BILL & MELINDA GATES foundation

adpc

Bangladesh Preparedness Partnership (BPP)

EMERGENCY OPERATION CENTER (EOC)

TECHNICAL BRIEF

EMERGENCY OPERATION CENTER (EOC) **TECHNICAL BRIEF**

The Emergency Operation Center (EOC) combines systems and infrastructure to provide timely and impactful disaster response. As a center of excellence, the EOC has the following priorities:

1) Enhance emergency response capacities, reduce the loss of property and life, and alleviate suffering caused by mega-disasters.
2) Provide a strategic policy mechanism for issuing command and control guidance for quick and effective response during any mega-disaster. This includes the capacity to handle earthquakes of magnitudes up to 10 on the Richter scale, level-5 cyclones and tornadoes, devastating floods, severe fires, and chemical explosions.

This technical brief will support the Government of Bangladesh in building its own EOC based on global best practices. It elaborates the following components of establishing an EOC:

Legislation

EOC Organizational Structures

Human and Equipment Resources

EOC Resource Management

Context:

Considering Bangladesh's environment, population density, and developmental stage, the country is increasingly susceptible to frequent and devastating environmental disasters. Various environmental and human-induced disasters impact Bangladesh, greatly hindering the country's development and leading to the loss of lives, livelihoods, assets, and infrastructure. Disasters include cyclones, tornadoes, river erosion, floods, drought, and seismological events such as earthquakes and landslides. Profound and widespread poverty exacerbates the population's vulnerability to catastrophic episodes.

Bangladesh has made good progress in implementing disaster risk reduction initiatives. The country has a long history of institutionalizing disaster management systems. Just after the nation's liberation in 1972, the Government of Bangladesh established the Ministry of Relief and Rehabilitation and the Ministry of Food. The primary objective of these two ministries was to provide support to people affected by disasters and ensure food security for the country. In 1982, the Ministry of Relief and Rehabilitation was merged with the Ministry of Food to form the Directorate of Relief and Rehabilitation. In 1988, the Ministry of Relief and Rehabilitation was established as an independent ministry. In 1993, reflecting shifts in disaster management paradigms and philosophy, the Ministry of Relief and Rehabilitation were renamed as the Ministry of Disaster Management and Relief. In 2004, the Ministry of Disaster Management and Relief and the Ministry of Food were merged to form the Ministry of Food and Disaster Management. In 2009, the Department of Food and the Department of Disaster Management and Relief were established under the Ministry of Food and Disaster Management. In 2012, the Department of Disaster Management and Relief under the Ministry of Food and Disaster Management became an independent ministry and was renamed the Ministry of Disaster Management and Relief.

Disasters have adversely affected human civilization since the dawn of our existence. Environmental and human-induced disasters have increased both in frequency and fury over the years. India has suffered enormously, in terms of loss of lives and livelihoods and damage to both public and private property due to recurring disasters. In response, various strategies have been formulated and implemented. These cover disaster mitigation, prevention, response, rehabilitation, and reconstruction during the pre-disaster and post-disaster period.

What is an EOC?

An EOC is a physical facility with a technical infrastructure where decision-makers meet to coordinate the response to an emergency or disaster. An EOC has protocols, a human interface, human resources requirements, and an organizational structure.

As soon as the EOC recieves information about an emergency, the EOC will transmit the information to relevant policymakers at the national and local levels, providing instructions for further action. The EOC staff on duty will be responsible for collecting information related to the type, magnitude, and location of the disaster and also informing responsible authorities. Hence, the EOC works as an information clearing house.

Emergency Support Functions (ESFs) are an essential component of emergency management, comprising various coordinating agencies, which manage and coordinate specific kinds of assistance common to all disaster types. Further, an EOC will have an Emergency Support Function Plan.

The Plan establishes a framework to conduct ESF operations for any ongoing environmental or human-induced disaster. It outlines an implementation plan for sharing resources and coordinating preparedness, mitigation, response, and recovery activities as required. The Plan structures the activities of concerned agencies, i.e., primary,/ nodal, and support agencies in an organized manner according to their capabilities, skills, resources, and, authorities across state and district governments. It also attempts to unify the efforts of state departments so that they are involved in emergency management comprehensively to reduce the impact of any emergency or disaster within the state.

In the Standing Order on Disaster (SOD 2019) issued by the Government of Bangladesh, specific reference to the EOC is made in each section of the activities outlined for the disaster management committee. In SOD 2019 specifically describe about the National Disaster Response Coordination Center (NDRCC) in section 3 and National Emergency Operation center (NEOC) in section 7.

The EOC in Bangladesh: An operation center for effective response

At the national level, there is a good indication of government engagement in disaster risk management through the coordination of different ministries, state departments, NGOs, and civil society organizations. At the local level, the Disaster Management Committees (DMC) at the City Corporations, Districts, Pourashava, Upazilas, and Unions play a key role in disaster risk management. Once a disaster event has occurred, in the interest of speedy and simplicity in disaster response management, coordination should be carried out at the lowest possible level of government, with minimum reorganization. Information is the key resource needed to support affected people on time. The SOD 2019 defines the EOC as a central command and control facility from where all emergency response and humanitarian aid activities are coordinated during an emergency.

At the national level, there are two levels of EOCs. The first one is based within the Ministry of Disaster Management and Relief, and is called the National Disaster Response Coordination Center (NDRCC). The second level EOC is at the Department of Disaster Management (DDM). The Urban Resilience Project of WB also established an EOC within the DDM focusing on earthquakes. The overall goal of the emergency management component (Component A) of the EOC? is to design and operationalize an integrated emergency management system in Bangladesh that will enable the country to plan for and respond to common, everyday emergencies, as well as major disasters in an organized and effective manner. The Prime Minister's Office also opened an EOC with support from the Armed Forces Division (AFD) during the emergency. All these EOCs mostly collect the same information. There is limited coordination between these EOCs; however, coordination exists between the EOC at the NDRCC and the DDM.

At the local level, the Deputy Commissioner (DC) and the Upazila Nirbahi Officer (UNO) have established an EOC or control room to obtain information and coordinate relief and rehabilitation activities. There are no dedicated facilities for the EOC at the local level. During a disaster, the conference room at the DC or the UNO office becomes an EOC for the Districts and Upazila, respectively.

To deal with the effects of and damage by earthquakes and other large-scale disasters, a decision was taken to establish a National Emergency Operation Centre (NEOC) in the meeting of the National Disaster Management Council held on 5 May, 2015. The Government of Bangladesh has taken steps to establish the NEOC for effectively responding to disasters in a timely and coordinated way.

Objectives of establishing the NEOC

A. Conduct effective disaster risk management and response programs before, during, and after disasters.

B. Establish effective coordination among all stakeholders.

C. Collect and share information related to disaster impact and damage.

D. Formulate effective response strategies through analysis and visualization of the disaster situation.

E. Provide strategic advice based on evaluation of disaster preparedness.

F. Formulate strategic direction and recommendations for implementing emergency response programs.

G. Establish disaster risk management related information management systems.

H. Establish effective communication systems during-disaster and post-disaster stages.

I. Ensure the proper implementation of principles and duties by respective officers of the NEOC.

GOOD PRACTICES – Process of Setting Up and Running the EOC

EOC documents were reviewed from Sri Lanka, The ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre) in Indonesia, Mexico, and the Federal Emergency Management Agency (FEMA). These documents define an EOC as a designated facility that supports multi-agency stakeholders to coordinate and manage information and mobilize resources in anticipation of and/or to support incident response operations. Additionally, (FEMA) defines an EOC as "the physical location at which the coordination of information and resources to support incident management (on-scene operations) activities normally takes place. An EOC could be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction."

EOCs facilitate incident response coordination by collecting and evaluating required information, setting priorities for response, and mobilizing resources in support of disaster response. Often, an EOC is also involved in pre-disaster activities such as facilitating disaster management planning, disaster surveillance, and disseminating warnings.

Establishing an effective EOC involves a systematic approach and includes different actions in different phases. It starts with a pre-establishment phase that determines EOC needs through a consultative process involving stakeholders, identifying EOC scope and functions, setting up the operations room in a way that facilitates stakeholder collaboration, designing organizational structures that helps in the smooth functioning of the EOC, adequately equipping the EOC, training human resources, and setting standard operating procedures (SOPs) as soon as the EOC is activated.

The pre-design phase involves different activities that need to be undertaken to enable the establishment of the EOC. This phase involves both generic as well as specific activities applicable for the EOC. Some of the examples of activities during this phase are:

Generic activities:

- Design and adopt a disaster response framework applicable to the country
- Establish an appropriate legal framework that allows the establishment and functioning of EOCs
- Establish jurisdiction levels of different EOCs i.e. National, State, District, and Sub-District level EOCs

Specific activities:

- Identify the authority responsible for setting up the EOC
- Identify the jurisdiction where the EOC is to be set up i.e. National, State, District or Sub-District level
- Identify a suitable place to locate the EOC
- Allocate required budgets for the establishment of the EOC
- Set up appropriate procurement and monitoring mechanisms

Good practices:

- EOC needs, roles, functions, and jurisdictions should be clearly defined through a government order, act, or notification
- Funds need to be identified and allocated for setting up the EOC
- The authorities responsible for setting up the EOC should strongly consider establishing a Technical Committee who can guide this phase

EOC Standard Operating Procedures:

The SOPs of the EOC and related job descriptions (JDs) for critical roles are proposed in the annexure. The enclosed SOPs should serve as a starting point for stakeholder discussions, and should be collaboratively refined and endorsed. Similarly, the draft JDs should be further refined in a collaborative manner. Current consultations are inadequate for reaching an agreement on the SOPs or JDs. At present, the stakeholders have conflicting opinions and ideas regarding these matters. A further consultative process is needed to finalize JEOC, Upazila EOC designs, staffing requirements at different phases, SOPs and JDs for various staff, and EOC activation and scaling up mechanisms. For the EOC to be successful, the humanitarian community needs to provide trained personnel with a clearly defined output phase-out plan for a minimum period of six months and for the government to take over the functions of the EOC.

GOOD PRACTICES:

This phase concerns activities that are required to establish a detailed plan which will help in establishing an EOC. The Plan includes the civil and architectural plan, details of non-structural requirements, communications, and technology needs, EOC organization, etc. Some specific activities required to be performed during this phase are:

- Technical experts should be identified to establish the elements that need to be incorporated in the EOC design
- Identify design elements that are critical to address structural and non-structural risks. In case of an earthquake the EOC infrastructure has structural as well as non-structural risk. E.g., if the equipment is not placed in the correct position
- Identify space requirement for normal as well as fully activated phase
- Finalize appropriate layout for the EOC operations room
- Identify communication needs
- Identify equipment required to facilitate internal as well as external communication with different stakeholders, departments, and agencies
- Identify equipment and systems for systematic surveillance
- Identify power requirements to run the EOC and power back up strategy
- Prepare an initial list of EOC roles and functions during normal and disaster response phases
- Identify different agencies and stakeholders for EOC operations and management
- Prepare an initial list of staff positions required to manage the EOC during normal and full activation times.
- Prepare a list of persons who will be at the EOC when it is fully activated
- Design appropriate EOC organization that will perform different EOC functions and activities, during normal and fully activation phases
- Prepare a list of SOPs that are specifically applicable for the management of the EOC
- Initiate drafting SOPs required to manage the EOC
- Establish a mechanism to prepare EOC design with all required elements
- Appropriate design consultants should be in place with clear terms of reference
- A EOC design workshop should be organized involving stakeholders and designers to discuss and finalize the list of considerations and requirements for the EOC and incorporate the same in EOC design

Physical Space, Design, and Layout:

The NDRCC at MoDMR have dedicated rooms for? It was the old Operation Center which was re-designed and furnished through the Comprehensive Disaster Management Program. However, the space is not adequate. The room dedicated to operating the EOC located within the DDM building has adequate space which was furnished with support from the Urban Resilience Program as the future site of the new EOC.

GOOD PRACTICES:

This establishment phase involves different activities about construction, procurement, staffing, training, awareness raising, and activation of the JEOC. Some specific activities in this phase include:

- Finalize JEOC design and identify an appropriate contractor or contractor agency to establish the JEOC
- Manage timelines; the construction of the JEOC should be completed within an agreed upon timeline
- Procure identified communication equipment and other equipment necessary for the JEOC
- Prepare JEOC staffing requirements, their roles, and responsibilities, and initiate the hiring process at the appropriate time so that the staff is ready to manage the JEOC when it is ready
- Establish an action plan for promoting awareness among the stakeholders, enabling them to have a common understanding of the roles and functions of the JEOC as well as their own roles and responsibilities
- Finalize training methodology for various JEOC roles and positions
- Design and establish the Decision Support System that will help to collect and store disaster risk data and information related to the JEOC jurisdiction. This will help assess the initial impact of the event and drive the decision making process
- Store collected data and information on suitable GIS platforms for quick retrieval and to provide a multidimensional understanding for enhanced intelligence
- Formalize budgets required to manage the JEOC
- Have an appropriate agency or consultant in place to design and establish an Emergency Decision Support System. The system will assist decision-makers evaluate emergency plans and in selecting an appropriate plan during an emergency by supporting heterogeneous emergency response data sources and providing makers decision-makers access to appropriate emergency rescue knowledge
- Appointment of a Project Management Committee to manage and monitor the construction process
- A Technical Committee as a part of the Project Management Committee or separately should be considered to guide the JEOC for effective and efficient response

Equipment, Furniture, and Technology:

The NDRCC at MoDMR and EOC at DDM have furniture, computer, and equipment that was provided during the CDMP but they are not adequate. The technology also needs to be updated to meet the growing demands for information management. At the local level, the DC and UNO conference rooms are being converted to serve as an EOC during an emergency. No equipment, furniture, or technologies are dedicated to the EOC. In some of the Upazillas, there is hardly any internet connection. Internal and external communication is mostly dependent on the internet. In general, only institutions having a good or adequate ICT capacity with broadband internet facilities will be able to exchange data.

GOOD PRACTICES:

Normal time operations include disaster surveillance, maintaining equipment in workable status, maintaining the operations room, ensuring availability of supplies, updating disaster management plans pertaining to JEOC jurisdictions, updating vendor data, and ensuring that different agreements are current. Some specific activities include:

- Regular maintenance check of JEOC equipment
- Security management
- Track and renew JEOC equipment
- Undertake mock drills with stakeholders
- Update disaster management plans
- Compile and update the available relevant base database for example cyclone shelter database, volunteer database, capacity database, suppliers database, etc.
- Update SOPs if required
- Update vendor data and agreements
- Dispatch routine surveillance reports in a timely and prompt manner
- Full-time staff, based on the size of the JEOC should be in place for JEOC maintenance
- Required annual maintenance contracts should be in place
- A well-defined SOP for JEOC maintenance should be in place
- Adequate budgets to support maintenance should be allocated
- Various preparedness activities that support effective response should be identified and the JEOC should be engaged in such activities
- A calendar for various planned training and awareness programs should be in place

Equipment:

Equipment includes communication tools. Radios, smartphones, wired telephone, and pagers may be required to alert team members to respond, notify public agencies or contractors, and communicate with other team members to manage an incident.

Other equipment needs depend on the functions of the team. Automated External Defibrillators may be required for first aid/CPR teams. Fire extinguishers would be required for the fire brigade. Spill containment and absorbent equipment would be required for a hazardous materials response team or trained employees working in their assigned workspace. Personal protective equipment including hearing, eye, face, and foot protection may be required for employees as part of a safety program.

Many tools may be required to prepare a facility for a forecast event such as a hurricane, flooding, or severe winter storm.

Materials and Supplies:

Materials and supplies are needed to support members of emergency response, business continuity, and crisis communications teams. Food and water are basic provisions.

Systems and equipment needed to support preparedness program require fuel. Emergency generators and diesel driven engines and fire pumps should have a fuel supply that meets national standards or local regulatory requirements. That means not allowing the fuel supply to run low because replenishment may not be possible during an emergency. Spare batteries for portable radios and chargers for smartphones and other communications devices should be available.

Human Resources (Experience and Training Needs):

The NDRCC at the MoDMR has some long-term junior-level regular staff. The NDRCC is run by the assigned staff from the Government Administrative Cadre staff. There is no disaster management, geographic information system, or information communication specialist staff currently available within the NDRCC.

GOOD PRACTICES:

Employees are needed to staff emergency response, business continuity, and crisis communication teams. The emergency response team may be limited to employees trained in direct evacuation or sheltering. Some businesses may choose to organize emergency response teams to administer first aid, perform CPR and use automated external defibrillators (AEDs). Still, others may train staff to use portable fire extinguishers. Regulations define minimum requirements that include training and organizing employees. Staff is needed to develop and manage business continuity and crisis communication plans. The teams will likely be made up of employees working in their respective departments. Some staff may be assigned to work at alternate worksites if a primary worksite cannot be occupied.

Information Management Systems:

The NDRCC/EOC will begin its operations with limited functions using basic information dissemination facilities. Because fax is still the dominant mode in institutional information transmission, the NDRCC/EOC will have fax transmission and reception capability. However, fax machines have issues that might delay or send inaccurate communication of important data for decision making. Hence, a human operator needs to be present for transmitting messages, which is an additional staff requirement in an already resource-challenged environment. While we are approaching a digital society, the original image or document must be first printed and then physically stored for traceability of transmission; recovery from failed transmissions may not be possible; and distribution lists cannot be easily maintained. These are some of the challenges of using a fax system.

GOOD PRACTICES:

Many systems and equipment are needed to detect potential hazards and threats, protect life, ensure the safety of property, and continue business operations. These resources include:

- Detection systems (fire detection, burglar alarm or intrusion detection, computer network security, emergency alert system receivers, and television, radio, for news and weather)
- Alarm systems (fire alarm, intrusion alarm, and process system alarms)
- Warning systems (occupant warning systems include fire alarm, public address, and tornado warning)
- Communications systems (landline telephones, cellphones, smartphones, email and data, radios and pagers)
- Pollution containment systems (primary and secondary building containment and devices to stop the flow of materials from tanks and piping)
- Fire protection and suppression systems (fire sprinklers, fire extinguishers, fire pumps and water supplies, special extinguishers for computer rooms and special hazards)
- Emergency power supplies (uninterruptible power supplies and generators).
- Building utility systems (electrical, plumbing, heating, ventilation, air conditioning, and sanitary)

ADDITIONAL GOOD PRACTICES INCLUDE:

- Evaluate these systems to determine whether they meet the needs of the program
- Identify and plan to overcome emergency communication system limitations such as weak radio or cellular service or areas where a warning system cannot be heard. Upgrading this critically important system may be required. Verify that these systems are in reliable working condition.
- If fuel, battery backup power, or batteries are required, make sure the system can run for the required time and chargers are available.
- Document how to operate these systems and mark the locations of controls.
- Make sure the information is available during an emergency.
- Many of these systems also require periodic inspection, testing, and maintenance with national codes and standards.
- Capacity building of the staff is vital to have right person in right place with the right capacity.

EOCs are a powerful tool for enabling response to emergencies, whether caused by environmental disasters, disease outbreaks, or even deliberate attacks. There is a body of knowledge that exists around EOC operations and incident management and which is tailored to individual organizations and the challenges to which they will have to respond. A hidden strength of the EOC model is that it requires a plan. So an EOC serves not only as a mechanism for communication and decision making in the event of a crisis, but also as a venue to develop, validate and improve existing plans, and train personnel in response (through scenario-based workshops and actual response situations). In addition to all this, EOCs are a great driver and example of international scientific collaboration.

ASIAN DISASTER PREPAREDNESS CENTER

SM Tower, 24th Floor, 979/66-70, Paholyothin Road,
Phayathai, Bangkok 10400 Thailand

Tel : +66 (0)2298 0681 to 92

: Asian Disaster Preparedness Center - ADPC

: adpc.net

: @ADPCnet

: adpc@adpc.net