Indicator Framework for Integrating Rio Conventions into Annual Development Programme and Projects of Department of Agricultural Extension (DAE)

Department of Environment

Ministry of Environment, Forest and Climate Change
Government of the People's Republic of Bangladesh

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Indicator Framework for Integrating Rio Conventions into Annual Development Programme and Projects of Department of Agricultural Extension (DAE)

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Department of Environment (DoE)
Ministry of Environment, Forest and Climate Change (MoEFCC)
Government of the People's Republic of Bangladesh

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Foreword

The Rio Conventions are comprised of UN Convention on Biological Diversity (UNCBD), UN Framework Convention on Climate Change (UNFCCC) and UN Convention to Combat Desertification (UNCCD). The Conventions are intrinsically linked, operated in the same ecosystem and directly contribute to the Sustainable Development Goals (SDGs) 2030. Bangladesh signed and ratified the Rio Conventions during 1992-1996.

The Indicator Framework for integrating the Rio Conventions is prepared to perceive the level of integration of three Conventions into the existing programs and projects of Department of Agricultural Extension (DAE). It aims to provide continuous support the process of decision-making, planning and designing for the agricultural extension to follow the impacts of interventions. I truly believe that such indicator framework is an essential step for mainstreaming the Rio Conventions into sectoral development planning and implementations.

I highly appreciate the Department of Agricultural Extension and Department of Environment (DoE) for taking the efforts first-ever in Bangladesh. I am thankful and grateful to Global Environment Facility (GEF) and United Nations Development Programme (UNDP) for their support. I also thank Mr Md Ziaul Haque, Director, DoE and National Project Director and Rio project team for a successful completion of this important document. The indicator framework is available in the website of DoE (rio.doe.gov.bd) and DAE.

Dr. A.K.M. Rafique Ahammed
Director General
Department of Environment

Foreword

Agriculture is the mainstream of Bangladesh. The economy of the country is largely reliant on this sector. At present, agriculture confronts climate change, loss of biological diversity, loss of soil fertility, water shortage and other environmental issues. In this context, it is a good news that the indicator framework has been developed to facilitate and assist professionals and practitioners of the Department of Agricultural Extension (DAE) for integrating the relevant obligations of the three Rio conventions namely UNCBD, UNCCD and UNFCCC into the annual development programs and projects.

This framework document will be a guide in performing the role of the planning professionals as well as practitioners in the process of planning, implementation and impact assessment. Planning professionals and practitioners now have more responsibilities and decision-making liberty in integrating the Rio Conventions into the extension programs.

I am convinced that these much-needed integration will be given due considerations during the formulation, implementation and evaluation process of the projects and programs of DAE.

Once again, I wish, through this very first approach, my staffs will be well equipped with managing the challenge of fulfilling their role and hope. This will be a milestone that they look forward with great zeal and excitement.

Mir Nurul Alam
Director General
Department of Agricultural Extension

Acknowledgement

The preparation of 'Indicator Framework for Integrating Rio Conventions into Annual Development Program and Projects of Department of Agricultural Extension (DAE)' is the first attempt of its kind in Bangladesh by the Rio Conventions project. In preparing this unique document, the project team have received invaluable inputs and contributions from numbers of key informants from the competent officials of DAE. I would like to extend my sincere gratitude to Dr. M Sahab Uddin, Additional Director (Project Implementation), DAE and his colleagues for their fullest cooperation to complete the document within a shortest span.

My deep sense of appreciation to the former Director General of the Department of Environment Dr. Sultan Ahmed, now Chairman of Rajdhani Unnayan Kartripakkha (RAJUK) for his invaluable guidance in the process. Sincere thanks are also due to Dr. A.K.M. Rafique Ahammed, Director General, Department of Environment for his wise guidance. I must also thank Global Environment Facility (GEF) and United Nations Development Programme (UNDP), Bangladesh for their financial and technical assistance.

Finally, I would like to gratefully acknowledge the contributions of Mr. Abu Mostafa Kamal Uddin, Project Management Specialist, Rio project and Dr. Abu Wali Raghib Hassan, Consultant, DAE for taking this initiative to develop a new guiding tool for mainstreaming the Rio Conventions into agriculture sector and complete it in appropriate manner. My gratefulness expresses to Rio project team for their efforts to publish this timely document.

Md. Ziaul Haque
Director, Department of Environment and
National Project Director, Rio Project

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1 Introduction

1.1 BACKGROUND

The United Nations Conference on Environment and Development (UNCED) was a milestone Conference on human and environment held in Rio de Janeiro from 3 to 14 June 1992. The Conference is also known as Rio Conference, Rio Summit or Earth summit. Three major Conventions, UN Convention on Biological Diversity (UNCBD), UN Framework Convention on Climate Change (UNFCCC) and UN Convention to Combat Desertification (UNCCD) derived from this summit.

Objectives of UNCBD are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from commercial and other utilization of genetic resources. The Convention entered into force on 29 December 1993. Bangladesh as a Party signed the Convention on 05 June 1992 and ratified on 03 May 1994.

Objectives of UNFCCC are to stabilize greenhouse-gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, within a time-frame enough to allow ecosystems to adapt naturally to climate change. The Convention entered into force on 21 March 1994. Bangladesh as a Party signed the Convention on 09 June 1992 and ratified on 15 April 1994.

Objectives of UNCCD are to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification through effective actions at all levels, supported by international co-operation and partnership arrangements. The Convention was entered into force in December 1996. Bangladesh as a Party signed the Convention on 14 October 1994 and ratified on 26 January 1996.

Secretary of Ministry of Environment, Forest and Climate Change is the National Focal Point of three Rio Conventions. As a Party to three Rio Conventions, Bangladesh is committed to complying with obligations of UNCBD, UNFCCC and UNCCD and related agreements and protocols. Mainstreaming the principles and obligations of the Conventions into national development planning, policies and institutions are essential for achieving environmental sustainability. The indicator framework is a tool for integrating Rio Conventions into Annual Development Program (ADP) and projects of a public institute. This framework addresses the common relevant obligations identified for Biological Diversity, Climate Change, and Combat Desertification Conventions.

1.2 INTRODUCTION TO AGRICULTURE AND AGRICULTURAL EXTENSION

Agriculture plays a vital role in the economic development of Bangladesh having direct impacts of the country's food security, nutrition, income and livelihood of people. Agriculture sector comprises crops, fisheries, livestock, and forestry sub-sectors with crop sub-sector being predominant. Agriculture is contributing about 14.10% (2017-2018) of national GDP (7th Five Year Plan, Bangladesh).

Agriculture, crop agriculture, confront climate change, loss of biological diversity, loss of soil fertility, water shortage and other environmental issues. Land quality is compromised due to degradation of soil fertility (e.g. nutrient imbalance), soil erosion, soil and water pollution, depletion of soil organic matter, water logging, increased soil salinity, pan formation, acidification, and deforestation. There is non-regulated and excessive use of groundwater and very few efforts to make efficient use of surface water. Excessive and injudicious use of agro-chemicals/ fertilizers by the farmer, threatening soil and human health and degrading of agricultural environment and destroy agriculture biodiversity.

Several policies are adopted addressing the issues of conservation and sustainable use of soil, land, water and natural recourses. The necessity of preserving the genetic, species and ecosystem biodiversity and lowering resource use footprint are also highlighted into the policies, strategies and action plans. The number of modern agriculture systems e.g. mixed farming, organic agriculture, integrated pest management, more use of organic fertilizers, crop rotation, recycling crop and animal wastes, zero tillage or minimum tillage agriculture, inter-cropping, multi-cropping, cover crops are brought in practice to ensure environmental sustainability.

Department of Agricultural Extension (DAE) is the largest extension service provider in Bangladesh and has considerable human and financial resources. In 1996 Bangladesh Government adopted the New Agricultural Extension Policy (NAEP) to conduct a well-planned agriculture extension service in Bangladesh. The vision of DAE is sustainable, safe and profitable agriculture. The mission of DAE is to provide efficient and effective need-based extension services to all categories of the farmer, to enable them to optimize their use of resources, to promote sustainable agricultural and socio-economic development. The agriculture extension services provided by DAE are:

- Extension education, social and on farm research
- Extension and training on modern technology
- Advisory service on improved technology
- Awareness building for quality seed production and use
- Seed production, quality control, certification, conservation and distribution
- Conservation agricultural
- Agricultural assistance and rehabilitation
- Collection, distribution, innovation, and management of agricultural equipment and machineries
- Small scale irrigation, solar irrigation
- Fertilizer test, recommendation, administration and regulation
- Pesticide registration and regulation
- Safe agriculture product
- Market linkage
- Institutional management and development

1.3 INTRODUCTION TO INDICATOR FRAMEWORK

The indicator framework has been developed to facilitate and assist practitioners and professionals of the Department of Agricultural Extension (DAE) for integrating the Rio Conventions into their annual development programs and projects. This framework document provides guidance in the planning process, implementation and impact assessment of programs and projects. Specific objectives of the indicator framework are

a. to perceive the level of integration of Rio Conventions into the existing programs and projects of DAE for enabling effective adaptation and achieving sustainable development.

b. to provide support to a continual process of decision-making, to guide development planning and implementation, and to evaluate the impact of the interventions beyond the project period.

c. to strengthen monitoring of the DAE's implementations as well as make those more accountable to the beneficiaries.

Indicators for Convention's obligations, thus, provide concrete and meaningful information on the conditions and changes over time of the inputs into the process of development, as well as the outputs and impacts. It is not an intention of the framework to portray the nature and functions of DAE precisely. However, a set of meaningful and representative indicators would facilitate the monitoring and assessment of functions in the changing conditions and allow for planning of new interventions achieving the Convention's objectives.

This indicator framework is prepared solely for the ADP and the projects of the Department of Agricultural Extension (DAE). DAE plays key roles in facilitating sustainable growth and development of agriculture of the country. Agriculture is one of the major contributors to climate change both by emissions of greenhouse gases and by conversion of non-agricultural land such as forests into agricultural land. Agriculture, forestry and land-use change are operated in the same ecosystem and contributes to the annual emission of Bangladesh. Determining the significant role of agricultural practices on the environment and assessing the scope of integration of the obligations of biodiversity, climate change, and land degradation, the agriculture deems appropriate as a sector to mainstream the Rio Conventions. DAE is thus selected as the first agency for developing this indicator framework.

This document frames indicator dimensions in three phases: Input, Output and Impact; and provides several examples. In this context, 'input' refers to planning, designing and preparatory phase of project and programmes, as for example, annual development programme, annual performance agreement, project document etc. 'Output' refers the implementation, piloting or demonstration phase which includes training, workshops, farmer's field school, motivational visit to 'good practice' site, monitoring, evaluation and other interventions undertaken by the project. 'Impact' refers to the positive changes made to the institution, community, and environment. As instances to 'impact', the capacity of professionals/ practitioner strengthened, awareness of the community increased, the level of pollution is abated. These indicators are also adhering to the S.M.A.R.T criteria which are

- Specific – target a specific area for improvement.
- Measurable – quantify or at least suggest an indicator of progress.
- Achievable/ Attainable – specify whether this will be completed within the timeframe.
- Relevant – state what why this should be done, what impacts it brings.
- Time-related – specify when the result(s) can be achieved.

1.4 METHODOLOGY

In the process of identification and selection of common obligations, dimensions and types of indicators for DAE, guidance has been taken from:

- Original documents of UNCBD, UNFCCC, and UNCCD
- Bangladesh Capacity Development Action Plan for Sustainable Environmental Governance
- Rio + 20: National Report on Sustainable Development
- The framework of Indicators for Pro-Poor, Environment-Friendly Low Emission Disaster and Climate Resilient Development
- Annual report of DAE, 2017-18
- Profile of DAE
- Report on Climate-Smart Agriculture in Bangladesh

This indicator framework has been developed from the input and insights of key personnel of the Department of Agricultural Extension and the Department of Environment. The initial consultation concentrated on screening the obligations of the conventions to find out the relevant obligations for the DAE. A technical working session screened out and identified a list of obligations that are relevant to the purview of the DAE mandates and responsibility. Consequently, corresponding indicators have been developed. The draft framework was then brought into discussion with the concerned officials of DAE and DoE and the indicator framework has been validated including definition, data source, data collecting methods and examples. Based on the feedback, the indicator framework is finalized.

This indicator framework will thus, support adjustments in the cost prioritized interventions at the input, monitor fulfilling obligations of the Rio Convention generating output and facilitate measuring sustenance of the impact of the interventions beyond the project tenure. It will also act as a living guide to be updated and further elaborated through a learning-by-doing approach.

2 Indicator Framework for Rio Conventions

2.1 INDICATOR FRAMEWORK SCHEMATIC

As mentioned, the indicator framework is based on the common relevant obligations (Annex II) identified for three Rio Conventions (UNCBD, UNFCCC, and UNCCD) within the lens of implementations of DAE. The common relevant obligations broadly identified are as follows:

A. Training and public awareness
B. Technology Transfer
C. Exchange of Information
D. Impact assessment
E. Adaptation to the Impacts
F. Research and Systematic Observation
G. Sustainable Development
H. Regulatory Framework

The indicators are also set at three tiers of intervention:

I. Input: Indicators are identified for project planning and ADP preparatory phase as an 'Input Indicator'
II. Output: Indicators are identified for ADP and project implementation phase as an 'Output Indicator'
III. Impact: Indicators are identified for ADP and project post-implementation phase as an 'Impact Indicator'

Each indicator is further illustrated by:

- Definition of the indicator: What input/ output/ impact indicator refers
- Data source: Where to collect the relevant data
- Data collection methods: How to collect relevant data. In this case, screening the project document/ ADP, progress report, media report, etc.
- Example: Evidence-based success cases for input, output and impact level.

The common method of analysis, for perceiving the changes, is comparing with the baselines. The baselines for measuring the input, output and impacts indicators need to be set in the initial period of any program and project.

The schematic of the indicator framework is as follow.

Original Convention's articles which are referred as 'Obligations' in this framework.			
Relevant Obligations for DAE	**INDICATORS**		
	INPUT	**OUTPUT**	**IMPACT**
Identified Common Obligations	*Indicator(s)*	*Indicator(s)*	*Indicator(s)*
Definition of indicator:			
Data source:			
Data collection methods:			
Example:			

2.2 INDICATOR FRAMEWORK FOR INTEGRATING RIO CONVENTIONS IN ANNUAL DEVELOPMENT PROGRAM AND PROJECTS FOR DEPARTMENT OF AGRICULTURAL EXTENSION (DAE)

The indicator framework is presented in three tables each allocated for three Rio Conventions which are:

a. United Nations Convention on Biological Diversity (UNCBD),

b. United Nations Framework Convention on Climate Change (UNFCCC) and

c. United Nations Convention to Combat Desertification (UNCCD).

2.2.1 INDICATOR FRAMEWORK FOR UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY (UNCBD)

Article 8. In-situ Conservation[1]

(a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity:

(c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;

(d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings:

(e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering the protection of these areas:

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
8(c): regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use	• **Measures for low water use in XX ha are included in the projects /ADP** • **Activities to preserve the gene pool of XX species are included in the projects/ ADP**	• **Soil conservation activities for XX ha are included in the project/ ADP** • **Soil moisture, soil nutrients increased, and soil erosion decreased into XX ha** • **Water use reduced by XX % in the project command area** • **XX Seed bank/Frozen seeds are preserved to conserve potentially valuable genotypes, adaptations**	• **Increased soil moisture, soil nutrients, and reduced soil erosion are maintained in the project command area** • **Low water use in agriculture in the project command area are maintained** • **Genepool of targeted species are preserved**
Definition of indicator:	• Refers to soil conservation activities for reducing soil erosion, maintaining soil moisture, increasing organic nutrients in the soil • Refers to activities that promote less water-loving crop, drip irrigation, use of mulch, dry direct seeding, AWD management, etc. Refers to activities that preserve gene pool (total number of genes of every individual in a population). It usually involves a species within a population. A large gene pool indicates high genetic diversity, increased chances of biological fitness, and survival.	• Refers to increase soil moisture and soil nutrients (N, P, K, Ca, Mg, S) and reduction of soil erosion • Refers to less water use in agriculture • Refers to store seeds for short-term in sealed containers at 5°C, below freezing, for long-term preservation (0°F or -20°C), cryopreservation, or freezing in or over liquid nitrogen at -180°C, for extremely long-term storage	• Refers to the sustenance of increased soil moisture, soil nutrients, and reduced soil erosion in the project command area • Refers to the sustenance of low water use in agriculture in the project command area • Refers to the sustenance of preserved Gene pool beyond the project period.

[1] Article 8. In-situ Conservation' contains 13 clauses; amongst only 04 relevant clauses are taken into consideration.

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Data source:	Project document, Project inception report	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Laboratory test results, oral history, technical reports
Data collection methods:	Screening and drawing from the reports	Screening and drawing from the reports	Screening survey reports, laboratory reports, technical reports
Example:	Mulching, composting, drip irrigation, dry direct seeding, crop rotation, cover crops, conservation tillage, planted windbreaks, gene bank/ frozen seeds	Soil, soil moisture and soil nutrients conservation Crop cultivation using less water	• Reduced soil erosion, increased soil moisture and soil nutrients beyond the project period • Less water uses in crop agriculture beyond project period • Seed bank with genepool of targeted species beyond project period
8(e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering the protection of these areas	**Activities for promotion of permanent crops (orchards) adjacent to Protected Areas that support wildlife are included in the ADP and projects**	**XX hectors of Protected Area adjacent land are converted to orchards**	**% of Protected Area has been surrounded with a patch of the green belt of orchards that provides additional protection**
Definition of indicator:	Refers to cultivation practices, awareness, sensitization demonstrations, piloting, and other related field activities for establishing orchards	Refers to Orchards that add protection to the PA	Belt of orchards increased physical protection in the project implemented region
Data source:	ADP document/ project document/ Appraisal reports/ Inception report	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	DAE report, case study, assessment reports, media news
Data collection methods:	Screening project document/ ADP	Screening project progress report, DAE annual report	Screening DAE report, case study, assessment reports, media news
Example:	Orchards near the PA	Orchards near the PA	Orchards near the PA

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Article 10: sustainable use of components of biological diversity (a) *Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;* (b) *Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;* (c) *Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements* (d) *Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced;* (e) *Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources.*			
SUSTAINABLE DEVELOPMENT Integrate consideration of the conservation and sustainable use of biological resources into decision-making	• **Interventions for conservation and sustainable use of biological resources are included in the ADP and non-ADP projects** • **A systemic mechanism for monitoring of conservation and sustainable use of biological resources established**	• **XX biological resources sustainably used in XX ha** • **A systemic mechanism for monitoring the conservation and sustainable use of biological resources established and monitored.**	• **ADP and non-ADP projects include activities for conservation and sustainable use of biological resources** • **A systemic mechanism for monitoring remains functional beyond the project period.**
Definition of indicator:	• Refers to the conservation and sustainable use of biological resources which are genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems that have actual or potential value or use to humanity. • Refers to the monitoring of the Sustainable use of the components of biological resources	• Refers to implementation of the interventions and practice for conservation and sustainable use of the selected biological resources in the project area • Refers to the monitoring of the implementation regarding conservation and sustainable use of the biological resources	• Refers to the inclusion of activities for conservation and sustainable use of biological resources continue at the post-project period. • Refers to the continuation of systematic monitoring beyond the project period.
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Project document/ADP for post project period, DAE report, technical report, media report
Data collection methods:	Screening Project document/ADP	Screening project progress report, annual report, technical report	Screening project document at the time of review that is post project period, DAE report, technical report, media report
Example:	- Pheromone traps - Compost/Organic fertilizer - Mulching - Dry direct seeding	- Beneficial micro organism - Beneficial insects - Soil nutrient	- Project/ADP that includes activities on conservation of biological resources

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
SUSTAINABLE DEVELOPMENT Adopt measures relating to use of biological resources to avoid or minimize adverse impacts on biological diversity	• **Activities for promotion of agriculture practice that avoid or minimize adverse impact on biological resources are included in the projects/ADP/and non-ADP projects**	• **XX ha. land cultivated without or reduced chemical fertilizer, pesticide, that minimized adverse impact on biological resources.**	• **Residues of the pesticides reduced in the XX ha sustained beyond the project tenure.** • **Reduced inorganic matters in soils in XX ha. sustained beyond the project tenure.**
Definition of indicator:	Refers to measures in cultivation that do not adversely impact the biological resources	Refers to agriculture practice without or reduced use of chemical fertilizer, pesticide, that avoid or minimize adverse impact on biological resources.	Refers to the sustenance of the reduced pesticides and inorganic matters in the soil in the post-project period.
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	laboratory test results, technical reports, media reports.
Data collection methods:	Screening Project document/ADP	Screening project progress report, annual report, technical reports	screening laboratory test results, technical reports, media reports.
Example:	• Reduced use of chemical fertilizer • Use of Urea Super Granule (USG) • Use of Compost/organic fertilizer • Use of pheromone traps, biopesticides • Use of wind break to protect erosion	Demonstration of: • Reduced use of chemical fertilizer • Use of deep placed urea briquette • Use of Compost/organic fertilizer • Use of pheromone traps instead of pesticide • Use of wind break to protect erosion	• Reduced pesticide residue • Reduced inorganic matter in • Increased organic matters in the soil • Less soil erosion
SUSTAINABLE DEVELOPMENT Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced	• **Provisions to support local populations to develop and implement remedial action are included in project document/ADP to increase biodiversity in the degraded land**	• **Number of local people or group are supported to develop and implement remedial action in degraded areas where biological diversity has been reduced** • **Soil microbes increased by %**	• **Increased microbes sustained beyond the project period**
Definition of indicator:	Refers to inclusion of activities in the project document/ADP for remedial actions in the in agricultural practice	Refers to local individuals or groups sensitized and supported	Refers to sustenance of increased microbes beyond project period.

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, FGD, DAE report, media reports.
Data collection methods:	Screening Project document/ADP	Screening project progress report, annual report, technical reports	Screening survey results, FGD findings, DAE report, media reports.
Example:	Project document/ ADP that includes awareness rising, promoting participation, use of: • Pheromone traps • Organic fertilizer • Urea Super Granule • Mulching • Dry direct seeding • Zero tillage agriculture	• Community sensitized • Microbes increased	• Increased microbes • Reduced pesticide residue and inorganic matter in the soil • increased organic matter and soil moisture in the soil
Article 12. Research and Training *The Contracting Parties, taking into account the special needs of developing countries, shall:* *(a) Establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation* *and sustainable use of biological diversity and its components and provide support for such education and training for the specific needs of* *developing countries:* *(b) Promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries, inter alia, in accordance with decisions of the Conference of the Parties taken in consequence of recommendations of the Subsidiary Body on Scientific, Technical and Technological Advice: and* *(c) In keeping with the provisions of Articles 16. 13 and 20. promote and cooperate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources.*			
Article 12(b) Promote and encourage research which contributes to the conservation and sustainable use of biological diversity	**Activities to identify research topics and to coordinate with respective research institutes (under the Bangladesh Agriculture Research Council - BARC) are included in Project document/ADP for conducting research**	• **XX research topics have been identified** • **XX identified topics are researched in coordination with BARC**	**Research results available for agriculture extension**
Definition of indicator:	Refers to project document/ADP that included activities to identify research topics and to coordinate with respective research institutes under the Bangladesh Agriculture Research Council for conducting research.	Refers to follow up with the respective institutes and influenced and research conducted; DAE received results.	Refers to use of the research results in agriculture extension beyond the project period.
Data source:	Project document/ADP	Research results	Survey, media report
Data collection methods:	Screening Project document/ADP	Screening Research results	Screening survey results, media report

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Example:	• Project document/ ADP that includes activities to assess current agricultural practices regarding sustenance of the microbes of the soil • Project document/ ADP that includes activities to research to find better agricultural practices that conserves soil microbes	• XX microbes are available in the soil of the project command area • XX better agricultural practices are identified that conserves soil microbes	• XX microbes beneficial to agriculture sustained in the soil of project command area beyond the project tenure
Article 13. Public Education and Awareness *The Contracting Parties shall:* *(a) Promote and encourage understanding of the importance of. and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programmes; and* *(b) Cooperate, as appropriate, with other States and international organizations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity.*			
Training programme Development on biodiversity in the agriculture sector and implementation	**Training programmes on biodiversity in agriculture are included in project document/ ADP**	**XX professional and XX practitioners are skilled to consider biodiversity in agriculture**	**XX professional, XX practitioners and XX policy makers remain competent to consider biodiversity in agriculture in dealing biodiversity in the agriculture sector**
Definition of indicator:	Refers to project document/ ADP that included training programme on biodiversity in agriculture	Refers to biodiversity conservation qualified professionals, practitioners and policy makers	Refers to professionals, practitioners and policy makers trained are sustaining their capacity
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, media report
Data collection methods:	Screening project document/ADP	Screening project report, DAE report	Screening survey results, media report
Example:	Training programmes	Biodiversity trained/skilled professionals/practitioners/ policy makers	Biodiversity trained/skilled professionals/practitioners/ policy makers
Development and implementation of public awareness programmes on biodiversity in agriculture sector.	**Public awareness on biodiversity in agriculture are included in the project document/ADP**	**XX people are aware of the biodiversity in agriculture and its importance**	**XX people can tell about importance of biodiversity in the agriculture sector**

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Definition of indicator:	Refers to project document/ADP that included activities on public awareness building.	Refers to people aware on importance of biodiversity in the agriculture sector	Refers to people who can tell the importance of biodiversity in the agriculture sector after the project period
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, media report
Data collection methods:	Screening project document/ADP	Screening project progress report, annual report	Screening survey results, media report
Example:	Project document/ADP that included activities on public awareness	People aware on the importance of biodiversity in agriculture	People aware on the importance of the biodiversity in agriculture

Article 14. Impact Assessment and Minimizing Adverse Impacts

1. *Each Contracting Party, as far as possible and as appropriate, shall:*

a. Introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate. allow for public participation in such procedures;

b. Introduce appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account:

c. Promote, on the basis of reciprocity, notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction, by encouraging the conclusion of bilateral, regional or multilateral arrangements, as appropriate;

d. In the case of imminent or grave danger or damage, originating under its jurisdiction or control, to biological diversity within the area under jurisdiction of other States or in areas beyond the limits of national jurisdiction, notify immediately the potentially affected States of such danger or damage, as well as initiate action to prevent or minimize such danger or damage; and(e) Promote national arrangements for emergency responses to activities or events, whether caused naturally or otherwise, which present a grave and imminent danger to biological diversity and encourage international cooperation to supplement such national efforts and, where appropriate and agreed by the States or regional economic Integration organizations concerned, to establish joint contingency plans.

2. *The Conference of the Parties shall examine, on the basis of studies to be carried out, the issue of liability and redress, including restoration and compensation, for damage to biological diversity, except where such liability is a purely internal matter.*

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
ADAPTATION TO THE IMPACTS **Introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate allow for public participation in such procedures.**	• **Office order to follow Environmental Impact Assessment (EIA) are issued for relevant project as per the prescribed procedure of Department of Environment.** • **Significant adverse effects on biological diversity of the proposed projects are identified through EIA.** • **Suitable measures identified to minimize the adverse impacts are included in the project document/ADP**	• **Office order to follow EIA procedure in place** • **Measures as identified in the project document are implemented** • **The adverse impact is minimized.**	**The process of identification of adverse impacts and the remedial measures remain functional beyond the project period.**
Definition of indicator:	• Refers to office order to follow Environmental Impact Assessment (EIA) for relevant project as per the prescribed procedure of Department of Environment. • Refers to adverse effects on biological diversity of the proposed projects. • Refers to measures to minimize the adverse impacts.	• Refers to issuance of Office order to follow EIA procedure in place • Refers to implementation of the identified measures • Refers to minimization of the adverse effect.	Refers to continuation of the process of identification of the adverse impacts and remedial measures and provisions for implementation remain functional in the post project period.
Data source:	EIA report and adjusted project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	DAE technical report, KII with relevant officials
Data collection methods:	Screening EIA report and adjusted project document/ADP	Screening project progress report, technical report, annual report	Screening DAE technical report and drawing from KII
Example:	Adjusted project document/ADP	Project progress report highlighting the remedial actions and results	Continued process of identifying adverse impacts and remedial actions remain functional beyond project period

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
ADAPTATION TO THE IMPACTS Appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have adverse impacts on biological diversity are duly considered	• **Measure taken for review and amendment of Agriculture policy and agriculture extension policy** • **Systemic monitoring mechanism for the programme and reporting system to assess the environmental consequences on biological diversity are established**	• **Agriculture policy and agriculture extension policy reviewed and amended to ensure due consideration of the adverse impact on biodiversity** • **XX DAE relevant programme monitored and assessed.**	• **Updated agriculture policy and updated agriculture extension policy in place.** • **Monitoring system remain functional beyond the project period.**
Definition of indicator:	• Refers to measures for review and adjustment of Agriculture policy and agriculture extension policy • Refers to establishment of a systemic mechanism for monitoring of the DAE program and reporting system to assess the environmental consequences (both positive and negative) on biological diversity.	• Refers to review and amendment of the Agriculture policy and agriculture extension policy. • Refers to monitoring/ assessment and submission of report.	• Refers to Updated agriculture policy and updated agriculture extension policy. • Refers to systemic monitoring system in place. • Refers to controlling of negative environmental consequences on biological diversity.
Data source:	Existing policy, review results, organogram and ToR for monitoring cell/wing	Adjusted agriculture policy and agriculture extension policy Monitoring reports	Gazette notification Technical report, media report
Data collection methods:	Screening document	Screening documents	Screening documents
Example:	Policy review activities Monitoring cell	Reviewed and adjusted policies Monitoring reports	• Reviewed and adjusted policies in place • Technical and media report on biological diversity

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Article 16: Access to and transfer of technology 1. *Each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provisions of this Article to provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.* 2. *Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favorable terms, including on concessional and preferential terms where mutually agreed, and, where necessary, in accordance with the financial mechanism. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights.* 3. *Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that Contracting Parties, those that are developing countries, which provide genetic resources are provided access to and transfer of technology which makes use of those resources, on mutually agreed terms, including technology protected.* 4. *Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that the private sector facilitates access to, joint development and transfer of technology referred to in paragraph 1 above for the benefit of both governmental institutions and the private sector of developing countries.* 5. *The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.*			
TRANSFER OF TECHNOLOGY **Provide and/or facilitate access to and transfer of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.**	**Facilitate farmers to access stress tolerant seeds, conservation technologies, and sustainable use of genetic resources and guidelines development to transfer the technology among the farmers are included in project document/ADP**	• **Extension service provided for XX stress tolerant seeds to XX farmers** • **Extension service provided for XX technologies to XX farmers** • **XX farmers practiced XX technologies and cultivated XX varieties of seeds** • **XX farmers use XX genetic resources**	• **Farmers are using XX stress tolerant seeds and XX technologies;** • **Sustainable use of XX genetic resources continued** • **Increased crop production without causing significant damage to the environment continued beyond project period in the command area.**
Definition of indicator:	Refers to project document/ ADP that included activities to facilitate farmers to access stress tolerant seeds, technologies and guidelines	Refers to extension service for new seeds, technologies to the farmers and sustainable use of genetic resources	• Refers to continuation of the seed use and technology use • Refers to continuation of sustainable use of genetic resources use • Refers to production increase without doing harm to the environment
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, KII, FGD, media report

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Data collection methods:	Screening project document/ADP	Screening progress report, annual report, technical reports	Screening survey results, KII, FGD, media report
Example:	Project document/ADP that included measures that enable farmers to access tolerant seeds, technologies that support conservation and sustainable use of genetic resources	Extension service to farmers for accessing stress tolerant seeds, guidelines for using technologies that support conservation and sustainable use of genetic resources	• Use of stress tolerant seeds • Use of conservation friendly technology • Increased production
Article 17. Exchange of Information *1. The Contracting Parties shall facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries.* *2. Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge.*			
EXCHANGE OF INFORMATION **Article 17: Facilitate exchange of results of technical, scientific and socio-economic research as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge**	• **Activities relating to facilitate exchange of results of technical, scientific and socio-economic research are included in Project document/ADP** • **Systemic procedure is established to disseminate information on training and surveying programmes** • **Activities to develop scientific paper on specialized knowledge, indigenous and traditional knowledge are included in Project document/ADP**	• **XX knowledge product on research findings prepared and disseminated** • **XX notice with information of training and survey programme issued and disseminated** • **XX scientific paper on specialized knowledge, indigenous and traditional knowledge developed and disseminated**	• **XX People are informed on research results.** • **XX people are informed on training programme** • **Access to XX scientific paper ensured**
Definition of indicator:	• Refers to project document/ ADP that included activities to facilitate exchange of results of technical, scientific and socio-economic research • Refers to establishment of systemic procedure to disseminate information on training and surveying programmes • Refers to project document/ ADP that included activities to develop scientific paper on specialized knowledge, indigenous and traditional knowledge	• Refers to knowledge product on research findings and dissemination of knowledge product • Refers to issue of notice on training and survey programme and dissemination of the notice • Refers to scientific paper on specialized knowledge, indigenous and traditional knowledge and dissemination of the scientific papers	• Refers to informed people on research results. • Refers to informed people on training and survey programme • Refers to ensured access to scientific papers

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Data source:	Project document/ADP Office order to establish a procedure for dissemination of information on training and survey programme	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report, reports on research findings, notice of training and survey programme, published scientific papers	Survey among the stakeholders
Data collection methods:	Screening project document/ADP and office order	Screening Project progress report, annual report, reports on research findings, notice of training and survey programme, published scientific papers	Survey results screening
Example:	• Project document/ADP that included activities to facilitate exchange of results of technical, scientific and socio-economic research • Office order to establish Systemic procedure for dissemination of information of training and surveying programmes • Project document/ADP that included activities to develop scientific paper on specialized knowledge, indigenous and traditional knowledge	• Knowledge product on research findings • Notice with information of training and survey programme • Scientific paper on specialized knowledge, indigenous and traditional knowledge	• People having information on research results. • People having information on training and survey programme • People having access to scientific papers

2.2.2 INDICATOR FRAMEWORK FOR UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

ARTICLE 3. PRINCIPLES

3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Relevant Obligations for DAE		**INDICATORS**	
	INPUT	**OUTPUT**	**IMPACT**
Impact Assessment **Take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects**	**Activities to promote AWD methods, drip irrigation, leaf color chart methods, solar irrigation for rice cultivation are included in Project document/ADP**	• **XX ha. cultivated using AWD methods, drip irrigation, leaf color chart methods, solar irrigation** • **Emission of XX tons of CO_2 equivalent reduced**	• **Cultivation of XX ha continued using AWD methods, drip irrigation, leaf color chart methods, and solar irrigation continues beyond the project period in the command area** • **Emission reduction of XX tons of Co_2 equivalent continues beyond the project period in the command area**
Definition of indicator:	Refers to project document/ ADP that included activities to promote AWD methods, drip irrigation, leaf color chart methods for crop cultivation that reduce CH_4 and other GHG	• Refers to cultivation using AWD methods, drip irrigation, leaf color chart methods • Refers to emission reduction	• Refers to the continuation of the AWD methods, drip irrigation, leaf color chart methods • Refers to the continuation of the emission reduction
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, media report
Data collection methods:	Screening project document/ ADP	Screening project progress report, technical reports	Screening survey report, media report
Example:	Project document that included activities to promote Alternate Wetting and Drying methods, Drip Irrigation, Leaf color chart (LCC), solar irrigation, urea super granule	Rice production using Alternate Wetting and Drying methods, Drip Irrigation, Leaf color chart (LCC), solar irrigation, urea briquette	Continued rice production using Alternate Wetting and Drying methods, Drip Irrigation, Leaf color chart (LCC), solar irrigation, urea super granule

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
ARTICLE 3. PRINCIPLES *4. The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.*			
Sustainable Development **Policies and measures to protect the climate system against human-induced change should be appropriate and integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.**	**Activity for amendment of the Agriculture Policy and the Agriculture Extension Policy for promotion of Climate Smart Agriculture is included in Project document/ADP**	**Agriculture Policy and Agriculture Extension Policy included Climate Smart Agriculture as a policy directive**	**The Agriculture Policy and Agriculture Extension Policy promote Climate Smart Agriculture**
Definition of indicator:	Refers to project document/ ADP that included activity to amend the Agriculture Policy and Agriculture Extension Policy to promote climate smart agriculture.	Refers to amended Agriculture Policy and Agriculture Extension Policy that promotes Climate Smart Agriculture	Refers to the amended Agriculture Policy and Agriculture Extension Policy that promotes Climate Smart Agriculture beyond the project period.
Data source:	Project document/ADP, Existing Agriculture Policy and Agriculture Extension Policy	Amended Agriculture Policy and Agriculture Extension Policy that promotes Climate Smart Agriculture	Agriculture Policy and Agriculture Extension Policy beyond the project period
Data collection methods:	Screening policy	Screening policy	Screening policy
Example:	Existing Policy	Amended Policy	Policy at future time

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
ARTICLE 4. COMMITMENTS *(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties;* *(f) Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;*			
Regulatory Framework ***Article 4: Periodic national inventories of GHG emission; programme for the control of climate change; incorporate suitable policies for the control of climate change in national plans***	**Activities for conducting GHG emission inventories from the agriculture sector in the command area are included in Project document/ ADP**	**GHG emission of the agriculture sector from the command area inventoried**	**GHG emission inventory continues beyond project period**
Definition of indicator:	Refers to project document/ ADP that included activity for conducting GHG emission inventory	Refers to conduction of GHG emission inventory	Refers to continuation of the GHG inventory
Data source:	Project document/ADP	Inventory report	Inventory report
Data collection methods:	Screening Project document/ ADP	Screening inventory report	Screening inventory report
Example:	Project document/ADP that included activity for conducting GHG emission inventory	GHG emission inventory	GHG emission inventory
ARTICLE 4. COMMITMENTS *(e) Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;*			

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Adaptation to the Impacts **Article 4: Develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture and for the protection and rehabilitation of areas, particularly affected by drought and land degradation, as well as floods**	**Activities to develop integrated planning to protect and rehabilitate drought affected degraded land and crop production in flood affected land are included in the project document/ADP**	• **XX ha drought affected degraded land protected, rehabilitated** • **XX ha flood affected land brought under cultivation**	• **XX of drought affected land continues crop production** • **XX ha flooded land continues crop production**
Definition of indicator:	Refers to project document/ADP that includes activity to develop integrated plans to protect and rehabilitate drought affected degraded land and enable crop production in flood affected land.	Refers to protection, rehabilitation of the drought and flood affected land brought under cultivation	Refers to continuation of the cultivation in the protected and rehabilitated land
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, media report
Data collection methods:	Screening project document/ ADP	Screening reports	Screening survey results and media reports
Example:	Project document/ADP that includes any or some of the following activities: Buried pipe irrigation, drip irrigation, dry direct seeding, organic/compost fertilizers, zero tillage/minimum tillage, pheromone traps, saline tolerant rice, submergence tolerant rice, short duration rice, heat tolerant rice, and wheat	Restored land providing optimal yield	Restored land providing optimal yield beyond the project period.

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
ARTICLE 5. RESEARCH AND SYSTEMATIC OBSERVATION (a) *Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;* (b) *Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and* (c) *Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts.*			
Research and Systematic Observation **article 5(b): Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries**	• **Activities to identify research topics and to coordinate with respective research institutes (under the Bangladesh Agriculture Research Council) are included in Project document/ADP for conducting research** • **Activities for collecting daily temperature and rainfall data at block level are included in the Project document/ADP**	• **XX research topics have been identified** • **XX identified topics are researched in coordination with BARC** • **Daily temperature and rainfall data at block level are collected**	• **Research results available for agriculture extension** • **Daily data (temperature and rainfall) are available beyond the project tenure**
Definition of indicator:	• Refers to the activities to identify research topics and coordination with respective research institutes under the Bangladesh Agriculture Research Council for conducting research. • Refers to activities to collect daily temperature and rainfall data at block level	• Refers to follow up with the respective institutes and influenced and research conducted; DAE received results. • Refers to collection of daily temperature and rainfall data at block level	• Refers to use of the research results in agriculture extension beyond the project period. • Refers to availability of daily temperature and rainfall data at block level
Data source:	Project document/ADP	Research results	Survey, media report
Data collection methods:	Screening Project document/ ADP	Screening Research results	Screening survey results, media report

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Example:	Research to tolerant seeds, low water crops etc.	Saline tolerant seed variety Wheat variety that use less water for example	Cultivation with tolerant seeds and less water loving crops
ARTICLE 6. EDUCATION, TRAINING AND PUBLIC AWARENESS (a) *Promote and facilitate at the national and, as appropriate, subregional and regional levels, and in accordance with national laws and regulations, and within their respective capacities:* (i) *The development and implementation of educational and public awareness programmes on climate change and its effects;* (ii) *Public access to information on climate change and its effects;* (iii) *Public participation in addressing climate change and its effects and developing adequate responses; and* (iv) *Training of scientific, technical and managerial personnel.* (b) *Cooperate in and promote, at the international level, and, where appropriate, using existing bodies:* (i) *The development and exchange of educational and public awareness material on climate change and its effects; and* (ii) *The development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field, in particular for developing countries.*			
Training and Public Awareness **Development and implementation of training programmes on climate change and its effects**	**Development and implementation of training programmes on climate change and its effects on agriculture are included in project document/ADP**	**XX professional and XX practitioner's XX policy makers are skilled to integrate climate change impacts and practice climate smart agriculture**	**XX professional, XX practitioners and XX policy makers remain competent dealing climate change in the agriculture sector**
Definition of indicator:	Refers to project document/ ADP that included training programme on climate change and its effect on agriculture	Refers to climate change qualified professionals, practitioners and policy makers	Refers to professionals, practitioners and policy makers trained are sustaining their capacity
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, media report
Data collection methods:	Screening project document/ ADP	Screening project report, DAE report	Screening survey results, media report
Example:	Training programmes	Climate change trained/ skilled professionals/ practitioners/policy makers	Climate change trained/skilled professionals/practitioners/ policy makers

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Training and Public Awareness **Development and implementation of public awareness programmes on climate change and its effects.**	**Public awareness on climate change and its effects are included in the project document/ADP**	**XX people aware of the climate change and its effect on agriculture**	**XX people can tell about climate change and its effect on the agriculture**
Definition of indicator:	Refers to project document/ ADP that included activities on public awareness building.	Refers to people aware on climate change and its effect on agriculture	Refers to people who can tell the climate change effects on the agriculture
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, media report
Data collection methods:	Screening project document/ ADP	Screening project progress report, annual report	Screening survey results, media report
Example:	Project document/ADP that included activities on public awareness	People aware on climate change effect on agriculture	People aware on climate change effect on agriculture
Exchange of Information ***Article 6(a): Public access to information on climate change and its effects and public participation in addressing and developing responses***	**Farmers field schools on agriculture and farmer exposure visit/study tour to the demonstration farms across the country are included in the project document/ADP**	• **XX farmers field school held XX farmers received XX latest technologies of climate smart agriculture** • **XX climate change issues at the local level and probable solutions are identified through field schools**	• **XX Farmers field schools continue to hold beyond the project period** • **Identification of the climate change issues related to agriculture at local levels are identified and communicated beyond the project period**
Definition of indicator:	Refers to project document/ ADP that included activities for organization of farmers field schools on agriculture and farmer exposure visit/study tour to the demonstration farms across the country	• Refers to organization of farmers field school on agriculture to share latest technologies and practices for climate smart agriculture with the farmers at local level • Refers to the discussion on climate change issues and solutions at the local level for agriculture during the farmers field school	• Refers to continuation of the farmers field schools beyond the project period • Refers to continuation of the discussion beyond the project period for identification of climate change issues and solution at the local level

Relevant Obligations for DAE	INDICATORS		
	INPUT	OUTPUT	IMPACT
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	DAE report, media report
Data collection methods:	Screening project document/ ADP	Screening progress report, annual report	Screening DAE report, media report
Example:	Project document/ADP that included farmers field schools	Farmers field school for climate smart agriculture	Continued farmers field school

2.2.3 INDICATOR FRAMEWORK FOR UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION (UNCCD)

Article 4. General Obligations

1. *The Parties shall implement their obligations under this Convention, individually or jointly, either through existing or prospective bilateral and multilateral arrangements or a combination thereof, as appropriate, emphasizing the need to coordinate efforts and develop a coherent long-term strategy at all levels.*
2. *In pursuing the objective of this Convention, the Parties shall:*

(a) *adopt an integrated approach addressing the physical, biological and socio-economic aspects of the processes of desertification and drought.*

(c) integrate strategies for poverty eradication into efforts to combat desertification and mitigate the effects of drought;

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Risk Assessment **Article 4: Adopt an integrated approach addressing the physical, biological and socio-economic aspects of the processes of desertification and drought**	**Integrated approach for addressing drought are included in DAE projects/ ADP**	• **Percentage/ha of land practiced integrated approaches for management of drought effects** • **Percentage of increase of water holding capacity and organic nutrient of soil** • **Percentage of participating farmers accepted the interventions** • **Range of increased income for % of participating farmers**	• **Percentage/ha of land practice integrated approaches for management of drought effects in the project area** • **Percentage of land maintain increased water content and organic nutrient of the soil** • **Percentage of participating farmers-maintained increased income (range)**
Definition of indicator:	Refers to inclusion of activities to address physical, biological and socio-economic aspects of drought in the projects/ ADP for the drought zone of the country	Refers to water holding capacity and organic nutrient content of the soil and interventions socially accepted and income from the agriculture in the drought zone	• Refers to continuation of integrated approaches • Refers to maintain water holding capacity and organic nutrient of the soil • Refers to maintain increased income
Data source:	Project documents, ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	DAE technical report, survey, interview, media report
Data collection methods:	Extract from the data source	Extract from the data source	Extract from the data source
Example:	Zero tillage agriculture, discourage heavy tractor, promotes mulching, Dry direct seeding organic fertilizer, pheromone traps and vegetable as inter crop.	Zero tillage agriculture practiced, heavy tractor not used; mulching, Dry direct seeding organic fertilizer, pheromone traps used, and vegetable as inter crop practiced.	Water holding capacity, organic nutrient of the soil, pesticide residue, social acceptance of interventions, income of the participating farmers

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Sustainable Development **Article 4: Integrate strategies for poverty eradication into efforts to combat desertification and mitigate the effects of drought**	**Poverty eradication strategies are included in the drought management project/ADP**	**Income poverty of XX participating farmers reduced by % (range)**	**Reduced number of income poverty participating farmers and reduced level (range) is maintained**
Definition of indicator:	Refers to poverty eradication measures embed in the drought management project/ADP	Refers to reduction % of poor people among the participants and reduction in poverty level by %	Refers to maintenance of the reduction of number of poor people among the participants and reduction in poverty level
Data source:	Project document, ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, KII, FGD and media reports
Data collection methods:	Screening Project document, ADP	Extract from project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Drawing from Survey, KII, FGD and media reports
Example:	Creating job, women empowerment, financial literacy for women, skill development, entrepreneurship development, access to credit etc.	New job created, women empowered financially literate women increased, number of skilled people and entrepreneurs increased	Job created, empowered women, increase in financially literate women, skilled people and entrepreneurs are maintained

Article 10. National action programmes

1. *The purpose of national action programmes is to identify the factors contributing to desertification and practical measures necessary to combat desertification and mitigate the effects of drought.*
2. *National action programmes shall specify the respective roles of government, local communities and land users and the resources available and needed. They shall, inter alia:*

(a) *incorporate long-term strategies to combat desertification and mitigate the effects of drought, emphasize implementation and be integrated with national policies for sustainable development;*

(c) give particular attention to the implementation of preventive measures for lands

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Regulatory Framework **Article 10: incorporate long-term strategies to combat desertification and mitigate the effects of drought emphasize implementation and be integrated with national policies for sustainable development**	• **Policy level intervention taken for inclusion of long-term drought management strategies in the NSDS.** • **Technical inputs are provided for inclusion of long-term drought management strategies in the Five-year plans aligning NSDS** • **Long term measures to mitigate drought effects are included in Projects/ ADP aligning NSDS and following five-year plan**	• **Long term drought management strategies are included in the NSDS** • **Long term drought management measures are included in Five-year plans aligning NSDS.** • **Percentage of land used:** **Zero tillage, lightweight tractors, organic fertilizer, pheromone traps in the project command area.**	• **Long term drought management strategies prevail in the NSDS** • **Long term drought management measures are there in the Five-year plans aligning NSDS at the post project period** • **Long term measures to mitigate drought effects are included in the projects and ADP after the project period** • **Zero tillage, lightweight tractors, organic fertilizer, pheromone trap use sustained after the project period**
Definition of indicator:	Refers to intervention for inclusion of long term for drought management in the NSDS Refers to technical inputs for inclusion of long-term measures for drought management in the five-year plans aligning NSDS. Refers to projects/ADP that includes long term drought management measures	Refers to long-term drought management strategies in the NSDS, five-year plan Refers to implementation of long-term strategies like Zero tillage, lightweight tractors, organic fertilizer, pheromone traps	Refers to sustenance of long-term measures to mitigate drought effects in the NSDS, five-year plan and projects/ ADP Refers to maintain and extension of practice of Zero tillage, lightweight tractors, organic fertilizer, pheromone trap in the command area
Data source:	Meeting minutes, project document/ADP	NSDS and Five-year plan and project document/ADP	Survey, FGD, KII, observation, media report
Data collection methods:	Screening meeting minutes, notes, project document/ADP	Screening NSDS and Five-year plan, project document/ADP	Conduct survey, KII, FGD, screen media report
Example:	Projects on drought management	NSDS includes strategic guidance to promote zero tillage, lightweight tractors, compost fertilizer, pheromone trap and five-year plan accordingly plans for these long-term strategies and project/ADP includes these activities	Zero tillage, lightweight tractors, compost fertilizer, pheromone trap are in use

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Article 16: Information collection, analysis and exchange *The Parties agree, according to their respective capabilities, to integrate and coordinate the collection, analysis and exchange of relevant short term and long-term data and information to ensure systematic observation of land degradation in affected areas and to understand better and assess the processes and effects of drought and desertification. This would help accomplish, inter alia, early warning and advance planning. To this end, they shall, as appropriate:* (a) *Facilitate and strengthen the functioning of the global network of institutions and facilities for the collection, analysis and exchange of information, as well as for systematic observation at all levels, which shall, inter alia:* (i) *aim to use compatible standards and systems;* (ii) *encompass relevant data and stations, including in remote areas;* (iii) *use and disseminate modern technology for data collection, transmission and assessment on land degradation; and* (iv) *link national, subregional and regional data and information centres more closely with global information sources;* (b) *ensure that the collection, analysis and exchange of information address the needs of local communities and those of decision makers, with a view to resolving specific problems, and that local communities are involved in these activities;*			
Technology Transfer **Article 16: Use and disseminate modern technology for data collection, transmission and assessment on land degradation**	**Data collection for Land degradation assessment and transmission using satellite imagery and GIS are included in the projects/ ADP**	**Data for Land degradation assessment collected and transmitted using satellite imagery and using GIS**	**Data collection for Land degradation assessment and transmission using satellite imagery and use of GIS continues for DAE projects**
Definition of indicator:	Refers to use of satellite imagery and GIS in collecting, transmitting and assessing land degradation	Refers to collection of Land degradation data, assessment and transmission using satellite imagery and using GIS	Refers to continuation of use of satellite imagery and GIS for land degradation data collection, assessment and transmission
Data source:	Project document and ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Technical report
Data collection methods:	Screening project document and ADP	Screening project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Screening technical reports
Example:	Satellite imagery and GIS technic		
Exchange of Information **Article 16: Ensure the collection, analysis and exchange of information, address the needs of local communities and those of decision makers with a view to resolving specific problems**	**Activities for collection of data on: water availability, water requirement and yield; analyze the data and to make communication products are included in Projects/ ADP for the policy makers to solve this problem of water scarcity.**	**XX Policy briefs developed using findings of the analysis using collected data on water availability, water requirement and yield for the policy makers**	**Water availability ensured for crop agriculture**

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Definition of indicator:	Refers to activities that collects data on water availability, water needs for certain crop, potential for reduce water use, reduce water loss and make communication materials with the gathered data for the decision makers	Refers to collection of data, analysis and preparing policy briefs for decision maker to solve specific problem	Refers to policy decision, financial and institutional support and establish infrastructures and procedures for ensuring water availability
Data source:	Projects/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Government gazette, project report, observation
Data collection methods:	Screening Project document and ADP	Screening progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Screening data sources
Example:	Data collection from project area on: • variety cultivated during dry season and water needs • water availability • potential of promoting less water loving crop, use of waste water in irrigation, Zero tillage agriculture, Rain water harvesting, Mini ponds in the crop field	Policy briefs	Buried pipe for irrigation, infrastructure for drip irrigation, mini ponds, rain water harvest, infrastructure for waste water use in irrigation

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Article 18. Transfer, acquisition, adaptation and development of technology 1. *The Parties undertake, as mutually agreed and in accordance with their respective national legislation and/or policies, to promote, finance and/or facilitate the financing of the transfer, acquisition, adaptation and development of environmentally sound, economically viable and socially acceptable technologies relevant to combating desertification and/or mitigating the effects of drought, with a view to contributing to the achievement of sustainable development in affected areas. Such cooperation shall be conducted bilaterally or multilaterally, as appropriate, making full use of the expertise of intergovernmental and non-governmental organizations. The Parties shall, in particular:* *(e) take appropriate measures to create domestic market conditions and incentives, fiscal or otherwise, conducive to the development, transfer, acquisition and adaptation of suitable technology, knowledge, know-how and practices, including measures to ensure adequate and effective protection of intellectual property rights.* 2. *The Parties shall, according to their respective capabilities, and subject to their respective national legislation and/or policies, protect, promote and use in particular relevant traditional and local technology, knowledge, know-how and practices and, to that end, they undertake to:* (a) *make inventories of such technology, knowledge, know-how and practices and their potential uses with the participation of local populations, and disseminate such information, where appropriate, in cooperation with relevant intergovernmental and non-governmental organizations;* (b) *ensure that such technology, knowledge, know-how and practices are adequately protected and that local populations benefit directly, on an equitable basis and as mutually agreed, from any commercial utilization of them or from any technological development derived therefrom;* (c) *encourage and actively support the improvement and dissemination of such technology, knowledge, know-how and practices or of the development of new technology based on them; and* (d) *facilitate, as appropriate, the adaptation of such technology, knowledge, know-how and practices to wide use and integrate them with modern technology, as appropriate.*			
Transfer of Technology **Article 18: Make inventories of such technology, knowledge, know-how and practices and their potential uses with the participation of local populations, and disseminate such information, where appropriate, in cooperation with relevant intergovernmental and non-governmental organizations**	• **Activities to make inventories of drought management technologies, knowledge, knowhow and practices and potential use with the participation of the local populations are included in projects/ADP** • **Disseminate the findings are included in projects/ ADP**	• **XX inventories prepared on drought management technologies, knowledge, knowhow and practices and potential use with the participation of the local populations** • **XX inventories disseminated**	**Preparing and dissemination of inventories on drought management technologies, knowledge, knowhow and practices and potential use continues**
Definition of indicator:	Refers to inventories of drought management technologies, practices, knowledge, knowhow, potential use and dissemination of the findings	Refers that the inventories on drought management technologies, knowledge, knowhow and practices and potential use have been prepared with the participation of the local populations Refers that the inventories prepared have been disseminated	Refers to preparing and dissemination of the inventories on drought management technologies, knowledge, knowhow and practices and potential use preparation with the participation of the local populations and dissemination of the inventories continues

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Data source:	Projects/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Survey, DAE annual report, technical report, media report
Data collection methods:	Screening project document/ ADP	Screening project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Analyzing survey and screening DAE annual report, technical report, media report
Example:	Inventories on but limited to: • Drip irrigation • Piped irrigation • Mulching • Dry direct seeding • Vegetable as inter crop • Waste water in irrigation • Zero tillage agriculture • Rain water harvesting • Mini ponds in the crop field • Others	Inventories on but limited to: • Drip irrigation • Piped irrigation • Mulching • Dry direct seeding • Vegetable as inter crop • Waste water in irrigation • Zero tillage agriculture • Rain water harvesting • Mini ponds in the crop field • Others	Inventories on but limited to: • Drip irrigation • Piped irrigation • composting • Dry direct seeding • Vegetable as inter crop • Waste water in irrigation • Zero tillage agriculture • Rain water harvesting • Mini ponds in the crop field • Others
Adaptation to the Impacts ***Article 18: Adaptation and development of environmentally sound, economically viable and socially acceptable technologies relevant to combating desertification and mitigating the effect***	• **Activity for adaptation of drought are included in Projects/ADP** • **Research activity for development of technologies are included in projects/ADP includes for mitigating drought effect which are environmentally sound, economically viable and socially acceptable**	• **XX inventoried adaptation technologies implemented for adaptation to drought** • **XX technologies for mitigating drought effect revealed environmentally sound, economically viable and socially acceptable**	**Implementation of XX environmentally sound, economically viable and socially acceptable technologies for mitigating drought effect continues**
Definition of indicator:	Refers to activity that enable adaptation to the drought Refers to research and action research to develop technologies to mitigate the effects of drought	Refers to implementation of inventoried technologies Refers to research results for technologies that are revealed environmentally sound, economically viable and socially acceptable	Refers to implementation of environmentally sound, economically viable and socially acceptable technologies for mitigating drought effect
Data source:	Project document /ADP	Project progress report, research findings, annual report, technical report	DAE annual report, technical report, survey, media report

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Data collection methods:	Screening project document /ADP	Screening project progress report, research findings, annual report, technical report	Conducting survey, screening DAE annual report, technical report, survey, media report, field visit
Example:	Technologies from inventoried options Invention of stress tolerant crop seeds, action research to find environmental soundness, economic viability and social acceptance	Technologies from inventoried options Invented adaptation option	Technologies revealed through research and action research

Article 19. Capacity building, education and public awareness

1. The Parties recognize the significance of capacity building – that is to say, institution building, training and development of relevant local and national capacities -- in efforts to combat desertification and mitigate the effects of drought. They shall promote, as appropriate, capacity building:

(a) through the full participation at all levels of local people, particularly at the local level, especially women and youth, with the cooperation of non-governmental and local organizations;

(b) by strengthening training and research capacity at the national level in the field of desertification and drought;

(d) by fostering the use and dissemination of the knowledge, know-how and practices of local people in technical cooperation programmes, wherever possible;

(h) through innovative ways of promoting alternative livelihoods, including training in new skills;

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Training and Public Awareness **Article 19: Promote awareness and facilitate participation of local community, the women and youth, NGOs to combat desertification and mitigate the effect of drought**	**Activity to promote awareness and facilitate participation of local community, the women and youth, NGOs to mitigate the effect of drought are included in projects/ADP includes**	**XX local community including women, youth and NGOs participated to the effort of mitigating the effect of drought in the project area**	**XX local community including women, youth and NGOs are oriented to participate to the effort of mitigating the effect of drought in the project area**
Definition of indicator:	Refers to awareness generation, facilitate community participation, youth and women participation and NGO participation in mitigating effects of drought	Refers to participation of local community including women, youth and NGOs to the effort of mitigating the effect of drought in the project area	Refers to local community including women, youth and NGOs remain oriented to participate to the effort of mitigating the effect of drought in the project area
Data source:	Projects/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	DAE reports on achievements, survey, media report
Data collection methods:	Screening project document/ ADP	Screening project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report	Screening DAE reports on achievements, survey report, media report

Relevant Obligations for DAE	INDICATORS		
	INPUT	**OUTPUT**	**IMPACT**
Example:	Awareness rising and promoting participation of local community including women, youth and NGOs for drought management	Participation of local community including women, youth and NGOs for drought management ensured in project implementation	Local community including women, youth and NGOs remain oriented to participate to the effort of mitigating the effect of drought in the project area
Article 19: Strengthening research capacity at the national level in the field of land degradation and drought by fostering the use and dissemination of the knowledge, know-how and practices of local people	• **Activities to strengthen research capacity using local knowledge, knowhow and practice for land degradation and drought management are included in project/ ADP**	• **Local knowledge, knowhow and practice for land degradation and drought management has been communicated to the national level for strengthening research**	• **Local knowledge, knowhow and practice for land degradation and drought management are available for conducting research**
Definition of indicator:	• Refers to develop projects/ADP with goal of strengthening research capacity using local knowledge, knowhow and practice for land degradation and drought management	• Refers to use of local knowledge, knowhow and practice for land degradation and drought management and communication of the findings to the national level • Refers to enhancement of research capacity using local knowledge, knowhow and practice for drought management	• Refers to regular communication of local knowledge, knowhow and practice for drought management to the national level for strengthening national training • Refers to retention of enhanced research capacity using local knowledge, knowhow and practice for drought management
Data source:	Project document/ADP	Project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report, official letters	Communication letters to the national level containing local knowledge, knowhow and practice for drought management to the national level for strengthening national training
Data collection methods:	Screening project document/ ADP	Screening project progress and final report, technical report, DAE annual report, midterm evaluation report, terminal evaluation report, official letters	Screening communication letters to the national level containing local knowledge, knowhow and practice for drought management to the national level for strengthening national training
Example:	Project on strengthening training using local knowledge, know and practice for drought management	Inventories on local knowledge, know-how and practice for drought management Communication letters containing inventories to the national level	Communication letters

Annex-I: Key Informants

Key Informants

Dr. M Sahab Uddin, Additional Director (Project Implementation), Planning, Project Implementation and ICT Wing, DAE

Ms. Rehana Sultana, Agricultural Economist, DAE

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Annex-II: Common obligations for Bangladesh under the Rio Conventions

Common Issue	UNCBD	UNFCCC	UNCCD
EDUCATION, TRAINING, AND PUBLIC AWARENESS	Article 13: cooperate in developing educational and public awareness programmes with respect to conservation and sustainable use of biological diversity	Article (6): development and implementation of educational and public awareness programmes on climate change and its effects; Training of scientific, technical and managerial personnel	Article 19: Promote awareness and facilitate participation of local community, the women and youth, NGOs to combat desertification and mitigate the effect of drought
RISK ASSESSMENT	Article 14: impact assessment and minimizing adverse impacts	Article 3(3): precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects Article 4: methods for impact assessments with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment	Article 4: adopt an integrated approach addressing the physical, biological and socio-economic aspects of the processes of desertification and drought
SUSTAINABLE DEVELOPMENT	Article 10: sustainable use of components of biological diversity	Article 3(4): Measures to protect the climate system against human induced change	Article 4: integrate strategies for poverty eradication into efforts to combat desertification and mitigate the effects of drought
RESEARCH AND SYSTEMATIC OBSERVATION	Article 12: promote and encourage research which contributes to the conservation and sustainable use of biological diversity	Article 5: research and systematic observation to strengthen national scientific and technical research capacities and capabilities	Article 19: strengthening training and research capacity at the national level in the field of desertification and drought

Common Issue	UNCBD	UNFCCC	UNCCD
TECHNOLOGY TRANSFER	Article 16: access to and transfer of technology	Article 8: to meet the specific needs and concerns arising from the adverse effects of climate change and the impact of the implementation of response measures	Article 16: use and disseminate modern technology for data collection, transmission and assessment on land degradation
ADAPTATION TO THE IMPACTS	Article 14: appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have adverse impacts on biological diversity are duly taken into account	Article 4: develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture and for the protection and rehabilitation of areas	Article 18: adaptation and development of environmentally sound, economically viable and socially Acceptable technologies relevant to combating desertification and mitigating the effect
EXCHANGE OF INFORMATION	Article 17: include exchange of results of technical, scientific and socio-economic research as well as information	Article 6: public access to information on climate change and its effects and public participation in addressing and developing responses	Article 16: ensure the collection, analysis and exchange of information, address the needs of local communities and those of decision makers with a view to resolving specific problems
REGULATORY FRAMEWORK	Article 8: regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use	Article 3(4): Adopting appropriate policies to integrate UNFCCC obligations with national development programmes Article 4: periodic national inventories of GHG emission; programme for the control of climate change; incorporate suitable policies for the control of climate change in national plans	Article 10: incorporate long-term strategies to combat desertification and mitigate the effects of drought emphasize implementation and be integrated with national policies for sustainable development

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