

Module: Public Health Disaster Planning for Districts

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Resource Title: Session 1.3 Disaster Hazard Analysis (Activity 1.3a-d)

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Form groups based on the district where you come from

In your groups, list the top 10 hazards/disasters which have occurred and are likely to occur in your district

Examine this list of disasters and categorize them into those that are natural disasters and those that are manmade (or technological disasters)

NB: You do not need to list them in any particular order. We shall re-organize them according to priorities in subsequent sessions

Table 1: Top 10 Disasters Likely to Occur in _____ District

	Disaster	Natural or Technological?
1.		
2.		
3.		
4.		
5.		
6.		
7.		

8.		
9.		
10.		

Activity 1.3b: Hazard Analysis 1: Probability of Occurrence of Disasters

Background:

Remember the formula:

$$\text{Disaster Risk} = [\text{Hazard X Vulnerability}] / [\text{Capacity}]$$

This formula can be used to rank the most important hazards likely to occur in a district

In this session, we shall look at the components of the first part of the formula i.e. Hazard

The population in your districts is at risk of each of the 10 disasters you have listed in the previous activity. However, the potential for any hazard to affect a district is measured by two components:

1. **The probability of occurrence** of the particular disaster: What is the likelihood that this disaster will happen in 5 years?
2. **The potential impact of the hazard** on the district once it occurs?

When we combine these two components, we obtain the **priority level for this hazard** in the district.

It helps us to determine the priority hazards that we should focus on based on their probability of occurrence and their potential impact once they occur.

We shall therefore undertake a series of activities to determine the disaster hazard profile for each of our districts.

In this activity, we shall first look at probability of occurrence:

Task:

Examine the list of top 10 hazards that you have made. Do you think they all have the same likelihood of occurrence?

On a scale of 0 to 3, score the likelihood of occurrence of each of the 10 disasters you have listed within the next 5 years (10 Minutes). Use table 2 below:

Probability Score	Score = 0	Score = 1	Score = 2	Score = 3
<i>Probability Criteria</i>	<i>Highly improbable</i>	<i>Improbable</i>	<i>Probable</i>	<i>Very probable</i>

Fill in your score in the table below:

Table 2: Probability of occurrence of the 10 ten disasters in your district

	Hazard	Probability Score
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Activity 1.3c: Hazard Analysis 2: Potential Impact of the Disasters

In the previous activity, we saw that the magnitude of a hazard is measured by two factors:

1. Probability of occurrence of the particular hazard: What is the likelihood that this disaster will happen in 5 years?
2. What is the potential impact of the hazard on the district once it occurs?

In that activity, we used a simple score to assess the likelihood of occurrence of each of the 10 disasters. In this activity, we shall see the potential impact of each of these hazards to the district, and shall use 4 simple criteria and a simple score of 0 to 3 to determine the potential impact of all the 10 disasters/hazards that you have already listed.

Procedure

1. Participants should be seated in district teams
2. Each team chooses a rapporteur
3. Each team lists the top 10 disasters that you discussed in your groups
4. Each team scores potential impact for each hazard using the four criteria named in the table below (On a scale of 0 to 3 based on your experience and consensus of team members)
5. Each team then calculates the mean impact score by adding the scores for the four criteria scores and dividing by four
6. Each team places the mean impact score into the far right column of **Table Four** (30 minutes)

Table Three lists an explanation of the criteria used to assign relative impact of the various hazards

Table Three: Criteria for scoring potential impact of hazards

Potential Impact Criteria	Score = 0	Score = 1	Score = 2	Score = 3
Size of incident area	None or negligible	Small part of the district	Large part of District	Entire District
Percentage of population whose health will be affected	None or negligible	Low (Less than 25% of total population)	Moderate (26-75% of population)	High (75-100% of total population)
Potential for lethality among those affected	None or Negligible	Low (less than 25%) chance of being deadly	Moderate (26-75%) chance of being deadly	High (75-100%) chance of being deadly
Potential degree of destruction of critical infrastructure	None or insignificant destruction likely to occur	Limited to a small part of the infrastructure	Large part of the infrastructure	Infrastructure in entire district likely to be affected

Table Four: Potential Impact Score of the Top 10 Disasters likely to occur in the District

Hazards	Size of incident area	Size of population	Potential lethality	Potential destruction of critical infrastructure	Mean Impact score

Activity 1.3d: Combining the two components of a Hazard to determine the priority hazards for your district

In exercise 1.3a, you allocated a probability score to each of the 10 hazards likely to occur in your district (on a scale of 0 to 3)

In exercise 1.3b, you calculated a mean impact score for each of these 10 hazards

In this exercise, we are going to combine these two scores for each hazard (the probability score and the mean impact score to come up with the hazard priority score

Steps:

1. Each team lists the top 10 disasters for the district
2. Each team transfers the probability score for each hazard from Table Two to Table Five
3. Each team transfers the mean impact score for each hazard from Table two to Table Five
4. Each team calculates the hazard priority score for each of the ten hazards by multiplying the Impact score by the Probability score
5. Each team lists the resultant hazard priority score for each of the ten hazards in the far right column of Table Five. (30 minutes)
6. Now Rearrange the Disasters according to the Hazard Priority Score

Table Five: Hazard Priority Scores

Hazard	Probability score (A)	Impact score (B)	Hazard priority score (A X B) = (C)
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

9.			
10.			

Question: Based on the combined score, what are the top 3 disaster priorities in your district?