

24<sup>th</sup> session of ICC on RESAP

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**Achievements and future plans on implementation of the  
Asia-Pacific Plan of Action on Space Applications for  
Sustainable Development (2018 – 2030) in Bangladesh**

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Chairman

Bangladesh Space Research and Remote Sensing Organization  
(SPARRSO)



Bangladesh Space Research and Remote Sensing Organization (SPARRSO)

## **Background: A brief history of SPARRSO**

- ☐ Space application in Bangladesh was started in 1968 with the establishment of Automatic Picture Transmission (APT) under Atomic Energy Commission
- ☐ Bangladesh Space Research and Remote Sensing Organization (SPARRSO) was established in 1980

## **National level contribution of SPARRSO**

- ☐ Monitoring of disasters (cyclones, floods and others)
- ☐ Monitoring of natural resources
- ☐ Assessment of major rice crops
- ☐ Providing technical supports and services to other agencies like Ministry of Agriculture, Ministry of Disaster Management and Relief, Ministry of Water Resources, National River Conservation Commission (NRCC), Bangladesh Bureau of Statistics etc.



Bangladesh Space Research and Remote Sensing Organization (SPARRSO)

SPARRSO is working to support the following thematic areas of Asia-Pacific Plan of Action on Space Applications for Sustainable Development:

- ☐ Disaster Risk Reduction and Resilience
- ☐ Management of Natural Resources
- ☐ Social Development



Bangladesh Space Research and Remote Sensing Organization (SPARRSO)

# **Thematic Area:**

## **Disaster Risk Reduction and Resilience**



Bangladesh Space Research and Remote Sensing Organization (SPARRSO)

# Food production: SDG 2

Action Area 1: Research and knowledge sharing

Action Area 2: Capacity building and technical support

## Annual estimation of rice crop

This information helps in food security planning in the country

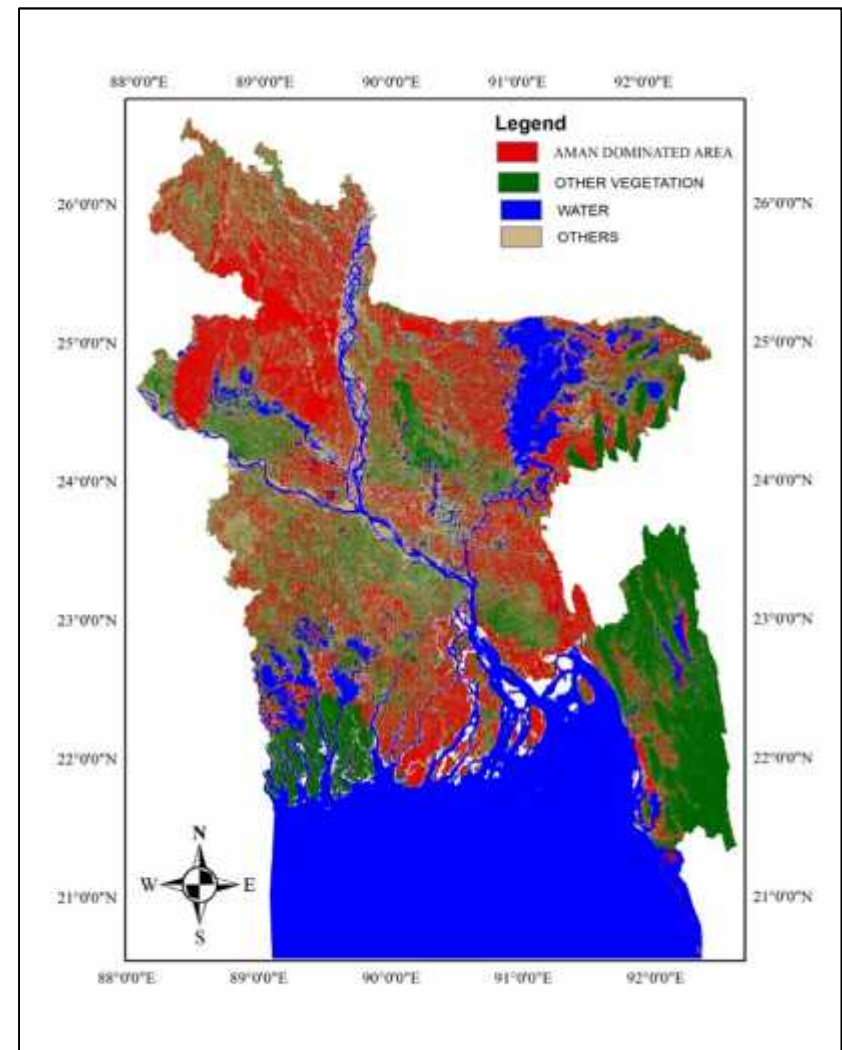
Information is disseminated to the following ministries/division:

- ☐ Ministry of Agriculture
- ☐ Ministry of Food
- ☐ Statistics and Informatics Division (SID)

Rice crops acreage:

Autumn (Aman) Rice area (2019):

5.52 M ha



Autumn (Aman) Rice

# Food production: SDG 2

Action Area 1: Research and knowledge sharing

Action Area 2: Capacity building and technical support

## Annual estimation of rice crop

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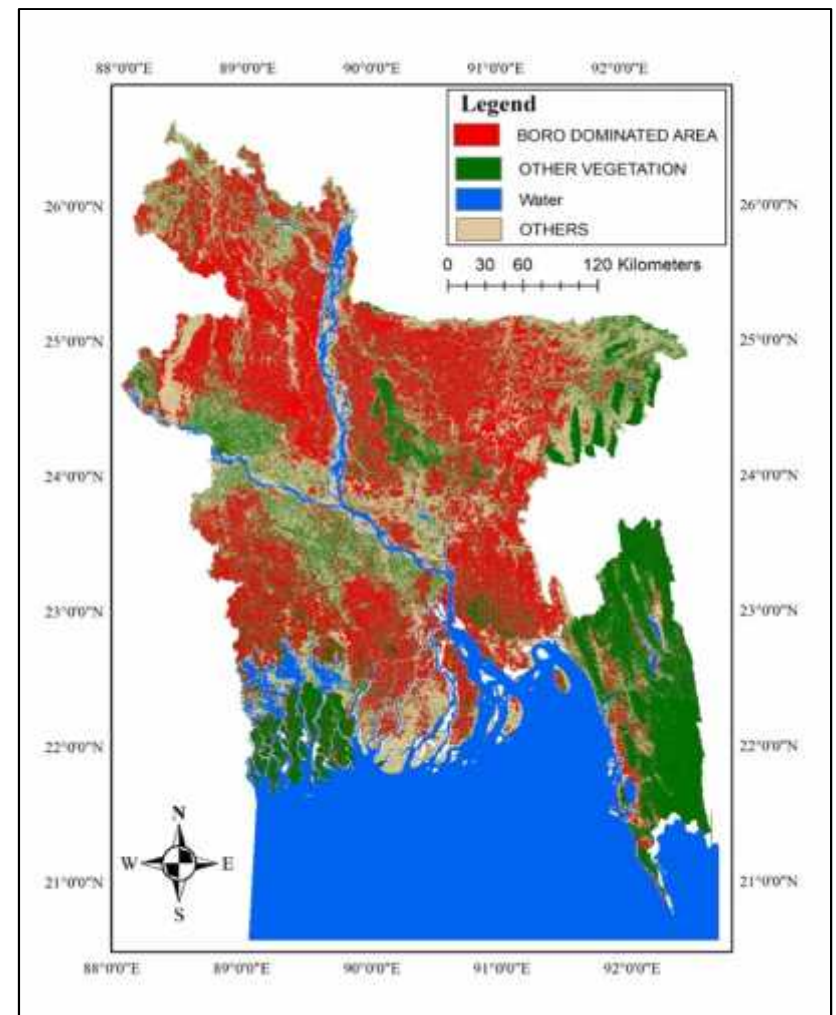
Information is disseminated to the following ministries/division:

- ☐ Ministry of Agriculture
- ☐ Ministry of Food
- ☐ Statistics and Informatics Division (SID)

Rice crops acreage:

Winter (Boro) Rice area (2020):

4.81 M ha



Winter (Boro) Rice



# Disaster assessment : SDG 11

Action Area 1: Research and knowledge sharing

Action Area 2: Capacity building and technical support

## Extended flood area mapping and early warning (2020)

The information helps Government for risk reduction, relief works and rehabilitation, which is disseminated to

- ❑ The Prime Minister's Office
- ❑ Ministry of Water Resources
- ❑ Ministry of Agriculture
- ❑ Ministry of Disaster Management and Relief
- ❑ Ministry of Food
- ❑ Ministry of Defence

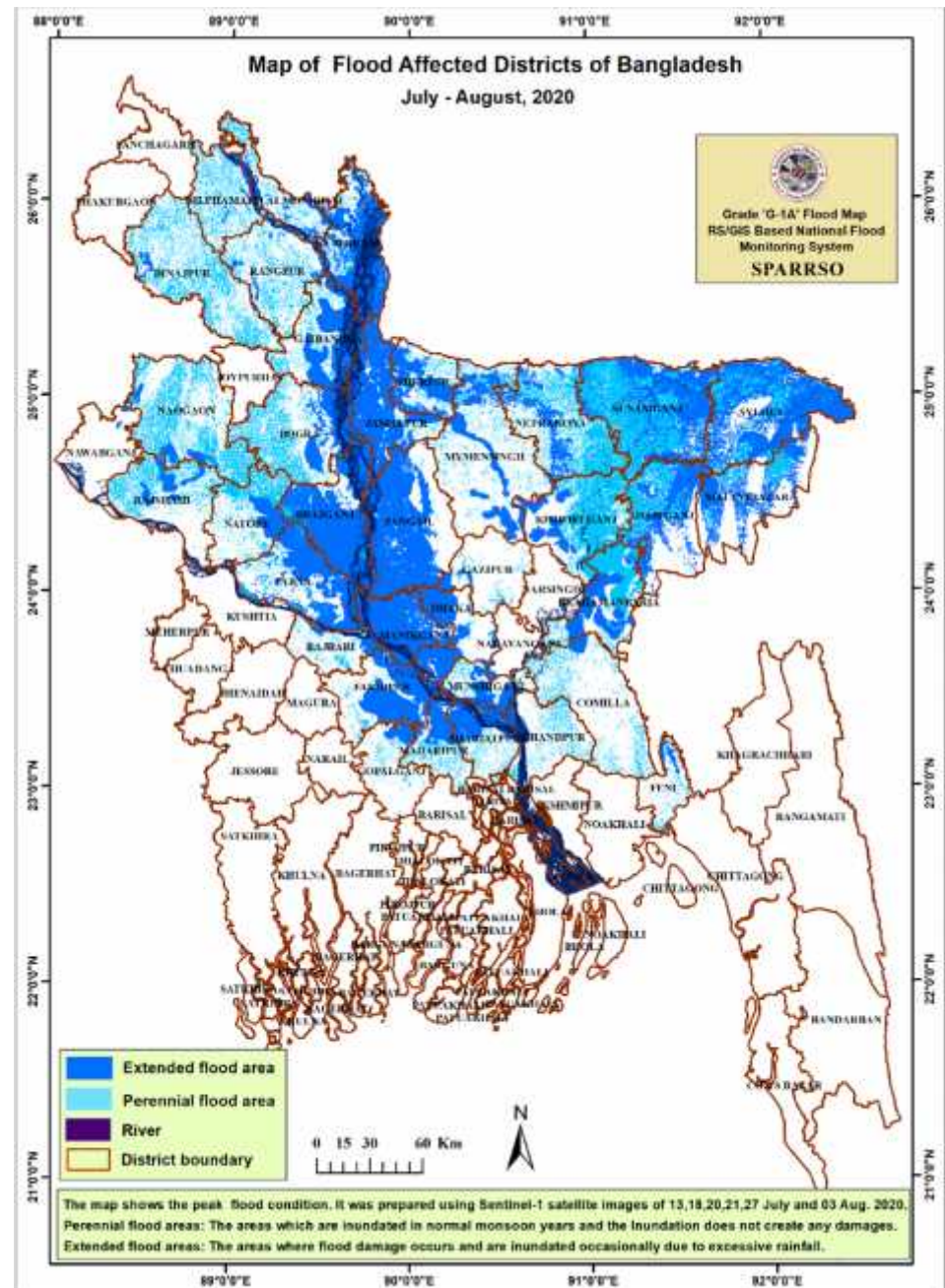
## Statistics

Districts affected: 35

Extended flood area: 17,45,366 ha

Settlements area affected: 3,81,610 ha

People exposed: 48,49,758



# Disaster assessment : SDG 11

Action Area 1: Research and knowledge sharing

Action Area 2: Capacity building and technical support

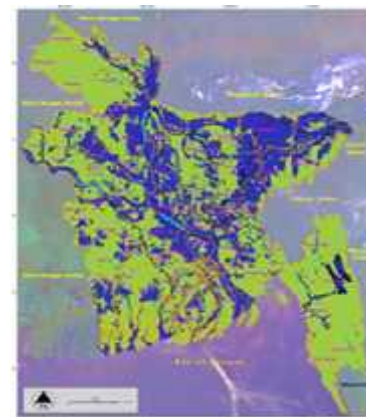
## Maps of severe floods in the recent past in Bangladesh



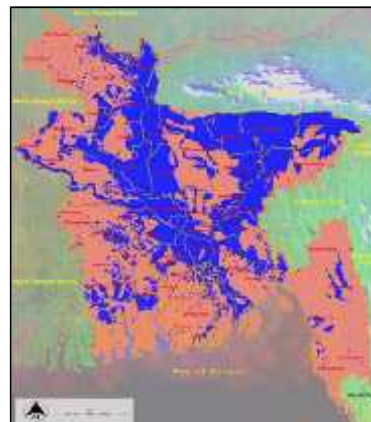
1988



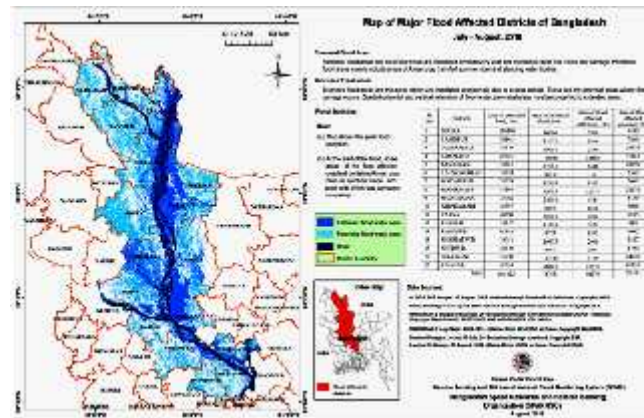
1998



2004



2007



2016



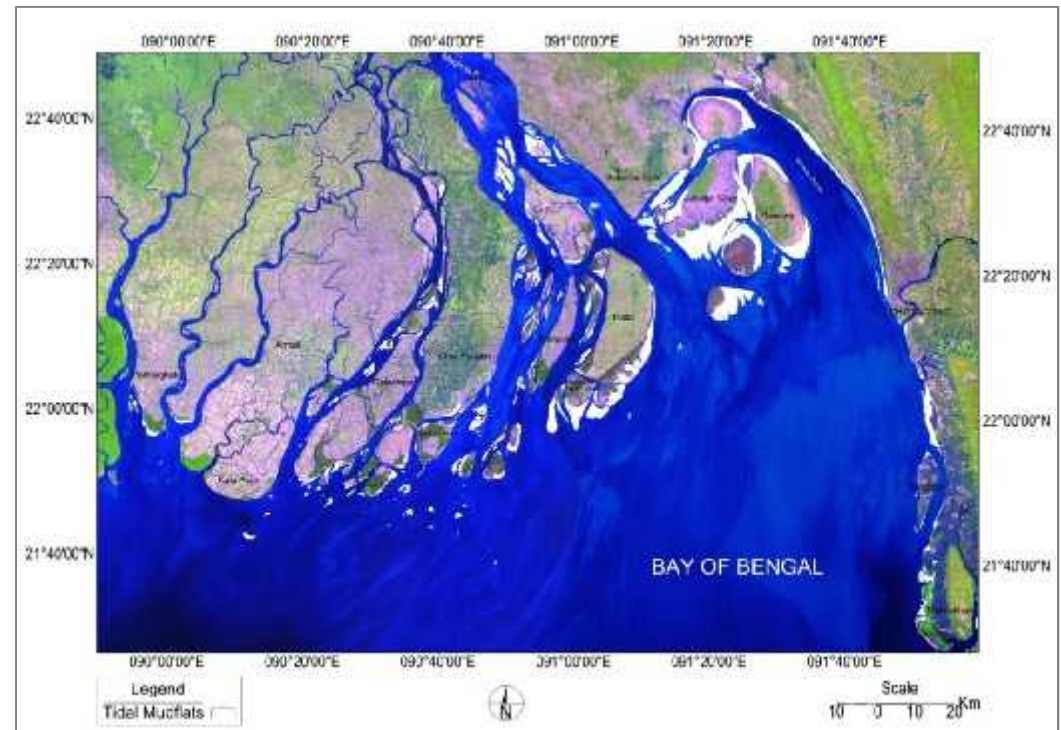
## Risk reduction : SDG 11

### Tidal mudflat map 2018

#### Action Area 1: Research and knowledge sharing

The information was shared and feedback was asked to the following agencies:

- ☐ Bangladesh Forest Department
- ☐ Bangladesh Navy
- ☐ Bangladesh Inland Water Transport Authority
- ☐ Bangladesh Water Development Board
- ☐ Bangladesh Coast Guard



Importance of mapping tidal mudflats:

- ☐ Planning of coastal development
- ☐ Planning of mangrove afforestation
- ☐ Coastal navigation planning
- ☐ Planning of land reclamation from sea

## Risk reduction, Disaster assessment: SDG 11

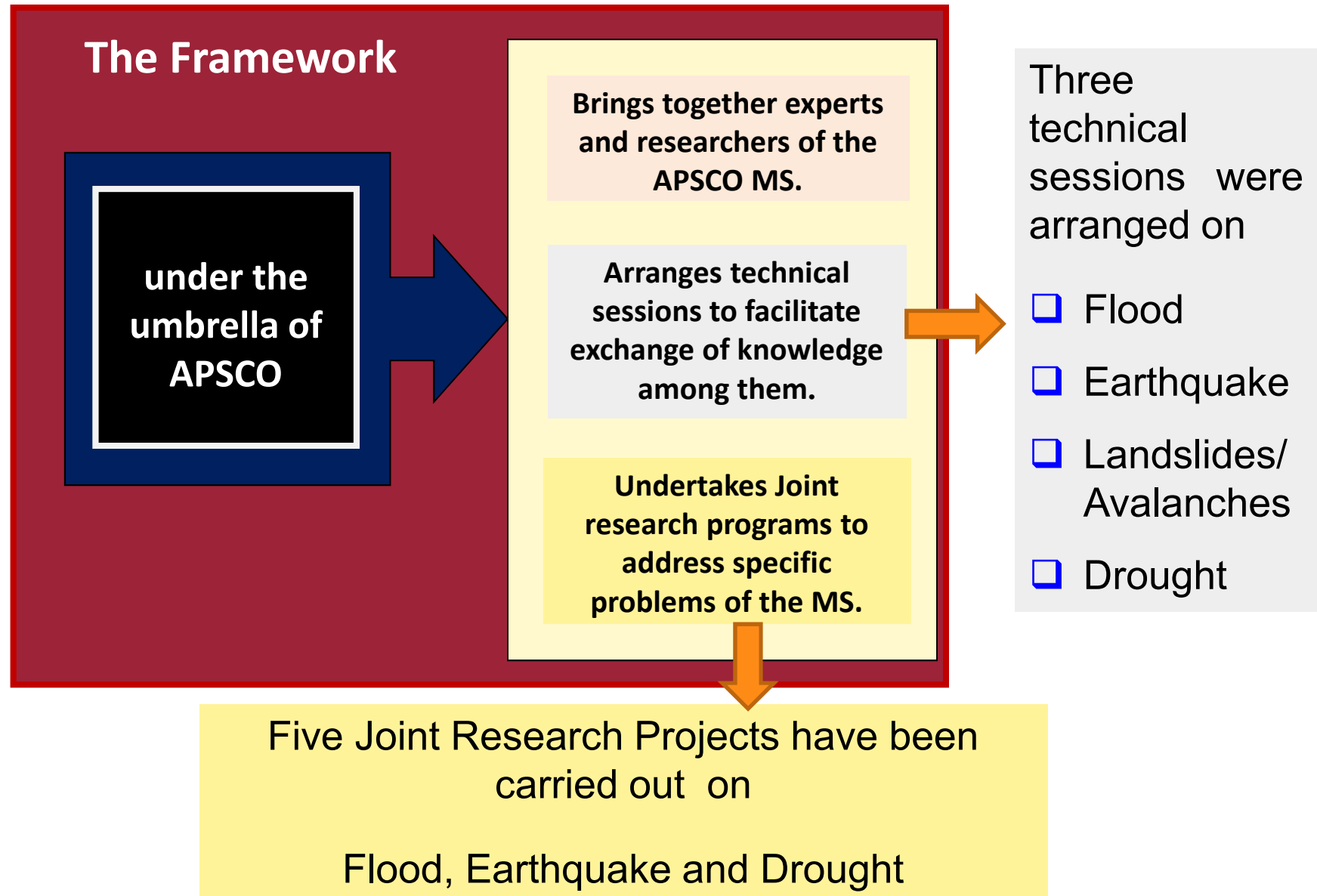
### Action Area 3: Inter governmental discussions and regional practices

**Establishment of a framework for researches on application of space technology for disaster monitoring in the APSCO member states (eight countries)**

- ☐ The project was implemented by Bangladesh as lead country under APSCO during 2016 to 2018.
- ☐ Bangladesh achieved the 'Best Spirit of Cooperation' award for successful implementation of this project in 2018.
- ☐ The feasibility study of the second phase is completed and to be started soon led by Bangladesh.



# What is this Framework ?



**Thematic Area:**

**Management of Natural Resources**

# Coastal ecosystems, Sustainable fisheries: SDG 14

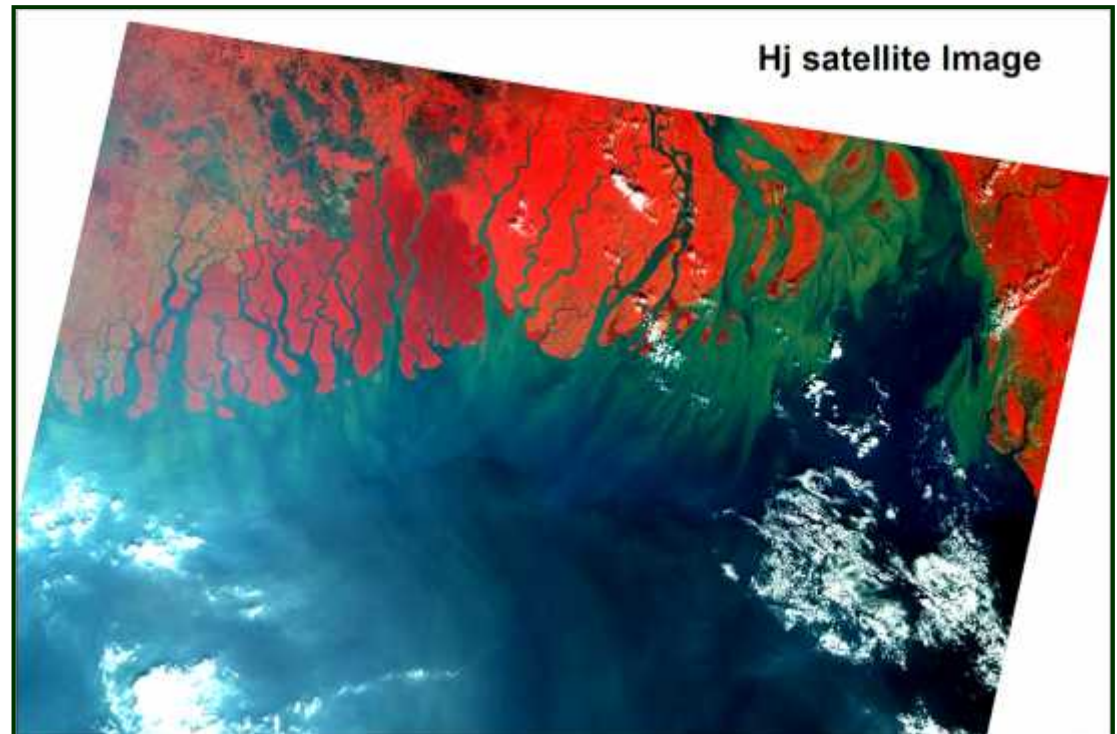
Action Area 1: Research and knowledge sharing

Action Area 2: Capacity building and technical support

**Project under implementation in the blue economy sector**

**(2019 - 2021)**

- ☐ Establishment of Geographic Information System of the coastal areas of Bangladesh
- ☐ Establishment of marine fishing zones identification system





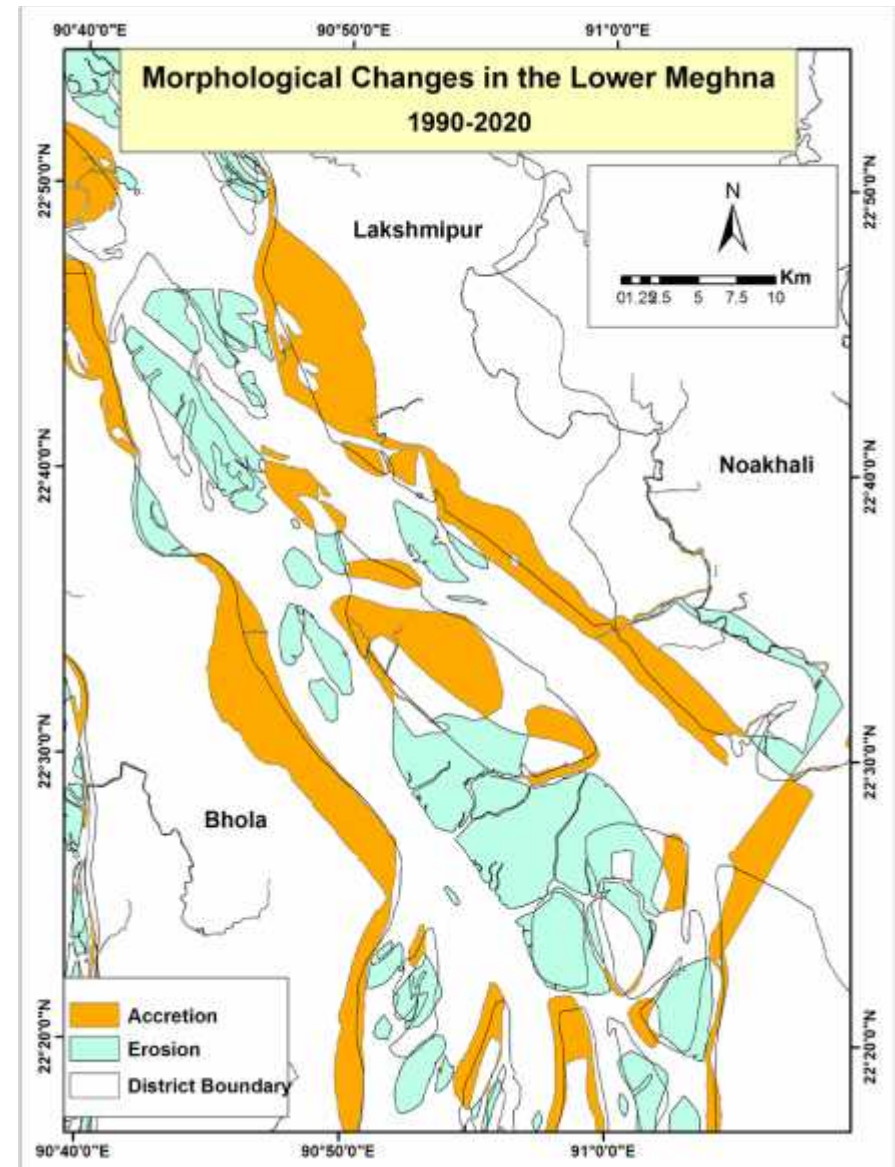
# Water resource management: SDG 6

Action Area 1: Research and knowledge sharing

Action Area 2: Capacity building and technical support

## Morphological changes of river (1990-2020)

The information is disseminated to National River Conservation Commission (NRCC), which is used for river conservation, navigation and fishing.



## Land use change: SDG 15

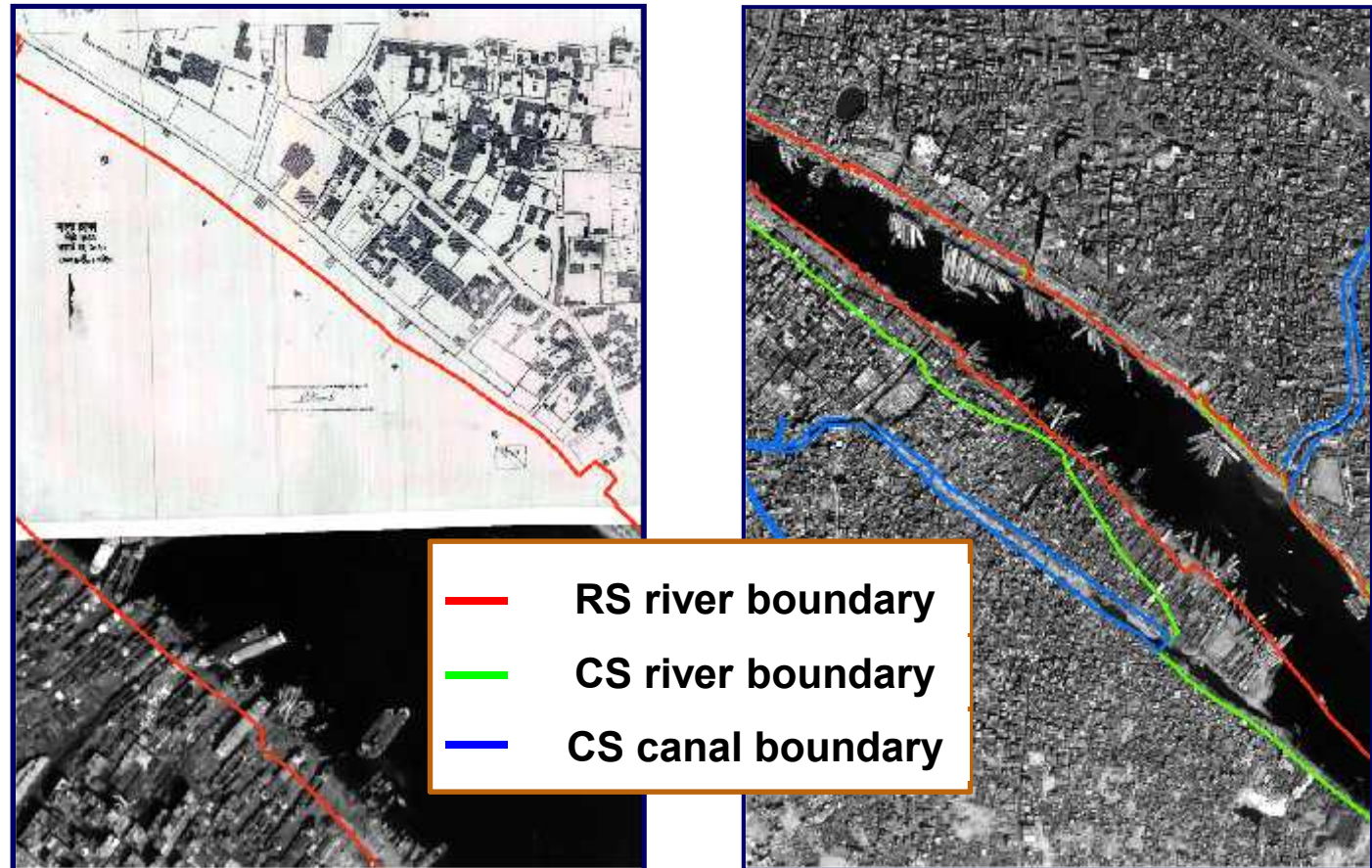
**Action Area 1: Research and knowledge sharing**

**Action Area 2: Capacity building and technical support**

Generation of river boundary based on Cadastral Survey (CS) and Revisional Survey (RS) Map for National River Conservation Commission (NRCC)

### Feasibility study on the Buriganga River

The information is used for evacuation of illegal encroachment, restoration of flood-plain and planning for citizen's benefit

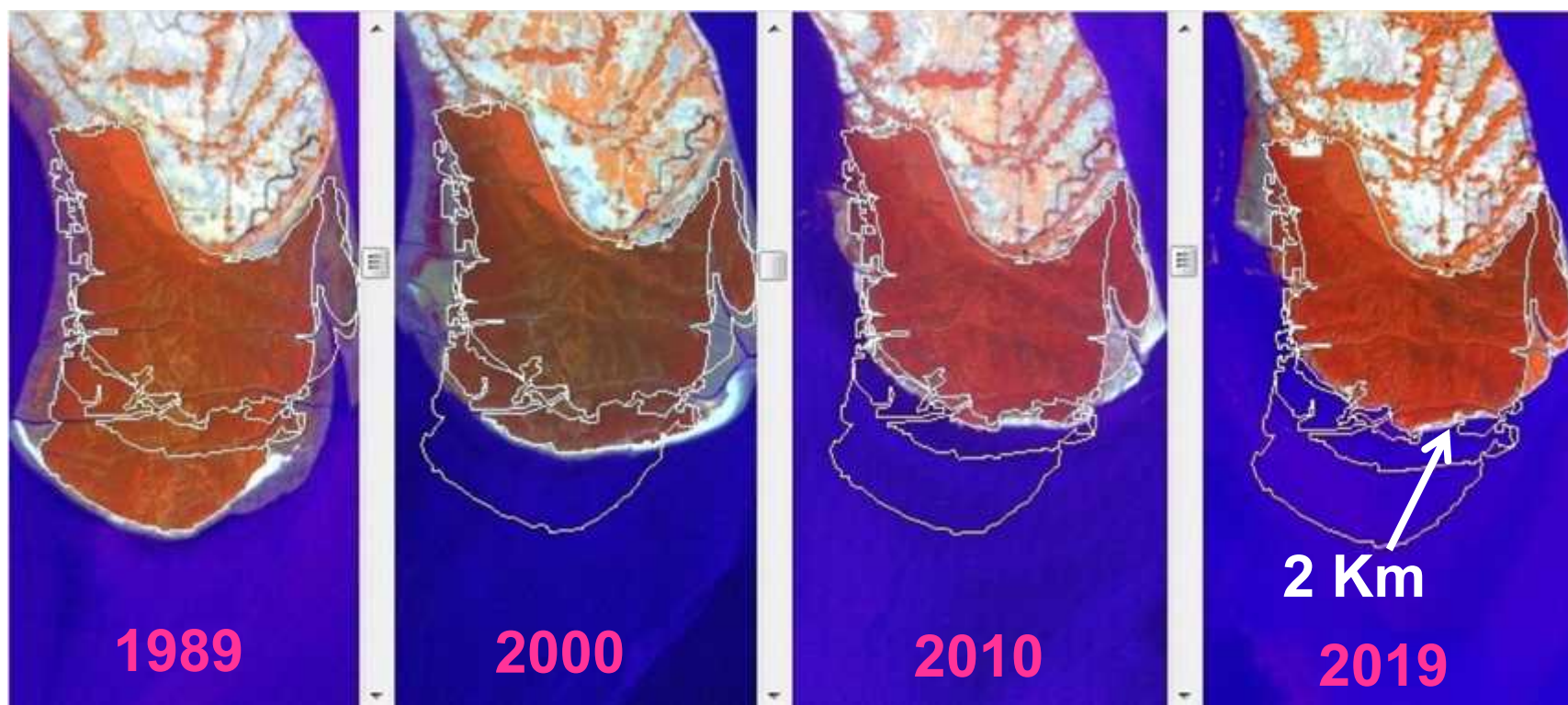




## Forests: SDG 15

### Action Area 1: Research and knowledge sharing

#### Changes of mangrove plantation in the coastal region of Bangladesh (Patharghata, 1989 - 2019)



Approximate forest area lost by erosion

1989-2000: 461 ha

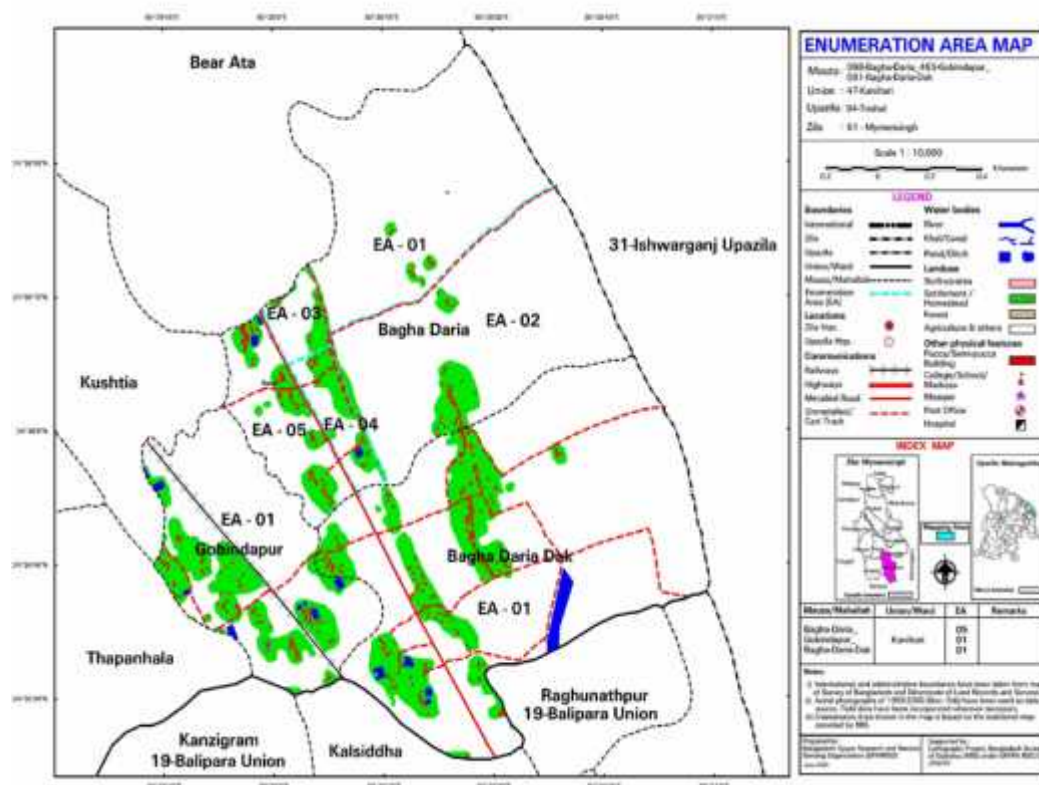
2000-2010: 245 ha

2010-2019: 59 ha

**Thematic Area:**  
**Social Development**

# Poverty including human poverty and income poverty: SDG 1

## Digital Enumeration Area (EA) mapping using aerial photographs



- ❑ First Digital EA Maps of Bangladesh at Mauza Level
- ❑ Time-frame: 2001- 2009
- ❑ Project area: Whole Bangladesh
- ❑ Number of maps: 57,600

- ❑ Mapping for poverty and spatial distribution
- ❑ The maps are being used by Bangladesh Bureau of Statistics (BBS) for census



**Future plans on implementation of the Asia-Pacific  
Plan of Action on Space Applications for Sustainable  
Development in Bangladesh**

# **Thematic Area:**

## **Disaster Risk Reduction and Resilience**

### **Food production: SDG 2**

- ☐ Remote sensing-based rice crop (Boro and Aman) yield forecasting using MODIS-NDVI
- ☐ Investigation on the applicability of microwave and optical satellite images for assessment of rice crop area at early stage of crop life cycle
- ☐ Remote sensing based assessment of crop water requirement of Boro Rice using SEBAL Model

# **Thematic Area:**

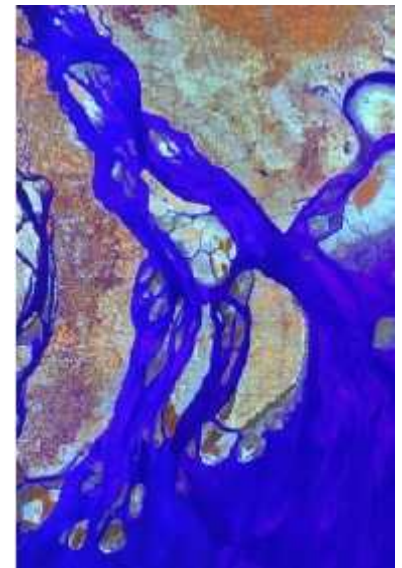
## **Management of Natural Resources**

### **Land use change: SDG 15**

- Assessment of land use and land cover changes in Savar Upazila under Dhaka District: a RS-GIS approach

### **Coastal ecosystems: SDG 14**

- Identification of the potential locations for reclamation of lands in the Meghna Estuary of Bangladesh using remote sensing techniques



# **Thematic Area:**

## **Management of Natural Resources (cont.)**

### **Sustainable fisheries: SDG 14**

- ☐ Remote sensing based water quality assessment for inland fisheries



### **Consumption and production: SDG 12**

- ☐ Investigation of heavy minerals using multispectral satellite imagery in the coastal part (Teknaf Upazila) of Bangladesh

# Thematic Area:

## Management of Natural Resources (cont.)

### Forests: SDG 15

- Monitoring long-term changes in the Sundarbans Mangrove due to coastal erosion: analysis of indicators and causal factors





# THANK YOU

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