

IMMEDIATE RESPONSE TO DISASTER: A DATA BASED MODEL FOR THE COASTAL BANGLADESH

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Abstract

After any disaster “Bringing Back Normalcy in Life” is a major challenge. Some mechanism or an indigenous dynamic cycle basing on Information Technology in identifying and making resources available can save many lives as well as bring back normalcy in disaster affected areas. Cycle must be dynamic so that it can address any change in situation. The experience of “Cyclone SIDR” and “Cyclone AILA” indicates that, even after allotment of relief goods; disaster management institutions could not reach at the first instance to support the disaster victim people. A “Database” of resource and manpower that may be used by upazila administration “On Loan Basis” to combat disaster may contribute significantly to provide support at the “First Instance”. Disaster Management Committees’ will not have to wait for the relief goods to arrive at their hand; they just need the allotment from higher headquarter which will authorize them to take loan from the pre-approved potential suppliers. On receipt of the relief goods from the District Headquarter the upazila administration can refund the loan to the suppliers. Preparing the “Database” and “Returning the loaned goods to the suppliers” will likely to be challenging that may be negotiated by proper plan, implementation and follow up activities. Networking the resources can play a vital role in “Bringing Back Normalcy in Life” after any disaster.

Keywords: Disaster Management, Data Based Management, Supply Chain Management, Local Resource, Information Technology, Networking resources.

Introduction

Dictionary meaning of disaster refers to the “adverse happenings/incidents usually occurring suddenly and unexpectedly”. We may define disaster as “an event that may be natural or man-made, sudden or progressive, seriously disrupts the functioning of a society, causing human, material or environmental losses of such a scale that exceeds the ability of the affected society to cope using only its own resources”. Natural disasters are those hazards that result from actions or effects of natural elements or agents such as weather, flood, volcanic eruption, earthquake, landslide and avalanche. There are some man-made disasters also that occur from man’s act of commission or omission. These types of disasters include road, air and train accident, boat mishap, explosion, civil disturbance, war and terrorism. ‘Disaster Management’ refers to the management of both the risks and the consequences of disasters. Disaster management refers to the series of steps taken by a nation that pulls the resources of relevant bodies and organizations within its territory towards preventing, preparing, responding and recovery from disasters. The organizations could be civil, para-military, military or private and government institutional mechanisms.

Bangladesh has an extensive disaster management institutional mechanism. Our disaster management system is more of a reactive one than that of proactive. Reactive posture of disaster management system some time cost heavy. It may not be wise to deploy the disaster management mechanism round the year but identifying the *Critical Resource and Manpower* requirement and ensuring the availability of those in time of crisis may make a huge difference in overcoming *Critical Challenges*.

After any disaster “**Bringing Back Normalcy in Life**” is a major challenge. Various case study, analysis, research paper and experience shows that, at district, upazila, union, and ward-level disaster management capacities are still very limited and they have even scarcer resources. Some mechanism or an indigenous model (cycle) in identifying and making resources available can save many lives as well as bring back normalcy in disaster affected areas.

TYPES OF DISASTER IN BANGLADESH

Bangladesh is a developing country which is one of the worst sufferer of various natural disaster. Out of total 64 districts, 19 southern districts close to the Bay of Bengal are usually called coastal zone. Natural disasters like cyclone, flood, drought, landslide etc regularly causing destruction to the infrastructures, inhabitants and ecosystem of Bangladesh specially the coastal zone thereby adversely affecting the development efforts of the country. Destructive tropical cyclones associated with storm surge, hit Bangladesh particularly in pre-monsoon months of April-May and post-monsoon months of October-November.

Topography and Vulnerability of Bangladesh towards Disaster

Bangladesh is generally a low-lying country located in South Asia with a largely marshy jungle coastline of 710 km on the northern littoral of the Bay of Bengal. Topography is formed by a delta plain at the confluence of the Ganges (Padma), Brahmaputra (Jamuna), and Meghna Rivers and their tributaries which is vulnerable to flood and drought. Bangladesh has a tropical monsoon climate characterized by heavy seasonal rainfall, high temperatures, and high humidity which makes it very vulnerable for any disaster.

Table 1: Natural Disasters and its Effect in Bangladesh

Year	Disaster	Death
1965	Cyclone	19,279
1966	Cyclone	850
1970	Cyclone	3,00,000
1985	Cyclone	11,069
1988	Flood	2,373

1988	Cyclone	5,704
1989	Drought	800
1991	Cyclone	1,38,882
1996	Tornado	545
1997	Cyclone	550
1998	Flood	1,050
2004	Flood	747
2007	Flood	1,071
2007	Cyclone (SIDR)	3,363
2009	Cyclone (AILA)	190

Source: Page 6-7, National Plan for Disaster Management 2010-2015: Bangladesh

Extensive rainfall and its funnel like coast enhance flooding and invite cyclones. Flood, Cyclone, Drought, Landslides, Earthquakes and Tidal Surges ravage the country almost every year. Out of all the disasters that hit Bangladesh, Tropical Cyclone caused the maximum damages and casualties. Number of cyclones hit Bangladesh, causing irreparable damage in our growth and development. Crops, buildings, roads, bridges, trees, houses, infrastructures etc are highly vulnerable towards cyclone.

DISASTER MANAGEMENT IN BANGLADESH

“The National Plan for Disaster Management for 2010-2015” is prepared basing on the global and regional commitment of the Government of Bangladesh (GoB). GoB Vision on disaster management has also contributed in the plan. The Disaster Management Vision of the GoB is “*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*”. Impact of natural and man-made disaster threats including issues of climate changes are well discussed with a view to identify the needful for GoB.

National Disaster Management Plan (DMP)

GoB has taken a number of significant steps to build up institutional arrangements from national to the union levels for effective and systematic disaster management in Bangladesh. Disaster Management Bureau (DMB) was established in 1992 to advise GoB on all matters relating to disaster management. According to the website of DMB and “Wikieducator”, about 2,023 cyclone shelters, 200 flood shelters, long coastal embankment of 3,931 km and drainage channels of total length 4,774 km have so far been constructed as part of the structural mitigation measures. During the last four decades 482 water and flood control projects have been implemented. Councils and Committees have been formed down to the grass root level for fighting disasters. Comparative studies of major disasters (as mentioned in Table:1) of recent years indicate that the disaster management capacity has enhanced significantly which resulted reduced human sufferings and the economic losses. However there is a lot of scope to improve in the field of present disaster management aspects in Bangladesh.

National Disaster Management Institutions

At the national level we have National Disaster Management Council (NDMC) headed by the Honourable Prime Minister to formulate and review the disaster management policies and issue directives to all concerns. At sub-national that is at the District level there is a District Disaster Management Committee (DDMC). The DDMC consists of the Deputy Commissioner of the District as the chairperson and members comprising all District level department heads, NGO leaders and civil society members. District Relief and Rehabilitation Officer (DRRO) acts as member secretary of the committee. Members of Parliament act as advisors of the committees.

Upazila Disaster Management Committee (UZDMC) is headed by the Upazila Nirbahi Officer (UNO) to coordinate and review the disaster management activities at the Upazila level. Union Disaster Management Committee (UDMC) is headed by the Chairman of the Union Parishad to coordinate, review and implement the disaster management activities of the concerned Union. Pourashava Disaster Management Committee (PDMC) is headed by Chairman of Pourashava (municipality) to coordinate, review and implement the disaster management activities within its area of jurisdiction. City Corporation Disaster Management Committee (CCDMC) is headed by the Mayor of City Corporations.

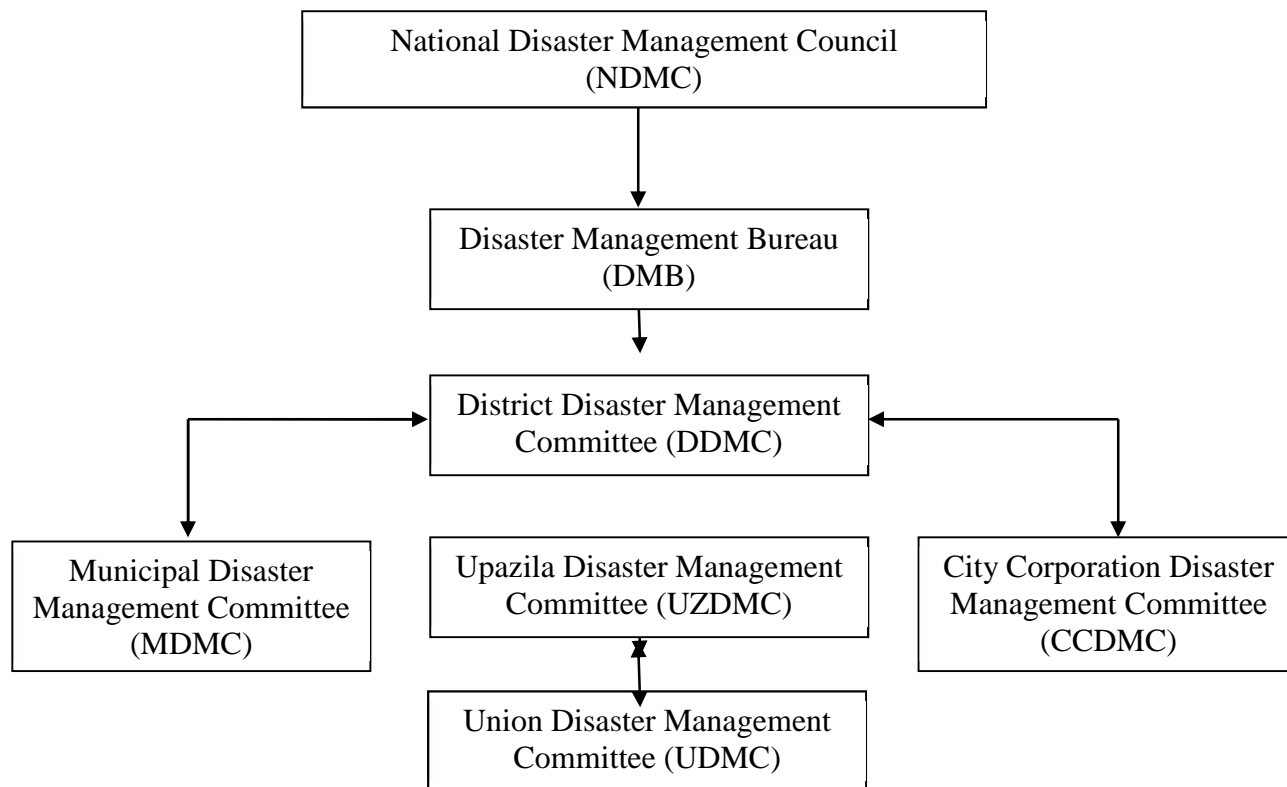


Figure: Disaster Management Council at Various Level

(Source: Prepared by author from the concept of National Plan for Disaster Management 2010-2015: Bangladesh)

Scope of Improvement in Bringing Back Normalcy in Life

Communication network is of paramount importance for immediate and first hand response in implementing a DMP. Even after allotment of relief by the government, the DMC's at various level find it challenging to transport relief goods including lifesaving equipments to disaster affected areas because of the disrupted and sometimes destroyed communication system. Even the electricity, telephone, gas, water, mobile networks etc all goes down partially or even completely which makes the **"Bringing Back Normalcy in Life"** difficult and sometime impossible. We all know that *time* is a challenging issue when the question of supply of relief goods in disastrous area is concerned. We may get lot of resources to face the disaster and to bring back normalcy in life but assistance and support *at the first instance* cannot be denied.

Readiness to Provide Support at the First Instance

Now the question is, **"are the disaster management institutions in a position to support at the first instance?"**. If we analyze the experience of "Cyclone SIDR" and "Cyclone AILA" then it becomes evident to us that, disaster management institutions could not reach at the first instance to support the

disaster victim people and to bring back normalcy in life. People had to wait for the relief goods to come to the upazila from district headquarter. Then only the DMC's at various level could go on with their relief distribution activities.

All the upazila of Bangladesh are now quite rich in terms of resources. We have life saving medical support even at Union Parishad level. There are number of markets, shops, medical center etc at Union Parishad level. We have skilled manpower who can contribute in bringing back normalcy in life if given with some resources that are readily available. A big difference in disaster management can be achieved by *best use of indigenous resources at the grass root level*.

DATA BASED MODEL (CYCLE) OF USING INDIGENOUS RESOURCES FOR DISASTER MANAGEMENT

Expected Data Based Dynamic Cycle.

Basing on the researchers experience, literature review, expert opinion expected findings of the research might be a **“Data based Dynamic Cycle to Disaster Management for Coastal Bangladesh”**. There is lot of indigenous resources at grass root level (Union Parishad or village level). For example, ration store, shop (grocery, hardware, sanitary etc), medical and health center, pharmacy etc. Besides there are association of shop owner, worker, employee, farmer, fisherman, student etc. These are resources in terms of man and material available at grass root level.

Usually lot of relief goods including life saving equipments are allotted for the disaster victim peoples after every disaster. These relief goods take its *time* to reach its target population. Due to obvious reason of disrupted communication network, transportation time is usually longer than normal. Even there are some areas for which relief goods are allotted and readily available in District Headquarter but could not be transported to desired destination due to disrupted communication system. Following **“FOUR STEP DYNAMIC CYCLE”** (at upazila level) may be considered to overcome this TIME factor. There are some **FACTORS** and **ELEMENTS** that are likely to contribute in all the steps. Following figure illustrates the proposed cycle:

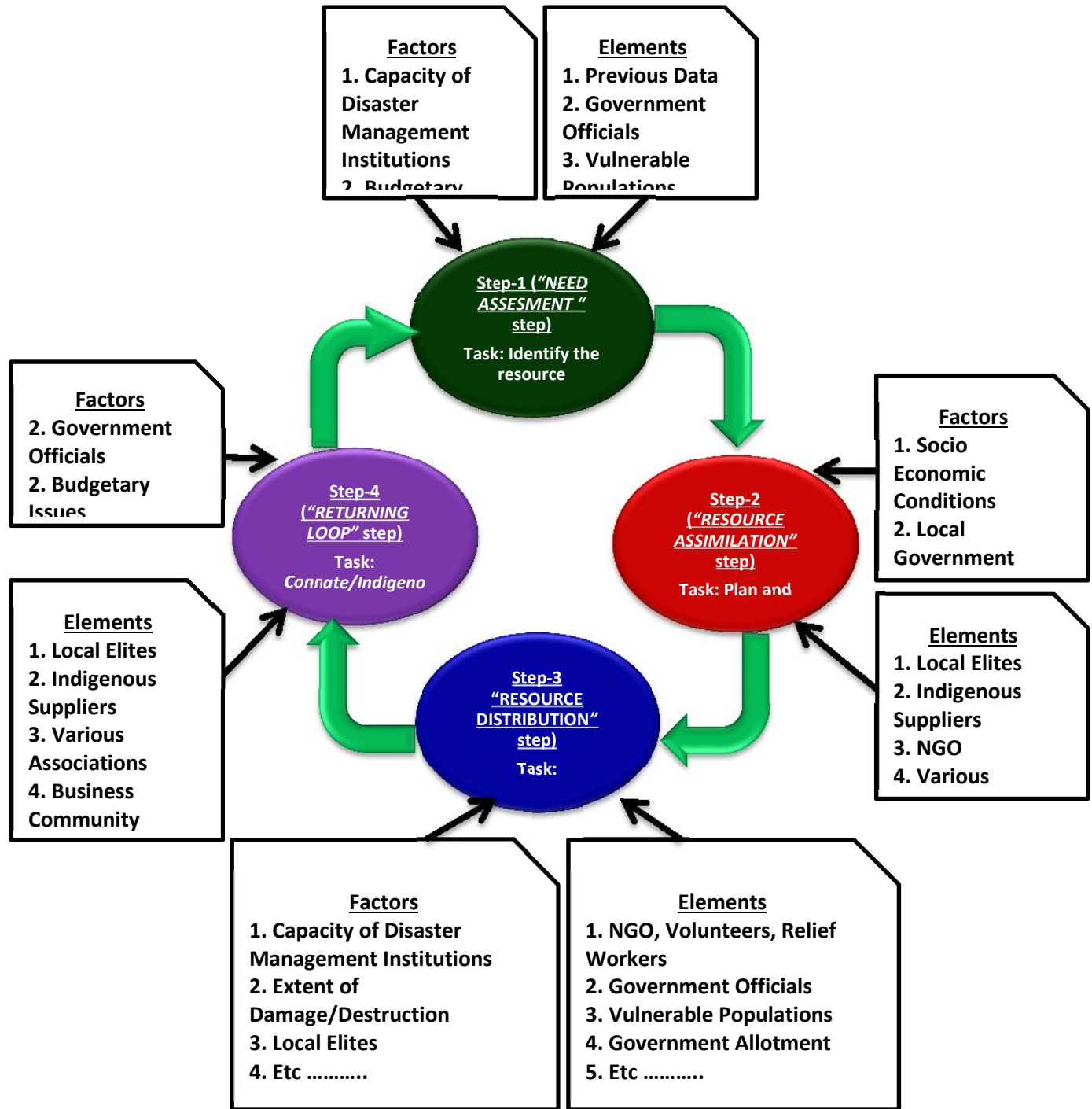


Figure – 2 : Four Step Dynamic Cycle
 (Source: Prepared by author to illustrate “Four Step Dynamic Cycle”)

Premises

The challenges of the post disaster miseries cannot be completely eradicated, but definitely can be minimized to a reasonable extent by adopting appropriate policy and implementing the same. However, there are several postulates for the model/concerted effort to be in operations. In fact, the postulated

sequences would be very much conditional to the local situations. In order to make it palatable to the local situation more testing of the proposed model will be of great use.

Followings are the few premises that should be taken care of;

- a. that the political situation (competing camp) would over ruled the post disaster crises,
- b. local administration (both governmental and elected) would not be contestant to each other,
- c. local elites, businessman, professional groups etc would act and assist the disaster management institutions to combat the crises.
- d. law and order situation will remain in control.
- e. disaster management institutions within the affected area will be in driving seat to combat the disaster.

Steps in “Four Step Dynamic Cycle”

Step-1:

Step-1 is the “**NEED ASSESMENT**” step.

1. First and foremost task is to identify the resource requirement in terms of material and manpower to “**Bring Back Normalcy in Life**” and until the relief goods from higher headquarter is not available in disastrous areas.

Step-2:

Step-2 is the “**RESOURCE ASSIMILATION**” step.

1. Plan and search for the indigenous sources for the resources as identified in step-1.
2. Volunteers to sacrifice their resource may be in the form of *loan or donation* should be given preference. Without ensuring the availability during the time of crisis, the sources should not be planned.
3. Material resources may be acquired from the *Connate/Indigenous Suppliers*. They may be the local shop owners, farmers, fishermen or anyone who is in a position to assist may be on loan or in the form of donation. Factors like *Sales Turnover, Tax/VAT* statistics etc may be used to divide the total requirement among the *Connate/Indigenous Suppliers*.
4. Manpower resources for undertaking the relief and rescue operation may be provided by the *Indigenous Manpower Suppliers*; may be shop owners association or any other association/society/club/organization etc. UZDMC and UDMC may utilize these indigenous manpower suppliers to collect indigenous resources and conduct relief and rescue operation.

Step-3:

Step-3 is the “**RESOURCE DISTRIBUTION**” step.

1. On declaration of the disastrous situation by the DDMC, UZDMC will issue necessary instruction for disaster management. Once UZDMC will get the allotment of relief goods from DDMC, basing on that allotment *Connate/Indigenous Suppliers* should place the preplanned resources in predestinated places. Responsibility of the *Connate/Indigenous Suppliers* will be to ensure the availability of indigenous resources.
2. UZDMC and UDMC will utilize the *Indigenous manpower resources* to transport, store, manage and distribute the indigenous resources.

Step-4:

Step-4 is the “**RETURNING LOOP**”.

1. Once the relief goods from the district or from other sources will be in the hand of the UZDMC, than the *Connate/Indigenous Supplier’s* resources should be refilled with whatever they have provided on loan. This refilling may be done in terms of money or with other goods in cost to cost basis. Responsibility of the UZDMC will be to ensure that *Connate/Indigenous Suppliers* are refunded as soon as possible.
2. If *Connate/Indigenous Suppliers* has spared their resources in the form of *donation* than that may not be refilled with.

Example. Following example may help us to get an insight of the proposed dynamic cycle:

Step-1 (NEED ASSESSMENT):

1. Let us consider a Union Parishad named as “Nazirpur”. UDMC of Union Parishad “Nazirpur” has identified the resource requirement list. According to that list, total 5000 kg rice, 50 country boats (considering only two item “rice” and “boat” for transporting relief goods) will be required for “Nazirpur” to run all the cyclone shelters for 3 days.

Step-2 (RESOURCE ASSIMILATION):

1. There are 100 shops that sell rice in “Nazirpur”. Basing on the “Sales Turnover” this 5000 Kg of rice may be planned from each shop (*Connate/Indigenous Suppliers*).
2. Similarly local fisherman, country boat association etc may be planned to provide 50 country boats for conducting relief operation.

Step-3 (RESOURCE DISTRIBUTION):

1. On declaration of the disastrous situation from DDMC and UZDMC (marked with red arrow in the diagram) let us consider that 3000 Kg rice and One Lac taka is allotted to UZDMC.
2. *Connate/Indigenous Suppliers should* make readily available this 3000 Kg rice in predestinated places for collection by UDMC.
3. *Connate/Indigenous Suppliers should* also make available 50 country boats for transporting relief goods.
4. UDMC should utilize the indigenous manpower resources (may be shop owners association but which must be preplanned) from various association groups to collect these indigenous resources from *Connate/Indigenous Suppliers* and deliver it to predestinated cyclone shelters/ relief workers/ concerned organization or institution (marked with green arrow in the diagram) with the help of 50 country boats.

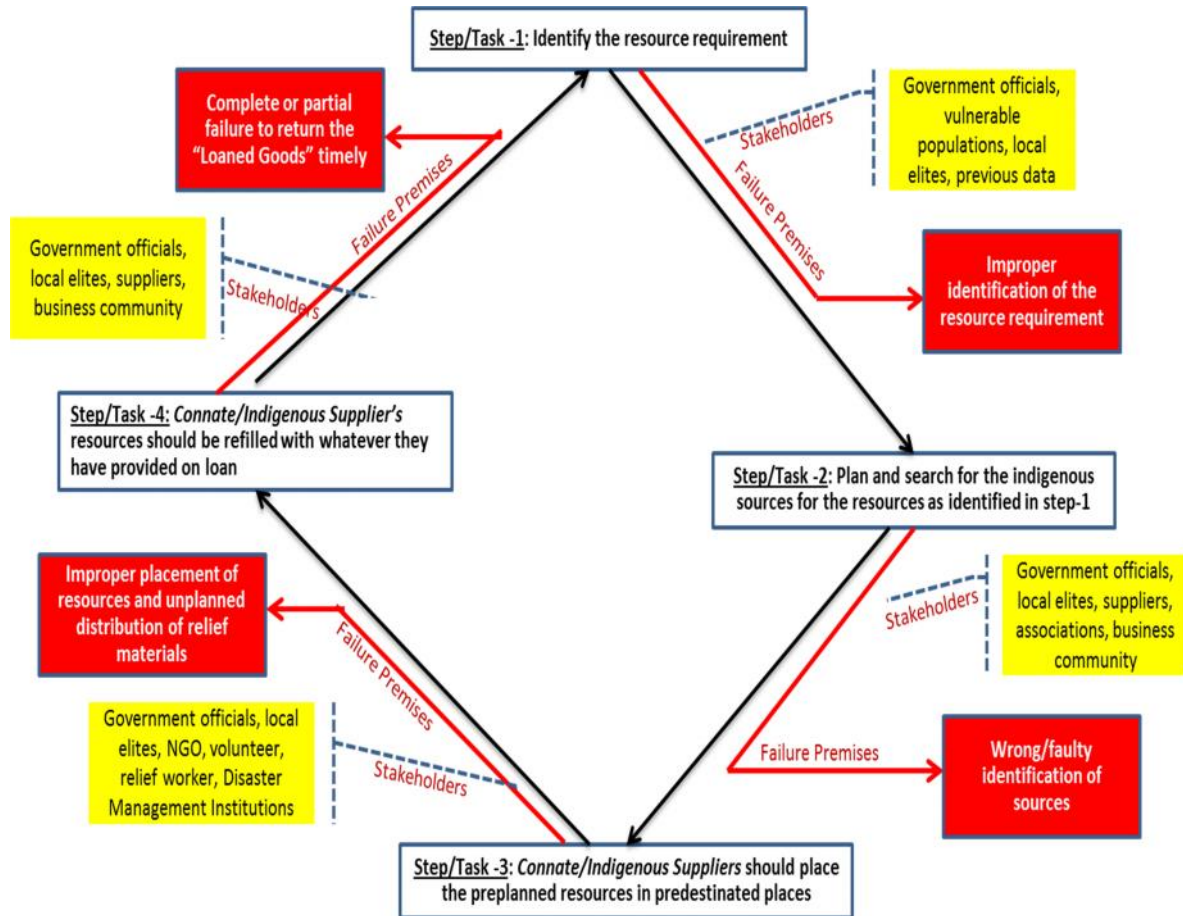
Step-4 (RETURNING LOOP):

1. Once UZDMC receive relief materials (may be in terms of money or goods), *Connate/Indigenous suppliers* should be returned (marked with black arrow in the diagram) with their 3000 Kg rice or cost of it. UZDMC will utilize the money to pay the rent or fuel cost of the hired country boats from indigenous suppliers.
2. However if *Connate/Indigenous suppliers* have donated the resources (here 3000 Kg rice and rent/fuel cost of 50 country boat) than they may not be returned with their resources.

7.5 Failure Premises in Four Step Dynamic Cycle

Four step dynamic cycle is affected by number of stakeholders at various steps. The activities, functions and ultimately the performance of the stakeholders shape up the functionality of the cycle. Failure premises are defined in the following figure which indicates that the cycle will not function or the cycle will lead to failure if the stakeholders are following the failure premises.

Figure – 7.3 Failure Premises of Four Step Dynamic Cycle



(Source: Prepared by author to illustrate Failure Premises of “Four Step Dynamic Cycle”)

Failure Premises of Various Steps are as Follows:

- a. Step/Task-1: The task in step 1 is to identify the resource requirement. The stakeholders are Government officials, vulnerable populations, local elites, previous data etc. The stakeholders will do the needful to identify the resource requirement. Previous data will likely contribute a lot in doing so. The failure premises for this step may be defined as “Improper identification of the resource requirement”.
- b. Step/Task-2: The task in step 2 is to plan and search for the local sources for the resources as identified in step-1. The stakeholders are Government officials, local elites, suppliers, associations, business community. Stakeholders will have to sweat a lot to identify the sources. There may be some source which may not have the potentiality and again there may be sources that do not have the interest to contribute in the system. Stakeholders must not fail to understand this difference. The failure premises for this step may be defined as “Wrong/faulty identification of sources”
- c. Step/Task-3: The task in step 3 is to *Connate/Local Suppliers* should place the preplanned resources in predestinated places. The stakeholders are Government officials, local elites, NGO, volunteer, relief worker, Disaster Management Institutions. The failure premises for this step may be defined as “Improper placement of resources and unplanned distribution of relief materials”

d. Step/Task-4: The task in step 4 is to *Connate/Local Supplier's* resources should be refilled with whatever they have provided on loan. The stakeholders are Government officials, local elites, suppliers, business community. Stakeholders must not fail to ensure the returning of loaned goods. Failure to do so will have a serious adverse effect on the contributors and will surely jeopardize the cycle. The failure premises for this step may be defined as "Complete or partial failure to return the "Loaned Goods" timely".

Merits and Opportunities Offered by the Cycle

1. UZDMC will have a **"Database"** of resource and manpower requirement to combat disaster.
2. DMC's at all level will have the flexibility to be **"Proactive"** to reach target population within shortest possible time.
3. Maximum utilization of the local logistic resources to **"Bring Back Normalcy in Life"** is ensured.
4. Providing support at the **"First Instance"** can be ensured. DMC's will not have to wait for the relief goods to arrive at their hand; they just need the allotment from higher headquarter.
5. During the time of disaster **"Storing, Preserving, Selling"** the resources by the local shopkeepers/businessman may be challenging and even impossible due to the destruction caused by the disaster. Rather **"Utilizing the resources in time of need and getting it back later"** is surely a better option for them.

Demerits and Challenges of the Proposed Cycle

1. Preparing the **"Database"** of resource and manpower requirement will likely to be **"Costly"** and challenging.
2. Local suppliers may not be interested to take part or **"Contribute"** in the process.
3. Local suppliers may not make his **"Resources Available"** even after committing to do so.
4. **"Returning"** the local logistic resources to the local suppliers will likely to be very challenging considering the socioeconomic aspect of our country.

Policy implication

"FOUR STEP DYNAMIC CYCLE" will automatically impose some policy implication on government and non-government organization. Taking loan from local businessman, preparing a database of requirement, giving limited access to the non-government organization to this database etc. need to be addressed by some policy at government level. "FOUR STEP DYNAMIC CYCLE" will need some administrative reforms since it involves local administration to hire some resources from local businessman.

CONCLUSION

We cannot get rid of disaster but surely we can reduce the sufferings of the people caused by the disaster. The success story of Bangladesh in terms of disaster management has earned due respect from all stakeholders. However there is no end to improvement. We now have a National Disaster Management plan and DMC's are formed at all levels. Indigenous resources are of great value when the question of **"Bringing Back Normalcy in Life"** is concerned. It is of utmost important for the DMC's to identify and plan the Connate/Indigenous resources for the disaster victim peoples. The merits and opportunities offered by the proposed Cycle are enormous. DMC's at all level can hit the disastrous areas at the first instance along with required life saving relief goods, services and support. Challenges of the proposed Cycle can be negotiated by honesty, sincerity, hardwork, motivation, education etc. Demonstration, exercise, seminar, workshop etc can add in capacity building of the DMC's in implementing the Cycle.

Education, Proper documentation and sound administration will play dominant role to negotiate the demerits.

RECOMMENDATION

Following may be Recommended:

1. “Verify the Feasibility” of the proposed Cycle. Prepare and plan for proper documentation and reports.
2. After verification, “prepare a software programe” to implement the “FOUR STEP DYNAMIC CYCLE”.

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