



ICT for DRR – The Bangladesh Experience

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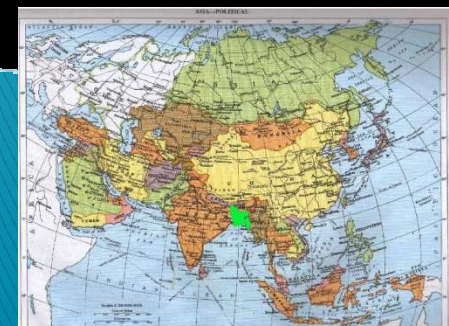
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Introduction

- ❖ Bangladesh is the country with complex geo-physical and environmental diversity
- ❖ Disaster is a regular phenomena. Living with risks (flood and cyclone) is the reality
- ❖ Over the years people of the country has developed their own indigenous coping mechanism
- ❖ Strong social belongingness and cohesion among the neighborhoods
- ❖ Vibrant NGO sector
- ❖ GO-NGO/public-private partnership
- ❖ Strong support from the development partners



Hazard	Year	Death (No.)	Economic Loss (billion USD)
Cyclone	1970	250,000	2.40
	1991	138,882	1.50
	2007	3,406	1.60
Flood	1988	2,379	1.20
	1998	918	2.80
	2004	285	2.20
	2007	707	1.06



Government of Bangladesh

Disaster Management Vision:

- To reduce the risk of people, especially the poor and the disadvantaged, from the effects of natural, environmental and human induced hazards, to a manageable and acceptable humanitarian level and to have in place an efficient emergency response system capable of handling large-scale disasters.

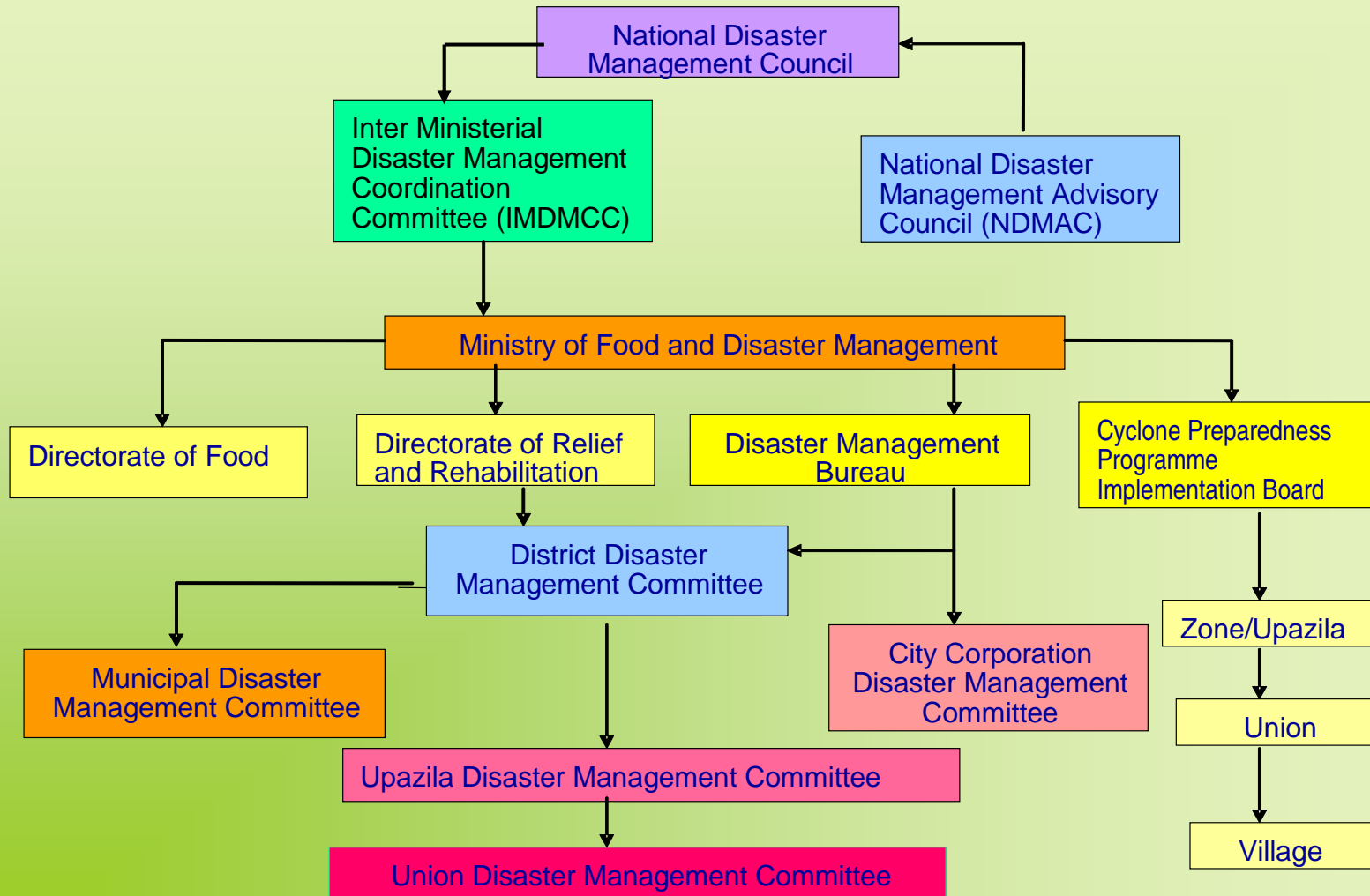
Disaster Management Mission:

- To bring a paradigm shift in disaster management from conventional response and relief to a more comprehensive risk reduction culture and to promote food security as an important factor in ensuring the resilience of the communities to hazards

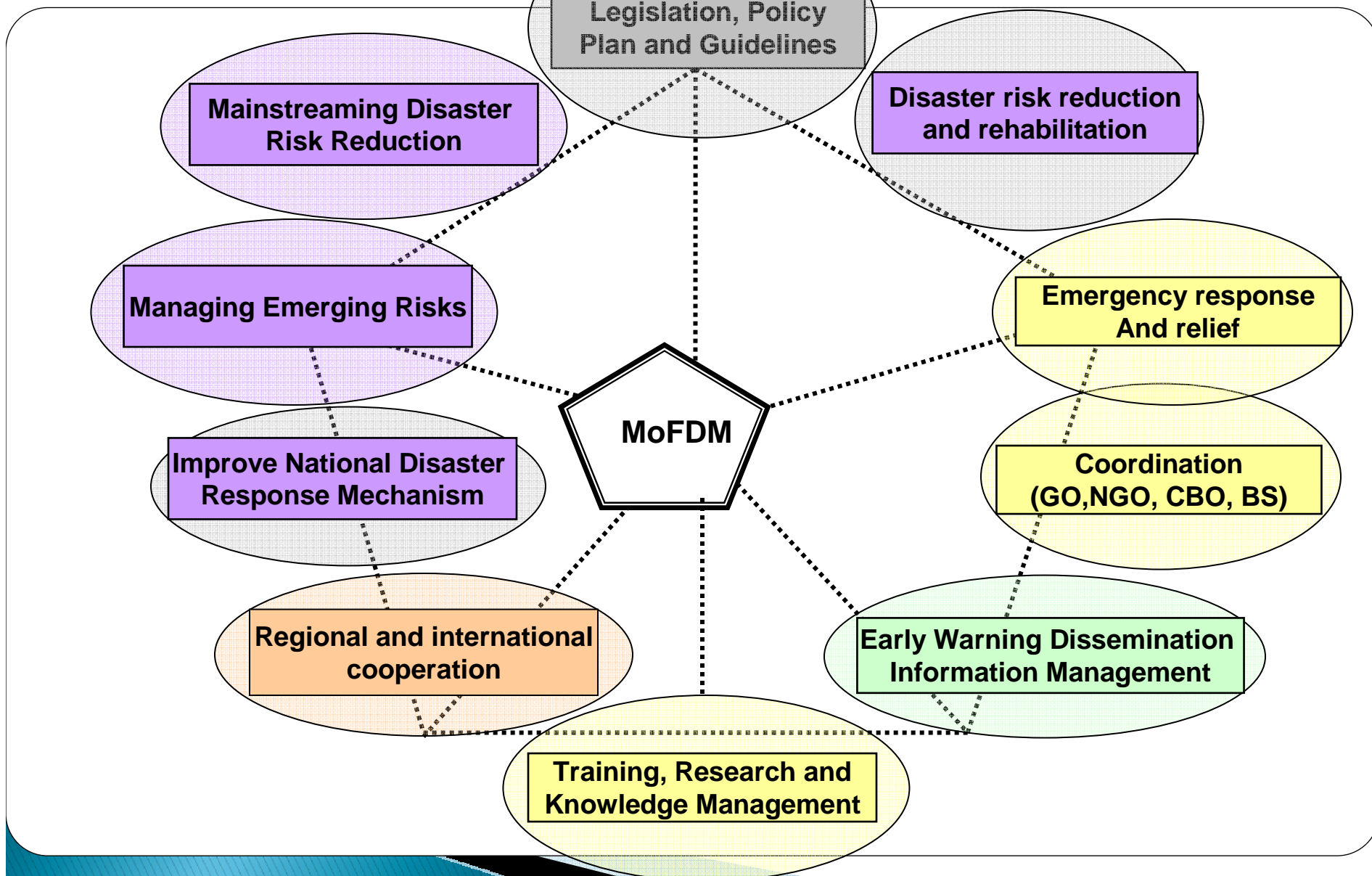
Overall Objective:

- To strengthen the capacity of the Bangladesh Disaster Management System to reduce unacceptable risk and improve response and recovery management at all levels and to effectively integrate and manage Bangladesh's food security system

Disaster Management Institutions in Bangladesh



MoFDM Core Functions for DM (As per revised AOB)



Disaster Management in Bangladesh: Specialized Institutions/Programmes

Technical Monitoring

- Bangladesh Met Department (BMD)
- Bangladesh Water Development Board (BWDB)
- Flood Forecasting and Warning Center (FFWC)
- Space Research Organization (SPARRSO)
- Geological Survey of Bangladesh (GSB)
- BUET
- CEGIS
- Institute of Water Modeling (IWM)
- Soil Research Development Institute (SRDI)

Capacity Building

- Comprehensive Disaster Management Programme (CDMP)
- Public and private universities
- Public training institutions
- National and international NGO Programmes

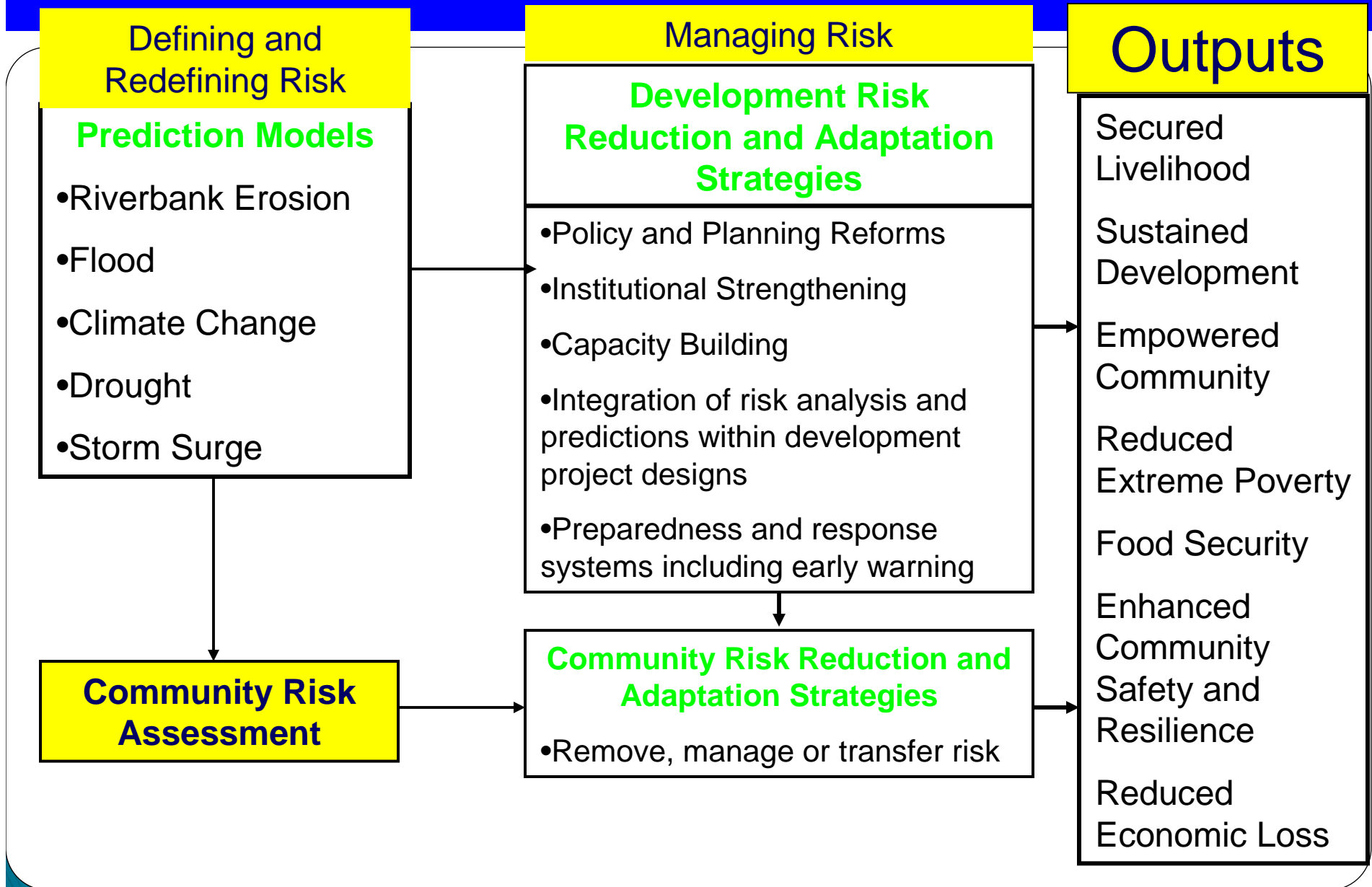
Preparedness & Response

- Ministry of Food and Disaster Management (MoFDM) and its agencies
- Army, Navy, Air Force, BD Police
- Fire Services
- District and Upazila Administrations
- Local Govt. Institutions
- City Corporations
- Disaster Emergency Response Group (DER)
- Cyclone Preparedness Programme
- Specialized NGOs (BDPC, IFRC, Care, Oxfam, Action Aid)

Comprehensive Disaster Management Programme of MoFDM

- ❑ Unique programme supported by UNDP, DFID and EC launched in 2004
- ❑ CDMP to lay the foundation for achieving the paradigm shift in Bangladesh on Disaster Management focusing on
 - ❖ Policy Reform
 - ❖ Professional Development
 - ❖ Institutional reform and capacity building
 - ❖ Mainstreaming Disaster Risk Reduction
 - ❖ Community Risk Assessment and Risk Reduction Action Planning
 - ❖ Earthquake and Tsunami Preparedness
 - ❖ Climate Variability
 - ❖ Disaster Management Information Networks
- ❑ CDMP follows a multi-hazard, multi-sector and multi-stakeholder approach
- ❑ CDMP has created a number of policy frameworks and guidelines to foster mainstreaming disaster risk reduction issues across hazards and sectors
- ❑ Established a range of partnership arrangements to ensure quality service delivery, ensure ownership and sustainability
- ❑ Learning by doing
- ❑ Did some pioneering work on community risk assessment and mapping, Earthquake risk mapping, climate variability and climate risk mapping and livelihood adaptation to climate change
- ❑ Received donor commitments for CDMP Phase II
- ❑ For details visit www.cdmp.org.bd

Disaster Management Conceptual Framework



BANGLADESH DISASTER MANAGEMENT MODEL

Defining and Redefining the Risk Environment

- Technical and traditional analysis
- Climate change and climate variability impacts
- Community risk assessment based on best practice model
- Documentation of vulnerability and risk factors
- All hazards; all risks; all sectors focus

Risk Reduction

Managing the Risk Environment

- Achieving a good balance of risk reduction options
- Moving from generic hazard to risk specific programmes
- Sustaining service delivery through partnerships
- Utilising technical and traditional analysis to strengthen preparedness and emergency response systems including early warning

Responding to the Threat Environment

- Activating systems and mobilizing resources
- Utilising vulnerability and risk databases to anticipate potential impact scenarios
- Maintaining effective communication and reporting
- Documenting learnings

Emergency Response

Feedback Loop

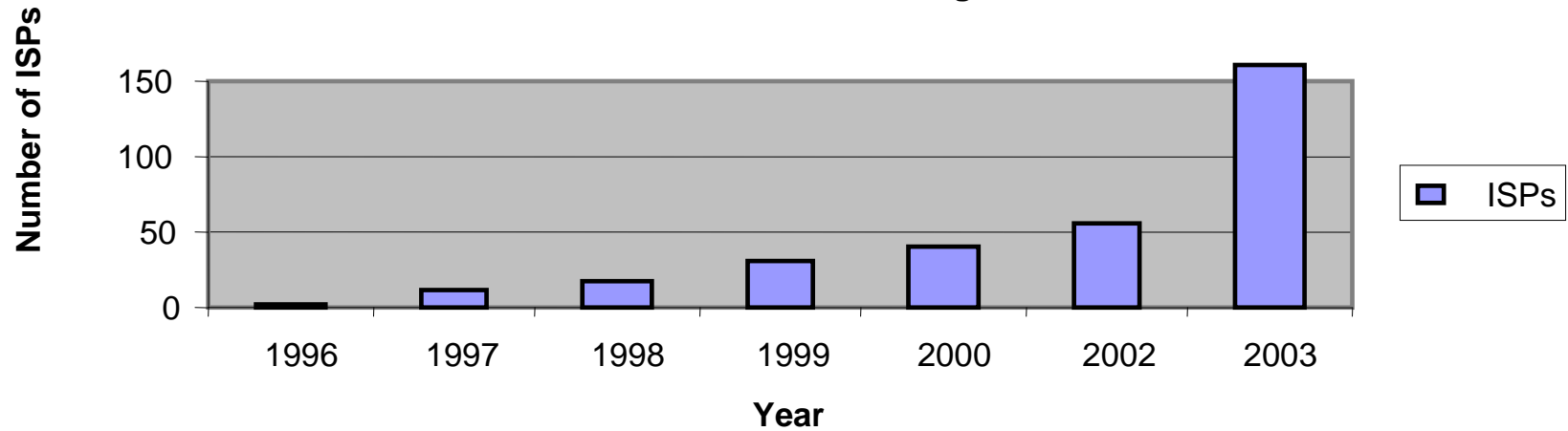
Bangladesh ICT Policy

- ▶ National ICT Policy (October : 2002)
 - ICT use in every sector shall have to be accelerated in terms of information generation, utilization and applications.
 - 103 policy directives in 16 areas (*8 were fully or largely accomplished, 61 were partially accomplished and 34 remained unaddressed*)
- ▶ National ICT Policy –2008 (proposed)
 - maximising the use of ICTs for national development
 - 10 broad objectives, 56 strategic themes and 306 action items.
 - Protect citizens from natural disasters through ICT-based disaster warning and management technologies
 - Utilize remote sensing technologies for disaster management and mitigation.
 - Web-based environmental clearance certification system
 - Promote cell phone/SMS-based disaster warning systems targeted to the population likely to be affected
 - Utilize GIS based systems to monitor flood & cyclone shelters (including equitable distribution in vulnerable areas)
 - Promote efficient relief management and post disaster activities monitoring
 - Utilize GIS based systems to ensure equitable distribution of relief goods with special focus on the hard-to-reach areas.

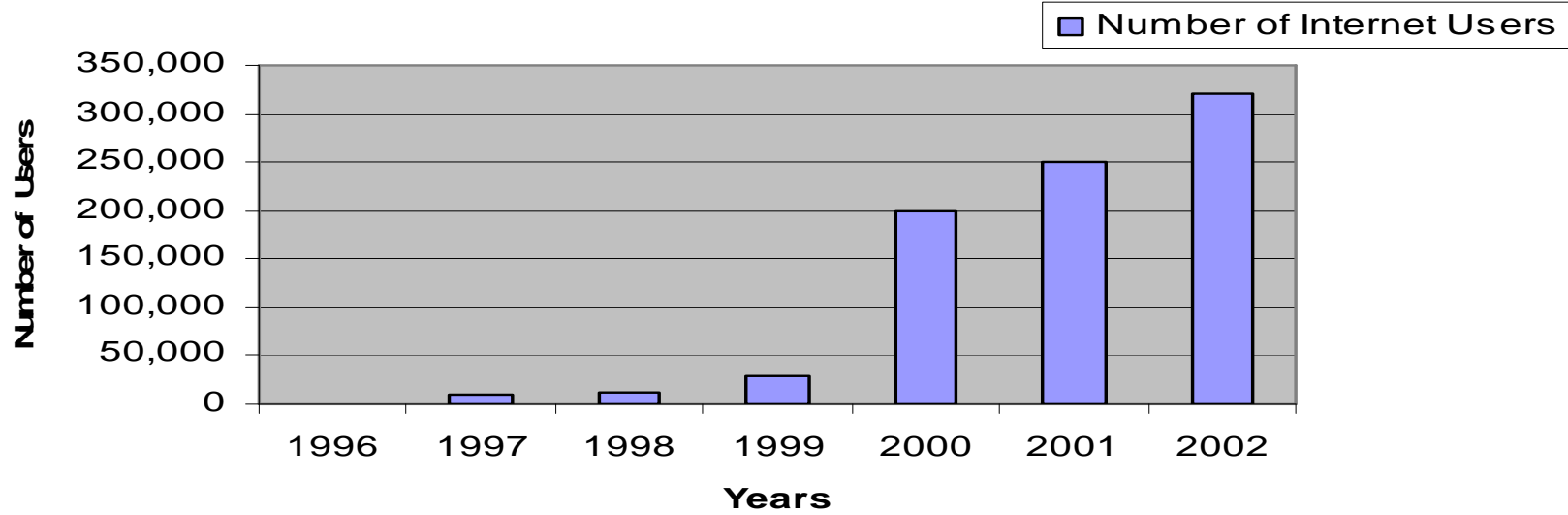
Present Internet Situation in Bangladesh



Number of ISPs over time in Bangladesh



Internet Users in Bangladesh over the years



Disaster Management Information Centre (DMIC) to support

National agencies

- policy implementation
- vertical command and control
- coordination
- integration
- decision support
- hazard early warning

Local institutions

- inter- and intra-agency communication
- project management
- training and awareness-building
- decision support
- hazard early warning

Communities and households

- risk reduction and preparedness
- decision support
- livelihood alternatives
- hazard early warning

DMIC ICT strategy

useful information

- Provide timely, accurate, relevant information
- Present understandable information
- Negotiate MOUs with data providers for consistent quality
- Provide means for user feedback and interaction

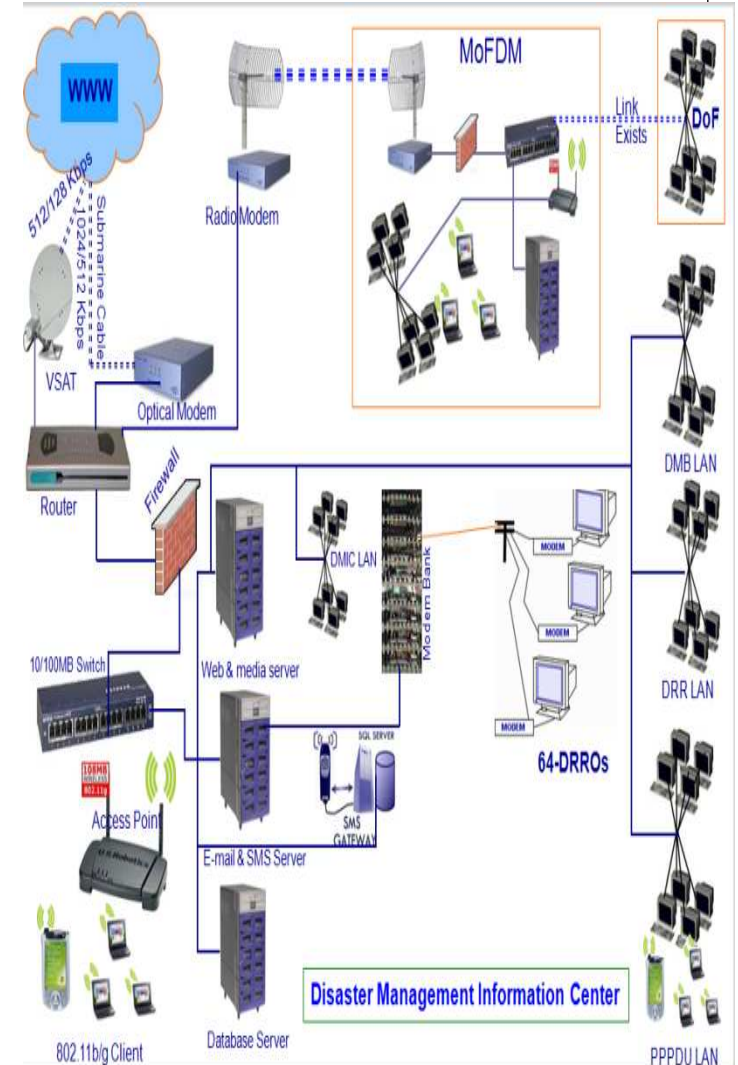
appropriate media

Level	Media
National, district	web, email, fax, SMS, IVR, courier, HF/VHF radio
Upazila	<ul style="list-style-type: none">➤ fax, SMS, IVR, HF/VHF radio, courier➤ Web, email in some agencies
Union	SMS, IVR, HF/VHF radio, courier
Community and households	SMS, IVR, am/fm radio, television, meetings

DISASTER MANAGEMENT INFORMATION CENTRE

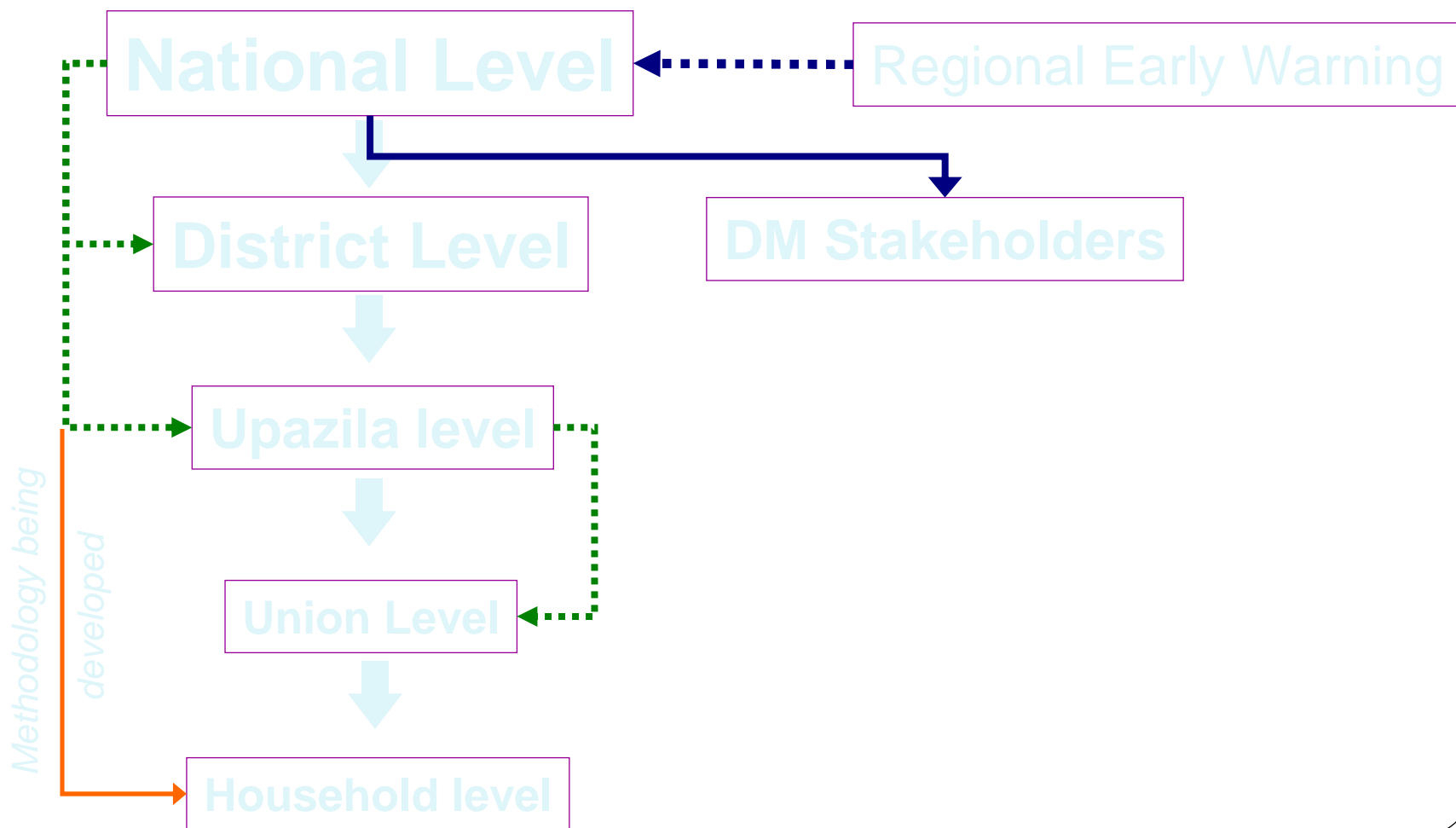
CORE HARDWARES @ DMIC

- ❑ FAX Server (04 line)
- ❑ SMS Gateway
- ❑ UNIX & Windows Based Server
- ❑ GIS & Mobile GIS Unit
- ❑ WAN (Internet)/LAN Connectivity

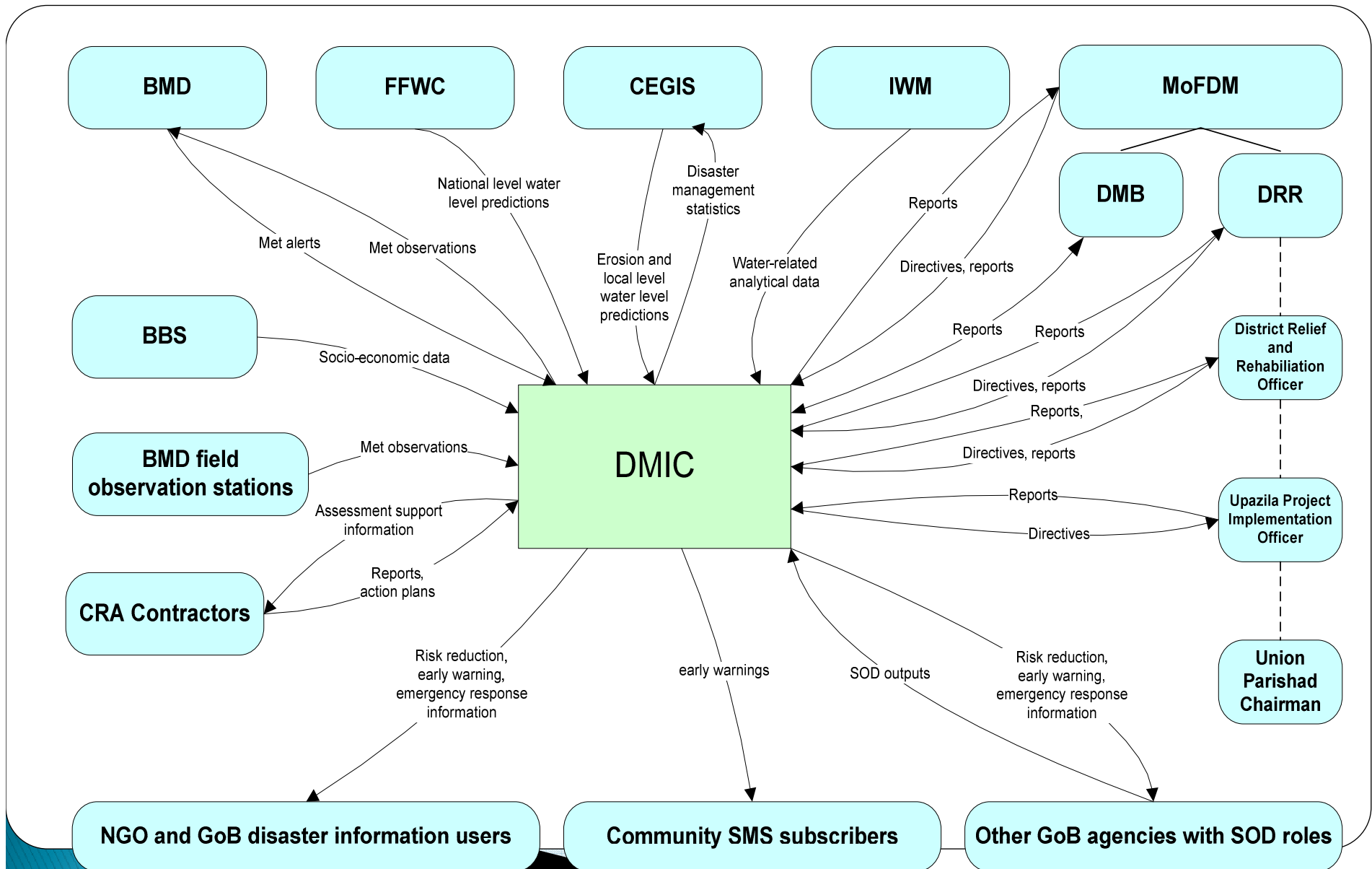


Early Warning Communication

Top-Down approach



DMIC/N Information Flows

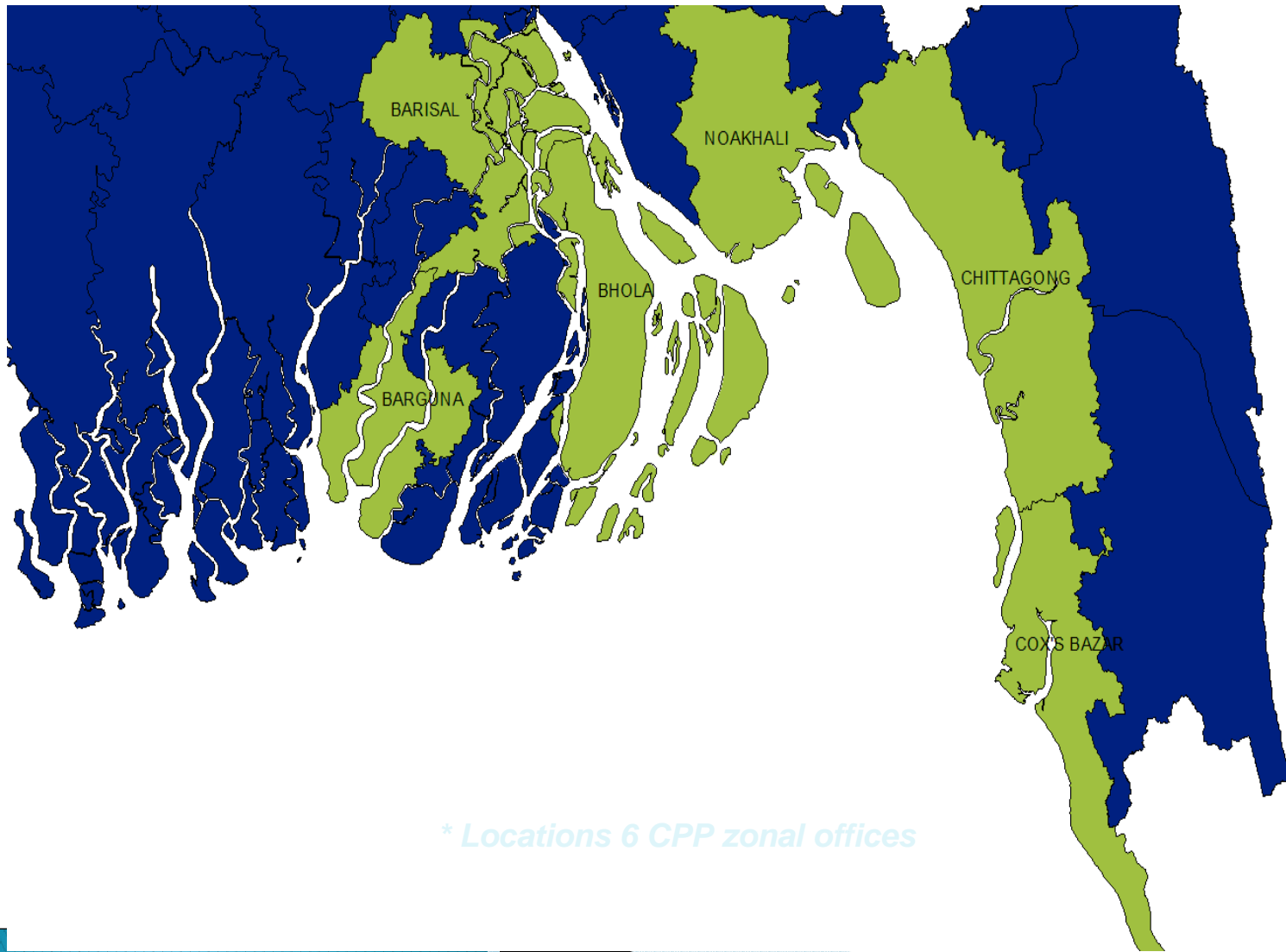


CAPACITY BUILDING @ DEPARTMENTS & FIELD OFFICES

- ❑ Computer, Printer, Fax, Photocopier, Mobile Internet etc. @ 64 districts + 235 upazillas
- ❑ 35 Met. Observatory station computerised
- ❑ WAN/LAN at MoFDM, DMB, DRR, CPP & BMD
- ❑ Emergency Response kits @ CPP
 - ❑ First Aid Box
 - ❑ Rescue Kit
 - ❑ Free-play Radio
 - ❑ Super Megaphone
 - ❑ Hand Siren
 - ❑ Solar Panel etc.
- ❑ Developing Central Relief Management Information System (CRMIS)– ongoing
- ❑ Piloting Cell Broadcasting of early warning to the community (ongoing)



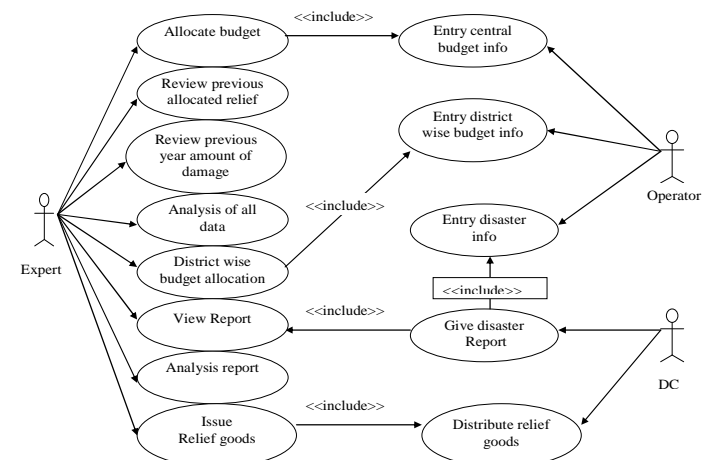
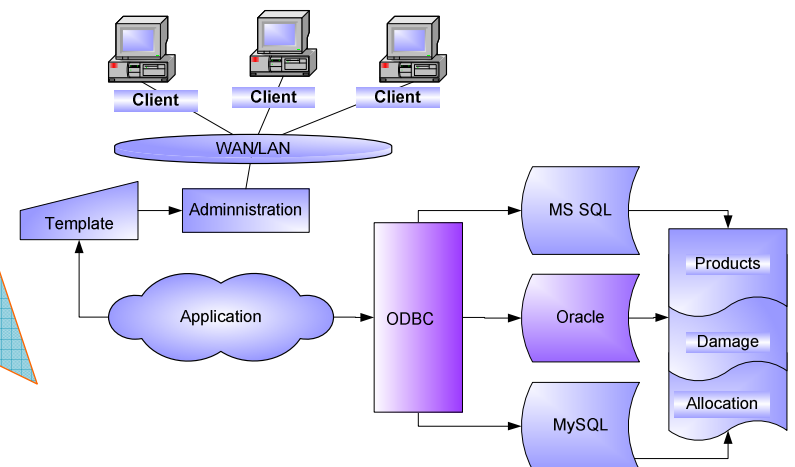
ICT equipment at 6 CPP zones



CRMIS comprised of the following features:

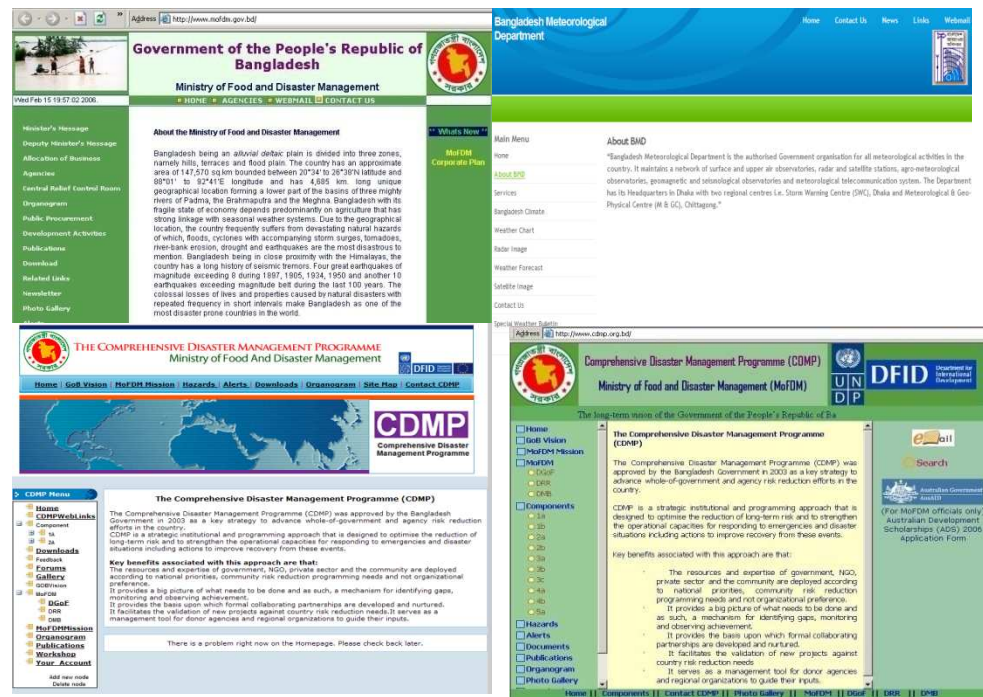
- Web based administration, data entry utility, relief allocation

- ❖ Customized Reports
- ❖ Customized Reports for Media
- ❖ Web based file(PDF, Gif, Jpeg) upload module
- ❖ Option to change graphical look by changing template
- ❖ Friendly administration, GUI with graphical topic manager
- ❖ Option to add, edit and delete data or transaction
- ❖ Administrators may edit texts of different sections
- ❖ The software will be based on PHP/MySQL web technology over web server. This is selected to reduce software purchasing cost.

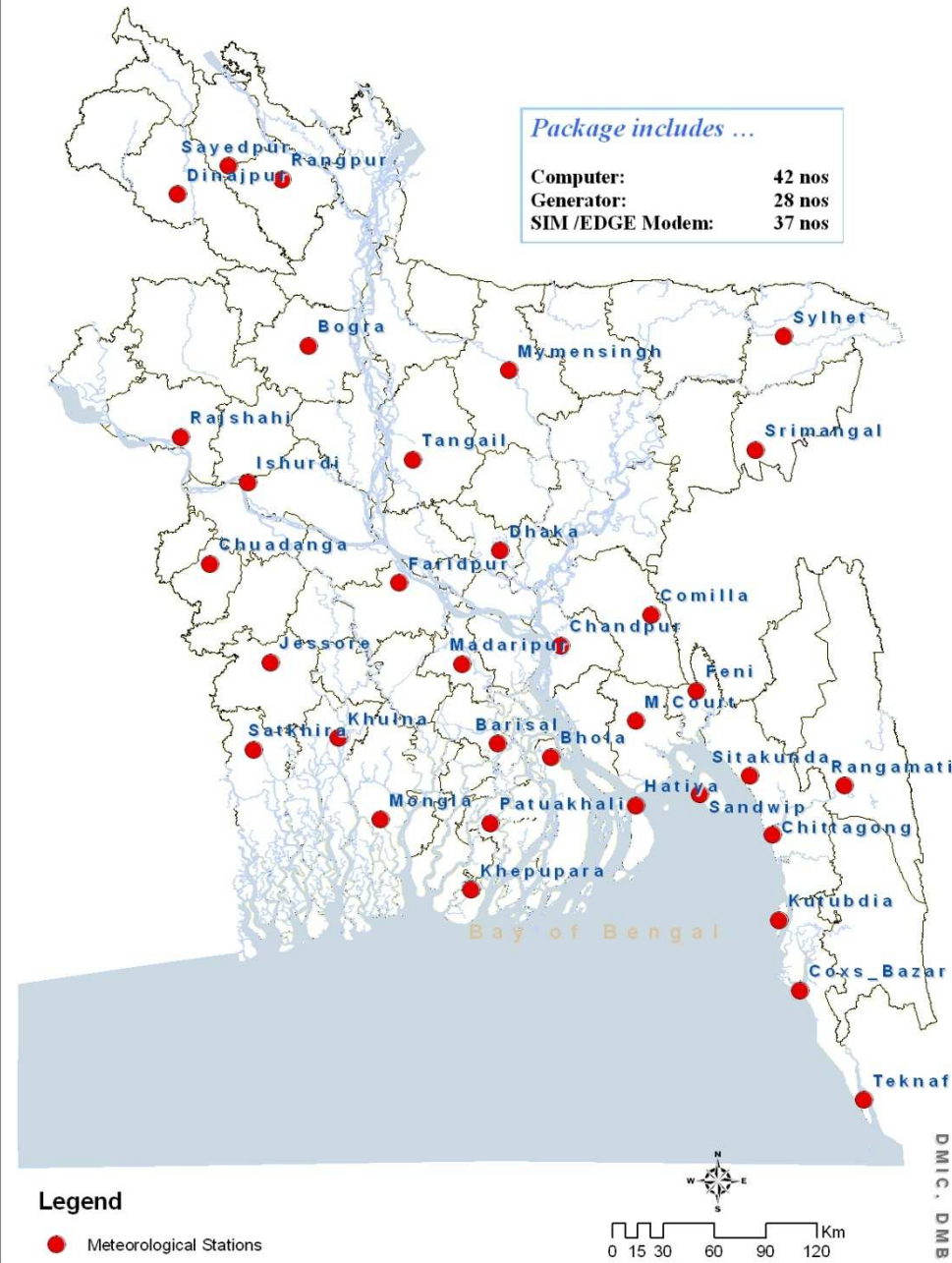


CAPACITY BUILDING @ DEPARTMENTS & FIELD OFFICES (CONTD.)

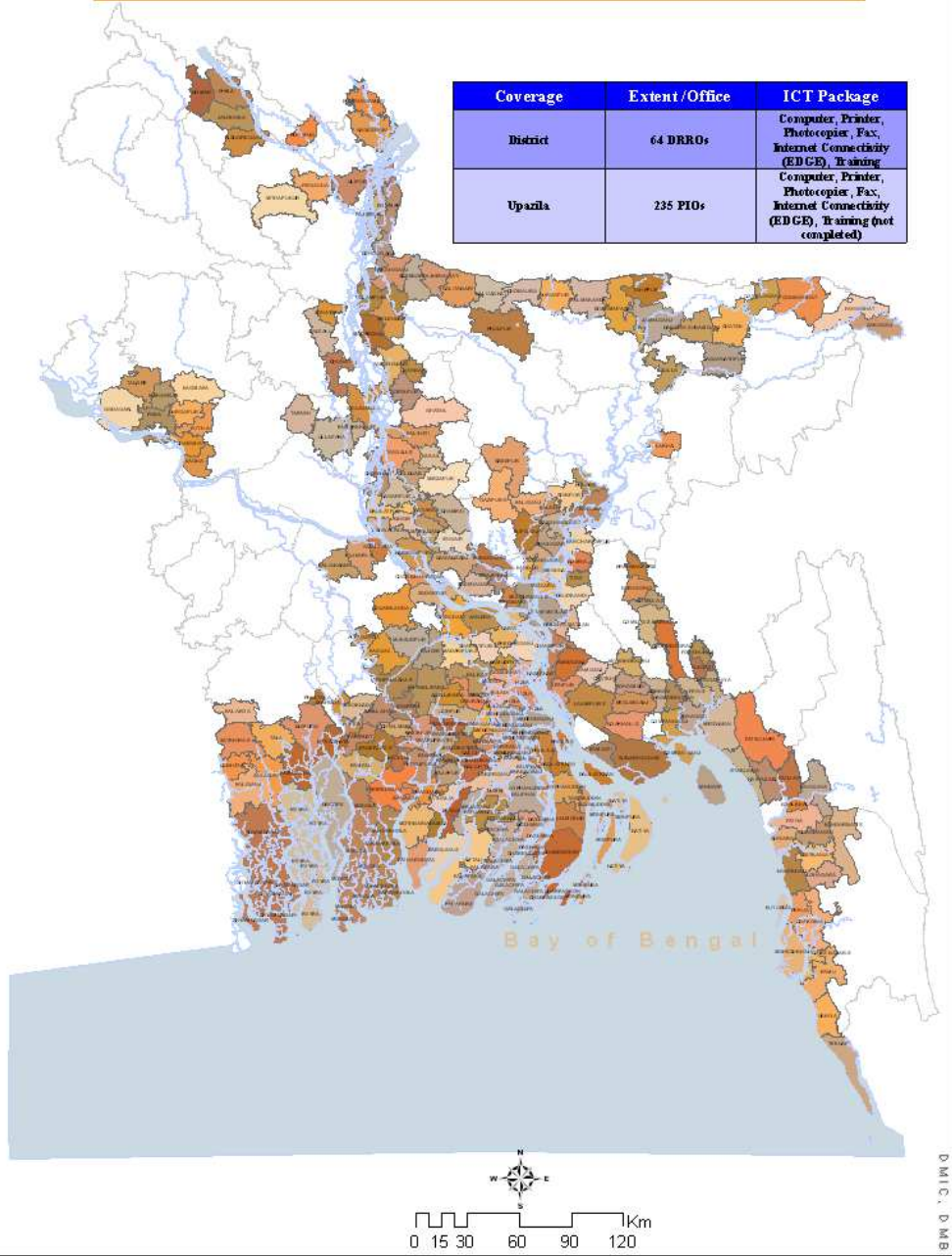
- ❑ Websites for
 - MoFDM
 - BMD
 - DRR
 - CDMP
- ❑ ICT Training
 - 300 MoFDM officials



Automation of Meteorological Stations, BMD



ICT Capacity Building (MoFDM Field Offices)





DMIN

Disaster Management Information Network



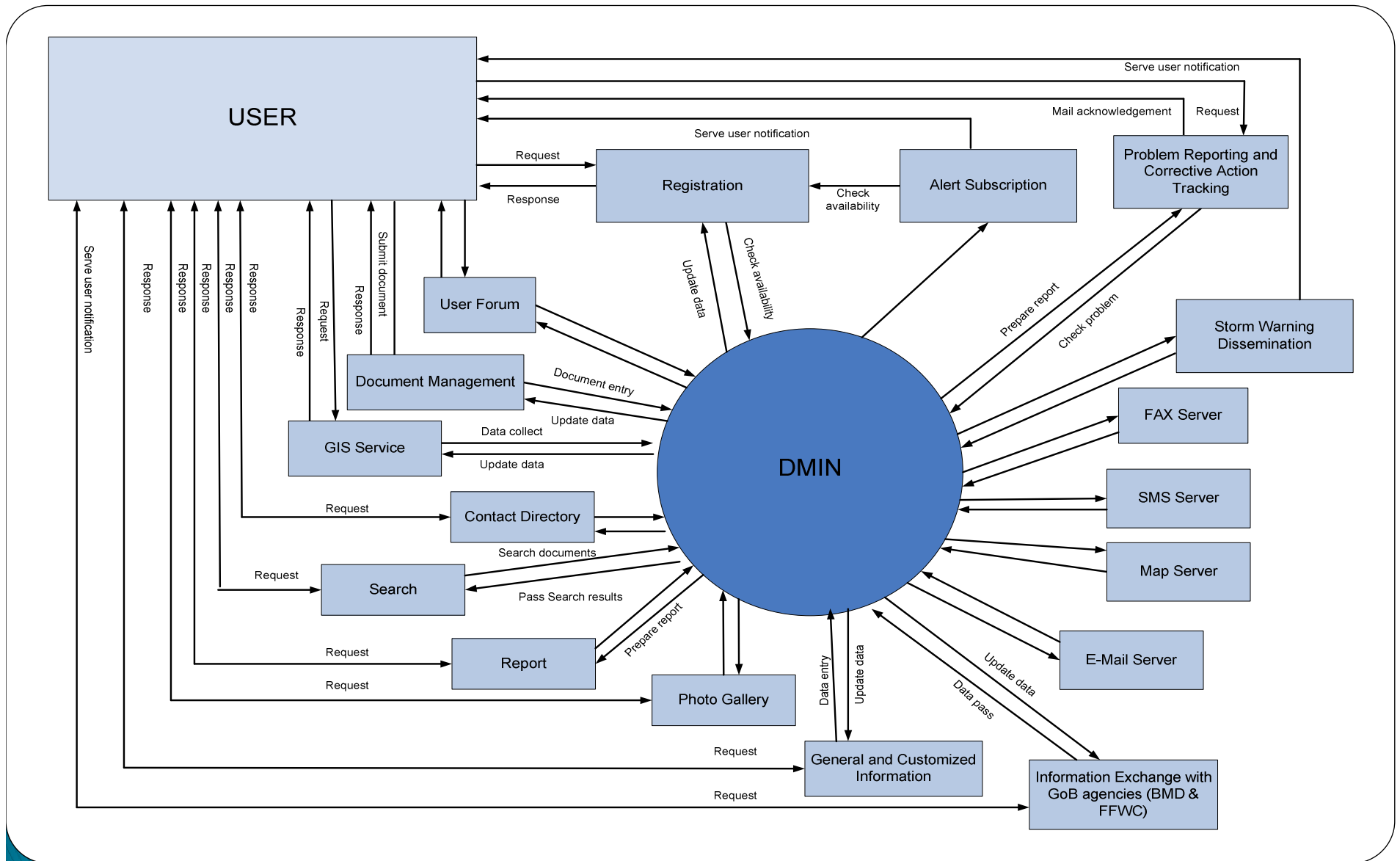
to share, coordinate and disseminate disaster management information, programs and guidelines among the disaster management stakeholders and citizen of Bangladesh

MAJOR PARTS OF DMIN PORTAL

- ❑ Organisation/User registration
- ❑ Alert Subscription
- ❑ Discussion Forum
- ❑ BMD Bulletin Dissemination System
- ❑ FFWC module
- ❑ GIS Map Server
- ❑ SitReps
- ❑ CRA and RRAP reports and databases
- ❑ EQ and Tsunami risk databases and scenario maps
- ❑ Cyclone centre database with evacuation path
- ❑ Inventory of Community Risk Reduction Programs (ICRRP)
- ❑ Climate Change Database (CCDB)
- ❑ Disaster Damage Information Database (DDIS)
- ❑ Disaster Incident Database (DIDB)

The screenshot shows the 'Alert Subscription Configuration Form' on the DMIN portal. The form is titled 'Alert Subscription Configuration Form' and is located under the 'Alert Subscription Configuration' menu item. The user is logged in as 'Anwar Ali'. The form includes a dropdown menu for 'Station Name' with options: Panchagarh(Karata), test test(Padma), Atrai(Atrai), Mohadevpur(Atrai), Behadurebad(Jamuna), Kazipur(Jamuna), Naoggon(Jamuna), and Serajgoni(Jamuna). The 'Alert Dissemination Type' is set to '15 cm+ above danger level'. There are three checked options for dissemination: E-Mail, SMS, and Telephone. The E-mail address is 'rezwansyl@gmail.com', the mobile number is '01712139157', the fax number is '9890854', and the telephone number is '9890937'. A 'Save' button is at the bottom of the form.

Disaster Management Information Network Links



Key Challenges

- Cultural gap, traditional paper base work vs. ICT
- Poor ICT knowledge at the field !
- Poor/inadequate nationwide infrastructure
- Providing Scientific Information Services is very critical (availability, data validation, data ownership, procedures, cost)
- Uses of warning messages by District Disaster Management Committee or DMIC at District is yet to be strengthen
- Dissemination of early warning to the community level
- Providing area specific early warning
- Alerting specific user group
- Faster communication
- Less cost dissemination
- On-time/real time basis

Future Plan

- Community Resource Center
- Strengthening of early warning dissemination through cell broadcasting
- Expansion of DMIC to rest of the Upazilas
- Automated Weather Station for BMD – Field Server, Mobile /Internet infrastructure.
- FFWC capacity building – automated real time data acquisition
- Disaster Management decision support system for evacuation and early response planning / management – Shelter/ Road-River network/ Settlement database, shortest path algorithm, Route planning
- CPP volunteer database and capacity building
- Establishment of real time earthquake observatory station

One Success story

13 Sep 2007

- **EQ of 8.2M occurred in Sumatra, Indonesia at : 5:10PM (BST)**
- **PTWC issued tsunami warning at : 5:36PM (BST)**
- **DMIC notified by email, fax and SMS : 5:45 (BST) and cross check with BMD over ph.**
- **By 6:00 PM MoFDM, DMB, DRR, DC's (costal belt), CPP activated. TV, Radio started dissemination of tsunami warning within 30 min.**