২: ক্ষুধামুক্ত বিশ্ব অর্জনের জন্য একটি মজবুত ভিত্তি গড়ে তোলা সম্ভব হবে যা মূলত সকলের জন্য একটি ন্যায়ভিত্তিক, স্থিতিশীল এবং টেকসই ভবিষ্যতের পথকে প্রশস্ত করবে।

Chapter I
Introduction

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Introduction

1.1 Background

The geography and climate have made the country vulnerable to different meteorological, hydrological and geological hazards. These hazards often lead to disasters and the major ones in the country are floods, cyclones, droughts, tidal surges, tornadoes, earthquakes, river erosion, infrastructure collapse, water logging, water and soil salinity, epidemic, and various forms of pollution etc. Changes in the climate is a reality and is happening mainly due to greenhouse gas emission and rise in the surface air temperature of the earth. Climate Change and its impacts are the burning issue in the world.

Himalayan range to the north, the Bay of Bengal to the south with it funneling towards Meghna estuary and the vast stretch of Indian land to the west of the country. It is a low-lying country with 405 rivers and it is the largest delta in the World formed by the mighty rivers namely the Padma (the Ganges), the Brahmaputra, the Jamuna, the Meghna etc.

The constitution of Bangladesh in its 18(A) clause states that the State shall endeavour to protect and improve the environment and to preserve and safeguard the natural resources, biodiversity, wetlands, forests and wild life for the present and future citizens.

Thus, it highlights the importance of protection and improvement of environment and biodiversity for the benefit of its citizens. Similarly, the Wildlife (Conservation and Security) Act 2012, which was enacted by the present government aims to protect the biodiversity, wildlife, and forests of the country. It provides provisions for establishing sanctuaries, national parks, and community conservation areas, as well as defining the permissible activities within these areas. An admirable feature of this Act is its recognition of national heritage, memorial trees, and sacred trees, while also respecting the traditional and cultural values of the communities. This is a significant stride towards acknowledging and upholding the rights of indigenous communities.

In 2017, the Bangladesh Biodiversity Act (2017), was passed in line with Bangladesh's constitutional mandate under Article 18A and international mandates under Convention on Biodiversity to regulate and ensure conservation of biodiversity in Bangladesh. In addition to the Acts, there are several other laws that indirectly tackle environmental issues.

Given this background, it has been of keen interest to the Government to understand the contribution and land to the economy and to determine where such natural resources are managed sustainably so that the constitutional obligations of the government is upheld and the interest of the future generations are upheld.

Based on this commitment and the international obligations of the government of Bangladesh towards SDGs, the Bangladesh Bureau of Statistics has developed a project to undertake the Natural Resource Accounting (NRA) activities in Bangladesh. The objective of the assignment is to explore possibilities of NRA using UN-SEEA methodology and to understand the data and research gaps that exists

towards completing a full account of natural resources, its changes over time and to measures their contribution to the economy.

Natural Resource Accounts (NRA) is a process of measuring the value of natural resources and their services. It is a tool that can be used to understand the economic value of nature, and to inform policy decisions about sustainable development.

We are preparing the Land Accounts based on SEEA, the System of Environmental-Economic Accounting (SEEA) categorizes environmental assets into seven key groups. Such as natural resources; mineral and energy resources; soil resources; water resources; biological resources; land and associated surface water; and ecosystems. These categories help assess the sustainability of natural resource use and the environmental impacts of economic development. [i]

1.2 Vision

To gather or provide data and information on the condition of natural resources using geospatial techniques (Remote Sensing, GIS, and GOs) and to build a gateway for disseminating Natural Resource/Capital Accounts (NRA/NCA) Statistics in collaborative ways so that appropriate policies and interventions would be adopted to safeguard them as well as ensure the Management of Sustainable Development in a holistic approach.

1.3 Mission

- To develop an integrated, professional, efficient and effective roadmap on NRA/NCA under the guidance and leadership of BBS, to sustainable management and protection of natural resources;
- To administer the quality of environmental data and information to ensure a healthy sustainable environment that is essential in the context of nurturing, understanding and harnessing for the benefit of present and future generations;
- To provide data and information support to apply integrated, innovative and coherent approaches in developing and implementing policies, laws, plans and budgets on poverty eradication;
- To develop a sound, authentic, timeliness environmental database to support the Governments on designing clean environments e.g., land use, preserve forest, ecosystem, water use efficiency, water withdrawal, waste management, air, water and soil pollution, energy solutions-renewable energy, energy efficiency, smart energy distribution etc. that are in the social and economic interest of its people; and
- To define the time frame and design working arrangements to implement the roadmap within the time frame.

1.4 Significance of NRA/NCA

The NRA/NCA in Bangladesh will provide information on the state of natural resources and the changes affecting them. The NRA/NCA is one of the tools which may be used to support environmental

policy, alongside instruments such as environmental impact assessments at a project level, integrated environmental and economic analyses for policy work at the sectoral and macro-economic levels, and public investment/ expenditure reviews[ii]. In general, the NRA/NCA will create a bridge between the environment and the economy. In Bangladesh, NRA can be used for:

1. It will create the opportunity on the way of thinking for demonstrating the accountability in managerial perspective and protection of natural resources;
2. It will identify present and future environmental problems such as resource depletion, generating unsustainable waste, loss of biodiversity, overfishing;
3. NRA/NCA will help for analyzing government plan and policy, undertaking resource management and decision-making to monitor sustainable development and country's national strategic plans;
4. It will draw up macro-economic indicators for environmental performance or prosperity; and
5. It will improve the benchmarks for measuring a country's national resource and economy.

1.5 Policy Evidence

Accumulation of natural resources (capitals) of the surrounding environment and developing the linkage between these resources and economy is now essential for the country like Bangladesh as the country is occupied by diversified geographical features and natural assets. Though this concept is very new for the country but government has already introduced it in the country's strategic plan.

NRA/NCA will ensure a sound database that would help policy makers to understand the potential impact of their decisions. In the National Strategic plan of Bangladesh like the different plans taken by the government, it is emphasized to provide necessary, relevant and timely data on natural resources. It is mentioned that the specific activities to improve green growth that the BBS will generate physical statistics about the stock of natural resources and their changes over time. This also entails calculating the monetary costs of losing natural resources. In addition, in the National Strategy of Development of Statistics (NSDS) it is noted in the context of strategic actions that BBS will develop the Compilation of the Natural Resource Accounts.

The NRA/NCA will make a strong interrelation between economy and environment- such as quantifies the nonrenewal damage to the environmental resources and assists in determination of development in real terms. Furthermore, NRA/NCA has deep inter-linkages with the SDGs as 9 out of the 17 goals directly relation to management of natural resources and their accounting. Besides fulfilling the SDGs, Bangladesh government has the international commitments to develop NRA/NCA that would also ensure this nation to become a part of the group of elite countries in generating Asset Accounts.

The UN General Assembly resolution titled, "Transforming our world; the 2030 agenda for sustainable development which got the approval of more than 190 countries, requires the preparation of Natural Resource Accounts. Bangladesh is a signatory to this resolution. The UN, in 2012, adopted the System of Economic and Environmental Accounting (SEEA). It is the latest internationally accepted

framework for NRA/NCA. It is an umbrella term covering efforts to make use of an accounting framework to provide a systematic way to measure and report on stocks and flows of natural resources/capitals[iii].

1.6 Linkage of International Communities

United Nations Environment Program, United Nations Statistical Division, Organization of Economic Cooperation and Development (OECD), World Bank, World Resource Institute (WRI), Statistical Office of the European Communities (EUROSTAT) and Worldwide Fund for Nature (WWF).

1.7 SEEA-CF Accounts – Land

National assessments of the changing shares of different categories of land use and land cover within a country can provide useful indicators of change by following SEEA-CF of Accounts. For example, how changing shares of land cover and land use relate to income generation over time. Such information can be used to assess how factors interact in particular regions and help to target policy action appropriately. Moreover, land accounts are at the core of ecosystem accounting.

1.8 Core Accounts – Land

Land accounts can be prepared in both physical (e.g., hectares) and monetary (Tk. $, €, ¥, etc.) terms. There are three core accounts that are most fundamental for land; namely the physical asset accounts for land, first with land classified by land cover and secondly, classified by land use, as well as the monetary asset account for land use. At its most basic level, land cover comprises all of the individual features that cover the area within a country. For the purposes of land cover statistics area of land and inland waters of the country are included.[iv] The area of coastal waters is generally excluded from land accounts but provision is made to extend the coverage to include coastal waters and the Exclusive Economic Zone (EEZ) if there is a need (e.g., because fish or other marine resources are harvested).

National assessments of land use and land cover change, such as deforestation, urban expansion, or agricultural shift offer key indicators of environmental and economic trends. Land accounts, combined with GIS, help identify where these changes occur and support the mapping of related social, economic, and environmental data for better decision-making[v].

1.9 National Development Planning

It is envisioned that the accounts will inform and drive the government policy, direction, and agenda on enhancing land productivity, agricultural expansion, urban and rural development planning, and reducing deforestation. The land account has generated data that will help to understand the following issues:

- ✓ The interactions between natural and human induced land cover changes;
- ✓ Data on competing land uses (e.g., agricultural development at the expense of natural resources conservation). This will be derived from the noticed changes on cropland cover, which is expanding at the expense of the natural resources land cover, particularly forests; and
- ✓ Baseline data for development planning and hence well-planned national development programs.

- ✓ In terms of ecological and environmental issues, the land account will provide baseline data on how the land resource plays a role in the following issues:
- ✓ Environmental and natural resources management;
- ✓ The role of forests, water, wetlands and other natural resources in the production of ecosystem services;
- ✓ To determine how these services may be quantified via ecosystem accounting and their value to industry (e.g., the value of water provisioning and water purification services from forests to the water supply industry);
- ✓ Sustainable Agricultural practices, in view of understanding the quantities and location of land utilized for agriculture;
- ✓ To know how the condition of agricultural land changes over time depending on management; and
- ✓ Adaptation and mitigation of climate change impacts, in view of understanding periodic land cover changes. For example, the land accounts could also provide the platform for generating information on the production of ecosystem services and carbon sequestration which could potentially be sold into international markets.

1.10 Relationship of the SEEA and SNA

The System of National Accounts (SNA) is a measurement framework that has developed since the 1950s to be the pre-eminent approach to the measurement of economic activity, economic wealth and the general structure of the economy. The SEEA applies the accounting concepts, structures, rules and principles of the SNA to environmental information. Consequently, the SEEA allows for the integration of environmental information (often measured in physical terms) with economic information (often measured in monetary terms) in a single framework. The power of the SEEA comes from its capacity to present information in both physical and monetary terms in a coherent manner. Because it uses the same accounting conventions, the SEEA is, in general, consistent with the SNA[vi]. However, given the specific analytical focus of the SEEA on the environment and its linkages with the economy, as well as its focus on the measurement of stocks and flows in physical and monetary terms, some differences between the SEEA and the SNA are also seen[vii].

1.11 Limitations

The development of a baseline Natural Resource Account for Land in Bangladesh, following the System of Environmental-Economic Accounting – Central Framework (SEEA-CF)[viii], represents a significant step toward integrated environmental and economic policymaking. However, several limitations and challenges may affect the comprehensiveness and reliability of the account. These are outlined below:

1. **Limited Spatial and Temporal Resolution**

   The spatial resolution of satellite imagery and temporal frequency of data collection may not capture fine-scale land changes, especially in rapidly urbanizing or ecologically sensitive areas. This can lead to underestimation or misrepresentation of certain land dynamics.

2. **Challenges in Harmonizing Classification Schemes**

National or project-specific land classifications may not fully align with SEEA-CF definitions. The process of reclassification can introduce uncertainties and may oversimplify complex land use categories, particularly mixed-use or transitional landscapes.

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4. **Insufficient Ground Validation (Ground-truthing)**

   Ground verification of remote sensing data is essential for accuracy, yet such efforts remain limited due to logistical and resource constraints. This is particularly problematic for detecting subtle or seasonal land cover types.

5. **Institutional and Technical Capacity Constraints**

   Effective implementation of SEEA-CF requires strong institutional coordination and technical expertise. In many cases, resource limitations and lack of standardized procedures across agencies can compromise the robustness of the baseline account.

6. **Underrepresentation of Informal and Customary Land Use**

   Informal, temporary, and customary land uses—common in rural and indigenous areas are often not captured in official datasets. These omissions may result in an incomplete picture of actual land utilization and resource dependency.

7. **Difficulty in Attributing Drivers of Change**

   While the account documents land cover changes, it does not inherently explain the drivers behind those changes (e.g., socio-economic development, climate impacts, policy shifts). This limits the analytical depth for policy formulation.

8. **Uncertainty in Historical Reconstruction**

   Establishing a baseline often involves reconstructing past land cover scenarios using limited or proxy data, which can lead to estimation errors and reduce confidence in the historical consistency of the account.

9. **Impact of Natural Disasters and Seasonal Variability**

   Frequent natural events such as floods, cyclones, and river erosion can cause abrupt and temporary changes in land cover. Differentiating between permanent and short-term changes is challenging but critical for accurate accounting.

10. **Potential Misinterpretation in Policy Contexts**

    As a reference point, a baseline account should be updated periodically and interpreted in context. Without regular updates or contextual analysis, there is a risk of misusing the data in decision-making processes.

This baseline account provides a foundational framework for tracking land-related environmental changes in Bangladesh. However, the limitations outlined above should be carefully considered in future updates, policy applications, and analytical interpretations.

Chapter II
Concept and Definition

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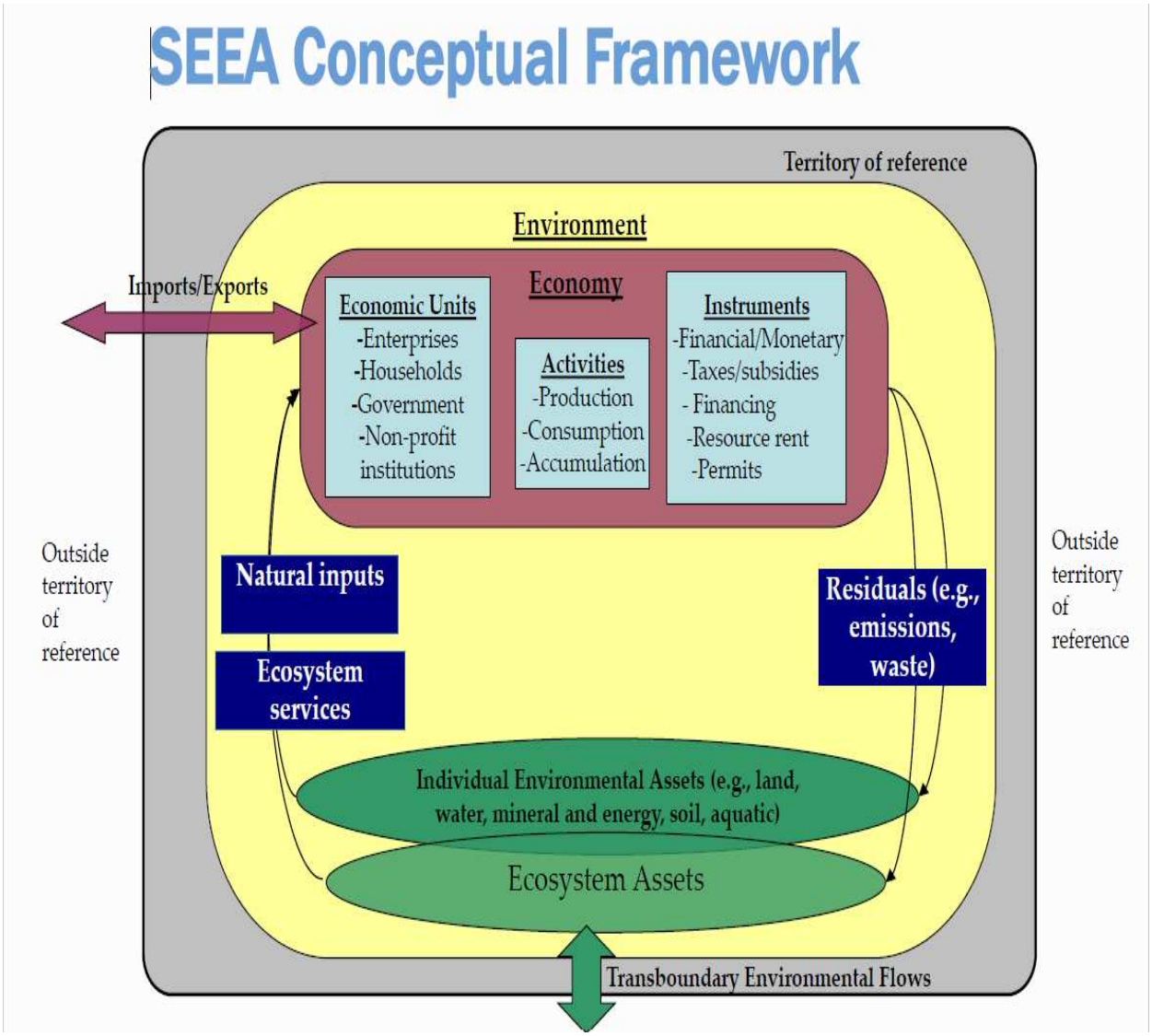
Concept and Definition

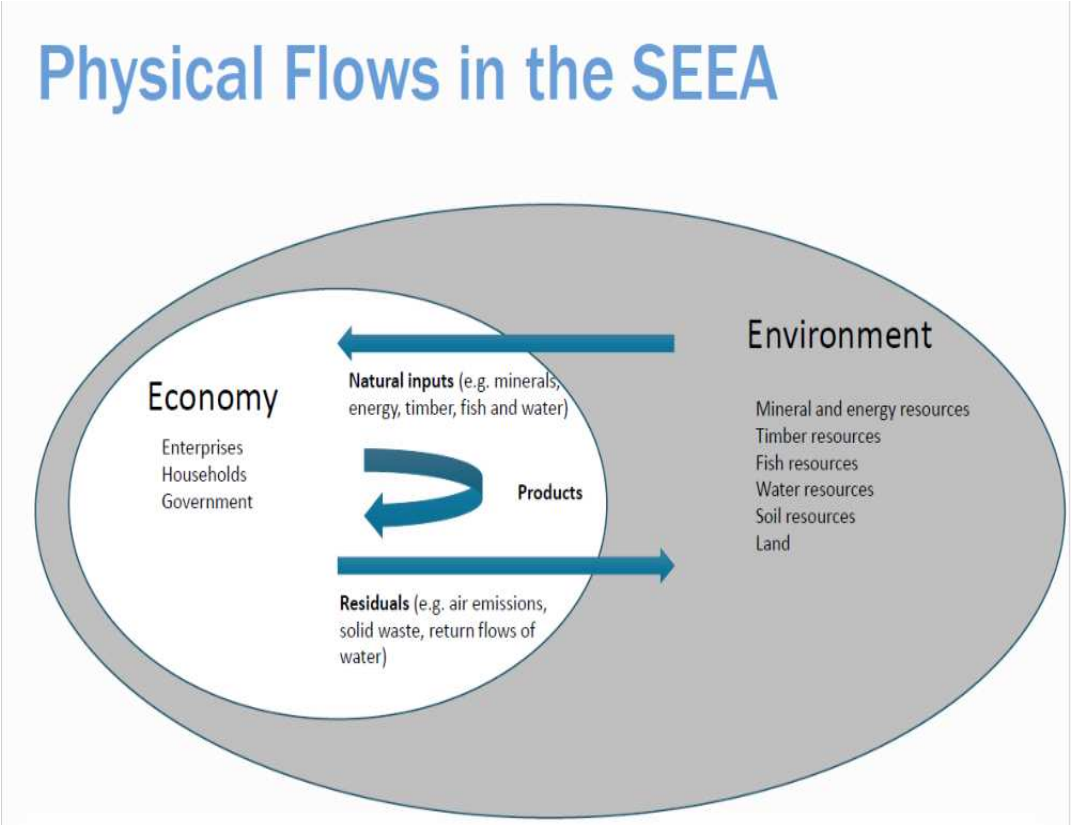
2.1 The System of Environmental-Economic Accounting (SEEA)

In practice, NRA/NCA structure includes the compilation of physical supply and use tables, functional accounts and asset accounts for natural resources like water and wetland, ocean (blue economy), land and soil, forest, ecosystem, energy, fisheries, waste, air emission (GHG), disaster expenditure etc. The integration of information concerning the economy and the environment requires an interdisciplinary approach. The System of Environmental-Economic Accounting (SEEA) CF brings together, in a single measurement system. Each of these areas has specific and detailed measurement approaches that are integrated in the SEEA CF to provide a comprehensive as a holistic view. The SEEA Central Framework defines natural resource depletion primarily as a physical change, making it useful to compare depletion rates with resource stock levels.[ix] The concepts and definitions that comprise the SEEA CF are designed to be applicable across all countries, regardless of their level of economic and statistical development, their economic structure, or the composition of their environment. The SEEA conceptual framework integrates environmental and economic information into a unified system[x]. This framework supports evidence-based policymaking by linking natural resource use, environmental degradation, and economic performance in a coherent manner.



2.2 Physical Flow Accounts

Physical flow accounts track the extraction, use, and disposal of environmental resources[xi]. These accounts quantify the flows of natural resources from the environment to the economy, such as energy and water extraction, as well as emissions and waste generated by economic activities.



2.3 Asset Accounts

Asset accounts capture changes in the stock of natural resources over time. They provide information on the availability, condition, and value of environmental assets, including land, forests, fisheries, and minerals. By valuing these assets, the SEEA enables policymakers to assess their contribution to national wealth and economic development.

2.4 Monetary Accounts

Monetary accounts assign economic values to environmental resources and their services. They quantify the economic benefits derived from ecosystem services, such as pollination, water purification, and climate regulation. By incorporating these values into economic indicators, such as GDP, policymakers gain insights into the true costs and benefits of economic activities.

2.5 Environmental-Economic Extensions

The SEEA CF facilitates the integration of environmental and economic data with other analytical tools. This includes the use of input-output analysis to understand the environmental footprints of different industries and the application of environmentally-adjusted macroeconomic models for policy simulations.

The SEEA plays a crucial role in informing policy decisions and fostering sustainable development. Its integrated approach provides policymakers with a comprehensive understanding of the environmental and economic implications of different policy options. By quantifying the value of natural resources and

ecosystem services, the SEEA enables the development of policies that internalize environmental costs and promote more sustainable resource management.

The SEEA serves as a valuable framework for integrated analysis, enabling policymakers to make informed decisions that balance economic development with environmental sustainability. By accounting for the environment and its resources, the SEEA provides a comprehensive understanding of the interactions between the economy and the environment. Its standardized approach enhances comparability across countries and facilitates the monitoring of sustainable development progress. The SEEA continues to evolve, guiding policymakers in addressing complex environmental challenges and promoting a more sustainable and resilient nations in future.

2.6 Forest Accounts

Within the SEEA framework, the central account for forests captures the economic and environmental information related to forests. Determine the scope of the forest account by defining the spatial and temporal boundaries. This includes identifying the forest area to be considered and the time period for which the account will be prepared. It's important to note that developing a forest account under the SEEA may require expertise in both environmental and economic accounting. The specific data sources, measurement techniques, and valuation methods will vary depending on the country or region being studied and the available data.

2.7 Ecosystem Accounts

Ecosystem Accounts is a spatially-based, integrated statistical framework for organizing biophysical information about ecosystems, measuring ecosystem services, tracking changes in ecosystem extent and condition, valuing ecosystem services and assets and linking this information to measures of economic and human activity. Ecosystem Accounting was developed by a multidisciplinary group of experts to respond to a range of policy demands and challenges with a focus on making visible the contributions of nature to the economy and people, and on better recording the impacts of economic and other human activity on the environment. To this end, ecosystem accounting incorporates a wider range of benefits to people than captured in standard economic accounts and provides a structured approach to assessing the dependence and impacts of economic and human activity on the environment.

The Ecosystem Accounting complements the measurement of the relationship between the environment and the economy described in the SEEA CF.[xii] The data on ecosystems can be combined with the data from the SEEA CF accounts on environmental pressures, individual resource stocks and environmental responses in the form of expenditures, taxes and subsidies, to provide a comprehensive picture of the environmental economic relationship.

2.8 Land Ownership Accounts

Another important characteristic of land is that of ownership (by institutional sector or by industry/activity), which generally requires access to administrative records. Ownership information can allow the creation of datasets by economic activity or economic sector which may be very useful in some policy applications. Generally, the total area of land for a country will remain unchanged from one period to the next and so the total opening and closing stock of land in physical terms (hectares) will be unchanged. However, there are situations where the area of land for a country may change. It may increase, for example due to reclamation of land through the construction of dykes and other barriers. It may also decrease, for example due to land subsidence or higher water levels. Changes in the total area of land may also occur due to political factors. For example, the total area may increase or decrease due to war and associated events and or possibly resolution of areas of disputed territory.

2.9 Other Land Accounts

The accounts described above provide opening and closing balances by type of land classification, based either on cover or use. An extension of this would be to present information on changes which cross classifies the opening and closing classes for basic observation units and identifies those that have changed. This allows one to present a change matrix showing how land units evolved from one classification to another during a given period.

2.10 Land Ownership, Distribution and Environmental Sustainability

The land account outlines the changing of the forests, cropland, and urban areas etc as well as land ownership of corporations, general government, household, NPISH etc. This helps to faultless distribution of land for a wellbeing and environmentally sustainable country.

2.11 Valuation of Natural Assets

In the stock account, value of land resources needs to be assessed. The monetary asset account can be determined by multiplying the physical asset account with the unit rent. In the case of land resources, the Net Present Value (NPV) method is utilized to calculate the rent units. NPV[xiii] involves evaluating the value of resources by considering their price as a proxy for future sales value of land without taxes/subsidies. Such values play critical roles in use of these resources. In this case, classification of land is important.

The NPV is calculated using the following formula

$$NPV=\sum_{i}^{T}\frac{P_i Q_i}{(1+d)^i}$$

Where, i is the year, T is the time horizon used for the valuation purpose, P is the price of annual output (goods/services) produced on the land, and Q is the quantity of the produced goods and services.

Using the NPV from the above equation, it is possible to calculate the rent units using the following equation.

$$\text{Unit Rent} = \frac{\text{NPV}}{\text{Economic Life}}$$

Chapter III

Methodology

Chapter III
Methodology

3.1 The Two Paths of Natural Resource Accounting

The development of resource accounting is generally perceived as having gone along two different paths; these are characterized as "physical" accounts and "monetary" accounts. The "physical" approach is based on the laws of conservation of matter and of energy.

The "monetary" approach has its base to modify the System of National Accounts (SNA) in order to better reflect economic welfare.[xiv]

3.2 Thematic Area of NRA/NCA in Bangladesh[xv]
Thematic Area 01: Environment, Climate Change and Disaster Risk Statistics
3.1.1 Bangladesh Disaster-related Statistics: Climate Change and Natural Disaster Perspectives
3.1.2 Compilation of Environmental Statistics (Collected from secondary sources)
3.1.3 Environmental Protection Expenditure and Resources Management Statistics/Accounts
3.1.4 Municipal (City corporations and Paurashavas) Waste Management Statistics/Accounts
3.1.5 Household Based Environmental Survey (HBES) 2024
3.1.6 Climate Vulnerability Index (CVI) based on lowest administrative unit under the BESF 2016-2030 and Statistical Act 2013 using UNSD/Global Guideline
Thematic Area 02: Physical Flow and Monetary Valuation Land, Forest, Water etc.
3.2.1 Land Accounts
3.2.2 Forest Accounts
3.2.3 Ecosystem Accounts
3.2.4 Material Footprint and Domestic Material Consumption Accounts
3.2.5 Water Accounts
3.2.6 Air Emission Accounts/ GHG Inventories
3.2.7 Energy Accounts
3.2.8 Disaster Risk Reduction (DRR) Expenditure Accounts
Thematic Area 03: Physical Flow and Monetary Valuation of the Ocean and Fisheries
3.3.1 Ocean Accounts (Blue Economy)

3.2 Thematic Area of NRA/NCA in Bangladesh[xv]
3.3.2 Fisheries Accounts
Thematic Area 04: Poverty Environment Nexus (PEN)
3.4.1 Poverty Environment Accounts (PEA)
3.4.2 Measuring Green Growth Indicators of Bangladesh

3.3 Land Cover

Land cover refers to the observed physical and biological cover of the Earth's surface and includes natural vegetation and abiotic (non-living). Current land cover is a function of natural changes in the environment and of previous and current land use, particularly in agricultural and forestry areas. Thus, a clear and systematic description of classes of land cover allows the land cover classification to be compared with that for types of land use, while maintaining pure land cover criteria[xvi].

The following descriptions of different land cover types are based on the FAO Land Cover Classification System (LCCS);

Major land cover classes	Description
1 Artificial surfaces (including urban and associated areas)	The category comprises various regions characterized by a prevailing artificial covering. This encompasses all urban or interconnected attributes, such as urban parks (encompassing parks, green spaces, and lawns), along with industrial zones and locations for waste disposal and resource extraction.
2 Herbaceous crops	This category consists of a primary level of cultivated non-woody plants (such as grasses or flowering plants). This incorporates herbaceous crops grown for making hay. All non-perennial crops that endure for less than two growing seasons, as well as crops like sugarcane, maize, wheat etc. where the upper portion is routinely harvested while the root system persists in the field for over a year, are encompassed within this grouping.
3 Woody crops	The class is composed of a main layer of permanent crops (trees or shrub crops) and includes all types of orchards and plantations (fruit trees, tea plantation, oil palms, rubber plantation, Christmas trees, etc.).
4 Multiple or layered crops (mixed)	This class combine two different land cover situations: **Two layers of different crops:** A common case is the presence of one layer of woody crops (trees or shrubs) and another layer of herbaceous crop, for example, rice with long beans produced in Chattogram area. Trees with orchids in village forests, or betel nuts with Paan leaf in Rajshahi and Sylhet region.

Major land cover classes	Description
	Presence of one important layer of natural vegetation (mainly trees) that covers one layer of cultivated crops. Tea plantations are often covered with shade-trees are an example.
5 Grassland	This class includes any geographical area dominated by natural herbaceous plants (bathes in the haors, or grasslands in the forests) with a cover of **10 per cent or more**, irrespective of different human and/or animal activities, such as grazing or selective fire management. Woody plants (trees and/or shrubs) can be present, assuming their cover is **less then10 per cent**. **For example, a lot of grass land area at Sirajganj district and char land area in Bangladesh.**
6 Tree-covered areas	This class includes any geographical area dominated by natural tree plants with a **cover of 10 per cent or more**. Other types of plants (shrubs and/or herbs) can be present, even with a density higher than that of trees. Areas planted with trees for afforestation purposes and forest plantations are included in this class. This class includes areas seasonally or **permanently flooded with freshwater. It excludes coastal mangroves.**
7 Mangroves	This class includes any geographical area dominated by woody vegetation (trees and/or shrubs) with a cover of **10 per cent or more** that is permanently or regularly flooded by salt and/or brackish/saline water located in the coastal areas or in the deltas of rivers.
8 Shrub-covered areas	This class includes any geographical area dominated by natural shrubs having a cover of **10 per cent or more**. Trees can be present in scattered form if their cover **is less than 10 per cent**. Herbaceous plants can also be present at any density. The class includes shrub-covered areas permanently or regularly **flooded by inland fresh water**. It excludes shrubs flooded **by salt or brackish water in coastal areas.**
9 Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	This class includes any geographical area dominated by natural herbaceous vegetation **(cover of 10 per cent or more)** that is permanently or regularly flooded by **fresh or brackish water** (swamps, marsh areas, etc.). Flooding must persist for at least two months per year to be considered regular. Woody vegetation (trees and/or shrubs) can be present if their cover is **less than 10 per cent.**
10 Sparsely natural vegetated areas	This class includes any geographical areas where the cover of natural vegetation is **between 2 per cent and 10 per cent.** This includes **permanently or regularly flooded areas.**
11 Terrestrial barren land	This class includes any geographical area dominated by natural abiotic surfaces (bare soil, sand, rocks, etc.) where the natural vegetation is absent or almost absent (**covers less than 2 per cent**). The class includes areas regularly flooded by inland water (lake shores, river banks, salt flats, etc.). **It excludes coastal areas affected by the tidal movement of saltwater.**

Major land cover classes	Description
12 Permanent snow and glaciers	This class includes any geographical area covered by snow or glaciers persistently for 10 months or more. (**Not applicable for Bangladesh)**
13 Inland water bodies	This class includes any geographical area **covered for most of the year by inland water bodies**. In some cases, the water can be frozen for part of the year (less than 10 months). Because the geographical extent of water bodies can change, boundaries must be set consistently with those set by class 11, according to the dominant situation during the year and/or across multiple years. **Boga lake, Kaptai lake, Shitakundu lake etc. are example of inland water bodies.**
14 Coastal water bodies and intertidal areas	The class is defined on the basis of geographical features of the land in **relation to the sea** (coastal water bodies, i.e., lagoons and estuaries) and abiotic surfaces subject to water persistence (**intertidal areas, i.e., coastal flats in cox's bazar, coral reefs of Saint Martin**).

The following mapping of FAO Land Cover Classification System (LCCS) and country perspective (Bangladesh).

UNSEEA-CF Land cover Classification	Local classification
1. Artificial surfaces (including urban and associated areas)	Airport
	Brickfield
	Built-Up Non-Linear
	Dump Sites/ Extraction Site
	Rural Settlement
2. Herbaceous crops	Multiple Crop
	Single Crop
3. Woody crops	Orchards and Other Plantations (Trees)
	Rubber Plantation
	Shifting Cultivation
	Orchards and Other Plantations (Shrub)
4. Multiple or layered crops	Not applicable
5. Grassland	Herb Dominated Area
6. Tree-covered areas	Bamboo Forest
	Forest Plantation
	Hill Forest
	Plain Land Forest (Sal Forest)
	Swamp Forest
	Swamp Plantation
7. Mangroves	Mangrove Forest
	Mangrove Plantation
8. Shrub-covered areas	Shrubs with scattered trees
9. Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded	Swamp Reed Land
10. Sparsely natural vegetated areas	Not applicable
11. Terrestrial barren land	River Banks

UNSEEA-CF Land cover Classification	Local classification
	Salt Pans
	Sand
12. Permanent snow and glaciers Inland water bodies	Not applicable
13. Inland water bodies	Baor
	Brackish Water Aquaculture
	Fresh Water Aquaculture
	Lake
	Perennial Beels/Haors
	Ponds
	Rivers and Khals
14. Coastal water bodies and intertidal areas	Mud Flats or Intertidal Area

Chapter IV
Land Accounts for Bangladesh

Chapter IV
Land Accounts for Bangladesh

4.1 Land Accounts

Land is a unique asset that delineates the space in which human activities and environmental processes take place, and within which environmental assets and economic assets are located. Land is central to economic and environmental accounting. Beyond an assessment of the ownership and use of land as part of economic production, some of the issues that can be considered in the context of land accounts include the impacts of urbanization, the sustainability of agriculture and forestry, the use of inland freshwater resources, and biodiversity conservation. Land area can be analyzed in many ways and as such land accounts can be prepared from several points of view.

From a spatial point of view, land accounts can be compiled for the country as a whole or for regions within countries. For example, accounts can be compiled by administrative boundaries or by land cover characteristics. From an economic point of view, land accounts can be constructed by the area of land owned by different institutional sectors, land used by different industries and land zoned for different activities (e.g., residential, industrial, conservation).

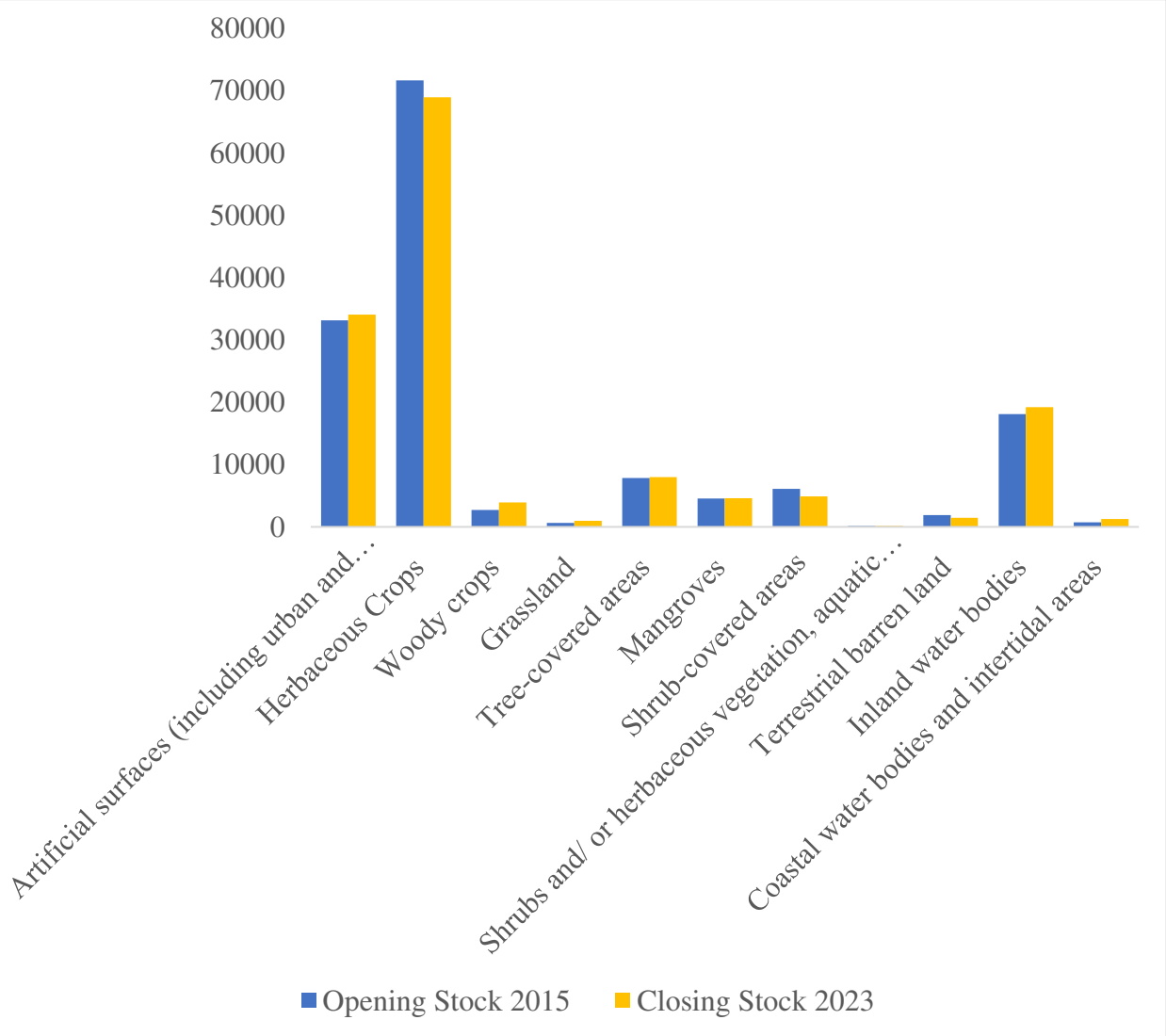
Table 4.1 Physical Account for Land Cover, Bangladesh, 2015 and 2023 (sq. km)

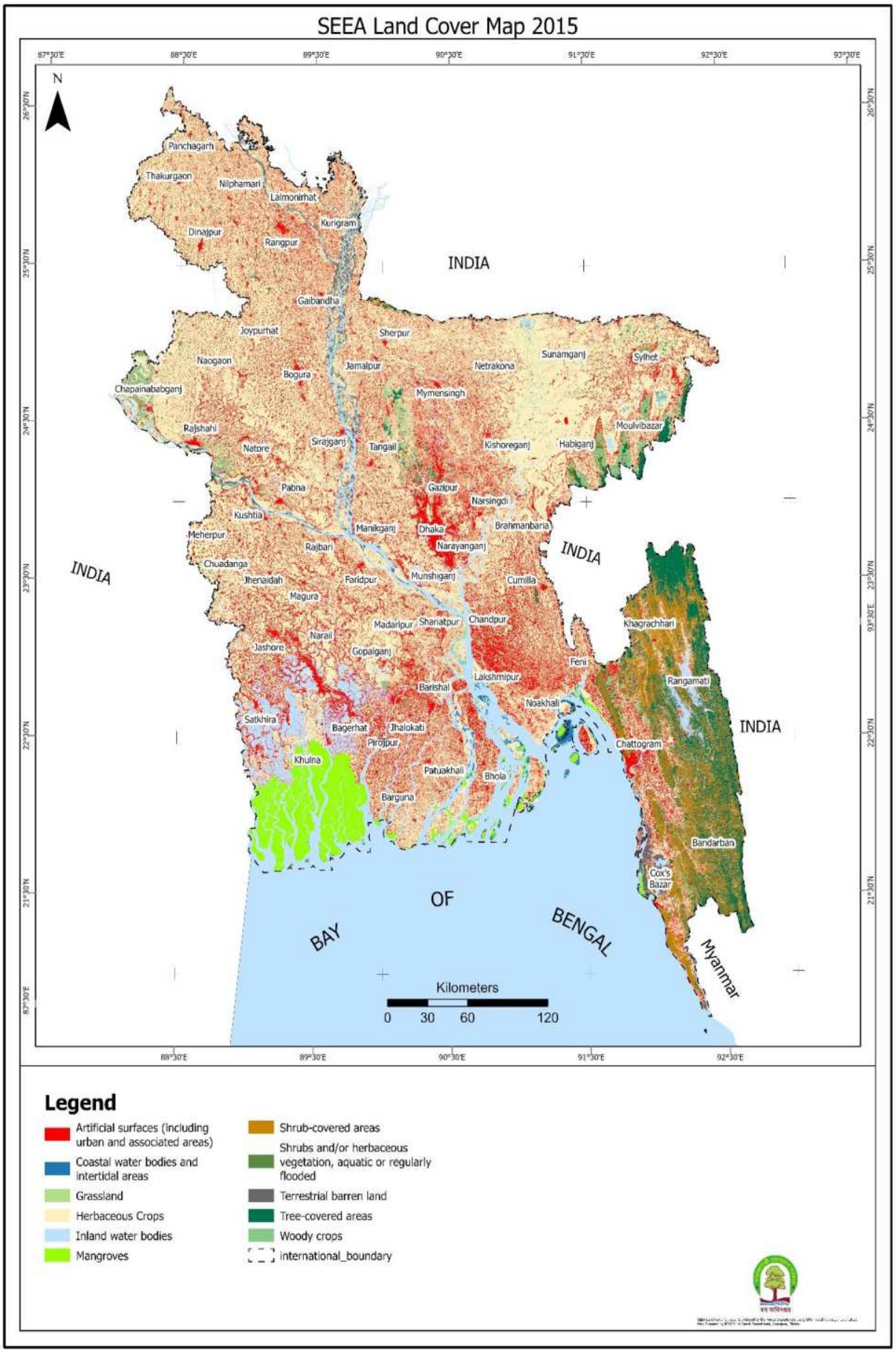
	Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas
Opening Stock 2015	33139.83	71655.99	2730.64	650.44	7839.79	4545.52	6113.77	133.57	1881.88	18120.05	758.51
Additions to Stock	3912.07	4749.86	1852.76	759.38	945.86	201.49	599.05	31.58	766.95	4 140.55	1124.83
Reductions in Stock	2979.00	7438.67	634.84	409.28	790.00	143.83	1813.47	9.67	1168.27	3064.49	632.86
Closing Stock 2023	34072.90	68967.18	3948.56	1000.55	7995.65	4603.18	4899.35	155.48	1480.56	19196.12	1250.48
Percentage (%) Change	**2.82**	**-3.75**	**44.60**	**53.83**	**1.99**	**1.27**	**-19.86**	**16.40**	**-21.33**	**5.94**	**64.86**

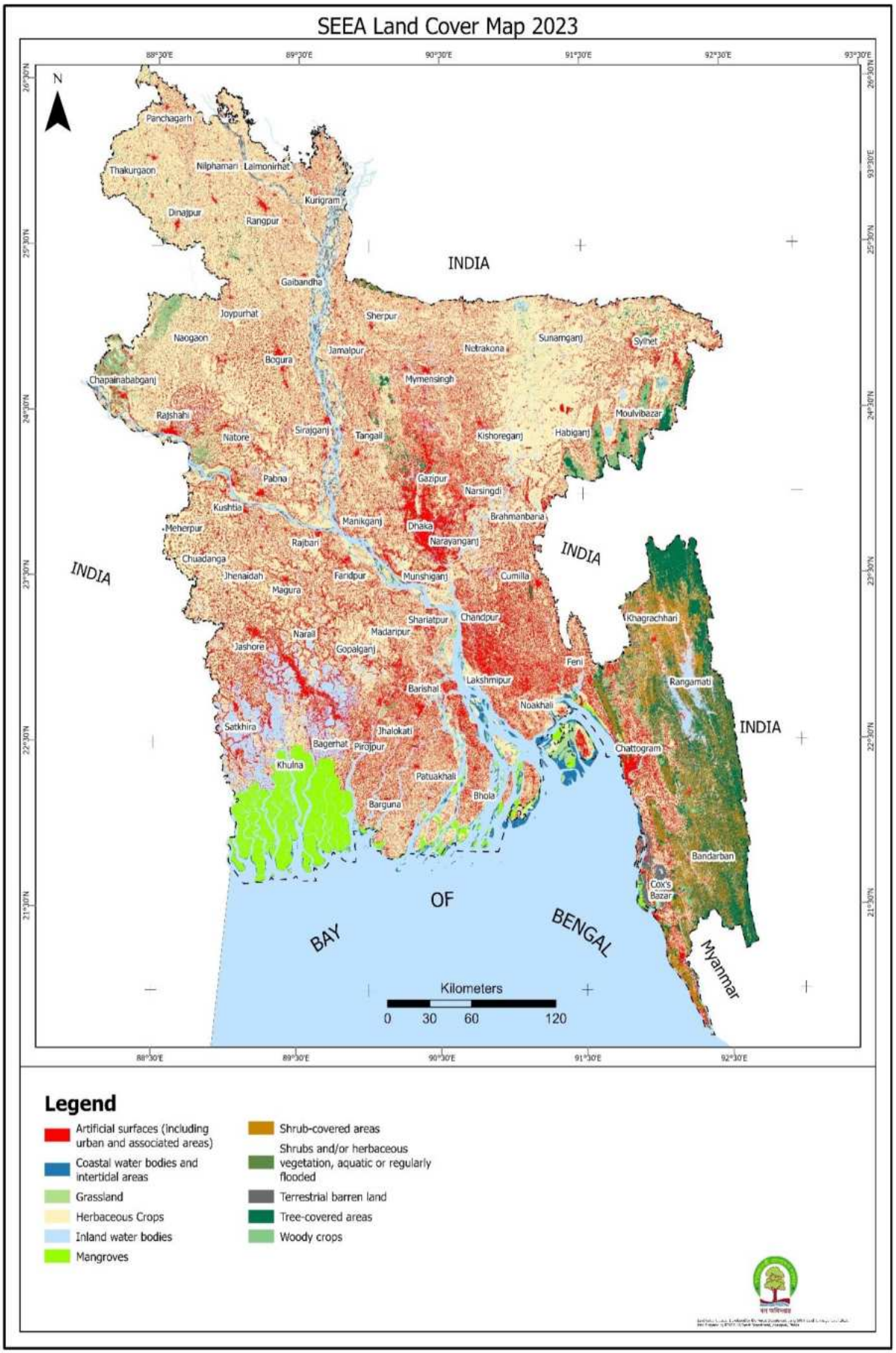
*** Data Source: Forest Department.

Table 4.1 depicts the physical account for land cover of Bangladesh from 2015 to 2023 in Square Kilometre (sq. km) by land cover classification reflecting the status of opening and closing stock from the specific years. Opening stock of Artificial surfaces (including urban and associated areas) at 2015 is recorded 33139.83 sq. km and after 08 years, at 2023 its closing stock is recorded 34072.90 sq. km (2.82%). Similarly, opening stock of remaining classes; Herbaceous Crops, Woody crops, Grassland, Tree-covered areas, Mangroves, Shrub-covered areas, Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded, Terrestrial barren land, Inland water bodies and Coastal water bodies and intertidal areas at 2015 are recorded 71655.99 sq. km, 2730.64 sq. km, 650.44 sq. km, 7839.79 sq. km, 4545.52 sq. km, 6113.77 sq. km, 133.57 sq. km, 1881.88 sq. km, 18120.05 sq. km and 758.51 respectively and after 08 years at 2023 its closing stock are recorded 68967.18 (3.75%), 3948.56 (44.60%), 1000.55 (53.83%), 7995.65(1.99%), 4603.18 (1.27%), 4899.35 (-19.86%), 155.48 (16.40%), 1480.56 (-21.33%), 19196.12 (5.94%) sq. km and 1250.48 (64.86%) sq. km respectively. Figure 4.1 provides a graphical presentation of land cover of Bangladesh from 2015 to 2023 in sq. km by land cover classification.

Figure 4.1: Land cover of Bangladesh from 2015 to 2023 in sq. km by land cover classification.




SEEA Land Cover Map 2015
N
INDIA
INDIA
INDIA
INDIA
Myanmar
BAY OF BENGAL
Panchagarh
Thakurgaon
Nilphamari
Lalmonirhat
Kurigram
Dinajpur
Rangpur
Gaibandha
Joypurhat
Sherpur
Naogaon
Jamalpur
Sunamganj
Sylhet
Bogura
Netrakona
Chapainababganj
Mymensingh
Rajshahi
Moulvibazar
Natore
Sirajganj
Tangail
Kishoreganj
Habiganj
Pabna
Gazipur
Narsingdi
Kushtia
Manikganj
Dhaka
Brahmanbaria
Meherpur
Rajbari
Narayanganj
Chuadanga
Jhenaidah
Faridpur
Munshiganj
Cumilla
Magura
Madaripur
Shariatpur
Chandpur
Khagrachhari
Narail
Jashore
Gopalganj
Feni
Lakshmipur
Rangamati
Barishal
Noakhali
Satkhira
Bagerhat
Jhalokati
Pirojpur
Chattogram
Khulna
Patuakhali
Bhola
Barguna
Bandarban
Cox's Bazar
Kilometers
0 30 60 120
Legend
Artificial surfaces (including urban and associated areas)
Coastal water bodies and intertidal areas
Grassland
Herbaceous Crops
Inland water bodies
Mangroves
Shrub-covered areas
Shrubs and/or herbaceous vegetation, aquatic or regularly flooded
Terrestrial barren land
Tree-covered areas
Woody crops
international_boundary


SEEA Land Cover Map 2023
N
Panchagarh
Thakurgaon
Nilphamari
Lalmonirhat
Kurigram
Dinajpur
Rangpur
Gaibandha
Joypurhat
Sherpur
Naogaon
Jamalpur
Netrakona
Sunamganj
Sylhet
Bogura
Chapainababganj
Mymensingh
Rajshahi
Moulvibazar
Natore
Sirajganj
Tangail
Kishoreganj
Habiganj
Pabna
Gazipur
Narsingdi
Kushtia
Manikganj
Brahmanbaria
Meherpur
Dhaka
Rajbari
Narayanganj
Chuadanga
Jhenaidah
Faridpur
Munshiganj
Cumilla
Magura
Shariatpur
Chandpur
Khagrachhari
Madaripur
Narail
Jashore
Gopalganj
Feni
Lakshmipur
Rangamati
Barishal
Noakhali
Satkhira
Jhalokati
Bagerhat
Pirojpur
Chattogram
Khulna
Patuakhali
Bhola
Barguna
Bandarban
Cox's Bazar
INDIA
INDIA
INDIA
INDIA
OF
BAY
BENGAL
Myanmar
Kilometers
0 30 60 120
88°30'E
89°30'E
90°30'E
91°30'E
92°30'E
93°30'E
26°30'N
25°30'N
24°30'N
23°30'N
22°30'N
21°30'N
Legend
Artificial surfaces (including urban and associated areas)
Coastal water bodies and intertidal areas
Grassland
Herbaceous Crops
Inland water bodies
Mangroves
Shrub-covered areas
Shrubs and/or herbaceous vegetation, aquatic or regularly flooded
Terrestrial barren land
Tree-covered areas
Woody crops

4.2 Land Cover Change Matrix

The Land cover change matrix shows the area of different land cover types at the beginning of the reference period (opening stock), the net increases and net decreases according to the land cover type it was converted from (in the case of increases), or what it was converted to (in the case of decreases). Summing the rows will give the net overall change for each class of land cover during the period, which is shown in the second last row. Finally, the area covered by different land cover types at the end of the reference period (closing stock) is shown on last row.

We can see each cell in the matrix indicates the area of land that has changed from one class to another, thereby providing detailed insights into land conversion patterns such as deforestation, urban expansion, agricultural intensification, or wetland loss. This matrix serves as a foundational dataset for assessing environmental impacts, land degradation, and resource allocation.

In the context of natural resource accounting and sustainable land management, the Land Cover Change Matrix enables policymakers, researchers, and planners to track the dynamics of landscape transformation. It helps identify dominant trends, such as increases in artificial surfaces or declines in ecologically important areas like forests and wetlands. By highlighting both stable and transitional areas, the matrix supports evidence-based decision-making for land use planning, conservation strategies, and ecosystem service assessments. When aligned with frameworks like SEEA-CF, it also facilitates integration of environmental data with economic indicators, thereby promoting more comprehensive and sustainable development planning.

Table 4.2 Change Matrix for Land Cover, Bangladesh, 2015 and 2023 (sq. km)

Land Cover Classification	Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	**Opening stock 2015**
Artificial surfaces (including urban and associated areas)	30160.83	1729.96	688.51	8.33	36.12	4.45	43.84	0.07	26.10	438.39	3.23	33139.83
Herbaceous Crops	3149.20	64217.32	839.66	117.84	133.18	13.83	334.90	16.60	230.46	2576.28	26.73	71655.99
Woody crops	239.75	293.82	2095.80	0.08	37.96	0.42	35.36		0.80	26.62	0.03	2730.64
Grassland	13.83	203.59	1.82	241.16	3.08	13.34	0.70	14.43	28.88	122.13	7.49	650.44
Tree-covered areas	132.72	313.27	105.27	0.50	7049.79	0.10	165.57	0.13	0.76	71.60	0.08	7839.79
Mangroves	7.44	8.68	0.00	3.94	0.51	4401.69	0.00		4.93	100.29	18.03	4545.52
Shrub-covered areas	167.07	630.80	209.93	2.55	709.48	0.01	4300.30		0.42	93.18	0.03	6113.77
Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded	0.24	2.78		0.29	0.72		0.05	123.90		5.57		133.57
Terrestrial barren land	37.35	453.47	0.66	61.25	4.14	4.49	0.87	0.00	713.60	588.52	17.52	1881.88
Inland water bodies	149.02	894.26	6.78	385.58	20.50	79.25	17.73	0.35	459.32	15055.57	1051.68	18120.05

Table 4.2 Change Matrix for Land Cover, Bangladesh, 2015 and 2023 (sq. km)

Land Cover Classification	Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/ or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	**Opening stock 2015**
Coastal water bodies and intertidal areas	15.45	219.23	0.13	179.03	0.16	85.61	0.01		15.28	117.97	125.65	758.51
Net change (increase-decrease)	933.07	-2688.81	1217.92	350.10	155.86	57.66	-1214.42	21.91	-401.32	1076.07	491.96	
Closing Stock 2023	34072.90	68967.18	3948.56	1000.55	7995.65	4603.18	4899.35	155.48	1480.56	19196.12	1250.48	147570.00

*** Data source: Forest Department.

Table 4.2 depicts the change matrix for land cover of Bangladesh from 2015 to 2023 in Square Kilometre (sq. km) by land cover classification. Opening stock of each class at 2015 shows in the last column and closing stock at 2023 shows in the last row of the table. Net change (increase-decrease) also shows in the immediate before of the last row. Each cell of the matrix provides the data that changed from one class to another except diagonal cell.

The opening stock of Artificial surfaces in 2015 was 33,139.83 sq. km, increasing to 34,072.90 sq. km by 2023. During this period, 2,978.90 sq. km of Artificial surfaces were converted to other land uses, mainly: Herbaceous Crops (1,729.96 sq. km), Woody Crops (688.51 sq. km), and others comprising the remaining categories (560.43 sq. km). At the same time, 3,911.83 sq. km from other land uses were converted into Artificial surfaces, primarily from Herbaceous Crops (3,149.20 sq. km), Woody Crops (239.75 sq. km), and others (522.88 sq. km).

Between 2015 and 2023, the area under Herbaceous Crops decreased from 71,655.99 sq. km to 68,967.18 sq. km, a net loss of 2,688.81 sq. km over 8 years. During this period, 7,439.65 sq. km of Herbaceous Crops were converted to other land uses, mainly to Artificial Surfaces (3,149.20 sq. km), Inland Water Bodies (2,576.28 sq. km), and Woody Crops (839.66 sq. km). Conversely, 4,750.86 sq. km from other land categories were converted into Herbaceous Crops, primarily from Artificial Surfaces (1,729.96 sq. km), Shrub-covered Areas (630.80 sq. km), and Inland Water Bodies (894.26 sq. km).

In 2015, Woody crops occupied 2730.64 sq.km, increasing to 3948.56 sq.km by 2023. During this period, 634.84 sq.km were lost to other land uses, primarily to Artificial surfaces (239.75 sq.km) and Herbaceous crops (293.82 sq.km). Conversely, 1853.76 sq.km were gained from other land uses, mainly from Artificial surfaces (688.51 sq.km) and Herbaceous crops (839.66 sq.km), resulting in a net increase of approximately 1218 sq.km.

In 2015, Grassland covered 650.44 sq.km, increasing to 1000.55 sq.km by 2023. During this period, 409.29 sq.km were converted from Grassland to other land uses, mainly Herbaceous crops (203.59 sq.km) and Inland water bodies (122.13 sq.km). Meanwhile, 759.39 sq.km from other land uses were converted to Grassland, primarily from Inland water bodies (385.58 sq.km) and Coastal water bodies (179.03 sq.km), resulting in a net increase of approximately 350.11 sq.km.

In 2015, Tree-covered areas occupied 7839.79 sq.km, increasing to 7995.65 sq.km by 2023. Over this period, 789.00 sq.km were lost to other land uses, primarily to Herbaceous crops (313.27 sq.km), Woody crops (105.27 sq.km), and Shrub-covered areas (165.57 sq.km). Conversely, 945.93 sq.km were gained from other land uses, mainly from Shrub-covered areas (709.48 sq.km) and Herbaceous crops (133.18 sq.km), resulting in a net increase of approximately 155.86 sq.km.

Mangroves covered 4545.52 sq.km in 2015, increasing to 4603.18 sq.km by 2023. During this period, 144.82 sq.km were lost to other land uses, mainly Inland water bodies (100.29 sq.km) and Coastal water bodies (18.03 sq.km). Conversely, 201.60 sq.km were gained from other land uses, primarily from Inland water bodies (79.25 sq.km) and Coastal water bodies (85.61 sq.km), resulting in a net increase of approximately 57.66 sq.km.

Shrub-covered areas declined from 6113.77 sq.km in 2015 to 4899.35 sq.km in 2023. Over this period, 1813.64 sq.km were converted from Shrubs to other land uses, primarily Herbaceous crops and Tree-covered areas. Meanwhile, 599.03 sq.km were converted to Shrub-covered areas from other uses, resulting in a net loss of approximately 1214.42 sq.km.

Between 2015 and 2023, the area of Shrubs and/or herbaceous vegetation, aquatic or regularly flooded areas increased from 133.57 sq. km to 155.48 sq. km. During this period, 9.65 sq. km were lost to other land uses, while 31.58 sq. km were gained from conversions, resulting in a net increase.

In 2015, Terrestrial barren land covered 1881.88 sq. km, decreasing to 1480.56 sq. km by 2023. During this period, 1168.27 sq. km shifted to other land uses such as Artificial surfaces (37.35 sq. km), Herbaceous Crops (453.47 sq. km), Inland water bodies (588.52 sq. km), and others. Meanwhile, 766.95 sq. km from various land uses, including Herbaceous Crops (230.46 sq. km), Inland water bodies (459.32 sq. km), and others, were added back to Terrestrial barren land, resulting in a net decrease.

In 2015, Inland water bodies covered 18,120.05 sq. km, increasing to 19,196.12 sq. km by 2023. During this period, 3,063.47 sq. km were converted to other land uses such as Herbaceous Crops (894.26 sq. km), Coastal water bodies (1,051.68 sq. km), and others. Meanwhile, 4,140.55 sq. km from various land uses, including Herbaceous Crops (2,576.28 sq. km), Terrestrial barren land (588.52 sq. km), and others, were added to Inland water bodies, resulting in a net increase.

In 2015, Coastal water bodies and intertidal areas covered 758.51 sq. km, increasing to 1,250.48 sq. km by 2023. During this period, 632.87 sq. km were converted to other land uses such as Herbaceous Crops (219.23 sq. km), Inland water bodies (117.97 sq. km), and others. Meanwhile, 1,125.79 sq. km from various land uses, including Inland water bodies (1,051.68 sq. km) and Herbaceous Crops (26.73 sq. km), were added to Coastal water bodies and intertidal areas, resulting in a net increase.

It is important to note that the matrix shows net changes, which may hide important details. For instance, if natural forest is lost in one area but plantation forest is added elsewhere, the net change in tree-covered area would appear as zero. Similarly, agricultural land converted to built-up areas may be offset by new agricultural land created through deforestation, showing no overall change. In such cases, the table format can be expanded to show gains and losses separately for more detailed analysis.

Chapter V
Land Use Accounts

Chapter V
Land Use Accounts

Land use reflects both (i) the activities undertaken and (ii) the institutional arrangements put in place; for a given area for the purposes of economic production, or the maintenance and restoration of environmental functions.

In effect, an area that is "used" implies the existence of some human intervention, including active management. Land in use therefore includes protected areas which are under the active management of institutional units of a country for the purpose of excluding most economic or human activity from that area. Not all land in a country is used following the definition above. Some areas are "not in use", although they may have a use in supporting ecosystems and biodiversity. In order to provide a complete accounting for land use within a country, both land in use and land not in use must be included[xvii].

The complete classification for land use comprises **46 basic classes** mentioned at the SEEA-CF. The higher-level classes for land and the classes for inland water are mentioned below. Classes for coastal water and the exclusive economic zone (EEZ) are parallel to those for inland water[xviii].

Land use classification	
1	**Land**
1.1	Agriculture
1.2	Forestry
1.3	Land used for aquaculture
1.4	Use of built up and related areas
1.5	Land used for maintenance and restoration of environmental functions
1.6	Other uses of land (not elsewhere classified)
1.7	Land not in use
2	**Inland Waters**
2.1	Inland waters used for aquaculture or holding facilities
2.2	Inland waters used for maintenance and restoration of environmental
2.3	Other uses of inland waters n.e.c.
2.4	Inland waters not in use
3	**Coastal Water**
4	**Exclusive Economic Zone (EEZ)**

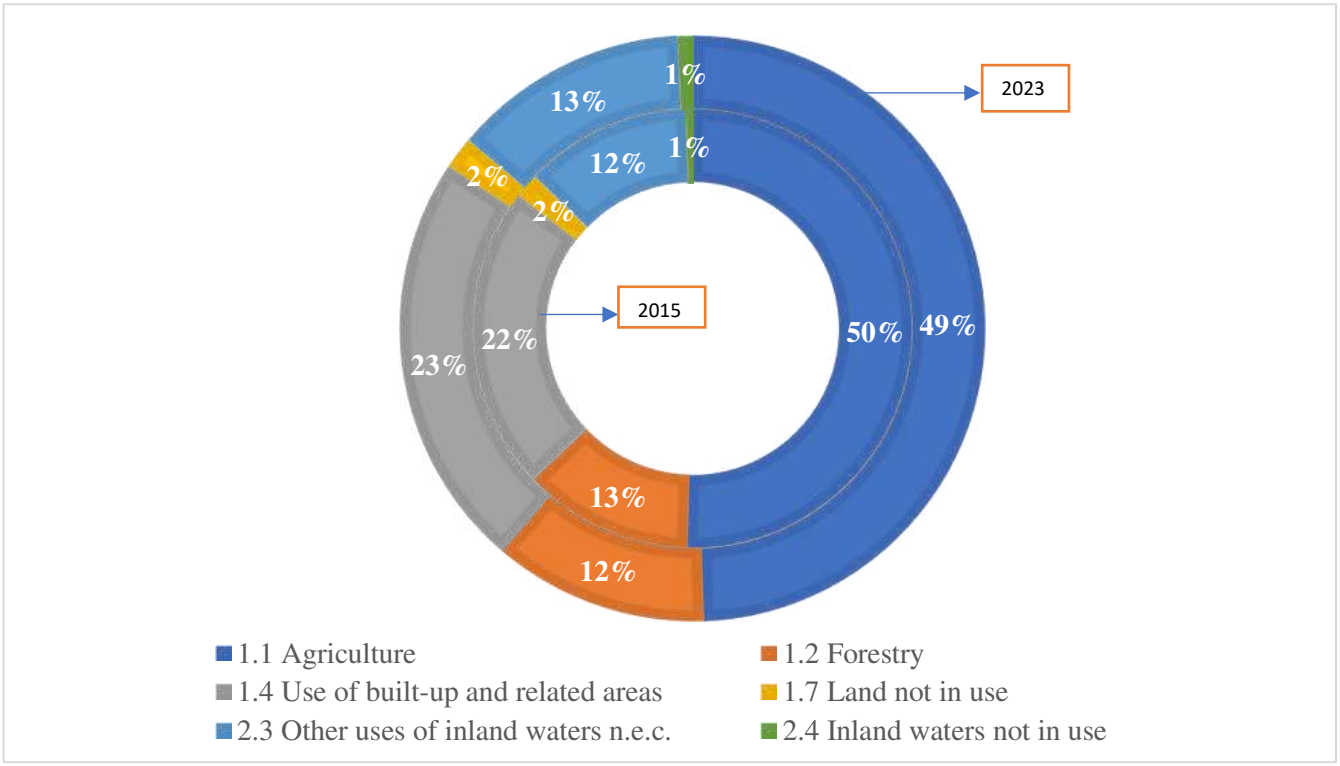
Table 5.1 Physical Account for Land Use, Bangladesh, 2015 and 2023 (sq.km)

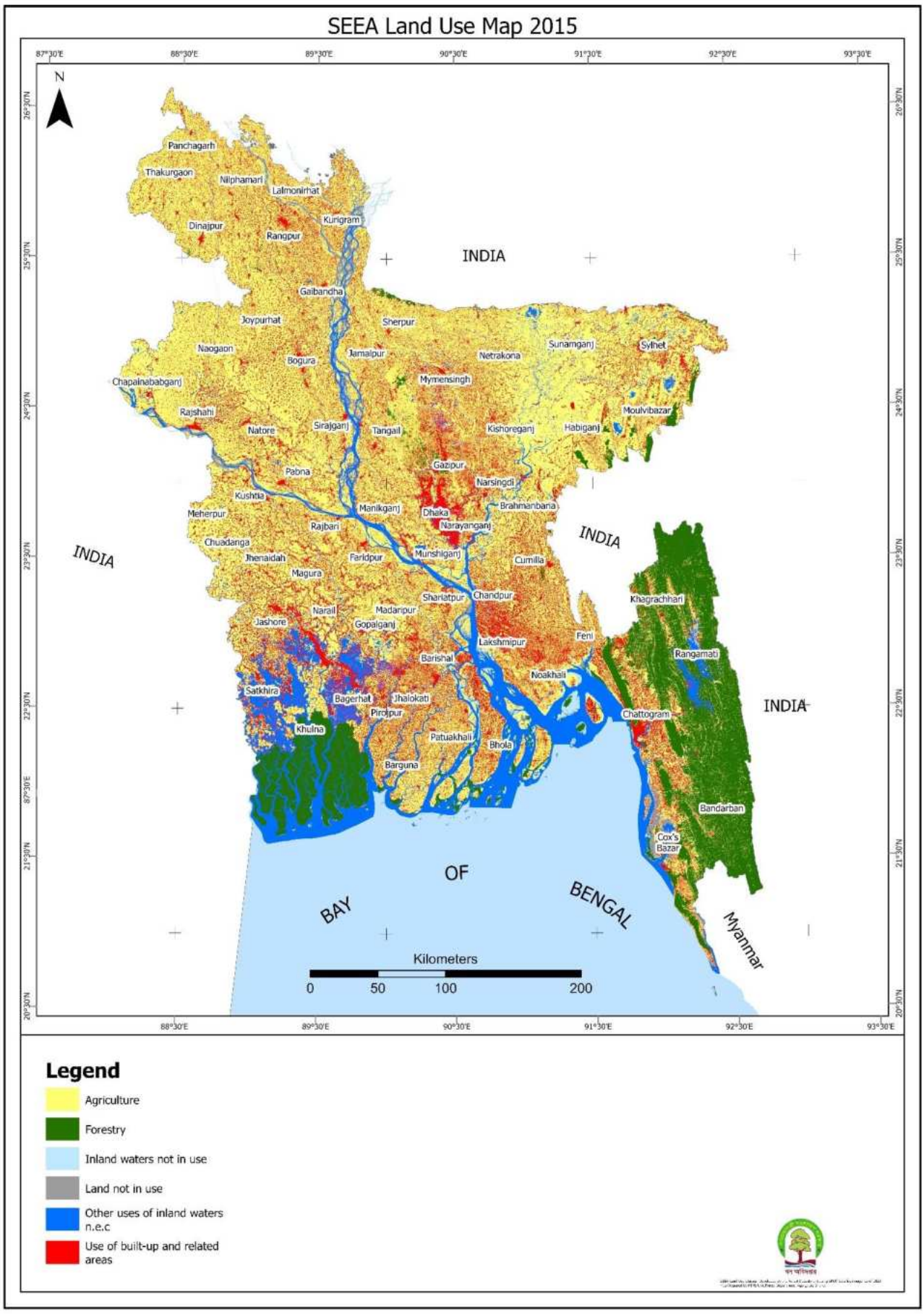
	Agriculture	Forestry	Use of built-up and related areas	Land not in use	Other uses of inland waters n.e.c.	Inland waters not in use
Opening Stock 2015	74386.63	18499.08	33139.83	2665.89	18120.05	758.51
Additions to Stock	-	-	933.07	-	1076.07	491.96
Reductions in Stock	1470.89	1000.90	-	29.31	-	-
Closing Stock 2023	72915.74	17498.18	34072.90	2636.58	19196.12	1250.48
Percentage (%) Change	-1.98	-5.41	2.82	-1.10	5.94	64.86

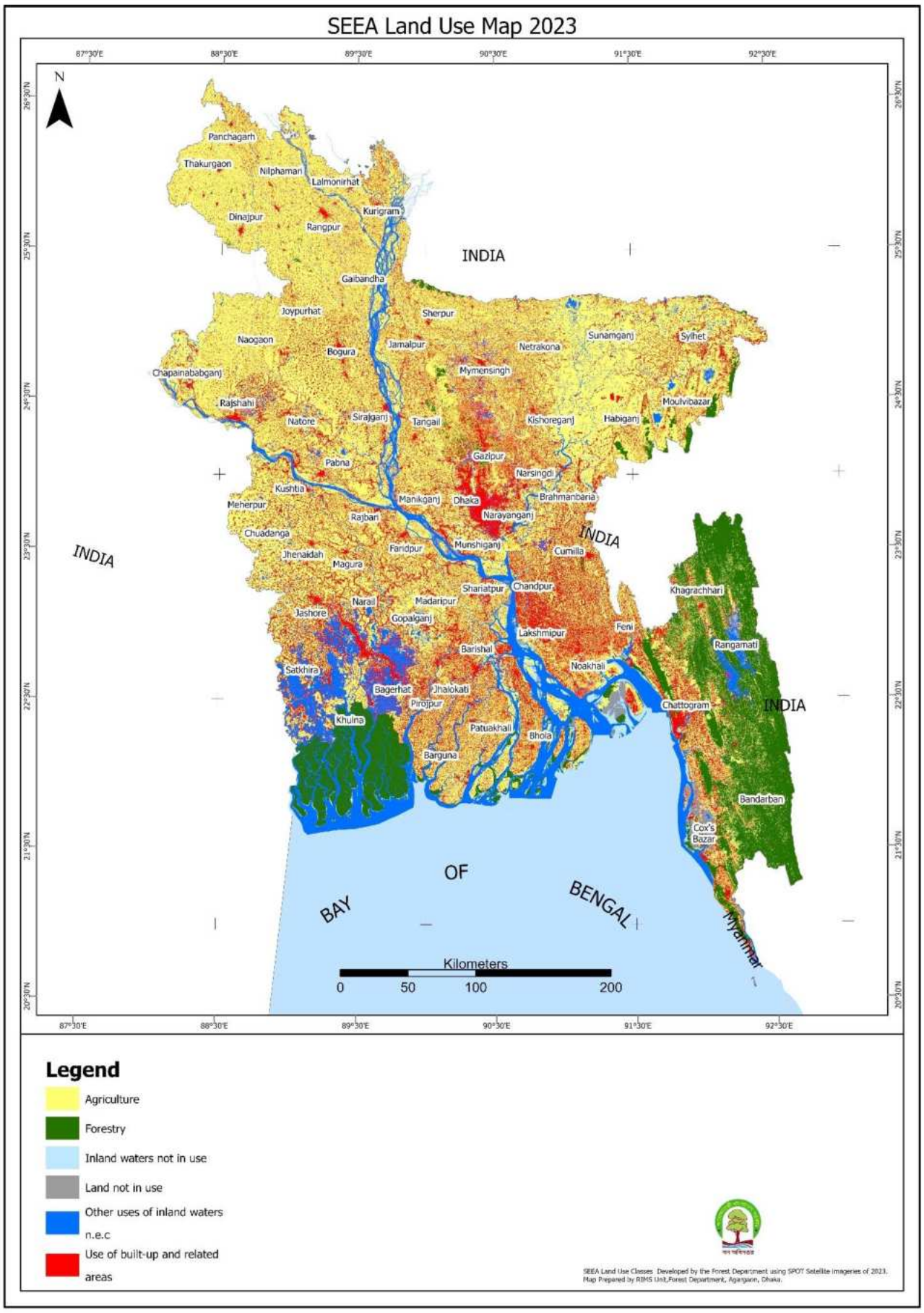
*** Data source: Forest Department

Table 5.1 portrays the physical account for land use of Bangladesh from 2015 to 2023 in Square Kilometre (sq. km) by land use classification reflecting the status of opening and closing stock from the specific years. Opening stock of Agriculture at 2015 is recorded 74386.63 sq. km and after 08 years, at 2023 its closing stock is recorded 72915.74 sq. km. Similarly, opening stock of remaining classes; Forestry, Use of built-up and related areas, Land not in use, Other uses of inland waters n.e.c and Inland waters not in use at 2015 are recorded 18499.08 sq. km, 33139.83 sq. km, 2665.89 sq. km 18120.05 sq. km and 758.51 sq. km respectively and after 08 years at 2023 its closing stock are recorded 17498.18 sq. km, 34072.90 sq. km, 2636.58 sq. km, 19196.12 sq. km and 1250.48 sq. km respectively.

Figure 5.1 provides a graphical presentation of land use of Bangladesh from 2015 to 2023 in sq. km by land use classification.




SEEA Land Use Map 2015
N
INDIA
INDIA
INDIA
INDIA
Myanmar
BAY OF BENGAL
Panchagarh
Thakurgaon
Nilphamari
Lalmonirhat
Kurigram
Dinajpur
Rangpur
Gaibandha
Joypurhat
Sherpur
Naogaon
Bogura
Jamalpur
Netrakona
Sunamganj
Sylhet
Chapainababganj
Mymensingh
Rajshahi
Natore
Sirajganj
Tangail
Kishoreganj
Habiganj
Moulvibazar
Pabna
Gazipur
Narsingdi
Kushtia
Meherpur
Manikganj
Dhaka
Brahmanbaria
Rajbari
Narayanganj
Chuadanga
Jhenaidah
Faridpur
Munshiganj
Cumilla
Magura
Shariatpur
Chandpur
Khagrachhari
Narail
Madaripur
Jashore
Gopalganj
Feni
Lakshmipur
Rangamati
Barishal
Noakhali
Satkhira
Bagerhat
Jhalokati
Pirojpur
Chattogram
Khulna
Patuakhali
Bhola
Barguna
Bandarban
Cox's Bazar
Kilometers
0
50
100
200
Legend
Agriculture
Forestry
Inland waters not in use
Land not in use
Other uses of inland waters n.e.c
Use of built-up and related areas


SEEA Land Use Map 2023
N
87°30'E
88°30'E
89°30'E
90°30'E
91°30'E
92°30'E
26°30'N
25°30'N
24°30'N
23°30'N
22°30'N
21°30'N
20°30'N
Panchagarh
Thakurgaon
Nilphamari
Lalmonirhat
Kurigram
Dinajpur
Rangpur
INDIA
Gaibandha
Joypurhat
Sherpur
Naogaon
Bogura
Jamalpur
Netrakona
Sunamganj
Sylhet
Chapainababganj
Mymensingh
Rajshahi
Natore
Sirajganj
Tangail
Kishoreganj
Habiganj
Moulvibazar
Pabna
Gazipur
Narsingdi
Kushtia
Meherpur
Manikganj
Dhaka
Brahmanbaria
Rajbari
Narayanganj
Chuadanga
Faridpur
Munshiganj
Cumilla
Jhenaidah
Magura
Shariatpur
Chandpur
Khagrachhari
Narail
Madaripur
Jashore
Gopalganj
Feni
Lakshmipur
Rangamati
Barishal
Noakhali
Satkhira
Bagerhat
Jhalokati
Pirojpur
Chattogram
Khulna
Patuakhali
Bhola
Barguna
Bandarban
Cox's Bazar
OF
BAY
BENGAL
Myanmar
Kilometers
0
50
100
200
Legend
Agriculture
Forestry
Inland waters not in use
Land not in use
Other uses of inland waters n.e.c
Use of built-up and related areas
SEEA Land Use Classes Developed by the Forest Department using SPOT Satellite Imageries of 2023.
Map Prepared by RIMS Unit,Forest Department, Agargaon, Dhaka.

Land cover and land use are interrelated. For example, land uses associated with agricultural production are closely aligned to crop area. However, while land use and land cover can be closely related, this is not always the case. For example, tree covered areas can be used for forestry, for the maintenance and restoration of environmental functions, or may not be used at all (i.e. land not in use). Another common example is grazing land which constitutes agricultural land use but shows up as grasslands or sparse trees when considering land cover.

With data structured in an accounting format based on common statistical units, it is possible to link land cover to land use. This allows for the preparation of accounts showing land cover by land use as well as matrices showing the changes in both land cover and land use over an accounting period. In assessing land cover and land use change, it may be useful to determine the proportion of the opening stock of land whose cover or use has remained unchanged. To undertake this type of analysis the data must be based on spatially referenced data source.

Chapter VI

Conclusion

Chapter VI
Conclusion

Opportunities and Challenges

The opportunities to develop Natural Resource Accounts (NRA/NCA) are

- ✓ Strong organizational structure;
- ✓ Strong collaboration with Development Partners (DPs) and Stakeholders;
- ✓ Vibrant civil society, academia, civil society's organizations, NGOs/INGOs etc.;
- ✓ Media (print and electronic) support.

BBS has also challenged to develop NRA/NCA in the following ways:

(i) Capacity of the Human Resources;

(ii) Lack of Statistics (Data and Information); and

(iii) Clear understanding of the various elements of the SEEA.

Bangladesh will need to invest time and resources to collect data from various ministries, divisions, departments and agencies. The key tasks will be to identify the sources (or agencies collecting the data), set up the data collection and sharing protocols and provide technical assistance to the data collecting agencies to improve data quality and frequency.

The focus of the NRA/NCA activities that will produce substantial new information to address Bangladesh's sustainable development policy priorities. This is the first stage of creating a common, cost-effective and sustainable statistical infrastructure for the SEEA. Maintaining the momentum generated by these medium-term activities by new data collection and continual improvement will require more than specific funding opportunities e.g., Ocean Accounts (Blue Economy), Fisheries, Air Emission Accounts, Energy Accounts etc. It will also require embedding the activities into the functions of government and national planning processes. The -NRA/NCA could provide the foundations to write proposals that track the detailed for each activity and the funding would be required. May the Opportunities for resources mobilization from different sources like National Initiatives, UN Agencies, Development Partners and the refocusing of current activities of the NRA/NCA under SEEA.

Annex

Annex-01 (District Data)

SEEA Land Cover Class 2015

SL		Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	Grand Total
1	**Bagerhat**	665.89	460.22	4.45	16.90		1488.90			1.89	1605.50	9.17	4252.91
2	**Bandarban**	73.97	329.32	54.36		2154.38		1927.16		0.00	33.14		4572.33
3	**Barguna**	443.93	762.10	2.38	1.86		50.51			1.34	326.45	6.68	1595.24
4	**Barisal**	929.92	1101.89	16.03	45.97		0.00			5.66	409.33	26.42	2535.22
5	**Bhola**	650.27	918.43	0.79	19.39		126.16			2.73	1734.67	165.19	3617.62
6	**Bogra**	742.88	1902.29	7.18	11.71	0.00				80.89	163.48		2908.42
7	**Brahamanbaria**	407.83	1380.07	6.53	0.60	5.87				0.18	113.29		1914.36
8	**Ch. Nawabganj**	678.94	721.52	0.49	42.22					3.09	260.62	0.28	1707.16
9	**Chandpur**	187.93	828.85	473.73	14.56	0.00				13.69	159.22		1677.97
10	**Chittagong**	1329.69	1449.10	99.14	0.01	547.75	49.79	682.75		41.13	1087.71	118.12	5405.18
11	**Chuadanga**	238.20	780.60	105.70	0.09						33.24		1157.82
12	**Comilla**	401.64	590.67	5.32	0.36	150.68	56.08	471.56		357.12	639.35	33.51	2706.28
13	**Cox'S Bazar**	1089.05	1874.53	0.32		24.12					86.83		3074.85
14	**Dhaka**	670.45	645.16	8.90	6.91	0.45				9.12	117.79		1458.78
15	**Dinajpur**	776.27	2487.49	76.91	0.78	32.12				14.73	47.12		3435.42
16	**Faridpur**	538.44	1317.72	16.12	0.06					20.26	129.77		2022.36
17	**Feni**	354.97	496.16	1.00	12.22	3.27	4.78			3.94	33.25	13.03	922.62
18	**Gaibandha**	539.53	1240.87	6.75	15.13					184.52	147.68		2134.48
19	**Gazipur**	835.30	752.16	18.70	5.58	135.19		0.42		0.07	53.82		1801.24
20	**Gopalganj**	367.31	964.11	4.00	0.52					0.04	138.78		1474.76
21	**Habiganj**	389.52	1787.63	200.21	5.05	89.66		49.22		0.36	70.78		2592.44

SL		Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	Grand Total
22	**Jamalpur**	537.81	1268.64	11.06	15.63	7.26		2.21		81.64	112.23		2036.47
23	**Jessore**	924.42	1315.99	18.67							298.46		2557.53
24	**Jhalokati**	329.01	342.30	13.21			0.31				43.30	2.07	730.19
25	**Jhenaidah**	524.93	1330.93	19.11						1.47	74.73		1951.17
26	**Joypurhat**	230.02	718.66	3.34							6.79		958.81
27	**Khagrachhari**	157.95	369.80	23.29		1025.10		1353.99			28.25		2958.37
28	**Khulna**	497.75	751.83	3.38	2.74		1460.86			3.54	1788.86	14.42	4523.39
29	**Kishoreganj**	455.96	1894.45	1.74	16.23				0.32	0.78	174.92		2544.39
30	**Kurigram**	520.96	1161.12	0.18	26.25					343.49	198.61		2250.60
31	**Kushtia**	393.96	1037.30	15.52	14.78					70.74	94.86		1627.16
32	**Lakshmipur**	602.17	507.06	0.86	7.40					2.25	344.52	27.83	1492.10
33	**Lalmonirhat**	329.91	797.88	3.43	2.53					58.56	30.42		1222.73
34	**Madaripur**	307.97	744.93	12.60	5.91					4.75	69.03		1145.19
35	**Magura**	317.22	668.73	18.38						4.27	25.99		1034.60
36	**Manikganj**	333.24	818.77	1.82	9.26					37.98	181.95		1383.01
37	**Maulvibazar**	123.54	523.58	51.13							15.00		713.25
38	**Meherpur**	512.31	1161.10	483.31	9.00	306.52		26.19	21.21	0.99	135.29		2655.91
39	**Munshiganj**	223.47	536.36	4.44	3.25					6.90	152.24		926.66
40	**Mymensingh**	1433.38	2597.26	29.58	0.22	29.15		0.83		8.81	201.25		4300.47
41	**Naogaon**	595.18	2681.19	55.96		12.62					69.39		3414.34
42	**Narail**	303.42	593.27	0.82	3.02					0.51	75.28	0.27	976.60
43	**Narayanganj**	316.50	303.50	1.45						0.07	79.61		701.12
44	**Narsingdi**	411.72	596.32	41.02							105.64		1154.70
45	**Natore**	475.23	1234.04	91.30	3.66					22.87	63.98		1891.08

SL		Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	Grand Total
46	**Netrakona**	510.87	2078.54	1.62	43.64	4.88		4.49	1.61	6.55	127.41		2779.61
47	**Nilphamari**	472.85	1044.43	5.96	1.52					33.53	26.45		1584.73
48	**Noakhali**	1025.76	1298.21	1.27	20.35		145.89			7.78	1323.18	281.54	4103.97
49	**Pabna**	510.50	1597.19	33.10	17.82					49.92	165.58		2374.11
50	**Panchagarh**	347.10	984.21	26.45	0.27	0.14				13.13	22.68		1393.98
51	**Patuakhali**	705.35	1526.16	0.88	2.40		131.23			5.28	819.24	53.94	3244.49
52	**Pirojpur**	537.31	491.15	40.45			1.58			0.18	189.90	2.56	1263.13
53	**Rajbari**	301.03	672.06	1.68	5.81					26.65	114.00		1121.23
54	**Rajshahi**	542.35	1422.52	230.84	18.70					40.70	150.44		2405.54
55	**Rangamati**	127.84	378.42	15.40		3064.80		1535.05			487.03		5608.53
56	**Rangpur**	781.20	1439.19	24.19	1.32	4.56				36.24	59.00		2345.70
57	**Satkhira**	577.89	585.40	10.95	1.87		1029.44			0.08	1832.70	3.47	4041.80
58	**Shariatpur**	355.16	632.37	3.66	17.63					23.14	161.61		1193.58
59	**Sherpur**	304.12	918.38	4.45		35.14		24.01		4.38	27.07		1317.56
60	**Sirajganj**	484.45	1501.05	6.69	35.73					143.15	322.03		2493.11
61	**Sunamganj**	371.81	2864.42	0.86	134.27	1.25		0.76	18.11	8.97	240.55		3641.01
62	**Sylhet**	795.31	2196.20	66.52	28.42	40.35		35.12	92.33	10.84	134.87		3399.96
63	**Tangail**	819.44	1924.13	230.18	0.40	162.31				77.30	133.58		3347.34
64	**Thakurgaon**	399.60	1356.07	10.88	0.52	2.22				3.66	20.33		1793.28
	Grand Total	**33139.83**	**71655.99**	**2730.64**	**650.44**	**7839.79**	**4545.52**	**6113.77**	**133.57**	**1881.88**	**18120.05**	**758.51**	**147570.00**

SEEA Land Cover Class 2023

SL		Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	Grand Total
1	**Bagerhat**	674.65	401.98	6.03	18.66	0.22	1488.64			2.20	1636.38	24.16	4252.91
2	**Bandarban**	103.68	431.42	156.86		2239.34		1575.34		1.26	64.42		4572.33
3	**Barguna**	470.41	728.05	3.98	1.13	0.63	58.44			0.63	311.86	20.11	1595.24
4	**Barisal**	961.60	1027.66	16.60	47.16					7.55	451.33	23.32	2535.22
5	**Bhola**	698.12	899.95	1.26	58.92		144.83			2.54	1578.13	233.86	3617.62
6	**Bogra**	768.22	1845.63	8.84	10.89					69.78	205.06		2908.42
7	**Brahamanbaria**	483.36	1221.19	6.00	6.80	4.65				0.10	192.27		1914.36
8	**Ch. Nawabganj**	770.88	597.10	2.13	33.53					7.19	291.50	4.84	1707.16
9	**Chandpur**	272.76	675.08	535.95	5.46					45.61	143.11		1677.97
10	**Chittagong**	1417.19	1492.58	176.56	109.11	560.75	58.72	495.36		40.39	854.51	200.02	5405.18
11	**Chuadanga**	254.79	761.11	89.37	0.10	0.01				0.03	52.40		1157.82
12	**Comilla**	512.00	524.36	11.73	8.19	242.33	73.37	321.11		383.58	579.24	50.37	2706.28
13	**Cox'S Bazar**	1317.71	1569.84	0.94	2.94	21.35				0.31	161.75		3074.85
14	**Dhaka**	769.00	502.65	11.05	15.00	0.94				9.16	150.97		1458.78
15	**Dinajpur**	480.74	2552.91	230.03	0.66	36.18				11.13	123.77		3435.42
16	**Faridpur**	621.60	1182.06	19.07	23.47					27.09	149.07		2022.36
17	**Feni**	418.85	420.42	2.88	13.22	4.85	3.33			1.31	41.42	16.34	922.62
18	**Gaibandha**	363.53	1320.66	73.19	9.53					102.08	265.49		2134.48
19	**Gazipur**	923.51	648.60	14.72	3.12	132.98		0.79		0.07	77.45		1801.24
20	**Gopalganj**	403.24	878.07	6.26	7.26						179.93		1474.76
21	**Habiganj**	411.05	1749.72	193.84	4.78	113.65		27.79		0.39	91.23		2592.44
22	**Jamalpur**	566.81	1244.32	10.60	11.21	7.30		2.16		42.07	151.99		2036.47
23	**Jessore**	949.67	1211.54	45.80	0.15						350.37		2557.53

SL		Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	Grand Total
24	**Jhalokati**	320.36	336.28	24.81	0.55		0.57				47.51	0.10	730.19
25	**Jhenaidah**	511.50	1301.96	38.97						0.48	98.26		1951.17
26	**Joypurhat**	243.03	687.32	5.93							22.54		958.81
27	**Khagrachhari**	228.56	503.00	100.74	0.02	964.96		1100.76		0.04	60.30		2958.37
28	**Khulna**	540.54	623.19	2.10	5.93		1431.39			5.12	1869.36	45.74	4523.39
29	**Kishoreganj**	473.32	1850.35	1.09	13.37	0.05			0.33	0.83	205.05		2544.39
30	**Kurigram**	442.25	1256.19	20.99	4.15					211.02	315.99		2250.60
31	**Kushtia**	447.68	954.01	27.74	13.34					29.68	154.71		1627.16
32	**Lakshmipur**	645.23	439.12	1.02	20.08					0.44	324.94	61.26	1492.10
33	**Lalmonirhat**	194.94	868.16	43.42		0.38				42.21	73.61		1222.73
34	**Madaripur**	336.47	672.86	10.05	7.15					7.99	110.67		1145.19
35	**Magura**	327.47	643.98	20.45						0.41	42.30		1034.60
36	**Manikganj**	382.91	737.59	3.82	6.23					40.29	212.16		1383.01
37	**Maulvibazar**	123.68	486.55	74.27						0.01	28.75		713.25
38	**Meherpur**	521.05	1122.22	484.49	8.50	313.73		25.36	17.32	0.81	162.43		2655.91
39	**Munshiganj**	282.83	540.48	4.47	9.46					7.40	82.04		926.66
40	**Mymensingh**	1493.99	2409.17	42.37	0.21	28.89		0.16		13.86	311.81		4300.47
41	**Naogaon**	510.96	2377.75	401.54		8.50				0.92	114.66		3414.34
42	**Narail**	317.06	516.45	1.97	6.40					0.66	134.07		976.60
43	**Narayanganj**	378.50	226.75	0.98	3.94	0.00				0.10	90.83		701.12
44	**Narsingdi**	435.94	564.19	36.97	0.96					0.09	116.55		1154.70
45	**Natore**	472.12	1179.39	100.33	11.56					6.45	121.23		1891.08
46	**Netrakona**	580.42	2006.70	2.50	30.15	5.15		3.47	1.84	5.70	143.67		2779.61
47	**Nilphamari**	254.68	1166.56	55.21	0.03	2.09		0.41		44.53	61.22		1584.73
48	**Noakhali**	1147.49	1157.55	1.19	241.42	0.34	167.57	0.00		4.87	945.80	437.74	4103.97

SL		Artificial surfaces (including urban and associated areas)	Herbaceous Crops	Woody crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	Terrestrial barren land	Inland water bodies	Coastal water bodies and intertidal areas	Grand Total
49	**Pabna**	563.64	1495.31	34.51	28.07					18.99	233.59		2374.11
50	**Panchagarh**	315.59	967.13	59.17	0.58	1.92		0.02		13.67	35.90		1393.98
51	**Patuakhali**	762.00	1445.79	2.32	14.16	1.57	166.73			5.59	747.55	98.77	3244.49
52	**Pirojpur**	524.53	566.55	35.51	0.35		2.23			0.02	133.64	0.30	1263.13
53	**Rajbari**	334.17	627.02	4.71	11.92					22.65	120.76		1121.23
54	**Rajshahi**	627.27	1285.46	206.32	10.71	1.30				29.51	244.98		2405.54
55	**Rangamati**	162.28	490.03	31.16	0.29	3053.73		1293.00		0.04	578.00		5608.53
56	**Rangpur**	465.97	1616.57	121.77		7.17				24.39	109.83		2345.70
57	**Satkhira**	590.16	586.34	11.82	1.27		1007.36			0.78	1810.52	33.54	4041.80
58	**Shariatpur**	370.42	607.31	4.21	20.21	0.00				20.82	170.61		1193.58
59	**Sherpur**	307.82	910.42	3.91	0.19	37.91		20.94		2.74	33.64		1317.56
60	**Sirajganj**	523.82	1454.37	5.08	26.87					107.87	375.11		2493.11
61	**Sunamganj**	400.48	2816.21	2.22	91.33	3.80		1.98	36.13	8.46	280.39		3641.01
62	**Sylhet**	796.65	2164.26	73.68	18.27	39.31		26.32	99.85	9.77	171.84		3399.96
63	**Tangail**	874.07	2042.95	85.20	1.14	157.26		4.27		34.45	148.01		3347.34
64	**Thakurgaon**	227.67	1376.80	135.88	0.41	2.37		0.12		2.40	47.63		1793.28
	Grand Total	34072.90	68967.18	3948.56	1000.55	7995.65	4603.18	4899.35	155.48	1480.56	19196.12	1250.48	147570.00

SEEA Land Use Class 2015

SL		Agriculture	Forestry	Use of built-up and related areas	Land not in use	Other uses of inland waters n.e.c.	Inland waters not in use	Grand Total
1	**Bagerhat**	464.67	1488.90	665.89	18.79	1605.50	9.17	4252.91
2	**Bandarban**	383.68	4081.54	73.97	0.00	33.14		4572.33
3	**Barguna**	764.48	50.51	443.93	3.20	326.45	6.68	1595.24
4	**Barisal**	1117.92	0.00	929.92	51.62	409.33	26.42	2535.22
5	**Bhola**	919.22	126.16	650.27	22.12	1734.67	165.19	3617.62
6	**Bogra**	1909.46	0.00	742.88	92.60	163.48		2908.42
7	**Brahamanbaria**	1386.60	5.87	407.83	0.78	113.29		1914.36
8	**Ch. Nawabganj**	722.01		678.94	45.32	260.62	0.28	1707.16
9	**Chandpur**	1302.57	0.00	187.93	28.25	159.22		1677.97
10	**Chittagong**	1548.24	1280.28	1329.69	41.13	1087.71	118.12	5405.18
11	**Chuadanga**	886.29		238.20	0.09	33.24		1157.82
12	**Comilla**	595.99	678.32	401.64	357.47	639.35	33.51	2706.28
13	**Cox'S Bazar**	1874.85	24.12	1089.05		86.83		3074.85
14	**Dhaka**	654.06	0.45	670.45	16.03	117.79		1458.78
15	**Dinajpur**	2564.40	32.12	776.27	15.51	47.12		3435.42
16	**Faridpur**	1333.84		538.44	20.32	129.77		2022.36
17	**Feni**	497.16	8.06	354.97	16.16	33.25	13.03	922.62
18	**Gaibandha**	1247.62		539.53	199.65	147.68		2134.48
19	**Gazipur**	770.85	135.61	835.30	5.66	53.82		1801.24
20	**Gopalganj**	968.11		367.31	0.56	138.78		1474.76
21	**Habiganj**	1987.85	138.88	389.52	5.41	70.78		2592.44
22	**Jamalpur**	1279.70	9.47	537.81	97.26	112.23		2036.47
23	**Jessore**	1334.65		924.42		298.46		2557.53

SL		Agriculture	Forestry	Use of built-up and related areas	Land not in use	Other uses of inland waters n.e.c.	Inland waters not in use	Grand Total
24	**Jhalokati**	355.50	0.31	329.01		43.30	2.07	730.19
25	**Jhenaidah**	1350.04		524.93	1.47	74.73		1951.17
26	**Joypurhat**	722.00		230.02		6.79		958.81
27	**Khagrachhari**	393.09	2379.08	157.95		28.25		2958.37
28	**Khulna**	755.20	1460.86	497.75	6.28	1788.86	14.42	4523.39
29	**Kishoreganj**	1896.18		455.96	17.33	174.92		2544.39
30	**Kurigram**	1161.29		520.96	369.74	198.61		2250.60
31	**Kushtia**	1052.82		393.96	85.52	94.86		1627.16
32	**Lakshmipur**	507.93		602.17	9.65	344.52	27.83	1492.10
33	**Lalmonirhat**	801.31		329.91	61.09	30.42		1222.73
34	**Madaripur**	757.53		307.97	10.66	69.03		1145.19
35	**Magura**	687.12		317.22	4.27	25.99		1034.60
36	**Manikganj**	820.59		333.24	47.23	181.95		1383.01
37	**Maulvibazar**	574.71		123.54		15.00		713.25
38	**Meherpur**	1644.41	332.71	512.31	31.20	135.29		2655.91
39	**Munshiganj**	540.81		223.47	10.15	152.24		926.66
40	**Mymensingh**	2626.84	29.98	1433.38	9.03	201.25		4300.47
41	**Naogaon**	2737.15	12.62	595.18		69.39		3414.34
42	**Narail**	594.10		303.42	3.54	75.28	0.27	976.60
43	**Narayanganj**	304.94		316.50	0.07	79.61		701.12
44	**Narsingdi**	637.34		411.72		105.64		1154.70
45	**Natore**	1325.33		475.23	26.53	63.98		1891.08
46	**Netrakona**	2080.16	9.37	510.87	51.80	127.41		2779.61
47	**Nilphamari**	1050.39		472.85	35.04	26.45		1584.73
48	**Noakhali**	1299.48	145.89	1025.76	28.13	1323.18	281.54	4103.97

SL		Agriculture	Forestry	Use of built-up and related areas	Land not in use	Other uses of inland waters n.e.c.	Inland waters not in use	Grand Total
49	**Pabna**	1630.29		510.50	67.74	165.58		2374.11
50	**Panchagarh**	1010.66	0.14	347.10	13.40	22.68		1393.98
51	**Patuakhali**	1527.04	131.23	705.35	7.69	819.24	53.94	3244.49
52	**Pirojpur**	531.60	1.58	537.31	0.18	189.90	2.56	1263.13
53	**Rajbari**	673.75		301.03	32.45	114.00		1121.23
54	**Rajshahi**	1653.36		542.35	59.39	150.44		2405.54
55	**Rangamati**	393.82	4599.85	127.84		487.03		5608.53
56	**Rangpur**	1463.38	4.56	781.20	37.56	59.00		2345.70
57	**Satkhira**	596.35	1029.44	577.89	1.95	1832.70	3.47	4041.80
58	**Shariatpur**	636.03		355.16	40.77	161.61		1193.58
59	**Sherpur**	922.83	59.16	304.12	4.38	27.07		1317.56
60	**Sirajganj**	1507.75		484.45	178.88	322.03		2493.11
61	**Sunamganj**	2865.28	2.02	371.81	161.34	240.55		3641.01
62	**Sylhet**	2262.72	75.46	795.31	131.58	134.87		3399.96
63	**Tangail**	2154.31	162.31	819.44	77.70	133.58		3347.34
64	**Thakurgaon**	1366.95	2.22	399.60	4.18	20.33		1793.28
	Grand Total	74386.63	18499.08	33139.83	2665.89	18120.05	758.51	147570.00

SEEA Land Use Class 2023

SL		Agriculture	Forestry	Use of built-up and related areas	Land not in use	Other uses of inland waters n.e.c.	Inland waters not in use	Grand Total
1	**Bagerhat**	408.00	1488.86	674.65	20.86	1636.38	24.16	4252.91
2	**Bandarban**	588.28	3814.68	103.68	1.26	64.42		4572.33
3	**Barguna**	732.04	59.07	470.41	1.76	311.86	20.11	1595.24
4	**Barisal**	1044.26		961.60	54.71	451.33	23.32	2535.22
5	**Bhola**	901.22	144.83	698.12	61.47	1578.13	233.86	3617.62
6	**Bogra**	1854.47		768.22	80.67	205.06		2908.42
7	**Brahamanbaria**	1227.19	4.65	483.36	6.90	192.27		1914.36
8	**Ch. Nawabganj**	599.24		770.88	40.71	291.50	4.84	1707.16
9	**Chandpur**	1211.03		272.76	51.07	143.11		1677.97
10	**Chittagong**	1669.14	1114.83	1417.19	149.50	854.51	200.02	5405.18
11	**Chuadanga**	850.48	0.01	254.79	0.13	52.40		1157.82
12	**Comilla**	536.09	636.81	512.00	391.78	579.24	50.37	2706.28
13	**Cox'S Bazar**	1570.78	21.35	1317.71	3.26	161.75		3074.85
14	**Dhaka**	513.70	0.94	769.00	24.17	150.97		1458.78
15	**Dinajpur**	2782.93	36.18	480.74	11.79	123.77		3435.42
16	**Faridpur**	1201.13		621.60	50.56	149.07		2022.36
17	**Feni**	423.30	8.18	418.85	14.53	41.42	16.34	922.62
18	**Gaibandha**	1393.85		363.53	111.61	265.49		2134.48
19	**Gazipur**	663.33	133.76	923.51	3.19	77.45		1801.24
20	**Gopalganj**	884.33		403.24	7.26	179.93		1474.76
21	**Habiganj**	1943.56	141.44	411.05	5.17	91.23		2592.44
22	**Jamalpur**	1254.93	9.47	566.81	53.27	151.99		2036.47
23	**Jessore**	1257.34		949.67	0.15	350.37		2557.53

SL		Agriculture	Forestry	Use of built-up and related areas	Land not in use	Other uses of inland waters n.e.c.	Inland waters not in use	Grand Total
24	**Jhalokati**	361.09	0.57	320.36	0.55	47.51	0.10	730.19
25	**Jhenaidah**	1340.93		511.50	0.48	98.26		1951.17
26	**Joypurhat**	693.24		243.03		22.54		958.81
27	**Khagrachhari**	603.74	2065.71	228.56	0.06	60.30		2958.37
28	**Khulna**	625.28	1431.39	540.54	11.06	1869.36	45.74	4523.39
29	**Kishoreganj**	1851.43	0.05	473.32	14.54	205.05		2544.39
30	**Kurigram**	1277.19		442.25	215.17	315.99		2250.60
31	**Kushtia**	981.75		447.68	43.02	154.71		1627.16
32	**Lakshmipur**	440.14		645.23	20.52	324.94	61.26	1492.10
33	**Lalmonirhat**	911.58	0.38	194.94	42.21	73.61		1222.73
34	**Madaripur**	682.91		336.47	15.14	110.67		1145.19
35	**Magura**	664.43		327.47	0.41	42.30		1034.60
36	**Manikganj**	741.42		382.91	46.52	212.16		1383.01
37	**Maulvibazar**	560.81		123.68	0.01	28.75		713.25
38	**Meherpur**	1606.70	339.09	521.05	26.64	162.43		2655.91
39	**Munshiganj**	544.95		282.83	16.85	82.04		926.66
40	**Mymensingh**	2451.55	29.06	1493.99	14.07	311.81		4300.47
41	**Naogaon**	2779.29	8.50	510.96	0.92	114.66		3414.34
42	**Narail**	518.41		317.06	7.06	134.07		976.60
43	**Narayanganj**	227.74	0.00	378.50	4.05	90.83		701.12
44	**Narsingdi**	601.16		435.94	1.05	116.55		1154.70
45	**Natore**	1279.72		472.12	18.01	121.23		1891.08
46	**Netrakona**	2009.20	8.62	580.42	37.69	143.67		2779.61
47	**Nilphamari**	1221.77	2.50	254.68	44.56	61.22		1584.73
48	**Noakhali**	1158.74	167.92	1147.49	246.29	945.80	437.74	4103.97

SL		Agriculture	Forestry	Use of built-up and related areas	Land not in use	Other uses of inland waters n.e.c.	Inland waters not in use	Grand Total
49	**Pabna**	1529.82		563.64	47.06	233.59		2374.11
50	**Panchagarh**	1026.30	1.94	315.59	14.25	35.90		1393.98
51	**Patuakhali**	1448.11	168.30	762.00	19.75	747.55	98.77	3244.49
52	**Pirojpur**	602.06	2.23	524.53	0.38	133.64	0.30	1263.13
53	**Rajbari**	631.73		334.17	34.56	120.76		1121.23
54	**Rajshahi**	1491.77	1.30	627.27	40.22	244.98		2405.54
55	**Rangamati**	521.19	4346.73	162.28	0.32	578.00		5608.53
56	**Rangpur**	1738.34	7.17	465.97	24.39	109.83		2345.70
57	**Satkhira**	598.16	1007.36	590.16	2.05	1810.52	33.54	4041.80
58	**Shariatpur**	611.52	0.00	370.42	41.02	170.61		1193.58
59	**Sherpur**	914.32	58.85	307.82	2.94	33.64		1317.56
60	**Sirajganj**	1459.44		523.82	134.74	375.11		2493.11
61	**Sunamganj**	2818.43	5.78	400.48	135.93	280.39		3641.01
62	**Sylhet**	2237.94	65.63	796.65	127.89	171.84		3399.96
63	**Tangail**	2128.14	161.53	874.07	35.59	148.01		3347.34
64	**Thakurgaon**	1512.68	2.49	227.67	2.81	47.63		1793.28
	Grand Total	72915.74	17498.18	34072.90	2636.58	19196.12	1250.48	147570.00

Annex 02: Committees

01. Project Steering Committee (PSC)

SL. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
1.	Secretary, Statistics and Informatics Division, Ministry of Planning	Chairperson
2.	Director General, Bangladesh Bureau of Statistics (BBS)	Member
3.	Additional Secretary (Development), Statistics and Informatics Division, Ministry of Planning	Member
4.	Representative, Finance Division, Ministry of Finance	Member
5.	Representative, Implementation Monitoring and Evaluation Division (IMED)	Member
6.	Representative, Socio-Economic Infrastructure Division, Planning Commission	Member
7.	Representative, Programming Division, Planning Commission	Member
8.	Representative, General Economic Division (GED), Planning Commission	Member
9.	Representative, NEC-ECNEC and Coordination, Planning Commission	Member
10.	Representative, Ministry of Environment, Forest and Climate Change	Member
11.	Representative, Ministry of Disaster Management and Relief (MoDMR)	Member
12.	Representative, Ministry of Power, Energy and Mineral Resources	Member
13.	Representative, Ministry of Water Resources	Member
14.	Representative, Ministry of Agriculture	Member
15.	Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
16.	Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
17.	Deputy Secretary (Development), Statistics and Informatics Division (SID)	Member Secretary

02. Project Implementation Committee (PIC)

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
1.	Director General (DG), Bangladesh Bureau of Statistics (BBS)	Chairman
2.	Additional Secretary (Development), Statistics and Informatics Division, Ministry of Planning	Member
3.	Deputy Director General, Bangladesh Bureau of Statistics (BBS)	Member
4.	Representative, Finance Division, Ministry of Finance	Member

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
5.	Representative, Implementation Monitoring and Evaluation Division (IMED)	Member
6.	Representative, Socio-Economic Infrastructure Division, Planning Commission	Member
7.	Representative, Programming Division, Planning Commission	Member
8.	Representative, General Economic Division (GED), Planning Commission	Member
9.	Representative, NEC-ECNEC and Coordination, Planning Commission	Member
10.	Representative, Ministry of Environment, Forest and Climate Change	Member
11.	Representative, Ministry of Disaster Management and Relief (MoDMR)	Member
12.	Representative, Ministry of Power, Energy and Mineral Resources	Member
13.	Representative, Ministry of Water Resources	Member
14.	Representative, Ministry of Agriculture	Member
15.	Representative, Ministry of Agriculture	Member
16.	Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
17.	Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member Secretary

3. Project Technical Committee (PTC)

SL. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
1)	Director General, Bangladesh Bureau of Statistics (BBS)	Chairperson
2)	Additional Secretary (Development), Statistics and Informatics Division, Ministry of Planning	Member
3)	Deputy Director General, Bangladesh Bureau of Statistics (BBS)	Member
4)	Dr. A. Atiq Rahman, Executive Director, Bangladesh Centre for Advanced Studies (BCAS), Dhaka.	Member
5)	Professor Dr. A. K. Enamul Haque, Department of Economics, East West University, Dhaka	Member
6)	Professor Dr. Syed Shahadat Hussain, Institute of Statistical Research and Training (ISRT), University of Dhaka, Dhaka	Member
7)	Professor Dr. Bazlul Haque Khondker, Chairman of the South Asian Network on Economic Modeling (SANEM) and Former Professor, Department of Economics, University of Dhaka	Member
8)	Deputy Secretary (Development), Statistics and Informatics Division (SID)	Member

SL. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
9)	Professor Dr. M Manzurul Hassan, Department of Geography and Environment, Jahangirnagar University.	Member
10)	Professor Dr. Muhammad Shahadat Siddiquee, Department of Economics, University of Dhaka	Member
11)	Professor Dr. Md. Faruk Hossain, Department of Geography and Environment, Associate Professor, University of Dhaka.	Member
12)	Mr. Md. Mostafizur Rahman, Principal Specialist and Director, Centre for Environmental and Geographic Information System (CEGIS)	Member
13)	Dr. Md. Abdus Salam, Chief Scientific Officer, Space Research and Remote Sensing Organization (SPARRSO), Ministry of Defense	Member
14)	Dr. Shamal Chandra Das, Addl. Chief Engineer (Civil), Bangladesh Water Development Board (BWDB)	Member
15)	Mr. Mohammed Solaiman Haider, Director (Planning), Department of Environment (DOE), MoEFCC, Agargaon, Dhaka	Member
16)	Ms. Dilruba Karim, Principal Scientific Officer, Soil Resource Development Institute (SRDI), Farmgate, Dhaka.	Member
17)	Dr. Farida Parveen, Department of Agriculture Extension (DAE), Ministry of Agriculture, Khamarbari, Dhaka	Member
18)	Mr. Md. Bazlur Rashid, Meteorologist, Bangladesh Meteorological Department (BMD), Ministry of Defense, Agargaon, Dhaka.	Member
19)	Dr. Dilara Zahid, Director, Institute of Disaster Management and Vulnerabilities Studies, University of Dhaka.	Member
20)	Mr. Netai Chandra Dey Sarker, Director (MIM), Department of Disaster Management, Mohakhali, Dhaka	Member
21)	Mr. Md. Mukhlesur Rahman, District Fisheries Officer (R), Department of Fisheries, Ramna, Dhaka	Member
22)	Dr. Hossan Md. Salim, Livestock Statistical Officer, Department of Livestock Services, Khamarbari, Dhaka.	Member
23)	Mr. Md. Zaheer Iqbal, Deputy Conservator of Forest, Bangladesh Forest Department (BFD), MoEFCC, Dhaka.	Member
24)	Mr. Alauddin Al Azad, Director, Agriculture Wing, Bangladesh Bureau of Statistics (BBS)	Member
25)	Mr. Mohammad Abdul Kadir Miah, Director, Census Wing, Bangladesh Bureau of Statistics (BBS)	Member
26)	Mr. Md. Emdadul Haque, Director, Demography and Health Wing, Bangladesh Bureau of Statistics (BBS)	Member
27)	Mr. Md. Rafiqul Islam, Director (IC), National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member

SL. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
28)	Mr. S. M. Kamrul Hassan, Assistant Professor, Department of Disaster Science and Climate resilience, University of Dhaka.	Member
29)	Mr. Md. Jahangir Alam, Deputy Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
30)	Mr. Surangit Kumar Ghosh, Assistant Project Director (APD), ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
31)	Mr. Aminur Rahman Khan, Statistical Officer, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
32)	Mr. Mohammad Saddam Hossain Khan, Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member Secretary

04. Project Sample Design Committee (PSDC)

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
1.	Mr. Mohammed Mizanur Rahman, Director General (Additional Secretary), Bangladesh Bureau of Statistics (BBS)	Chairman
2.	Mr. Mohammad Obaidul Islam, Deputy Director General (Joint Secretary), Bangladesh Bureau of Statistics (BBS)	Member
3.	Professor Dr. Syed Shahadat Hussain, Institute of Statistical Research and Training (ISRT), University of Dhaka, Dhaka	Member
4.	Dr. Dipankar Roy, Joint Secretary (Development), Statistics and Informatics Division	Member
5.	Mr. Kabir Uddin Ahmad, Director, Computer Wing, Bangladesh Bureau of Statistics (BBS)	Member
6.	Mr. Md. Rafiqul Islam, Director (IC), National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
7.	Mr. Surangit Kumar Ghosh, Assistant Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
8.	Mr. Mohammad Saddam Hossain Khan, Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member Secretary

5. Report Review Committee of SID

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
1.	Mr. S M Shakil Akhter, Additional Secretary (Informatics), Statistics and Informatics Division, Ministry of Planning	Chairman
2.	Mr. Debdulal Bhattacharjee, Joint Secretary (Budget and Audit), Statistics and Informatics Division (SID)	Member

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
3.	Mr. Md. Mir Hossain, Joint Secretary (Development), Statistics and Informatics Division (SID)	Member
4.	Dr. Dipankar Roy, Joint Secretary (Informatics), Statistics and Informatics Division (SID)	Member
5.	Mr. Md. Nurul Karim Vuiyan, Deputy Secretary, Development-2 Branch, Statistics and Informatics Division (SID)	Member
6.	Mr. Md. Quamrul Ahsan Talukder, paa, Deputy Secretary, Admin-4 Branch, Statistics and Informatics Division	Member
7.	Mr. SK Shamsur Rahman, Deputy Secretary, Planning Section, Statistics and Informatics Division	Member
8.	Mr. Md. Mahabur Rahman Sheikh, Deputy Secretary, Informatics wing-1, Statistics and Informatics Division	Member
9.	Mr. Kalachand Sarker Deputy Secretary, Informatic-3 Section, Statistics and Informatics Division (SID)	Member
10.	Mr. Mohammad Saddam Hossain Khan, Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
11.	Mr. Md. Azgar Ali, Deputy Director, Computer Wing, Bangladesh Bureau of Statistics (BBS)	Member
12.	Mr. Md. Alimul Azim, Accounts Officer, Account Section, Statistics and Informatics Division (SID)	Member
13.	Ms. Munira Islam, Deputy Secretary, Informatic-2 Section, Statistics and Informatics Division (SID)	Member Secretary

6. Editor's Forum of BBS

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3.	Mr. Kabir Uddin Ahmed, Director, Computer Wing, Bangladesh Bureau of Statistics (BBS)	Member
4.	Mr. Mohammad Abdul Kadir Miah, Director, Census Wing, Bangladesh Bureau of Statistics (BBS)	Member
5.	Mr. Md. Emdadul Haque, Director, Demography and Health Wing, Bangladesh Bureau of Statistics (BBS)	Member
6.	Mr. Md. Abdur Rab Dhali, Director, Panning and Development Cell Bangladesh Bureau of Statistics (BBS)	Member

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
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8.	Mr. H. M Firoz, Director (IC), FA and MIS Wing, Bangladesh Bureau of Statistics (BBS)	Member
9.	Mr. Md. Rafiqul Islam, Director (IC), National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
10.	Mr. Mohammad Saddam Hossain Khan, Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
11.	Mr. Ziauddin Ahmed, Director, SSTI, BBS National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member Secretary

7. ECDS Working Team

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
1.	Mr. Md. Rafiqul Islam, Director (IC), National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Chairman
2.	Professor Dr. M Manzurul Hassan, Department of Geography and Environment, Jahangirnagar University.	Member
3.	Mr. Mohammad Saddam Hossain Khan, Project Director, ECDS Project, Bangladesh Bureau of Statistics (BBS)	Member
4.	Mr. Md. Alamgir Hossen, Deputy Director, Demography and Health Wing, Bangladesh Bureau of Statistics (BBS)	Member
5.	Mr. Mohammad Shafiqul Islam, Deputy Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
6.	Mr. Muhammad Mizanoor Rahman Howlader, Deputy Director, National Accounting Wing & ECDS Cell, Bangladesh Bureau of Statistics (BBS)	Member
7.	Mr. Md. Mizanur Rahman, Deputy Director, Industry and Labour Wing, Bangladesh Bureau of Statistics (BBS)	Member
8.	Mr. Aziza Rahman, Deputy Director, Industry and Labour Wing, Bangladesh Bureau of Statistics (BBS)	Member
9.	Mr. Tufail Ahmed, Deputy Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
10.	Mr. Md. Arif Hossain, Deputy Director, Census Wing, Bangladesh Bureau of Statistics (BBS)	Member
11.	Mr. Md. Nazmul Hoque, Deputy Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
12.	Mr. Muhammad Rafiqul Islam, Deputy Director, Agriculture Wing, Bangladesh Bureau of Statistics (BBS)	Member

Sl. No.	Name, Designation and Office (Not according to seniority)	Designation in the Committee
13.	Mr. Md. Jahangir Alam, Deputy Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
14.	Ms. Israt Jahan Nasrin, Deputy Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
15.	Mr. Mohammad Eunoush, Deputy Director, National Accounting Wing, Bangladesh Bureau of Statistics (BBS)	Member
16.	Mr. Mohammad Anamul Haque, Maintenance Engineer, Computer Wing, Bangladesh Bureau of Statistics (BBS)	Member
17.	Ms. Sharmin Karim, Statistical Officer, National Accounting Wing & ECDS Cell, BBS	Member
18.	Mr. Aminur Rahman Khan, Statistical Officer, National Accounting Wing & ECDS Project, BBS	Member
19.	Ms. Atia Bilkis, Statistical Officer, National Accounting Wing & ECDS Cell, BBS	Member
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