UNIT 8: LOGISTICS MANAGEMENT[1]

Structure

8.0 Objectives

8.1 Introduction

8.2 Logistics Management

8.3 Managing Logistics in Disaster Situations: Key Considerations

8.4 Logistics Control and Monitoring

8.5 Challenges Logistics Managements

8.6 Conclusion

8.7 Glossary

8.8 References and Further Readings

8.9 Answers to Check Your Progress Exercises

8.0 OBJECTIVES

1 After studying this Unit, you should be able to:

- Explain the concept of logistics management and bring out its relevance to disaster situations;
- Discuss the important considerations for supply equipment and transportation management as key components of logistics management;
- Examine the significance of documentation as a tool of logistics monitoring and control; and
- Analyse the challenges in managing logistics in disasters.

8.1 INTRODUCTION

Logistics constitute a primary component of disaster response operations. Logistics have been described as procurement and delivery of the right supplies, in the right quantities, in the right order, in good condition, at the right place and at the right time. Though logistics are of primary importance during disaster response operations, they also play a key role in recovery programmes. Thus, logistical considerations have to be fully taken into account during preparedness assessments.

1 ***Contributed by*** Dr. Vasim khan, Associate Professor, Economic and Management Dir Ahitya University Takshila Campus, Khandwa Road indore, M.P. and prof. ulma Medury, Formes Professor of Public Adminidraham IGNOU, New Delhi. The Unit is adapted from Dr. Rayan Ganga Unit 3 on Logistics Management MPA 005 on Disaster Management.

Before the word logistics came into wide international usage (principally in the military field during World War II), an alternative term used sometimes was "supplies and transport". These two latter activities, in fact, constitute the major components of logistics as currently applied to disaster management. The two activities are likely to be of most direct and practical concernb to disaster management. In this Unit, we shall be discussing the concept of disaster logistics, key considerations of logistics in managing disasters, role of documentation as a tool of monitoring and control of logistics and bring out the challenges of logistics management.

8.2 LOGISTICS MANAGEMENT

Logistics has an important place in disaster management activities. Different types of logistics requirements and activities are required in various phases. Logistics management in disasters also referred to as 'Disaster logistics' include procurement, storage and transportation of materials required by disaster victims. Disaster logistics is the management of information, transport and storage of goods in disaster area. It is described as the efficient and cost-effective flow, storage, planning, implementation and control of material from the first production point to the end consumption point to meet the needs of the people in disaster situations. As it acts as a bridge between aid materials and the area of occurrence of disaster, efficient flow of materials and aid to disaster areas is to be ensured. Logistics management with reference to disasters is that activity that focuses on organizing the delivery and warehousing of supplies during natural disasters or other emergencies to the affected area and people. Disaster logistics is based on the type, severity and features of the disaster.

The management tasks during any disaster become largely a multi-stakeholders' involvement, Hence, several organisations engaged in disaster response may have their own logistics arrangements. Generally in India, the District Collector plays a key role in handling the logistics in emergencies. For example, during the Gujarat Earthquake-2001, the logistics arrangements of the government were handled by the District Collector of Bhuj and the staff assigned for assistance, whilst the logistics arrangements of United Nations agencies were handled by the logistics centre set up in Bhuj by the World Food Programme.

The person handling logistics has the responsibility to manage and supervise logistical and aviation support to the incoming disaster managment teams, ensure that the teams receive supplies, equipment and services. During disasters, a typical logistics manager (or logistics coordinator) orders, receives, distributes and tracks the incoming and outgoing relief commodities. The logistics coordinator/manager usually reports to the team leader. The following sections focus on specific aspects of the logistics in disaster management, namely Search and Rescue, Evacuation, Supplies, Transportation, Equipment, Hygiene and Sanitation, as well as Documentation.

The four major functions of logistics are inventory management, transportation management, order processing and warehouse management. The Phases of logistics management activities in managing disasters encompass:

Preparedness Phase: This is the most important stage that involves assessment of resources, vulnerabilities, initiation of information education and communication activities, procurement of required materials such as food, drinking water, medical supplies, basic aid materials etc. In preparedness stage, the installation of logistics centre where aid materials stored has an important role.

Response Phase: Once a disaster occurs, making arrangements in ensuring the supplies to the site of the incident for the affected, becomes an important activity.

Reconstruction and Rehabilitation Phases: These are the most crucial phase where along with the reconstruction and rehabilitation measures, effective supply management plans need to be in place. The reconstruction of infrastructure, houses, creation of livelihood opportunities etc. require varied types of logistics activities.

For a full-scale logistics operation, the following facilities will be needed: ● offices and administrative equipment, ● warehouses at various levels, fuel and spares stores, workshops, ● vehicle parks/motor pools, vehicles for management staff, fleet of trucks, special vehicles such as cranes, tankers and cargo-handling machines, ● communications equipment, and ● accommodation. The resources for a logistics operation usually come from a variety of organisations, from one's own organisation, from the national authorities, from relief organisations, or from the private sector. The types of supplies and materials needed varies in various activities of disaster management. Our Next Section brings out these aspects.

8.3 MANAGING LOGISTICS IN DISASTER SITUATIONS : KEY CONSIDERATIONS

Search and Rescue

Search and rescue involves assessing the situation, determining safe action plan, locating the victims, use of procedures and methods to rescue the victims. Over the past two decades, disasters in heavily populated areas around the world have increased the need for sophisticated Search & Rescue (SAR) capabilities to assist trapped victims. Recent improvements in technology have also increased the ability to locate, medically treat and rescue trapped victims. Many countries have developed a SAR capability and routinely send teams of well-trained experts to assist other countries in times of need. In India over the years the creation of National Disaster Response Force (NDRF) has been a significant initiative, which has been at the forefront in all SAR activities.

Various tools are needed depending on the nature of disaster in SAR operations. This includes lighting, multi-tool, crow bar, shovel, hammer, nails, ropes, etc, For example in road accidents hydraulic rescue tools are used by the emergency rescue personnel in extricating the victims. In the recent Mumbai ferry tragedy in December 2024, a naval helicopter and boats of Navy and Coast Guard were deployed in SAR operations.

It should be noted that initially in India, there has not been a developed search and rescue capability as compared to some of the advanced nations. In India, traditionally and routinely, these tasks were performed primarily by the Indian armed forces assisted by the local residents and at times, other organisations. However, learning from some of the recent disasters that have struck our country, all efforts are being made to develop such capability within the country, especially within the local emergency management authorities.

Now, India has multiple teams performing SAR operations during disasters including the National Disaster Response Force (NDRF), Aapda Mitra, Himalayan Heli. The NDRF has 16 battalions drawn from CRPF, Indo-Tibetan Border Police (ITBP), Seema Sashastra Bal (SSB) and Assam Rifles. Aapada Mitra is a programme that trains community volunteers to assist in disaster response in disasters. Himalayan Heli is a helicopter operator that has conducted SAR operations for stranded and sick mountain travelers. SAR teams play a vital role in assessing the situation, rescuing those trapped in a disaster, providing medical assistance and coordinating with other emergency services.

The search teams are expected to have the capability to perform physical search consisting of conducting interviews with survivors and a systematic movement across the site while listening to calls for help; canine search (search by dogs specially trained to find trapped victims under debris of fallen structures and avalanches) and electronic search using sophisticated listening and seismic equipment. These three primary types of searches allow search personnel to focus on the most important potential rescue opportunities.

Prior to initiating search operations, the team must determine the search strategy to be followed. This should be based on detecting and locating the greatest number of victims in the shortest amount of time. A plan should be developed, which prioritises the search opportunities based on a few factors, including occupancy, time of day, and local information on missing people. The search team is usually tasked with determining the type of assistance needed in particular situations as follows:

- Technical equipment and dogs;
- Type of lifting, pulling, cutting, digging and lighting equipment required for rescue operations;
- Medical assistance needed to oversee and aid the process of victim extraction; and
- Special operations required to remove hazardous material, demolition, and shoring of dangerous structures.

Keeping in view the above, the logistics need to be worked out to ensure smooth supply of materials. As a cooperative effort by the United Nations, the International Search and Rescue Advisory Group (called INSARAG) was formed in 1991. The Secretariat of INSARAG is located at the Geneva Office of the United Nations Office for the Coordination of Humanitarian Affairs known as OCHA now, what was earlier called first the UN Disaster Response Organization (UNDRO) and later the Department of Humanitarian Affairs (DHA). The INSARAG participants have developed a common understanding

of the functions and operations of SAR teams a which have resulted in the development of the International Search and Rescue Response System. The INSARAG Guidelines prepared by this group provide an overview of the system.

- **Rescue and Evacuation**

The rescue operations follow the search phase and are focused on extricating the greatest number of victims in the shortest amount of time, prioritising technical rescues that cannot be addressed by local resources. Based on the search results, the team must prioritise the rescue sites and determine what resources are to be committed to a rescue site based on potential success. Generally, rescue operations are prioritised based on rescues that are easily achievable and moving on to those that are more complex. A rescue plan ensures that all efforts are brought to bear in a systematic and coordinated manner, using the most up to date intelligence about the victims and buildings.

"Evacuation" refers to moving people at risk to a safer environment. The evacuation of communities, groups or individuals is a frequent requirement during response operations. Evacuation is usually precautionary in most cases undertaken on warming indicators, prior to impact, to protect disaster-threatened people from the full effects of the disaster and post-impact taken up to move persons from a disaster-stricken area into safer, better surroundings and conditions.

Population at risk are those groups of people adversely affected by a disaster, natural or human-made, who have been placed in situations where they are at an increased risk. They are at risk because of the disruption or loss of their normal community and social support systems that provide the critical elements of their survival: water, food, shelter, healthcare and sanitation.

It should be noted that evacuation is possible only in those events where an early warning of the forthcoming disaster is available. For example, upon receiving a warning message regarding a forthcoming cyclone or rising river levels, the population from the vulnerable areas (which are likely to be hit by the cyclone or get flooded) could be moved quickly to other safer locations. The standard evacuation kit or survival kit for such evacuees should contain the following items:

- Non-perishable food and water;
- Emergency supplies last for at least 3-4 days (or more, depending upon the projected severity of the forthcoming cyclone/flood);
- Personal items including clothes, shoes, blankets/sleeping bags:
- First aid kit and essential medical supplies: and
- Rescue kit containing a paddle, rope, iron hooks to tow belongings and/ or other rafts, containers to bail out water, torches, lanterns, candles, a transistor, an anchor, life jackets or tyres and other floatable objects.

The longer the negative impacts on populations at risk increase, they are displaced from their homes becomes imminent. As such, it is essential that the evacuation operations are taken up by organisations that are well-trained

in handling such matters. Local residents' clubs, local organisations and local NGOs who possess first-hand knowledge about safer and convenient grounds for moving people, as well as animals could be relied upon in working out evacuation plans. Such evacuation plans need to be well conceived prior to any disaster and should contain arrangements for stockpiling of essential supplies of food, drinking water, temporary shelter, medical care as well- as special requirements of children, the aged and ailing and expectant mothers.

In India, the District Collector through the Relief Commissioner (or Relief Secretary) of the State keeps in regular contact with the India Meteorological Department (based in New Delhi with observation station spread out) keeping an eye on the warnings for floods and cyclones. If a warning is received and an assessment of threat to people and property is made, the evacuation procedures are then initiated by the Collectorate.

- **Supplies**

The term 'supplies' in the disaster response context is understood as 'relief supplies and commodities'. The ready availability of relief supplies and commodities is an important factor in effective response. After the disaster, there is usually an urgent need to provide and distribute: food, drinking water, essential clothing, shelter materials, medical supplies and assistance for medical care, sanitary facilities.

Given that major disasters make big news not only in the country but across the world, it becomes most important to manage the incoming relief supplies and commodities that begin to flow to the affected area from within and outside the country. Experiences show that unless well-thought out in advance and well-coordinated, the management of relief supplies is exposed to the threat of mal-practices and large-scale wastage of resources.

Various response tasks need the use of various forms of operational capability, usually in the form of vehicles, boats, aircrafts. They also require the availability and utilisation of various forms of supplies which may include:

- Petrol, oil and lubricants;
- Technical spare and repair parts;
- Personnel subsistence and support commodities, including food, medical and health items, tents and so on; and
- Administrative items of various kinds, for instance, standard report forms and other requirements for survey and assessment.

During response operations, the availability of commodities is likely to be hampered by the disaster impact. Disaster management authorities, therefore, need to keep an ongoing operational check of the balance between:

- Assessment of commodity needs progressively updated by survey and assessment action;
- Availability and timing of in-country/local commodities; and
- Access and timing of international assistance supplies (in the event, international assistance is welcomed.

Forecasting supplies management is a challenging task for the disaster management authorities. Such forecasts, when attempted in detail in advance, provide a reasonably accurate picture of how logistic aspects would apply to a particular disaster situation. For instance, in case of major flooding, a forecast could be made of:

- What supplies and transport facilities might be lost or cut off, and for what period (like supplies inundated, roads cut or washed off);
- What areas would be accessible or inaccessible for supply purposes;
- What effects the evacuation of communities would have on logistic requirements, in terms of both evacuation movement and the subsequent supply of essential commodities to the evacuees; and
- What special logistic items might need to be brought in to reinforce existing capability (like special flood boats for rescue and/or relief supplies purposes).
- **Transportation**

The effective distribution of relief supplies and commodities is largely influenced by the availability of transport and the serviceability of transport systems. For this reason, some advanced countries are always researching innovative methods of transporting relief supplies and commodities. In some countries collapsible hospital kits have been in place that could be transported on horsebacks (or mule backs) to areas with difficult terrain.

It may be recalled that during Gujarat Earthquake 2001, along with the Turkish Military Hospital set up in Bhuj by the Turkish Army, the Danish government had also flown in a 50-bedded mobile hospital (flown to Mumbai first and then transported to Gandhidham near Anjar by ship via Kandla port and further by road) that began conducting orthopedic surgeries from 31 January 2001. The search for easy to transport equipment (like mobile hospitals, water purification systems and water storage tanks, emergency vehicles, medical equipment, tents for setting up logistics centres and smaller coordination camps etc.) during disasters is thus continually progressing. Effectiveness of response is thus determined by the following conditions:

- Loss and/or damage inflicted by the disaster on the access routes;
- Flexibility in transport capacity and systems, especially the ability to switch resources from unaffected areas to disaster-stricken areas;
- Ability to procure transport resources by requisitioning and/or charter;
- Difficulties of transport access to some stricken areas, due to remoteness, severed communications or severe disaster effects;
- Limitations or benefits resulting from preparedness, for instance, earmarking (or otherwise) of emergency transport capability in plans and departmental standard operating procedures; and
- Types of transport available (for instance, remote mountain areas or areas which are isolated by disaster effects cannot be supplied unless airlift/ airdrop capability is available; limited four-wheel drive capability may also be a restrictive factor).

Communities with strong leadership, authority and self-governance certainly aid the process of response. The optimum use of self-help from stricken communities facilitates transportation of supplies. In many cases it has been found expedient to deliver bulk supplies (by boat or airdrop) to various convenient points from which they can then be collected by responsible community representatives or groups and further distributed to affected families as required.

On a preparedness basis, the following sources of transport could be assessed:

Roads: Government transport capability, commercial transport capability for charter or requisitioning, private vehicles for charter or requisitioning, international agencies and contractors working on in-country projects;

Rail: Railway network, stations etc.;

Inland Waterways: River and canal shipping systems, with capabilities and restrictions, government and commercial craft: private craft including local boats and canoes. which may provide vital transport to remote locations.

Sea, Coastal and Inter-Island Shipping: Government vessels; commercial vessels for charter or requisition; private craft (e.g., launches, motorboats); and

Air Transport: Accessible airports with facilities.

In disaster logistics, infrastructure for logistics management should be established to transport the materials in the right place, right way and right time safely with minimum costs. The transportation mode depends on the material to be sent. The transportation of supplies in disasters to distant remote places are becoming better with technological tools like GIS, GPS etc.

- **Equipment**

The term "equipment" in the disaster response context, refers to a wide range of equipment used by disaster managers and rescue workers to assist the affected community. There are a variety of equipment that are used by national as well international teams in saving lives and rescuing entrapped victims. Such equipment includes gas cutters, earth moving equipment, tents, water storage tanks, plastic sheeting, hard hats, face masks, gloves, cranes, dumper trucks, water truck tankers etc.

The need for a particular type of equipment is determined by the nature of disaster emergency and the extent of its impact. For example, the equipment support following a major earthquake will contain largely the equipment for removal of debris of fallen structure (like earth moving equipment, bulldozers, cranes, gas-cutters, shovels, axes and spades), transportation, medical care, immediate shelter provision (plastic sheeting, tents, temporary construction materials such as tins, bamboos, etc.), food supplies, drinking water, mobile hospitals and mobile sanitation facilities etc. In case of flooding, the equipment support would largely contain boats of various types, plastic sheeting, movable food stocks, vaccinations and other medical care.

- **Specialist/Medical Support Equipment**

Medical or Specialist Equipment and personnel could be a part of the module

depending on the needs of the mission, for instance, nurse with basic medical equipment, air traffic controller for controlling incoming aircraft/helicopter at disaster site.

The equipment carried by assisting teams to the site of disaster follows the principle of "self-sufficiency". As time is short during any disaster and as the challenging task is to save maximum lives in the shortest possible time and prevent further damage to property and infrastructure, the groups assisting the local administration and the affected people do not intend to be a burden and hence go to help being self-sufficient.

To be effective during the response phase, the logistics coordinator needs to consider the availability of equipment, as well as the requirements for equipment prior to a disaster. Maintaining inventories of various types of equipment, their condition, location, modes of transportation, and the availability of skilled personnel to handle specialised equipment (operators) thus needs to be documented and checked periodically.

- **Hygiene and Sanitation**

Usually following a major disaster, respiratory infections, malaria, diarrheal diseases and other common diseases need to be dealt with in a decentralized network of healthcare facilities (health centres and health posts, health camps). Organising these in situations where there are many different operating partners requires good coordination amongst them. Manuals and guidelines allow standardisation among partners regarding essential drugs and therapeutic policies. Medical needs (material and drugs) are to be quickly assessed in anticipation of outbreaks of diseases known to occur locally. Experience acquired by health practitioners over the past management of disasters has led to the creation of "kits" of essential drugs and materials.

During the response phase, the common "health and sanitation" concerns of the affected population include the following essentials to be met:

- Doorstep delivery of medical assistance;
- Administering first-aid to the injured and shifting patients to the nearest medical care units/clinics/hospitals;
- Assisting doctors in facilitating medical aid and assistance in remote locations;
- Identification and purification of safe drinking water sources;
- Ensuring temporary sanitation facilities near the shelter sites;
- Awareness on health and hygiene to prevent epidemics, and
- Launching cleaning operations soon after the disaster.

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Explain the concept of logistics management.

.....

.....

.....

.....

2) List the items to be included in the evacuation kit.

.....

.....

.....

.....

3) Identify the health and sanitation concerns of the affected population.

.....

.....

.....

.....

8.4 LOGISTICS CONTROL AND MONITORING

- **Documentation**

In ensuring proper control and monitoring of logistics, proper documentation that reflects the records of supplies at various phases is a key tool. In the chaotic circumstances which tend to exist following a disaster, it is often not easy to obtain accurate and complete information. However, without accurate and comprehensive information, it becomes difficult to ensure that response operations are focused upon the correct tasks in the right and desired order or priority.

- **Control Rooms and Emergency Operations Centres**

Control Rooms and Emergency Operations Centres are essential for effective information management. Such Centres ensure that information is correctly processed according to the proven cycle of: (a) acquisition of information, (b) documentation of information, (c) assessment of information, (d) decision making; and (e) dissemination of decisions and information.

- **Logistics planning**

Any logistics planning is required to contain information and control system, since accountability and monitoring of performance against realistic and continually assessed standards are important to the success of the operation and to the donors. To achieve this, procedures must be established for recording/documenting and reporting on the quantity, location and condition

of commodities, where and when they will move next, and who is responsible for them at each stage. This requires a set of requisition forms, waybills, stock records and reporting formats.

Following is an illustrative list of the type of documentation that is required to be taken up during logistics operations. There is a need to look at the various forms used. The nomenclature of such forms may vary from organisation to organisation and country to country, however, all such forms/reports/formats serve the basic purpose of documenting information vital to logistics operations.

SITREPS or Situation Reports: Brief updates describing the current situation at the disaster site with regards to the nature and magnitude of impact, actions taken by various stakeholders, immediate problems, resources available/ required to meet specific needs, hidden threats, if any. Such reports are issued frequently by a variety of stakeholders that are operating at the disaster site. These are usually in the form of updates on the changing situation at the site and apprise the world at large as to the progress of things.

Relief Commodity Movement Form: Used to document what is coming from what source and where is it going. This documentation is very crucial in determining that specific needs of specific groups/areas are being met and if not, what further actions are required.

Specific Resources Request Form: Intended for documenting specific/sector-based/ area-wise resource requirements.

Transportation Operations Form: Utilised to document what resources personnel, equipment, commodities and supplies move from what point to what destination.

Inventories: Various types of inventories used to document the availability of a range of resources, for example, (a) inventory of all organisations working in health in the affected area, (b) inventory of suppliers of tents and temporary shelter material.

Mapping: Used for documenting (a) worst-hit areas, (b) movement of Search and Rescue Teams, (c) location of various relief organisations, (d) location of local emergency management authorities like fire brigade, army posts, police stations, hospitals, communications centres, (e) key logistics features such as airfields or railway stations, (f) any security incidents, (g) hazards mapping, (h) tropical cyclone threat mapping etc.

Logbooks: Used for documenting all telephone and radio messages sent and received and action taken.

Notice Boards: Used for documenting and disseminating information regarding relief operations, coordination meetings, assessment missions, important contact coordinates (telephone numbers, email addresses, location of relief distribution centres etc.).

GIS Tools: Used for facilitating record keeping and documenting the status of ongoing work. As work is completed and identified, GIS can visually display current project status.

8.5 CHALLENGES OF LOGISTICS MANAGEMENT

Managing logistics in disaster situations has challenges to be met as handling of the situation needs resources of varied nature and magnitude. Some of them are:

Transportation bottlenecks: Many a time access to affected areas is affected due to damaged roads, hilly terrains, inundation of places due to floods etc. Such situations call for alternative routes and means of transport and communication such as helicopters, boats etc.

Delays in procurement and deliveries of supplies due to logistics supply chain disruptions.

Coordination issues: This is a major problem encountered as there are several stakeholders involved in provision of disaster relief and response. Lack of coordination results in delays and arbitrary allocation of resources. Sheu(2007) considered two problems as the main challenges in the distribution of facilities during disasters , including delays in the provision and allocation of resources and facilities among disaster victims and the lack of accurate and timely information about the amount and type of requirements of the affected population.

Resource constraints: Limited funding, fuel shortages, paucity of personnel pose problems.

Immediate response issues: These include insufficient warehouses, transportation constraints, distribution and supply challenges, overstocking and understocking, misallocation of resources managing donor supplies etc. Priyadarshini and Venkatachalam (2021), analyse the challenges in disaster logistics as coordination issues encountered with government agencies,local people, armed forces, media etc. Communication issues encompassing non-availability of internet, electricity etc.

Infrastructure issues: These especially pertain to transportation, warehousing and distribution.

Social issues: These relat to language and cultural variations.

Each phase of disaster has problem areas. For example, the major challenges associated with “relief supplies and commodities” are: (a) obtaining the various commodities from the government stores, emergency stockpiles, commercial supplies and international assistance sources (in the event, such international assistance is welcomed and accepted by the affected country); and (b) organising the distribution of these commodities according to the best possible orders of priority.

To overcome the challenges of managing logistics in disaster situations, certain measures can be taken as indicated below:

- Identifying disaster risks and developing a contingency plan
- Building a resilient supply chain
- Standardisation of supplies

- Streamlining supply logistics
- Inducing and utilisation of technology enabled logistics management
- Streamlining all key components of logistics process
- Ensuring coordination among all stakeholders including local community
- Disaster logistics is a specialised activity. Proper use of techniques and processes in managing logistics in crisis is the need of the hour.

Check Your Progress 2

Note: i) Use the space given below for your answers.

ii) Check Your answers with those given at the end of the Unit.

1) Identify the various reports/forms for documenting information in logistics operations.

.....

.....

.....

2) What are the challenges in logistics operations?

.....

.....

.....

3) What measures can be taken to overcome the barriers in managing logistics?

.....

.....

.....

8.6 CONCLUSION

Logistes management is the key to disaster perforedmess and mihgahon. In this Unit, we have discussed the overall aspects of logistics management as relevant to disaster response phase. Key components discussed in detail are that of procedures for Search and Rescue and Evacuation and the common practices for Clearance of Debris and. Disposal of Dead. Major concerns related to the Supplies, Equipment, Transportation and Health and Hygiene have also been outlined. The significance of documentation as a tool of monitoring and control was brought out.

8.7 GLOSSARY

Canine Search: Search made by specially trained dogs for tracing victims

(alive and/or dead) entrapped under fallen structures.

Emergency Operations Center: A Control and Command Post set up (usually at headquarters) to supervise all matters pertaining to a given disaster/emergency.

Evacuation Center: A center set up by the local authorities (or other organizations) for housing evacuees and supervising related matters.

Inventory Management: It refers to the process of storing, ordering and selling of goods and services.

Population at Risk: Groups of people exposed to threats concerning their life and/or property.

8.8 REFERENCES AND FURTHER READINGS

Adiguzel Selminaz, (2019), Logistics Management in Disaster, Journal of Management, Marketingand Logistics, Vol 6 (4). P212-224.

Carter, W. Nick, (1991), Disaster Management: A Disaster Manager's Handbook, Asian Development Bank, Manila.

Government of India, Ministry of Agriculture, Department of Agriculture and Cooperation, (2001), National Disaster Response Plan A Document prepared by the High Powered Committee on Disaster Management, New Delhi.

United Nations Office for the Coordination of Humanitarian Affairs, 2002, UNDAC Field Handbook, Geneva.

USAID, (1998), Field Operations Guide for Disaster Assessment and Response, Bureau for Humanitarian Response, Office of Foreign Disaster Assistance, Washington DC.

Koseoglu Ahmet Murat and Hatice Yildirmh, (2015), The Role of Logistics in Disaster Management and Disaster Logistics Management, Journal of Teaching and Education 04 (03), 377-388.

Priyadharshini,Leela and Venkatachalam,July (2021), Disaster Relief Logistics and its Challenges: An empirical study, International Journal of Multidisciplinary Educational Research, Vol 10, Issue 3 (1).

Sheu,jiuh-bling, (2007), Transportation of Emergency Logistics, Logistics and Transportation Review 43(6).

8.9 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1. Your answer should include the following points:

- Logistics management in disasters also referred to as 'disaster logistics' is the management of information, transport and storage of goods in disaster areas.

- It is the efficient and cost-effective flow, storage, planning, implementation and control of material from the first production point to the end consumption point to meet the needs of the people in disaster situations.
- It acts as a bridge between aid materials and the area of occurrence of disaster, focusing on efficient flow of materials.

2. Your answer should include the following points:

The evacuation kit consists of :

- Non-perishable food and water
- Emergency supplies that last for at least 3-4 days
- Personal items including clothes, shoes, blankets, sleeping bags, torches, candles etc
- First aid kit and essential medical supplies
- Rescue kit containing rope, iron hooks,paddle etc.

3. Your answer should include the following points:

The health and sanitation concerns of the affected population encompass:

- Doorstep delivery of medical assistance.
- Administering first aid to the injured and shifting patients to the nearest medical centres etc.
- Identification and purification of safe drinking water resources.
- Ensuring temporary sanitation facilities near the shelter sites
- Health and hygiene awareness.
- Launching cleaning operations after disaster.

Check Your Progress 2

1. Your answer should include the following points:

The various reports/forms for documenting information in logistics operations include:

- Situation Reports
- Relief Movement Forms
- Specific Resource Request Forms
- Transportation Operation Forms
- Inventories
- Mapping
- Logbooks

- Notice boards
- GIS tools

2. Your answer should include the following points:

The challenges in logistics operations in disaster situations are:

- Transportation bottlenecks
- Delays in procurement and deliveries of supplies
- Coordination issues
- Resource constraints
- Communication issues
- Infrastructure issues
- Social issues

3. Your answer should include the following points:

The measures that can be taken to overcome the challenges of managing logistics are:

- Identifying disaster risks and developing a contingency plan
- Building a resilient supply chain.
- Standardisation of supplies.
- Streamlining supply logistics.
- Inducing and utilisation of technology enabled logistics management.
- Ensuring coordination among all stakeholders including local community.
- Streamlining all key components of logistics processes.

ignou
THE PEOPLE'S
UNIVERSITY