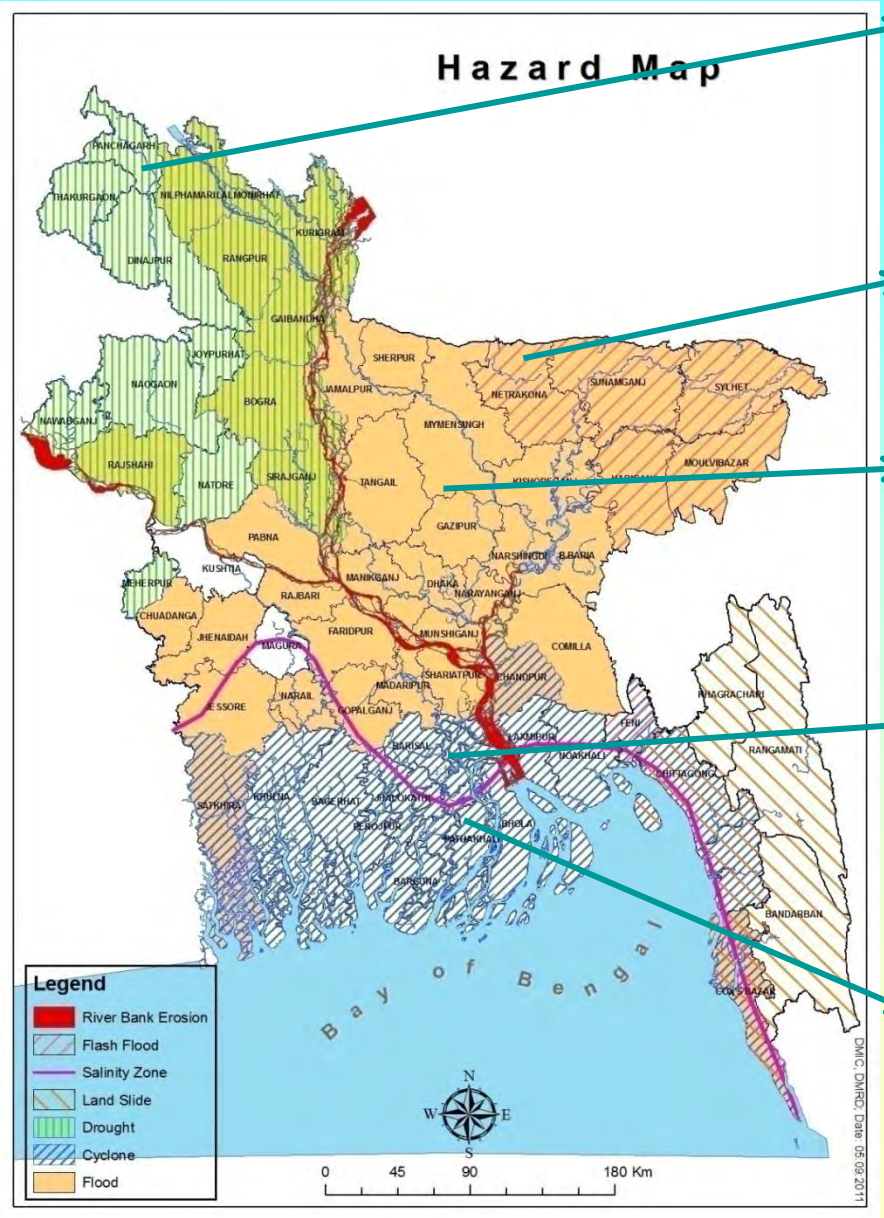
Disaster Management in Bangladesh and Follow-up of UN-SPIDER TAM

United Nations International Conference
on
Space-based Technologies for Disaster Management
"Disaster Risk Identification Assessment and Monitoring"
23-25 October 2013
Beijing, China

Country Profile: Bangladesh

- Total population : 150 million
- Total Geographic Area : 147,570 sqkm
- Pop^{n} density in coastal areas : 1000/sqkm
- Floodplains: 80% of total areas
- Located at fragile deltaic flood-plain
- Around 300 rivers (57 Trans boundary rivers)
- High-risk country to recurrent natural disasters

BD Hazard Profile



DROUGHT
Affects 8.3 million ha land
In 2006, reduced food grains by 1 million tons
Loss of grazing fields, dried ponds, water shortage

FLASH FLOOD
Damages standing crops
Damages infrastructures and facilities
Unpredictable, uncertain

FLOOD
Inundates more areas, increases river erosion
Breaches embankments, damages infrastructures
Loss of crops, fisheries, livestock, biodiversity

SALINITY INTRUSION
Sea level rise, damage to Sundarbans watersheds
Damages crop lands
Spreading intrusion from 1.5 to 2.5 Mha (2007)
Lack of drinking water, burden to women & children Projected displacement: 6-8 m by 2050

CYCLONE
Remain to be the deadliest and most destructive hazard Recurring event Lingering aftermath, complex recovery Improved preparedness (CPP, shelters, embankments)

Vulnerability Profile

Hazards	Flood	Flash Flood	Drought	Cyclone /salinity
Vulnerable land area (%)	61.09	23.09	45.89	31.99
Vulnerable population (%)	71.47	26.75	45.73	26.71

One of the most densely populated countries

Persistent rural poverty

Fast urbanization with growing urban poor

Key Factors of Vulnerability

- Global Warming and Climate Change
- Geographical location
- Dominance of floodplains
- Low elevation from the sea
- High population density
- High level of poverty

Major Disasters in Bangladesh

Year	Disaster	Death
1970	Cyclone	500,000
1988	Flood	1,708
1988	Cyclone	4,000
1989	Drought	800
1991	Cyclone	138,868
1996	Tornado	545
1997	Cyclone	550
1998	Flood	918
2004	Flood	747
2007	Flood	800
2007	Cyclone(SIDR)	3,406
2009	Cyclone(Aila)	190

Major Earthquakes Affecting Bangladesh

Date	Name of Earthquake	Magnitude (Richter)	Intensity at Dhaka (EMS)	Epicentral Distance from Dhaka (km)
10 January, 1869	Cachar Earthquake	7.5	V	250
14 July, 1885	Bengal Earthquake	7.0	VII	170
12 June, 1897	Great Indian Earthquake	8.7*	VIII+	230
8 July, 1918	Srimongal Earthquake	7.6	VI	150
2 July, 1930	Dhubri Earthquake	7.1	V+	250
15 January, 1934	Bihar-Nepal Earthquake	8.3	IV	510
15 August, 1950	Assam Earthquake	8.5	IV	780

GoB Capacity in Disaster Management

- Specialized **Ministry of Disaster Management and Relief**
- Creation of Department of Disaster Management (DDM): shifting focus from relief to disaster management specially to risk reduction culture.
- Issuance of SOD (Standing Orders on Disaster): establishing mechanisms and procedures for DRM and effective response at all levels during disaster emergency with legal backup by DM Act
- Established Disaster Management Information Centre (DMIC) down to Upazilla level to support info management & Coordn.
- Established National Disaster Response and Coordination Center
- Initiate formulation of 'Comprehensive Disaster Management Framework' involving all disaster stakeholders including development partners
- CPP (Cyclone Preparedness Programme): building a network of 49,365 trained volunteers across coastal belt
- The presence of **vibrant NGO communities**, disaster vulnerable people demonstrates strong coping capacity to face the disaster challenges

GoB Vision for Disaster Management:

- To reduce the vulnerability of the poor to the effects of natural, environmental and human induced hazards to a manageable and acceptable humanitarian level

MoDMR Mission:

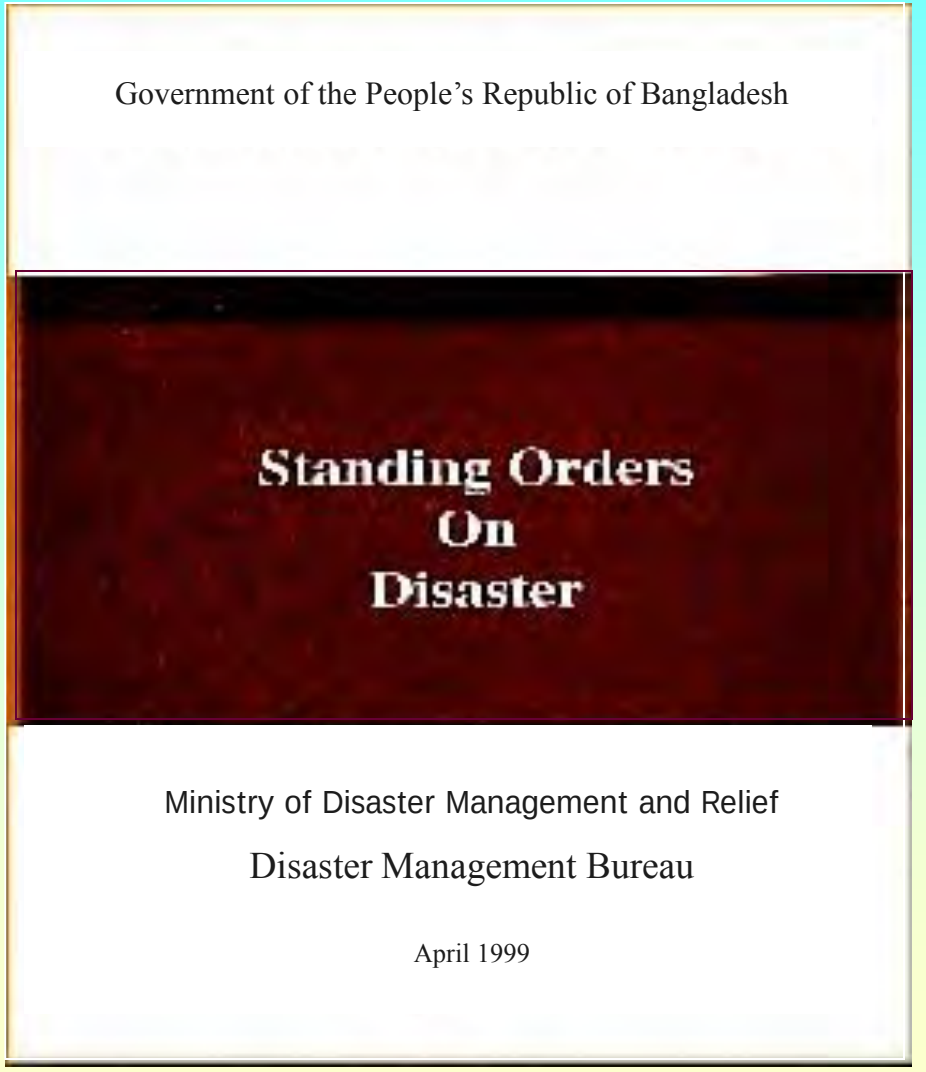
- To bring a paradigm shift in disaster management from conventional response and relief to a more comprehensive risk reduction culture

Overall Objective:

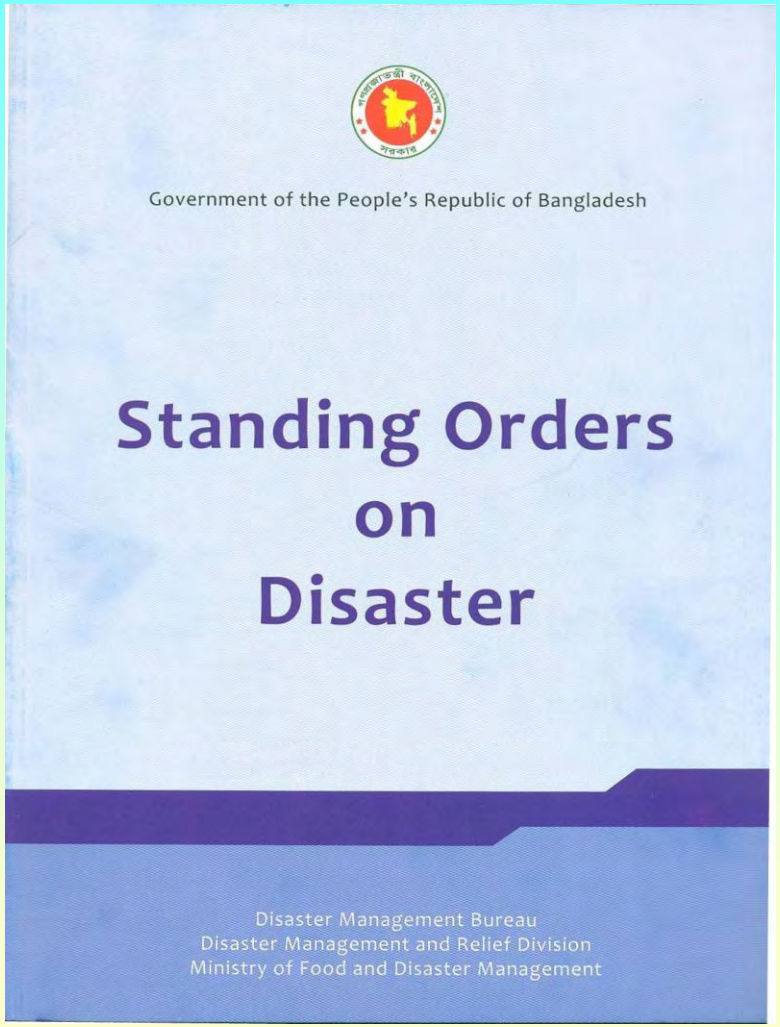
- To strengthen the capacity of the Bangladesh Disaster Management System to reduce unacceptable risk and improve response and recovery management at all levels

Standing Orders on Disaster

- The standing orders on disaster creates the opportunity to establish disaster management committee at every level.
- The standing orders for disaster management provide ample scope for the Government, NGOs and private sectors to think locally and plan need based program involving the community.



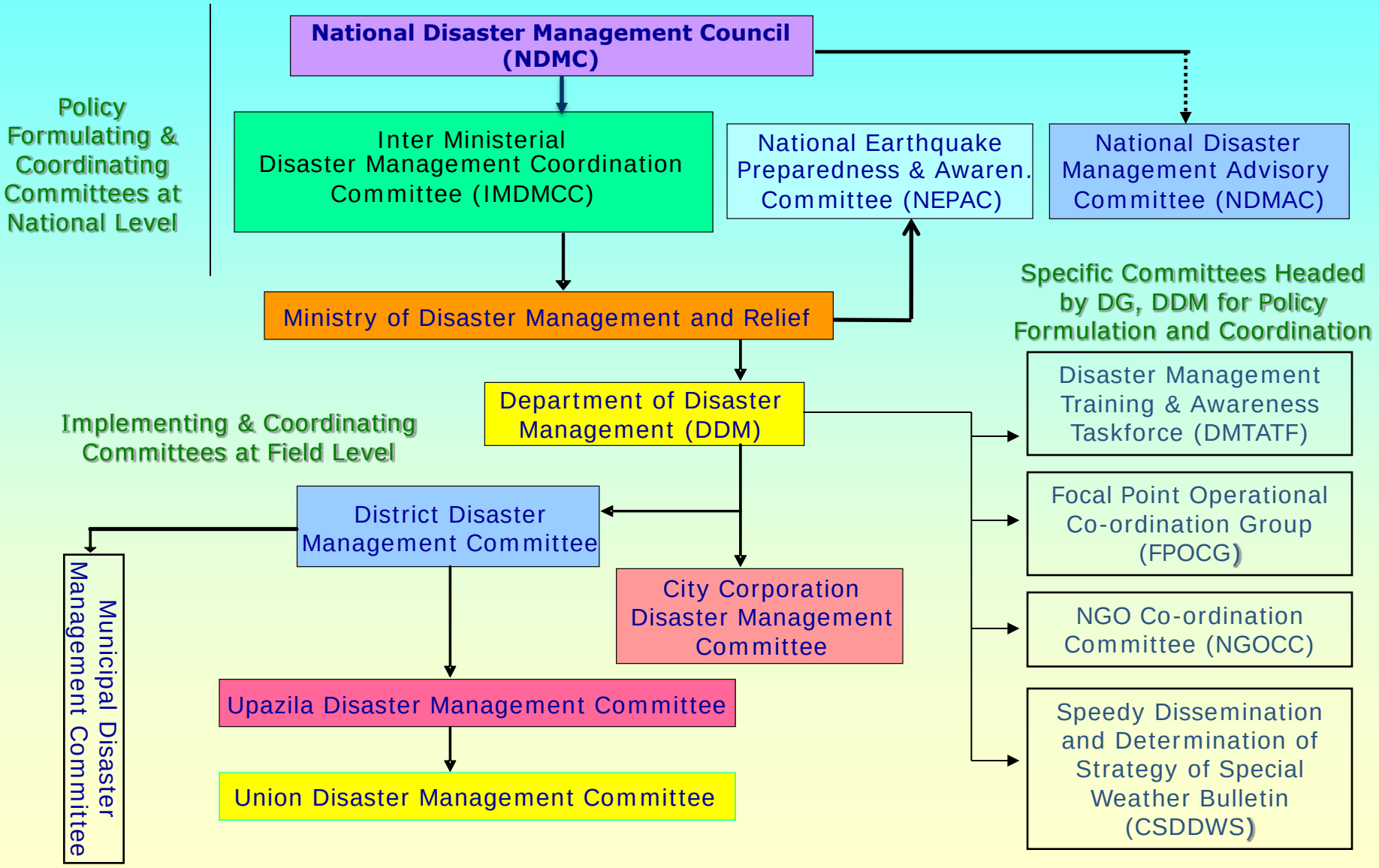
Revised Standing Orders on Disasters



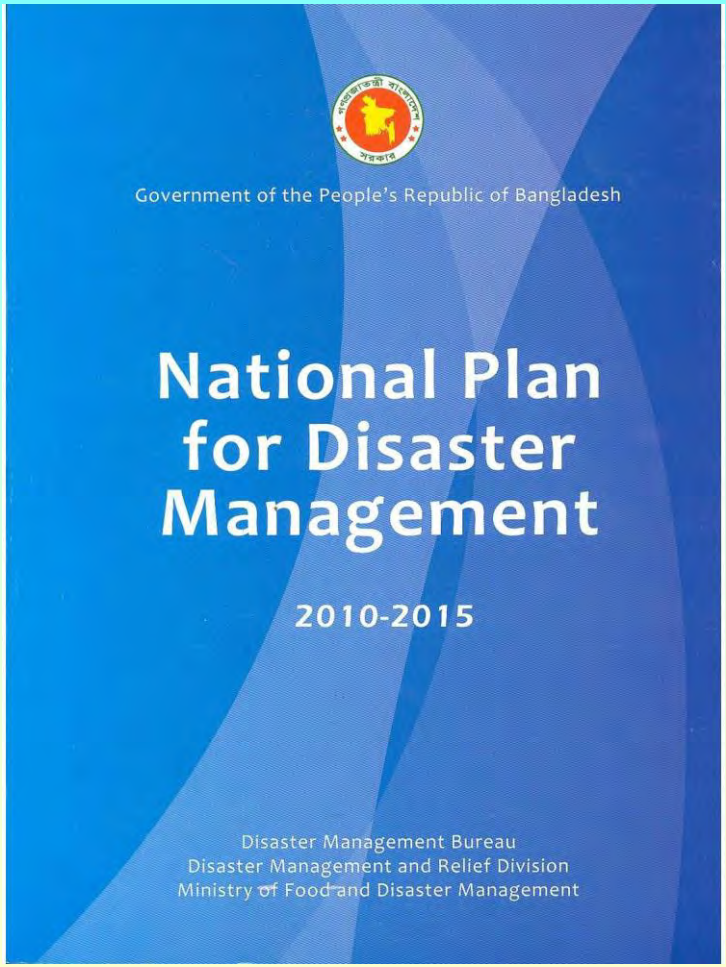
What's New?

- Change in focus from conventional relief and response to DRR culture
- More Focused on DRR
- Earthquake, Tsunami, Landslide and Fire are included
- Regulative Framework are in placed
- National Mechanism for Policy Guidance and Coordination is elaborated
- Gender, Children, Disable and Elderly people issues are well taken
- Multi-agency Disaster Incident Management System

Disaster Management Coordination



National Plan For Disaster Management (NPDM) 2010-2015



Objectives

- Articulate the vision and goals for disaster management
- Outline the strategic direction and priorities to guide the design and implementation of DM policies and programs with national and international commitments
- Illustrate to other ministries, NGOs, civil society and the private sector how their work can contribute to the achievements of the strategic goals and GoB vision on DM

STRATEGIC GOALS OF THE PLAN

Goal 1: Professionalizing the Disaster Management System

Goal 2: Mainstreaming Risk Reduction

Goal3: Strengthening Institutional Mechanisms

Goal 4: Empowering at Risk Communities

Goal 5: Expanding Risk Reduction Programming

Goal 6: Strengthening Emergency Response Systems

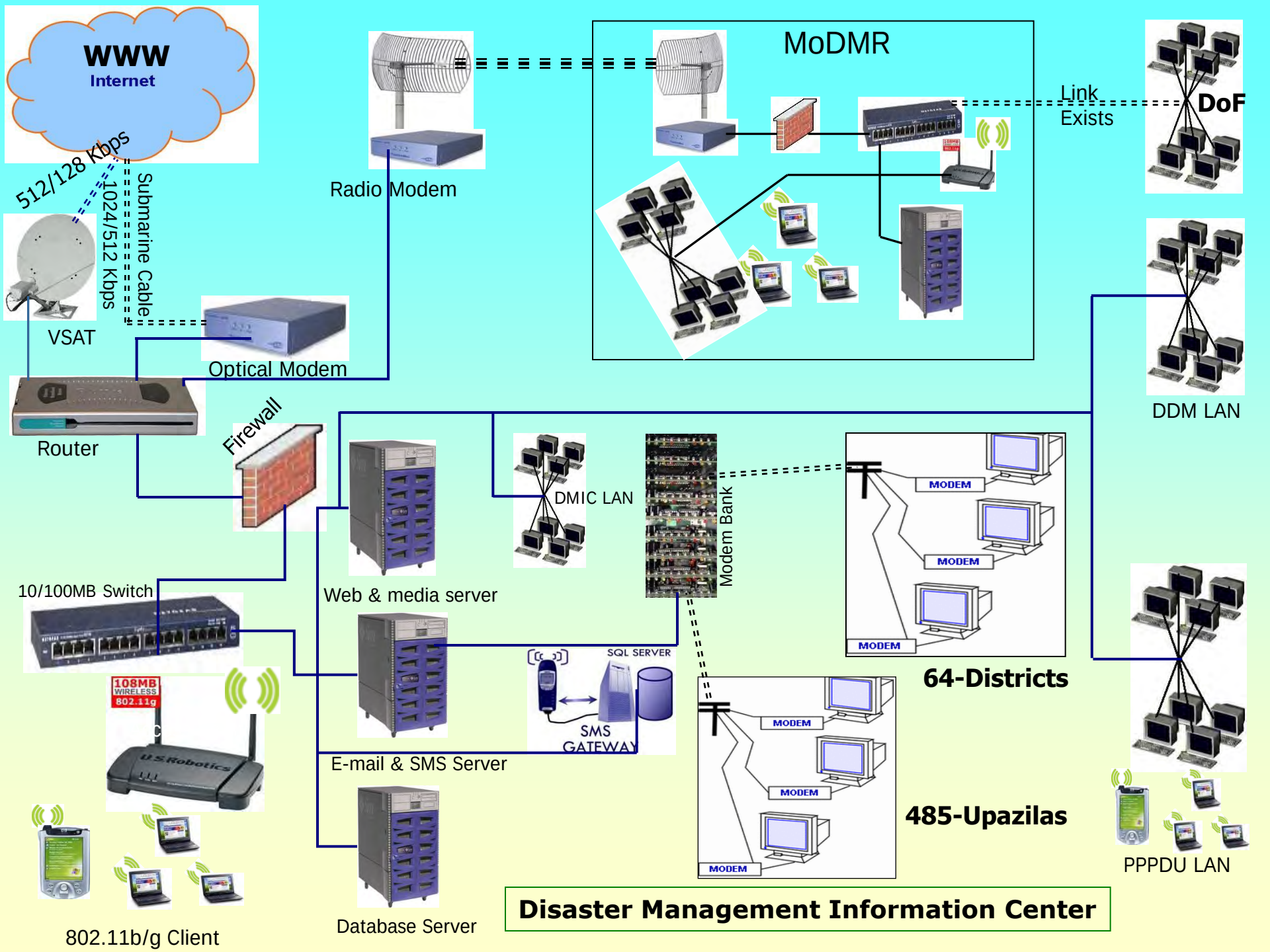
Goal 7: Developing and Strengthening Networks

Information Management for Coordination

Disaster Management Information Centre (DMIC) has been established to support information management and coordination.

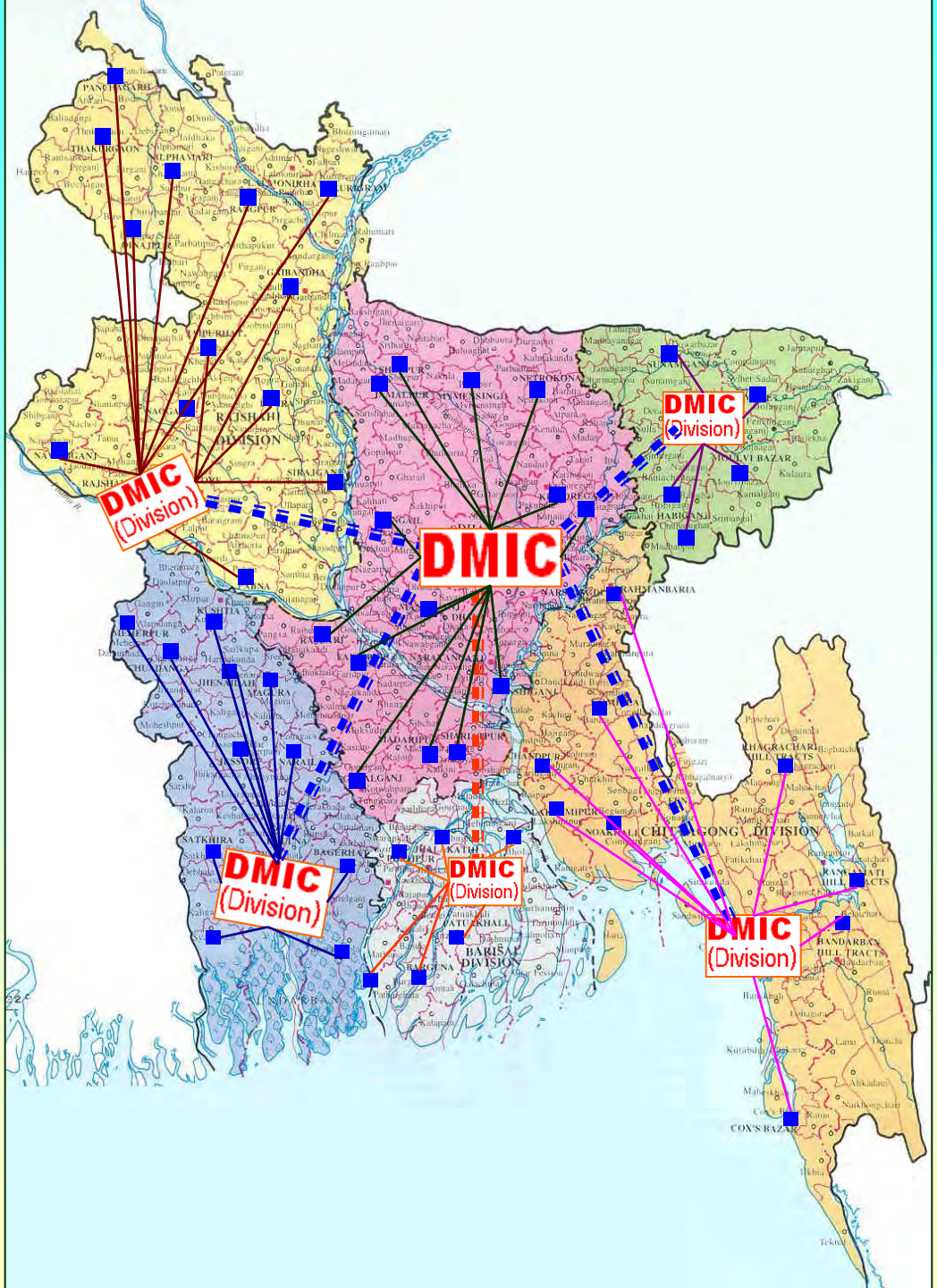
The key objectives are:

- To enhance disaster management coordination through improved facilities and information sharing capacities of DMIC during normal and emergency periods
- Improved capacity of information sharing during normal (non-emergency) periods
- EOC more effectively and efficiently coordinated during disasters


WWW
Internet
512/128 Kbps
1024/512 Kbps
Submarine Cable
VSAT
Optical Modem
Router
Firewall
Radio Modem
MoDMR
Link
Exists
DoF
DDM LAN
DMIC LAN
Modem Bank
MODEM
MODEM
MODEM
64-Districts
10/100MB Switch
Web & media server
SQL SERVER
SMS
GATEWAY
E-mail & SMS Server
108MB
WIRELESS
802.11g
U.S.Robotics
802.11b/g Client
Database Server
MODEM
MODEM
MODEM
485-Upazilas
PPPDU LAN
Disaster Management Information Center

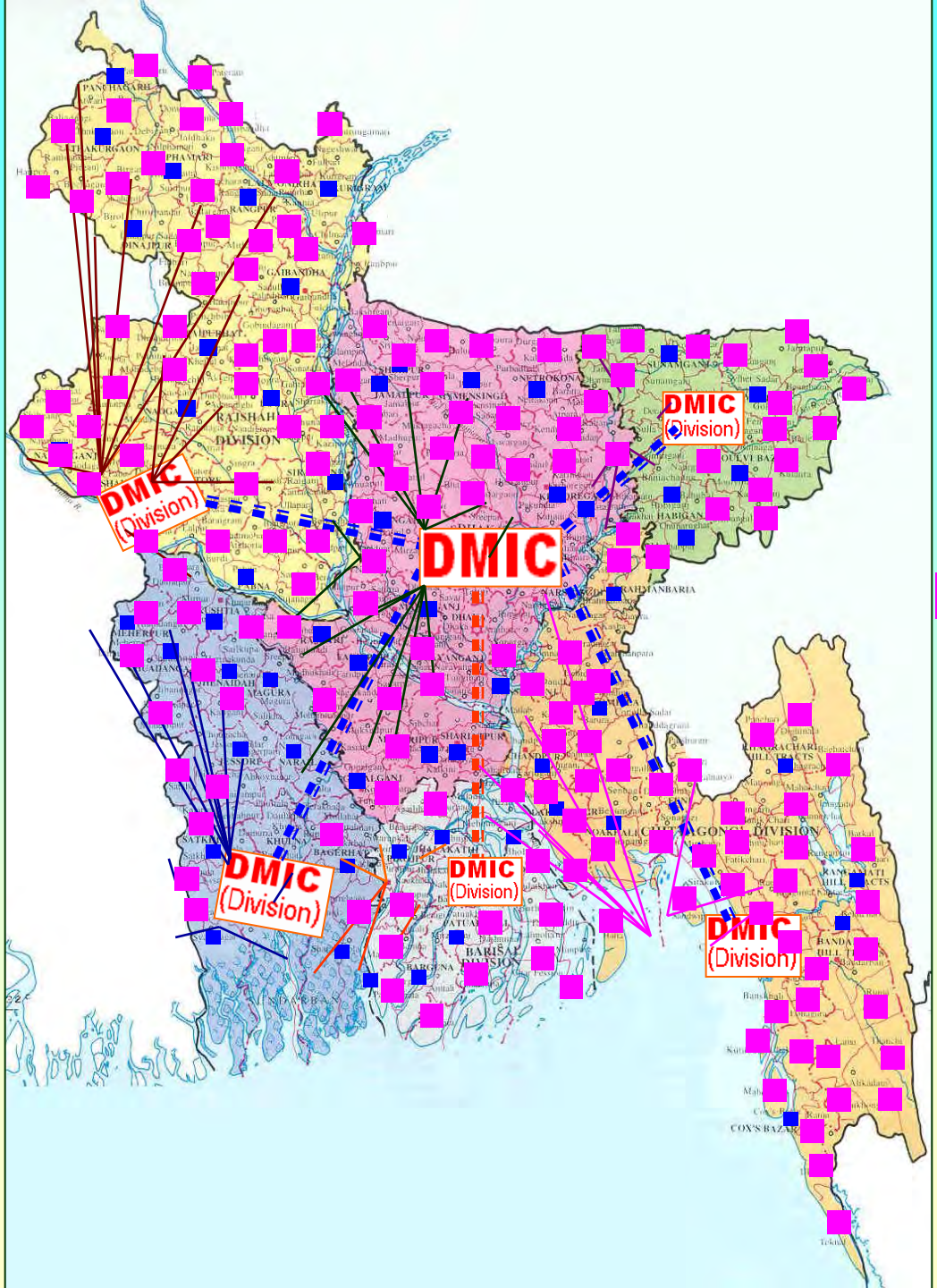
DMIC at District Level

Short-term



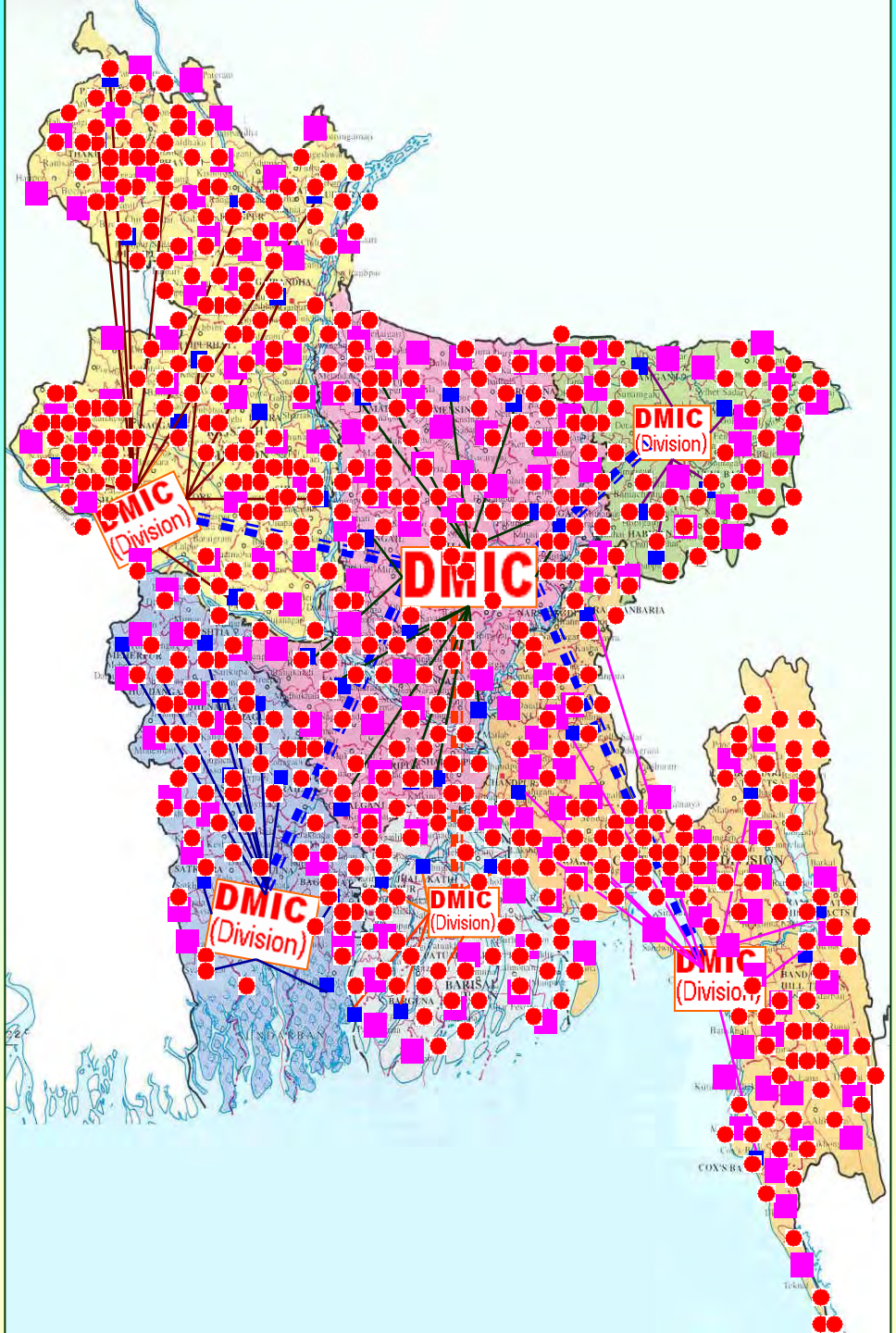
DMIC at Upazila Level

Mid-term



DMIC at Union Level

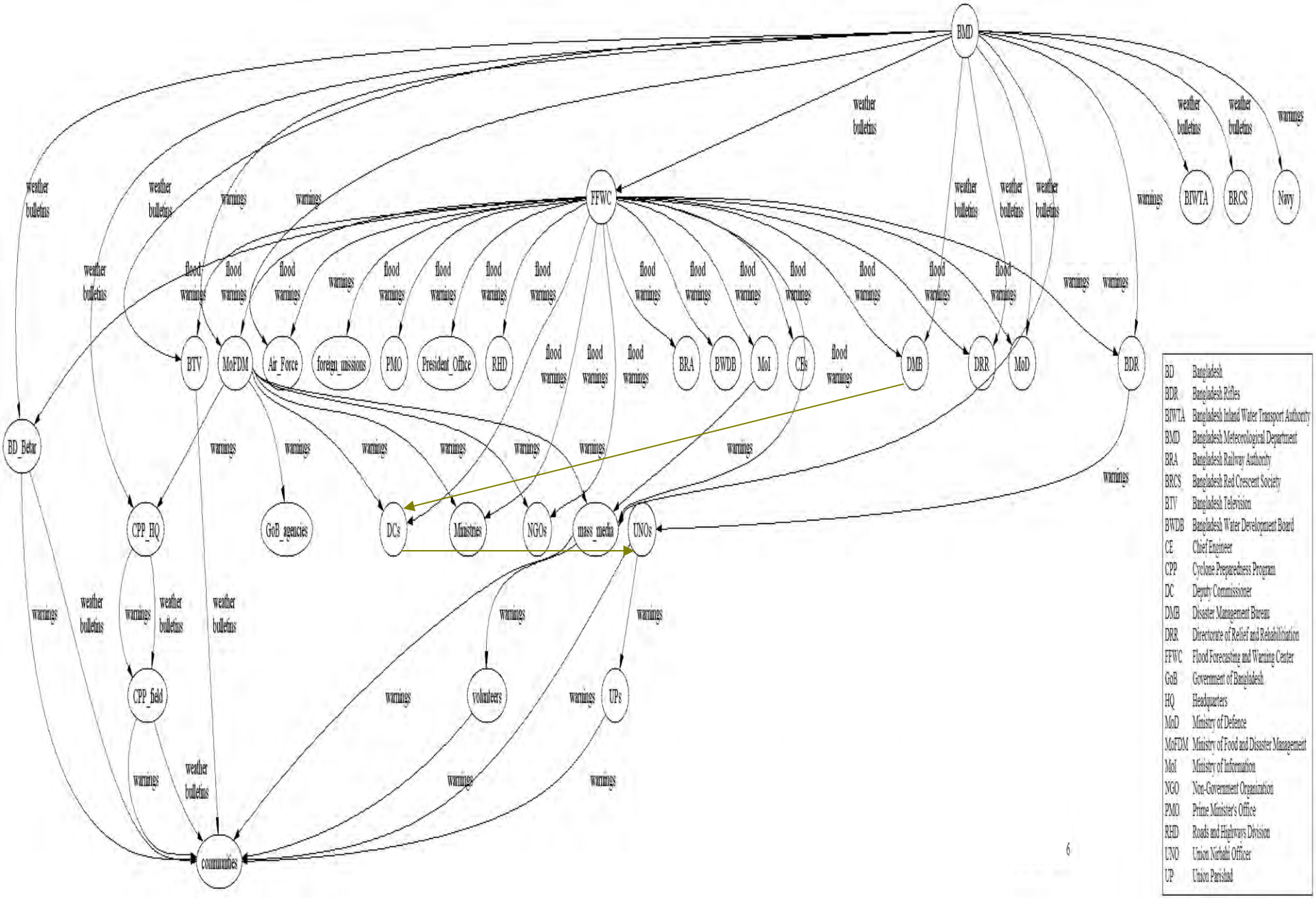
Long-term



Early Warning Dissemination System

- BMD and FFWC generates Early warnings
- Ensure receipt of warning signals of imminent disasters by all concerned officials and agencies
- Mass communication media play important role for Early Warning dissemination
- CPP plays vital roles for disseminating Cyclone EW to the community level in the coastal areas
- Field level Committees under SOD ensure EW dissemination at all level

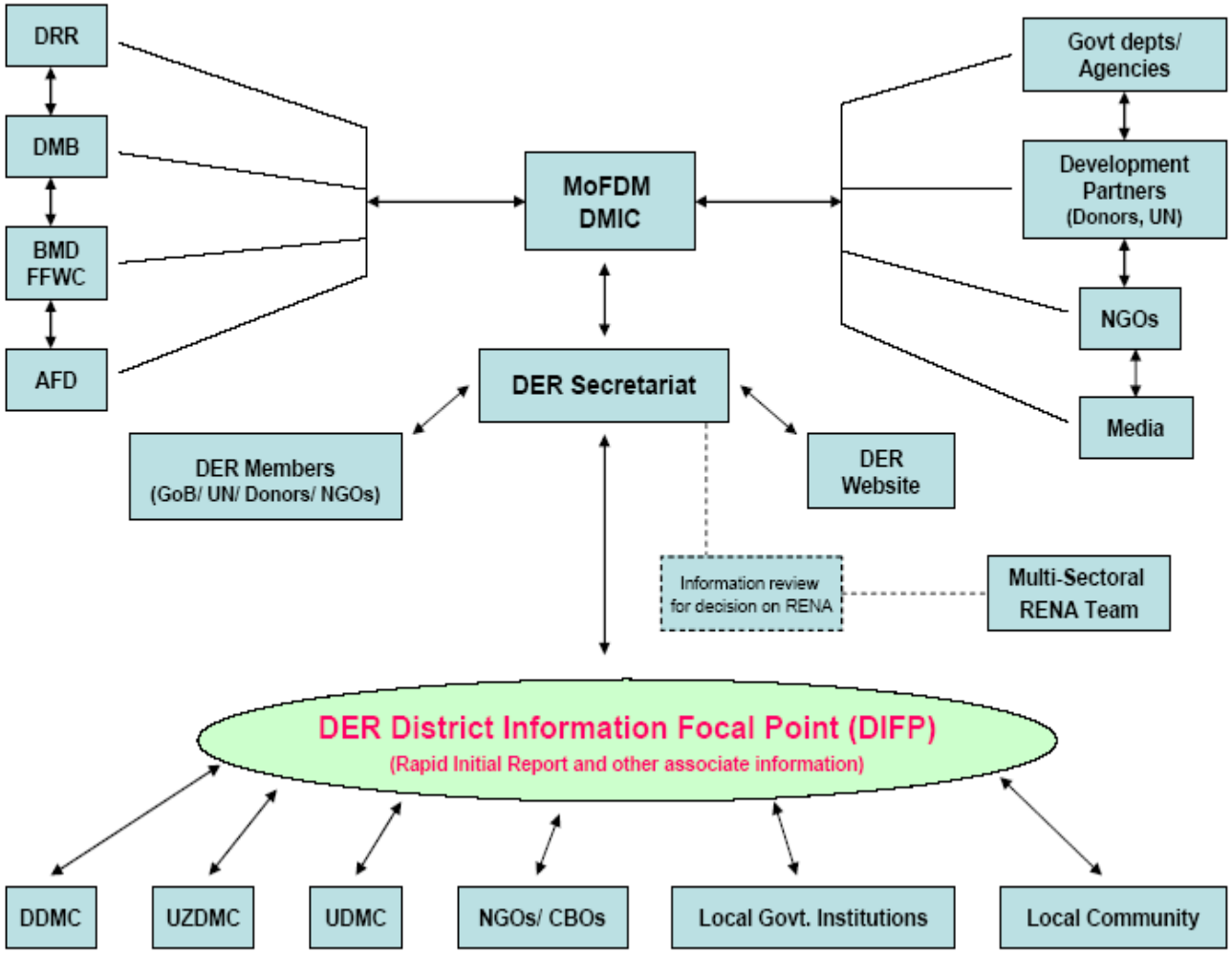
Warning Information Flows in SOD



BD	Bangladesh
BDR	Bangladesh Rifles
BIWTA	Bangladesh Inland Water Transport Authority
BMD	Bangladesh Meteorological Department
BRA	Bangladesh Railway Authority
BRCS	Bangladesh Red Crescent Society
BTV	Bangladesh Television
BWDB	Bangladesh Water Development Board
CE	Chief Engineer
CPP	Cyclone Preparedness Program
DC	Deputy Commissioner
DMB	Disaster Management Biwam
DRR	Directorate of Relief and Rehabilitation
FFWC	Flood Forecasting and Warning Center
GoB	Government of Bangladesh
HQ	Headquarters
MoD	Ministry of Defence
MoFDM	Ministry of Food and Disaster Management
MoI	Ministry of Information
NGO	Non-Government Organization
PMO	Prime Minister's Office
RHD	Roads and Highways Division
UNO	Union Nirbahi Officer
UP	Union Parishad

District Information Focal Point(DIFP)– information flow

Disaster and Emergency Response(DER) Group



Website – Information flow

Disaster Management Information Network (DMIN) Portal

www.modmr.gov.bd

www.ddm.gov.bd

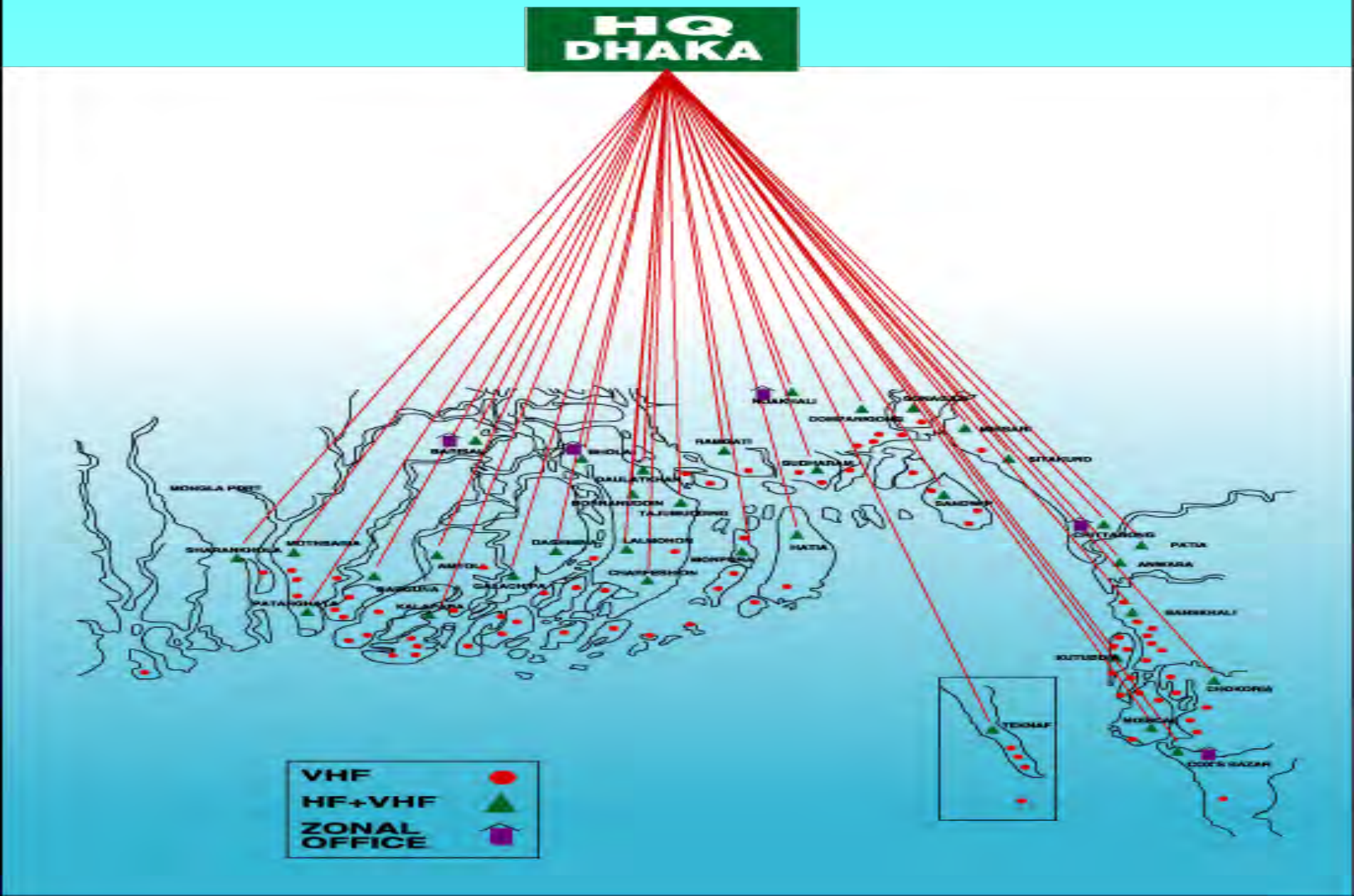
www.dmic.org.bd/dmin

www.cdmp.org.bd

Way of Communication to Disseminate Information at Community Level

- Field Level Disaster Management Committees
- CPP Telecommunication Network
- CPP Volunteers using megaphones, hand sirens and public address system
- Hoisting of Signal Flags
- Microphones Using by Religious Institutions
- Mass Media
- Interactive Voice Response Service (IVR)
- Cell Broadcasting (pilot basis)
- SMS

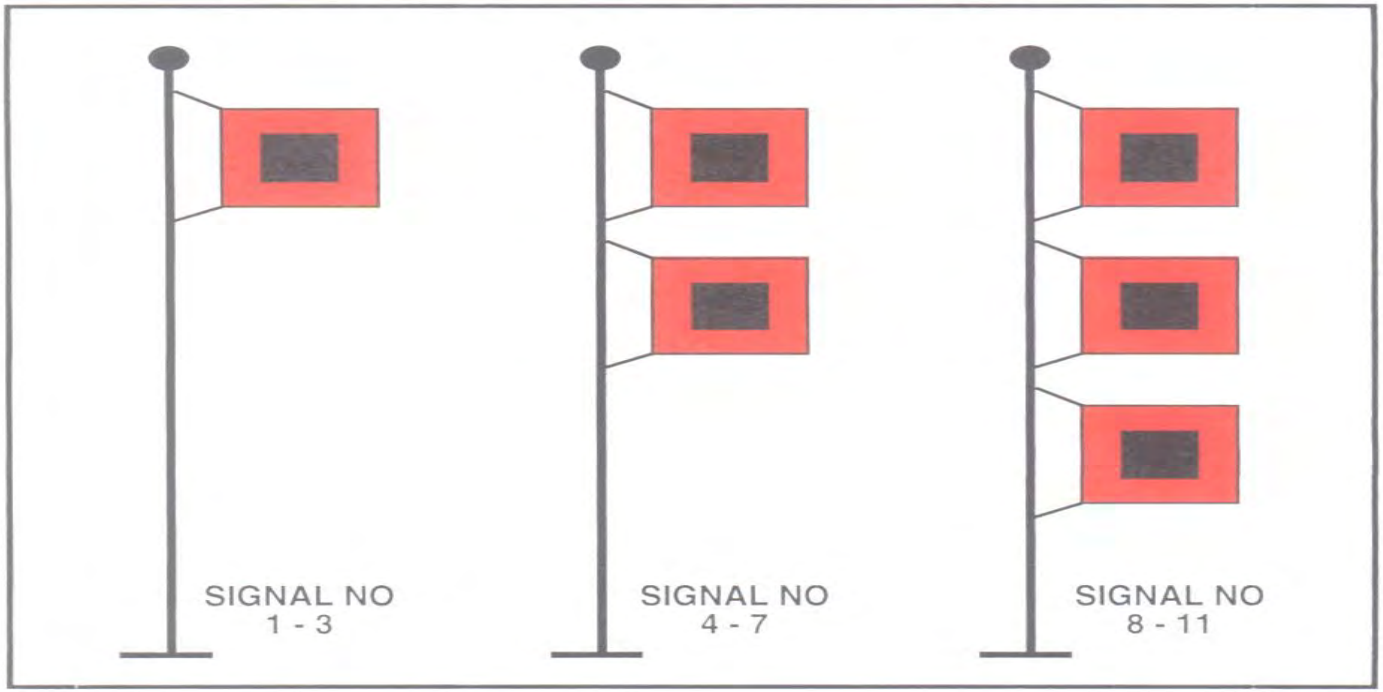
TELECOMMUNICATION NETWORK



CPP Volunteer Using Megaphone

BDRCS - Cyclone Shelter

HOISTING OF SIGNAL FLAGS



Early Warning through CBS, IVR

Disaster Management Bureau has tested successfully a pilot project on Early Warning dissemination through Cell Broadcasting System (CBS)

In this project two massage formats consists of maximum 20 characters have developed. One is for flood at Sirajgonj and other is for cyclone at Cox'sbazar

It is planned to expand CBS at 14 coastal districts of Bangladesh and ultimately all over the country

IVR has pilot tested through Teletalk for disaster information and daily weather bulletin. Finally all mobile operators has come with this initiatives

Cell Broadcasting Flood Information

W - Water level (পানির উচ্চতা)

A - Above (উপর)

DL - Danger Level (বিপদসীমার)

CM - Centimeter (সেঃমিঃ)

+ Increasing (বাড়ার সম্ভাবনা)

- Decreasing (কমার সম্ভাবনা)

24 H - Next 24 Hour (পরবর্তী ২৪ ঘন্টায়)

** যমুনা নদীর পানি সিরাজগঞ্জ পয়েন্টে বিপদসীমার ৪২সেঃমিঃ উপর দিয়ে প্রবাহিত হচ্ছে।

** আগামী ২৪ ঘন্টায় যমুনা নদীর পানি সিরাজগঞ্জ পয়েন্টে ৩২সেঃমি বৃদ্দি অথবা কমার সম্ভবনা আছে।

Cell Broadcasting Cyclone Warning

CS – Cyclonic Storm (ঘূর্ণিঝড়)

SC-Super Cyclone (সুপার সাইক্লোনের তীব্রতা সম্পন্ন প্রচন্ড সামুদ্রিক ঘূর্ণিঝড়। ১০ নং মহাবিপদ সংকেতের ক্ষেত্রে প্রযোজ্য)

CH-Cyclone with hurricane speed (হারিকেন তীব্রতা সর্ম্পূন্ন প্রবল ঘূর্ণিঝড়। ৯নং মহাবিপদ সংকেতের ক্ষেত্রে প্রযোজ্য)

03 – 03 নং স্থানীয় সতর্ক সংকেত

025 – 030 KPH (বাতাসের গতিবেগ ঘন্টায় ২৫ থেকে ৩০ কিঃমিঃ বৃদ্দি পাচ্ছে)

S – Strom Surge (জলোচ্ছ্বাস)

10F- স্বাভাবিক জোয়ারের চেয়ে ১০ ফুট উচ্চতায় জলোচ্ছ্বাসের সম্ভাবনা আছে।

Interactive Voice Response Service (IVR)

- **Dial 1 0 9 4 1 from any mobile**
- 1 For Sea going fishermen
- 2 For River port warning
- 3 For Daily Weather Bulletin
- 4 For Cyclone Warning
- 5 For Flood Forecast
- 6 For back to the main menu

Early Warning Dissemination through SMS

Selected Personnel Related to DM Committees

- Chairman and Member Secretary of District Disaster Management Committee
- Chairman and Member Secretary of Upazilla Disaster Management Committee
- Chairman and Member Secretary of Union Disaster Management Committee

Long-term Challenges

- Improvement of early warning system using space-based technology
- Expansion of disaster management information network
- Establishment of Pole Fitted Megaphone Siren in the disaster prone areas
- Expansion of the operation areas of the Cyclone Preparedness Programs
- Strengthening linkage with regional and international organizations involved in DRR in line with HFA

Follow-up of UN-SPIDER TAM

UN-SPIDER TAM Overview

- Mission: 19 – 23 June 2011
- Visits Stakeholders: 14 stakeholders including Govt. Institutions, Programmes and UN Programmes
- Stakeholders Workshop: Participated 30 Govt., Non-govt. and UN agencies/institutions/ programmes
- Share TAM findings with stakeholders in a high level meeting chaired by Secretary M/o Disaster Management and Relief (MoDMR)
- Submit TAM Report to M/o Disaster Management and Relief, Govt. of Bangladesh

TAM Composition

- UNOOSA/UN-SPIDER Office, Beijing, China
- UN Office for Coordination of Humanitarian Affairs (UNOCHA), Bangkok, Thailand
- Asia Pacific Space Cooperation (APSCO), Beijing, China
- Asian Disaster Reduction Centre (ADRC), Kobe, Japan
- National Disaster Reduction Centre (NDRC) of China
- Centre for Space Science Technology Education in Asia and the Pacific (CSSTEAP), Dehradun, India
- Pakistan Space and Upper Atmosphere Research Commission (SUPARCO), Pakistan

TAM Objectives

- Assess national capacity
- Assist in the definition of risk and disaster management plans and policies
- Provide guidelines to include space technologies into disaster risk reduction and emergency response
- Facilitate access of national institutions to space-based information
- Identify capacity building needs and facilitating
- Identify possible risk reduction and emergency response

TAM Recommendations

The recommendations focus on the challenges and opportunities in the following specific areas:

- Policy and coordination
- Capacity building and awareness raising
- Information management and sharing
- Data and access
- Emergency communication

Immediate Impacts of TAM

- ✓ Sensitization of key decision makers
- ✓ Awareness generation on use of space tech for DM
- ✓ Identifying missing links
- ✓ Understanding of
  - Current state of space technology use in DM
  - Constraint and challenge
  - Requirements & Way forward
- ✓ Networking & Fostering cooperation (within and outside)

Challenges

- Space-based information and products (specially earth observation) are in at incubation stage. We need to operationalise for DRR
- Satellite images are yet to be used effectively during emergency response and post-damage need assessment (PDNA)
- No provision of Emergency communication system (Satellite Telephone) after devastating nature of disaster
- Early warning (flood and cyclone predictions) needs to be further strengthened by providing better access to the space based information and related Technologies

Way Forward

- Capacity Development of both the organizations agencies responsible for earth observation and end users department
- Ensure coordination and good dialogue between EO organizations and end users
- Building network and platform with related EO organizations outside World
- Avoiding duplication and redundancy
- Incorporation of space technology for DRR to national policy and plan

Progress After TAM

- Developing Standard Operating Procedure (SOP) for the implementation of TAM recommendation
- Established Multi-hazard Risk Vulnerability Assessment (MRVA) Modeling and Mapping Cell
- Established Damage and Need Assessment (DNA) Cell
- Piloting a project on "Applying Remote Sensing Technology in River Basin Management"
- Drafting National Disaster Management Policy
- Organized awareness raising and capacity building program for relevant GoB staffs, academician and researchers in use of GIS/Remote sensing technology in cooperation with UN-SPIDER Beijing, NDRCC China and UNESCAP Bangkok and other relevant agencies

Conclusion

- Space Science and Remote Sensing Technology is still under development stage in Bangladesh, but a considerable progress has been achieved in developing structure and setting of tools and equipments
- The association of DDM/MoDMR to the international missions can help integrating DM programme to the global systems
- International educational institution could help by carrying out disaster related research, by offering higher education and training for Bangladeshi students and professionals, and
- Lastly, Space information should be easily available for developing countries like Bangladesh and distributed in such a format that everybody could use without much effort and technical knowledge.

Thanks for Patience Hearing

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