UNIT 20 DAMAGE ASSESSMENT

Structure

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20.0 OBJECTIVES

After studying the unit, you should be able to:

- define damage assessment and understand its objectives;
- describe the rapid damage assessment techniques; and
- highlight the detailed damage assessment methodology.

20.1 INTRODUCTION

Damage assessment is the process of determining the impact of a disaster. Damage assessment process includes the preparation of specific qualified estimates of physical damage resulting from a disaster. It may include recommendations concerning the repair/reconstruction of structures, replacement of equipment, and restoration of economic activities.

20.2 RAPID DAMAGE ASSESSMENT TECHNIQUES

Damage assessment is a prerequisite for all disaster management practices. Assessing the level of damage is required at two basic levels of intervention. Firstly, for emergency relief measures, for which purpose a quick assessment of damage would become the basis for the amount of medical relief and food stocks to reach the disaster area quickly. At the second level, would be a detailed technical analysis of the damage for long-term restoration and rehabilitation works. From a long-term perspective, realistic damage assessment examines the mechanisms of failure that take place during the disaster. These studies are very useful for all future prevention and mitigation efforts regarding disasters.

The basic objectives of damage assessment are:

- to make rapid assessment of areas affected and the extent of impact, for the purpose of immediate rescue and relief operations,
- to prepare estimates for the amount and type of relief to be provided and mode of relief, in terms of food, clothing, medicines, shelter and other essential items,
- to make detailed assessment for long-term relief and rehabilitation planning, and
- to identify focus areas for purpose of replication in similar situations.
In short, damage assessment is an important tool to assimilate and document the extent of impact of a disaster, and forms the basis for disaster management actions.

Assessments must be carefully planned and executed. The assessment process includes:

- Identification of information needs and sources of reliable data;
- Collection of data;
- Analysis and interpretation of data;
- Report writing;
- Conclusion; and
- Recommendations for planners and decision makers.

The official agency for reporting estimates of disaster damages is the Revenue Department of the State Government, as they are also the authority for granting and distributing relief to the affected persons. As usual, there is a hierarchy of officials who report from the lowest level of villages/panchayats through blocks/revenue circles, tehsils/talukas, sub-divisions and finally to the districts.

The basic items usually covered in the assessment report, as per the rapid assessment norms are:

- Name of sub-division
- Area in square kilometres
- Total number of villages
- Number of villages affected
- Total population
- Population affected
- Total number of panchayats
- Number of panchayats fully affected
- Number of panchayats partially affected
- In case of floods, areas still under water

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 this unit.

1) Define damage assessment and briefly discuss its importance.
2) What are the basic objectives of damage assessment? Discuss any two.

3) Highlight the rapid damage assessment technique.

20.3 DETAILED DAMAGE ASSESSMENT

Detailed damage assessment goes further than the rapid assessment, and it includes the following aspects of disaster damage.

i) Verified number of human lives lost

ii) Cattle lost
   a) Number
   b) Estimated Value

iii) Details of damage to crops (in hectares) and estimated loss of produce (in rupees)
   a) Area completely damaged (Ha)
   b) Area partially damaged (Ha)
   c) Area likely to be replanted or resown (Ha)
   d) Extent of affected area in percentage
   e) Crops lost (quintals)
   f) Estimated value of crops lost (in rupees)

iv) Houses damaged or destroyed
   a) Number
   b) Estimated value

v) Loss to infrastructure, public works and utilities including property of local bodies
   a) Name of the work and utility
   b) Nature of damage
   c) Estimated value of damage
   d) Estimated cost of restoration work
20.3.1 Damage to Buildings

The damage caused to buildings by the various disasters may be categorized as losses under the following heads:

- The loss of the main building
- The loss due to failure of other components whose damage is attributed to the main building damage.
- Area covered by the collapsed structure
- Death or injury to life due to building collapse
- Loss incurred in terms of debris removal and restoration
- Loss of revenue during the idle non-work period

In addition to these, there would be socio-economic costs arising as a consequence of the disaster, which would add to the loss under the heads listed above.

Building damages, on the wider scale, usually are most relevant in terms of damage to houses, than other types of buildings. Damage to house property is estimated in terms of number of households, percentage of reported damage, and repair cost per household. This estimation is needed to be carried out for all houses, even under classified categories of ‘Kutcha’ Houses, ‘Pucca’ Houses, and “Semi-pucca” Houses. This is required in order to carry out a value based assessment.

Besides the house structure damage itself, there is also an aspect of household asset damage assessment, which has to be taken into account. Damage to house structure can cause resultant damage to household goods, artisan assets and other productive assets stored in the house. These need to be accounted for in terms of average value of damage per household (in rupees).

20.3.2 Damage to Land

Damage to land due to disaster could be short-term damage, as in land rendered useless temporarily due to coverage by debris of sand and loss of standing crops, or else it could be long term damage as in perennial flood, lava or ash deposit, or loss of productivity of land. The most important in the immediate post-disaster scenario is the aspect of agricultural loss through land destabilization.

Crop damage is assessed in terms of percentage of households reporting damage under the following heads:

i) Area damaged per household (ha)
ii) Production loss per hectare (quintals)
iii) Production loss per household (quintals)
iv) Value of production loss per hectare (Rs.)
v) Value of production loss per household (Rs.)
Besides the damage to direct land attributes such as crops, there is also a long-
term impact on the productivity of the land itself, which is felt even after the
disaster, mainly in case when the floods have receded. The long-term impact on
crop production could either be favourable or unfavourable. The favourable
effect would be in the form of deposit of fertilising silt on land resulting in rise in
soil fertility, which would manifest in crop yields or a better crop after the
monsoon season due to water availability. The unfavourable effects would be in
the form of sand castings rendering the land unfit for cultivation. This generally
affects the production of Rabi crops and winter crops after the floods. This effect
can be assessed in terms of variation in production of crops after floods, as
follows:

- Yield per hectare (quintals)
- Normal yield per hectare (quintals)
- Percentage variation in yield

20.3.3 Damage to Human Lives

The most disastrous and immediate impact on human lives is in terms of loss of
lives by deaths that may occur due to the direct impact of the disaster, or through
indirect impact as in case of building collapses, fires etc. Injuries are the second
level of impact of disasters on human lives, and result from the same sources as
deaths. The impact on lives in terms of deaths and injuries has to be estimated
not only in numbers, but also in terms of the expenses incurred due to the death
or injury, as also the loss of productivity of the persons affected.

In a longer term perspective, the impact of the disaster is also manifested in
morbidity. Usually after a gestation period, which may be about two weeks after
the disaster, diseases start to set in due to the insanitary living conditions and
contamination of drinking water and food. The affected persons, who may be
housed in makeshift relief camps, have no access to proper civic services, and as
a result vector-borne diseases affect them, which may even take the form of an
epidemic if it goes unchecked. Once again, the impact of the sickness due to
disaster is felt in terms of expenditure on treatment and loss of employment
during the sickness period. This may be assessed under the following heads:

i) Total number of sample households
ii) Percentage of households reporting sickness
iii) Average number of persons reporting sickness per household
iv) Average duration of sickness (Days)
v) Average expenditure on treatment per household (Rupees)
vi) Average employment lost per household (Days)
vii) Average loss of income per household (Rupees)

Besides the physical impact of death, injury and morbidity, and their resultant
financial implications, there is also a purely economic impact on human lives,
which is in terms of loss of employment due to dislocation and disruption of
routine activities due to the disaster. For assessment of this impact, it is necessary
to first collect information on the total number of households, number of
households reporting wage employment, and average number of wage earners
Relief Measures per household in the affected area. An inventory has to be prepared to enumerate the following factors.

- Average employment days per household
- Average monthly earnings per household (Rupees)
- Average monthly earnings per earner (Rupees)

These factors have to be accounted for in the disaster scenario context, as factual figures in the post-disaster scenario, as well as in a situation of no disaster. The comparison of these two scenarios would give a gross loss in employment due to the disaster.

The loss of employment can be further classified according to the nature of skill or employment in a typical regional setting, the classifications adopted could be:

- Agriculture
- Dairying
- Fisheries
- Non-agricultural Labour
- Artisans
- Business/Trade
- Service
- Others

20.3. Damage to Livestock

The damage to livestock, namely cattle, other animals and poultry, which is a very important asset in rural households, is generally assessed in terms of the number of households reporting loss, and the per household value of livestock lost (Rupees). It is generally observed that loss of livestock takes place because they are not moved out at the time of disaster threat, or else because people flee the area, leaving their livestock tied up or enclosed, with no means of escape. In this light it has been observed that in case of floods, the loss of livestock is usually low in the areas with high flood zones, because the people expect a disaster, and move out their livestock in time. Losses are high in low flood zones where severe floods are not so frequent, and when they come, they take the people by surprise, and they are not able to move out their livestock in time. The loss in fishery is also often the result of floods and cyclones.

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 this unit.

1) Briefly describe the essential elements of detailed damage assessment.

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2) "Besides the house structure damage itself, there is also an aspect which has to be taken into account while assessing damage to house property". Discuss.

3) How is crop damage assessed? Mention any three heads under which crop damage is assessed.

20.4 LET US SUM UP

This unit has dealt with damage assessment as an important tool for knowing the extent of a disaster's impact, and the basis for immediate rescue and relief operations, as well as long-term rehabilitation and retrofitting programmes. However, in order that this could be really effective, damage assessment has to be realistic. Rapid damage assessment techniques have been identified and briefly described. Detailed damage assessment for long-term relief and rehabilitation planning has also been discussed.

20.5 KEY WORDS

Assessment is a survey of a disaster area to make estimates of damages and recommendations for necessary relief actions.

Damage Assessment is a post-disaster estimate of physical, human and economic damage.

Ha: Hectares

Replication: Reproducing the same at another place or time.

20.6 REFERENCES AND FURTHER READINGS


20.7 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1) Your answer should include the following points:
   - Damage assessment is the process of determining the impact of a disaster on specific society.
   - Damage Assessment is an important tool to assimilate and document the extent of impact of a disaster.
   - It forms the basis for disaster management actions.

2) Your answer should include the following points:
   - The basic objectives of damage assessment are:
     i) to make rapid assessment of areas affected and the extent of impact, for the purpose of immediate rescue and relief operations.
     ii) to prepare estimates for account of immediate relief to be provided and the mode of relief in terms of food, clothing, medicine, shelter etc.
     iii) to make detailed assessment for long-term relief and rehabilitation plans, and
     iv) to identify focus areas for replication in similar situations.

3) Your answer should include the following points:
   - The official agency for reporting estimates of disaster damage is the Revenue Department of the State Government.
   - Damage assessment process includes:
     i) Identification of information needed for data sources
     ii) Collection of Data
     iii) Analysis and interpretation of data
     iv) Report writing
     v) Conclusion
     vi) Recommendation
   - The Report should include:
     i) Name of Sub-division
     ii) Area in square kms.
     iii) Area affected in sqs. kms.
     iv) Total number of villages
     v) Total number of villages affected
     vi) Total population
     vii) Population affected
viii) Total number of panchayats
ix) Number of panchayats fully affected
x) Number of panchayats partially affected
xi) In case of floods, areas still under water

Check Your Progress 2

1) Your answer should include the following points:
   • The essential elements of detailed damage assessment include the following:
     i) Verified number of human lives and cattle lost.
     ii) Details of damage to crops and estimated loss of production.
     iii) Houses damaged or destroyed.
     iv) Loss to infrastructure, public works and utilities including property, local bodies, and
     v) Rough estimate of total loss in rupees in all the above items.

2) Your answer should include the following points:
   • Besides the house structure damage itself, there is also an aspect of household asset damage which has to be taken into account.
   • Damage to house structure can cause resultant damage to household goods, artisan assets and other productive assets stored in the house.
   • Above mentioned damages need to be accounted for in terms of average value of damage per household.

3) Your answer should include the following points:
   • Crop damage is assessed in terms of the following heads:
     i) Area damaged per household.
     ii) Production loss per household, and
     iii) Value of production loss per household.