AGRICULTURE AND AGRO-ECOLOGICAL ZONES IN BANGLADESH

OVERVIEW: BANGLADESH AGRICULTURE

OVERVIEW…

- About 65% of the total population live in rural areas
- Agriculture contributes about 13% to the country's GDP (2019)
- About 23% of which is contributed by the crop sector alone
- About 63% of the labor force is employed in agriculture
- About 57% being employed in the crop sector

CHARACTERISTICS OF BANGLADESH AGRICULTURE

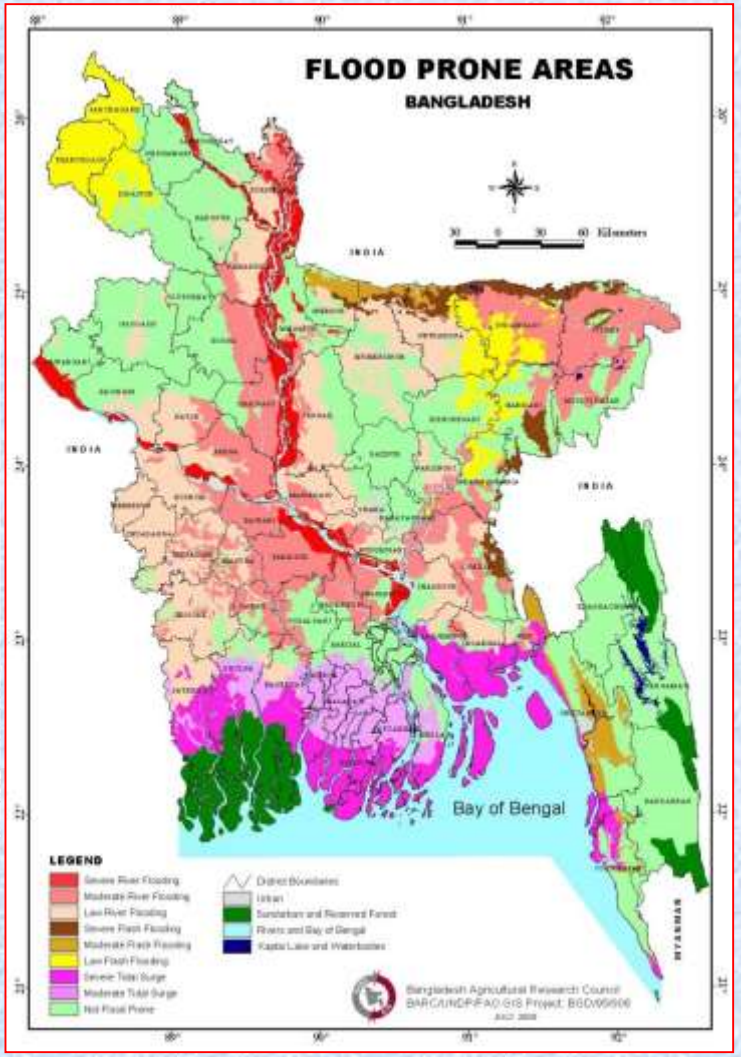
CHARACTERISTICS…

- Cropping intensity 190%;
- Irrigated land 56%;
- Surface water: 21% ;
- Groundwater: 79%;
- Land-man ratio: 0.06 ha;
- Mainly subsistence farming;
- Inadequate agro-processing;
- Non-mechanized farming;
- Fragmented land/plots;
- Dependence largely on nature.

CLIMATE INDUCED HAZARDS AFFECT AGRICULTURE

FLOOD…

- River flood
- Flash flood
- Tidal surge/ Cyclonic flood

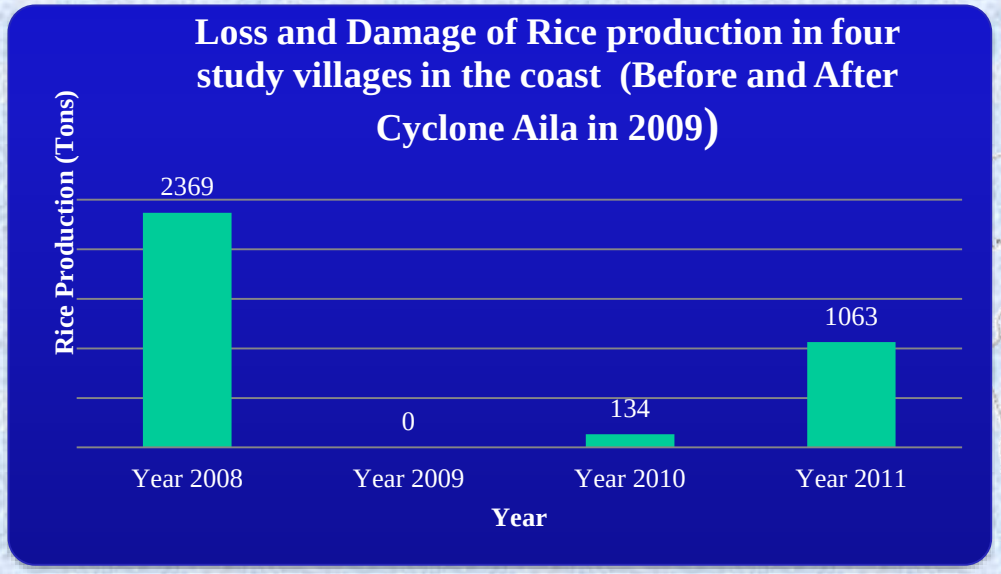


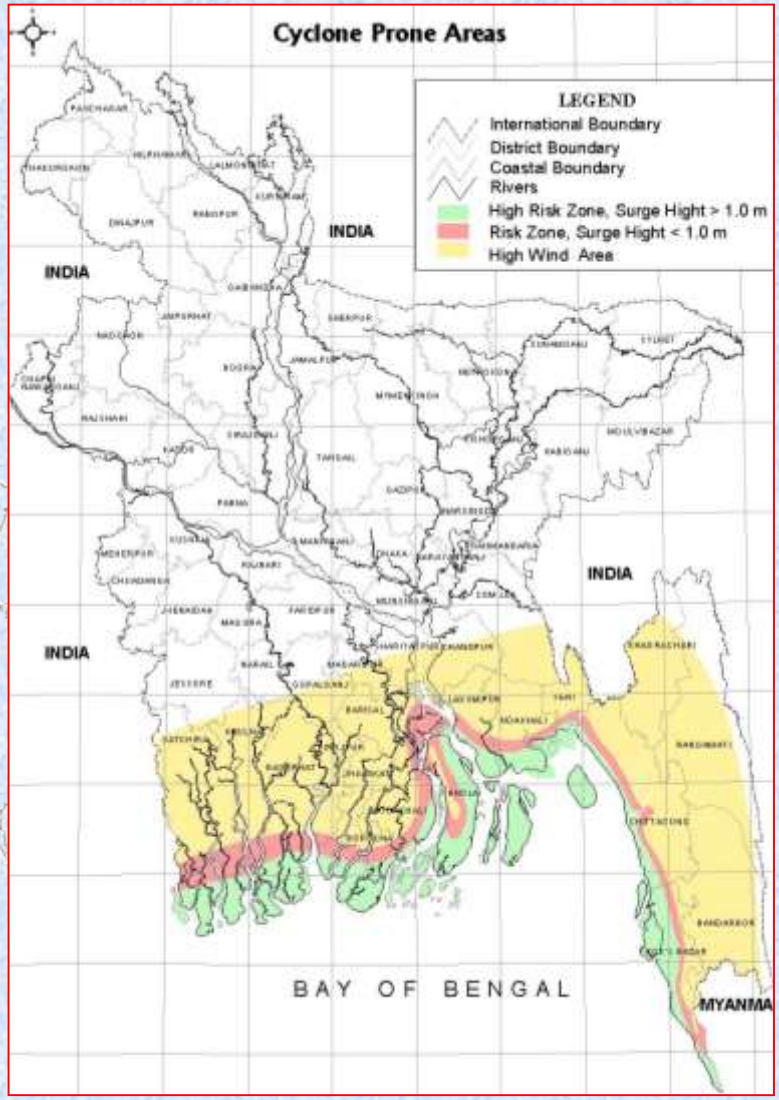
Affected/Exposed Areas:

- Nearly 80% areas of the country is low-lying
- Recent floods affected 30-69% areas
- Standing crops damage

CLIMATE INDUCED HAZARDS AFFECT AGRICULTURE

CYCLONE…



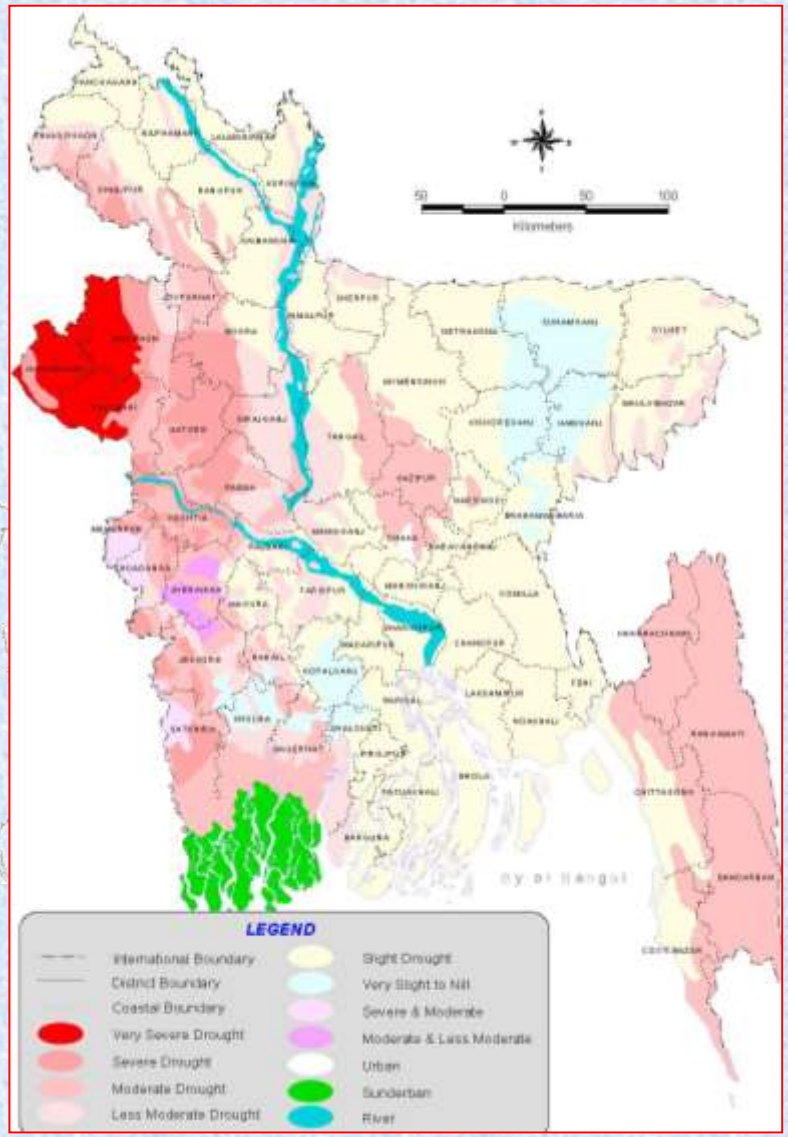


CLIMATE INDUCED HAZARDS AFFECT AGRICULTURE

DROUGHT…

Affected/Exposed Areas:

- About 25% of the country suffer water stress in dry season.
- Western and north western districts of the country are mostly affected.



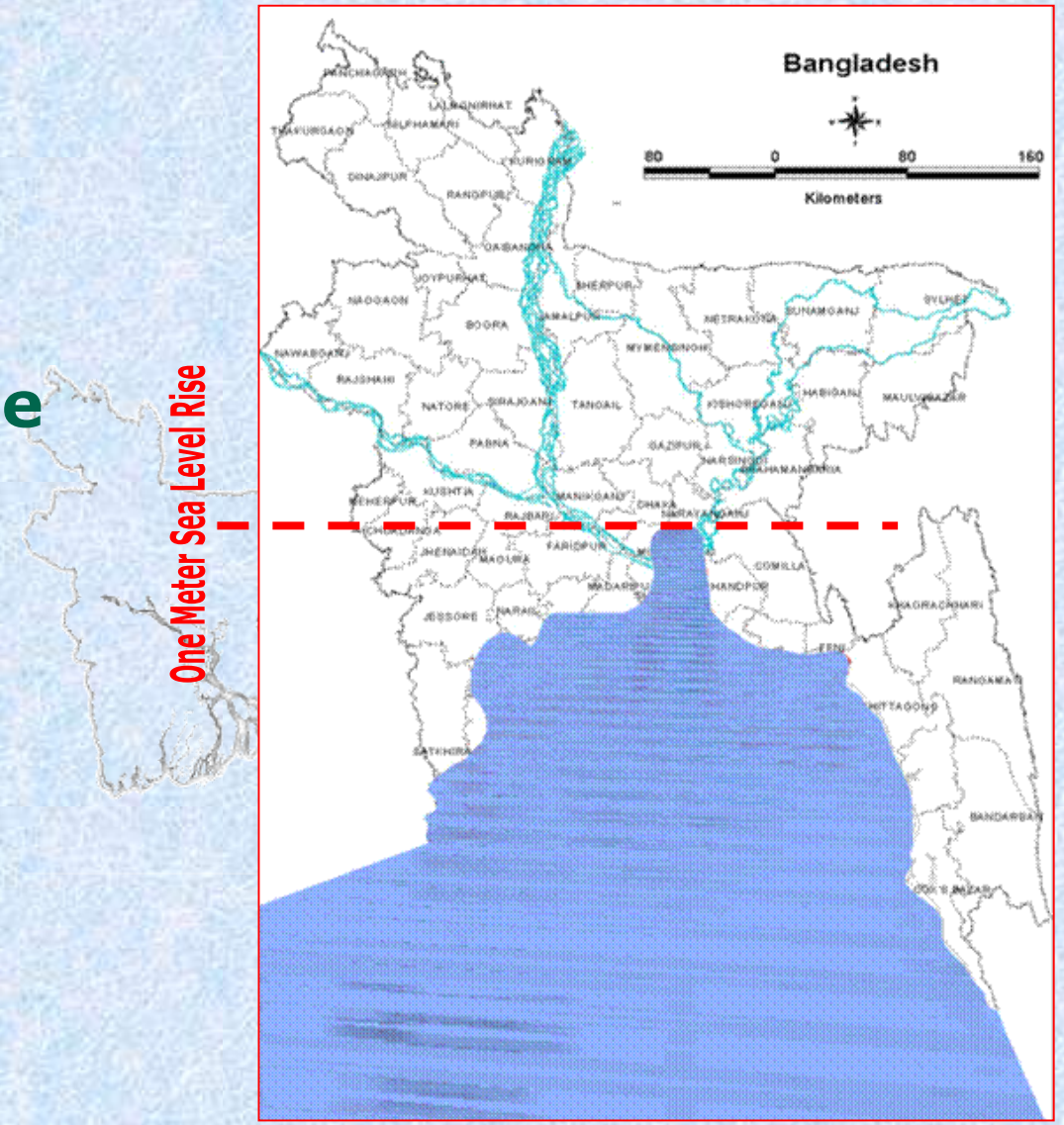
Source: BWDB

CLIMATE INDUCED HAZARDS AFFECT AGRICULTURE

SEA LEVEL RISE...

Affected/Exposed Areas:

- About 25% of the country will be inundated.
- Southern rice production belt will be submerged.



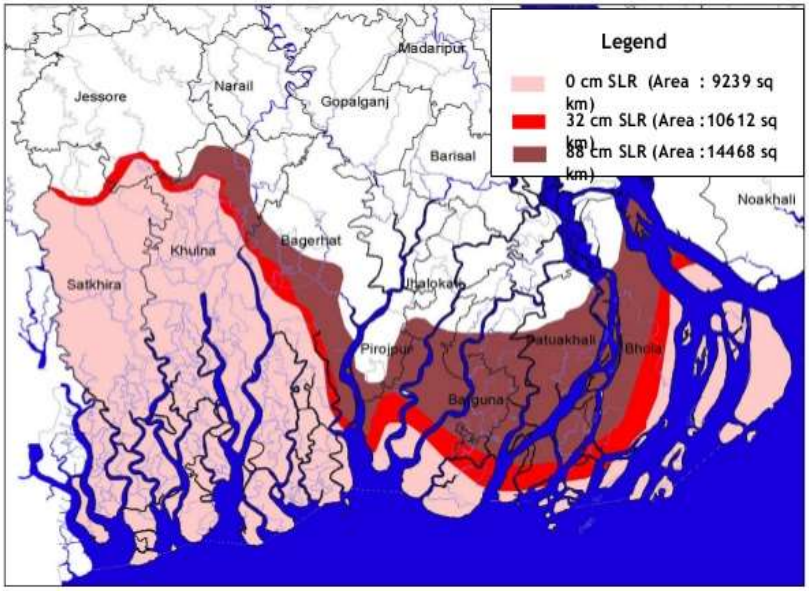
CLIMATE INDUCED HAZARDS AFFECT AGRICULTURE

SOIL SALINITY…

Salinity Intrusion in agriculture fields

- **Salinity intrusion increased by 30 % from 1973 to 2017.**
- **Farmers are extremely challenged with salinity.**
- **After Cyclone Aila (2009), many farmers couldn't cultivate rice properly for two consecutive years.**

Projected salinity intrusion due to sea level rise



ADAPTATION TECHNOLOGIES IN CROP AGRICULTURE

ADAPTATION TECHNOLOGIES…

- Stress (flood, drought and salinity) tolerant varieties
- Short duration crops
- Innovative farming practices (floating gardens, irrigation efficiency)
- Crop diversification
- Changing/shifting cropping pattern
- Adjustments in irrigation system (excavation of mini-ponds, supplementary irrigation)
- Cropping intensity (1, 2, 3, 4……crops in a year)

SUSTAINABLE GROWTH OF AGRICULTURE...

Bangladesh shall have to incorporate the following specific features:

1. **Land productivity of agriculture will have to be increased by at least 50 per cent.**

2. **The structure of agricultural production has to be diversified along non-crop lines.**

3. **Non-farm activities in the rural areas will have to be multiplied hugely to provide new employment.**

4. **Infrastructure and marketing system in the rural areas should be improved to meet the challenge of a more commercialized agriculture.**

IMPORTANCE OF AGRICULTURE

IMPORTANCE…

- 13% GDP;
- 63% labor force;
- Agriculture determines people's lives and livelihood of this region;
- People living in rural areas 65%.

PROSPECTS OF AGRICULTURE

PROSPECTS…

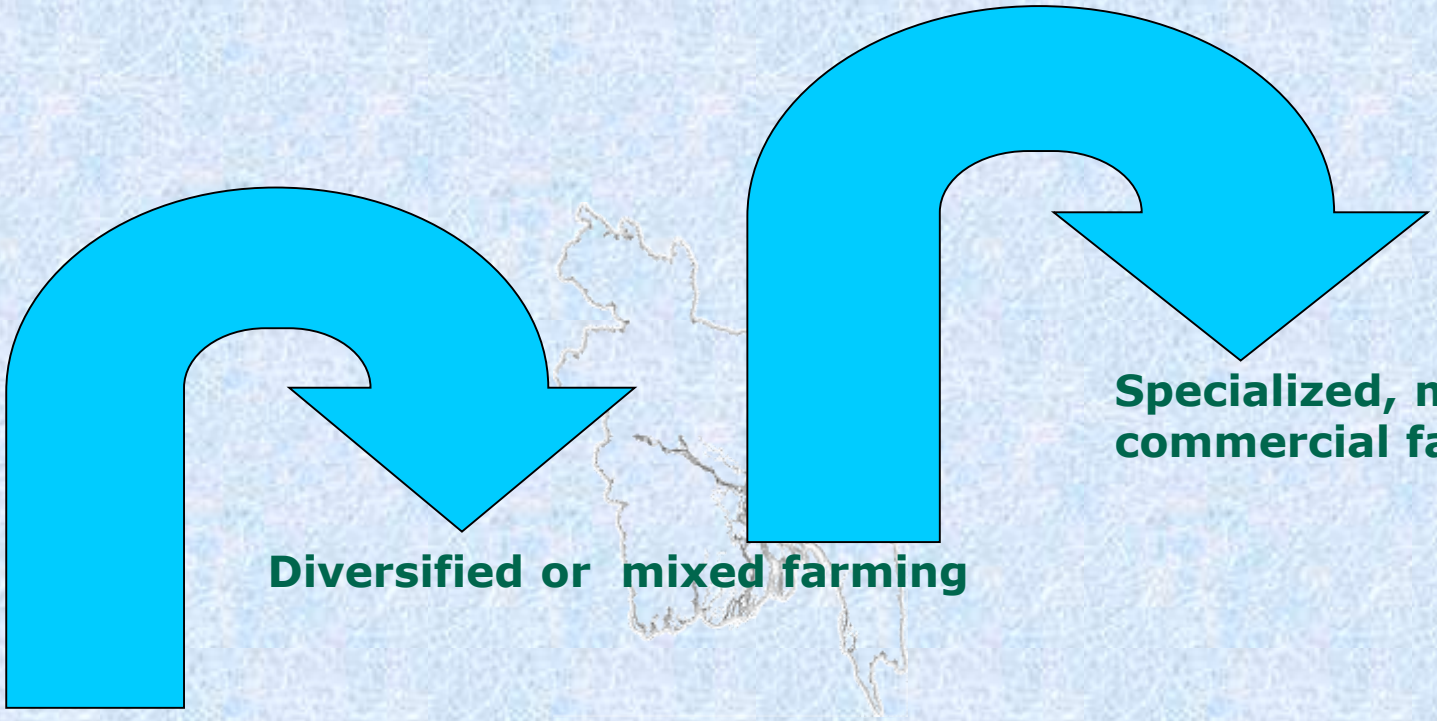
- Modern technological knowledge is available for reducing yield gaps;
- Scope for expanding hybrid technology exists;
- Prospects for adoption of advanced technology;
- Energy input in agri-sector is increasing gradually;
- Export potentials exist for high-value crops;
- Scope for crop diversification, intensification and value addition to agricultural produces;
- Agriculture sector has capacity to absorb labor force and to generate income;
- Potentials for proper utilization of hilly/coastal areas including agro-ecologically disadvantaged regions.

ECOLOGICAL AGRICULTURE…

Ecological agriculture is based on the principles of :

1. **Diverse and mixed cropping systems instead of monocultures;**
2. **Green manure and compost instead of chemical fertilizer;**
3. **Natural pest management;**
4. **Preservation of seeds at the household level; and**
5. **Agro-forestry.**

TRANSITION PROCESS…



SUSTAINABLE AGRICULTURAL DEVELOPMENT NEED.....

- **Financial Support**
- **Technical Support**
- **Technology**
  - **New Variety**
  - **Innovate new strategy for management practices**
  - **Cropping System**
  - **Machinery**

SOME CHALLENGES

CHALLENGES IN AGRICULTURE SECTOR…

- Rapid shrinkage of agricultural land @1% (i.e. 0.08m ha p.a.);
- Population growth @1.21% (i.e. 0.20 million p.a.);
- Climate change and variations;
- Rapid urbanization growth @12% p.a.;
- Technology generation (needs expertise, time and money);
- Technology dissemination (needs expertise, time, logistics support);
- Alternative livelihoods/rehabilitation program;
- Inadequate value addition/food processing.

BANGLADESH AGRICULTURE…FUTURE DIRECTION

FUTURE DIRECTION…

From 1960, onward, the official strategy of successive governments was intensification of agriculture and it was to be carried out with the help of a new technology called **High Yield Variety (HYV) technology.**

This HYV technology consisted of three principal components:

(a) Irrigation facility,

(b) Seeds with higher yield potentiality, and

(c) Proper Chemical Fertilizer and Chemical Insecticide.

AGRO-ECOLOGICAL ZONES

AGRO-ECOLOGICAL ZONES

Agroecological Zone land areas recognised on the basis of hydrology, physiography, soil types, tidal activity, cropping patterns, and seasons. In fact **an agroecological zone indicates an area characterised by homogeneous agricultural and ecological characteristics.** This homogeneity is more prominent in the sub region and unit levels. The agroecological zones of Bangladesh have been identified on the basis of four elements such as physiography, soils, land levels in relation to flooding and agroclimatology. **Bangladesh has been tentatively divided into 30 agroecological zones.** These 30 zones have been subdivided into 88 agroecological sub-regions, which have been further subdivided into 535 agroecological units.

AGRO-ECOLOGICAL ZONES

ID	Zones/Regions	Sub Regions
1.	Old Himalayan Piedmont Plain	a) North-central; b) Northern
2.	Active Tista Floodplain	Active Tista Floodplain
3.	Tista Meander Floodplain	a) Central; b) Eastern; c) Lower Atrai Floodplain; d) Lower Little Jamuna Floodplain; e) North-eastern and Southern North-western; f) Upper Little Jamuna and Middle Atrai Floodplain
4.	Karatoya-Bangali Floodplain	a) Northern and Central; b) South-western
5.	Lower Atrai Basin	Lower Atrai Basin
6.	Lower Punarbhaba Floodplain	Lower Punarbhaba Floodplain
7.	Active Brahmaputra-Jamuna Floodplain	Active Brahmaputra-Jamuna Floodplain
8.	Young Brahmaputra and Jamuna Floodplain	a) High Jamuna Floodplain; b) Upper Brahmaputra Floodplain; c) Upper Brahmaputra-Jamuna Floodplain

AGRO-ECOLOGICAL ZONES

9.	**Old Brahmaputra Floodplain**	**a) Bansi Valley; b) High; c) Low; d) Medium High; e) Medium Low**
10.	Active Ganges Floodplain	Active Ganges Floodplain
11.	High Ganges River Floodplain	a) Central and Southern; b) Ganges-Mahananda Floodplain; c) Northern
12.	Low Ganges River Floodplain	a) Central; b) Eastern
13.	Ganges Tidal Floodplain	a) Khulna Sundarban; b) Nonsaline, calcareous; c)Nonsaline, calcareous and non-calcareous; d) Nonsaline, noncalcareous; e) Saline, Acid Sulphate Soils; f) Saline, calcareous and noncalcareous; g) Saline, noncalcareous
14.	Gopalganj-Khulna Beels	Beel centres
15.	Arial Beel	Arial Beel
16.	Middle Meghna River Floodplain	Middle Meghna River Floodplain
17.	Lower Meghna River Floodplain	a) Calcareous, flood protected; b) Calcareous, unembanked; c) Noncalcareous, flood protected; d) Noncalcareous, unembanked
18.	Young Meghna Estuarine Floodplain	a) Nonsaline: Central Bhola; b) Nonsaline: Meghna Estuary Charland; c) Nonsaline: North Bhola; d) Saline: Central Bhola; e) Saline: Noakhali, Hatiya and

AGRO-ECOLOGICAL ZONES

19.	**Old Meghna Estuarine Floodplain**	**a) Dhaka-Narayanganj-Demra Project Area; b) High: Old Meghna Estuarine Floodplain; c) Low: Daudkandi-Habiganj; d) Low: Dhaka- Shariatpur-Barisal; e) Low: Eastern Kishoreganj; f) Low: Gopalganj Beels margins; g) Low: Habiganj-North Brahmanbaria; h) Low: Titas Floodplain; i) Medium Low; j) Very poorly drained: Laksham-Begumganj**
20.	Eastern Surma-Kushiyara Floodplain	Eastern Surma-Kushiyara Floodplain
21.	Sylhet Basin a)	Central and Southern; b) Northern; c) Western
22.	Northern and Eastern Piedmont Plain	a) Northern and Eastern Basins; b) Northern and Eastern Plains and Basins; c) North-western Plains and Basins; d) South Sylhet Piedmont Plains
23.	Chittagong Coastal Plain	a) Beach Ridges, Mangrove Swamp and Mud Clay; b) Mangrove Tidal Floodplain; c) Piedmont Plains and River Floodplains; d) Young Tidal Floodplain
24.	St Martin’s Coral Island	St. Martin’s Coral Island
25.	Level Barind Tract	a) Highland and Medium Highland; b) Medium Lowland and Lowland
26.	High Barind Tract	High Barind Tract
27.	North-eastern Barind Tract	a) Mainly poorly drained; b) Mainly well drained; c) Mixed well drained and poorly drained
28.	Madhupur Tract	a) Mainly poorly drained level terrace; b) Mainly well drained dissected terrace
29.	Northern and Eastern Hills	a) Low hills and Piedmont Plains; b) Mainly high hill ranges; c) Mainly low hills
30.	Akhaura Terrace	Akhaura Terrace

Thanks