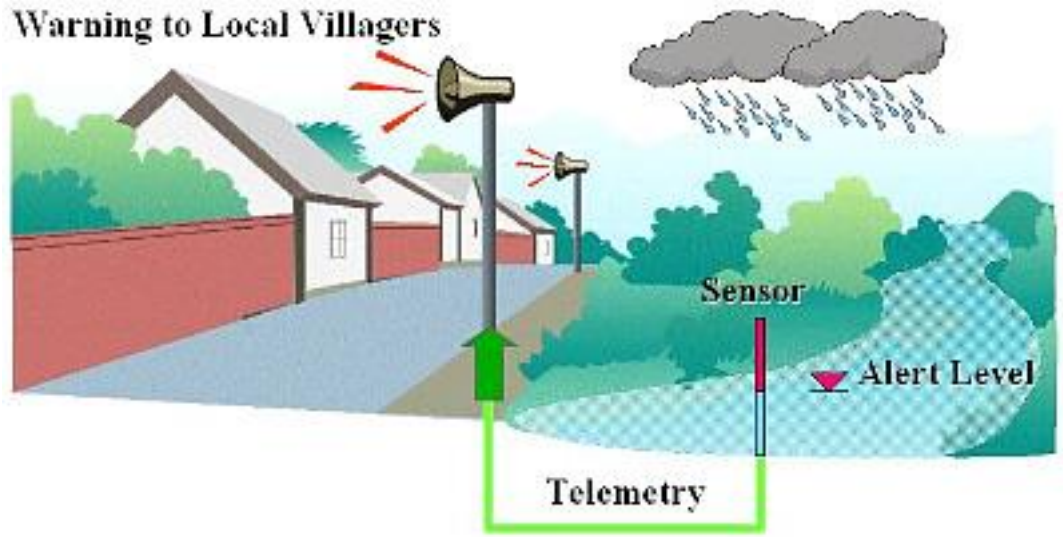
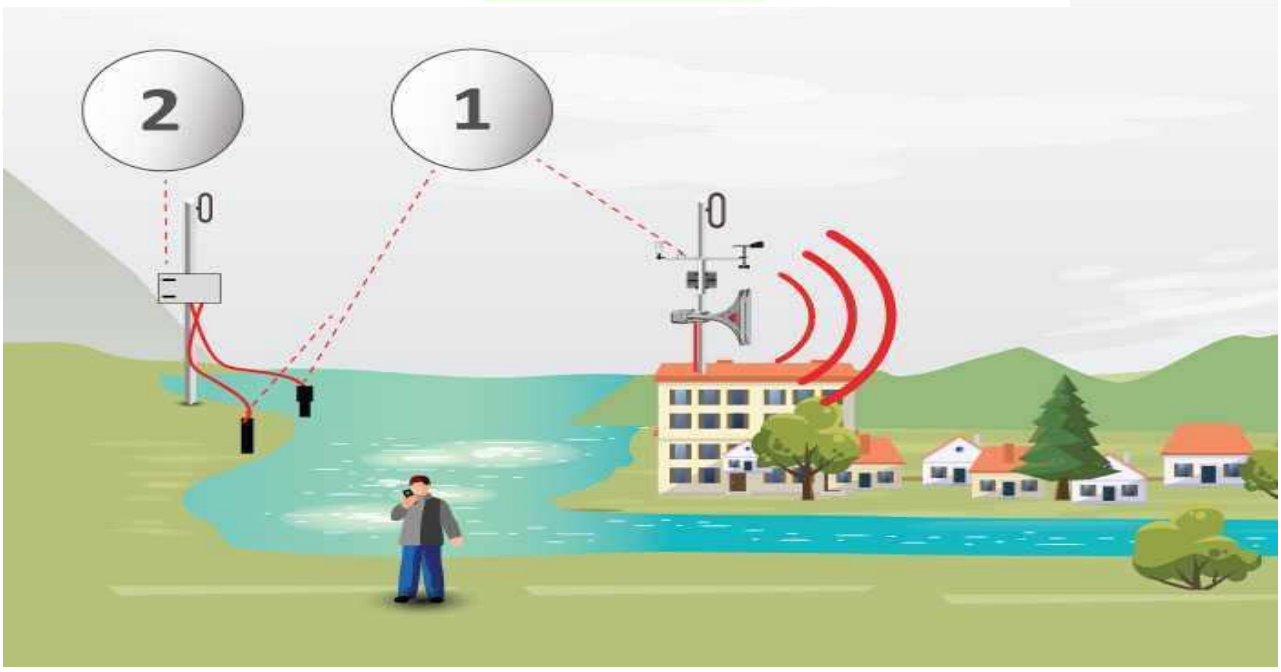
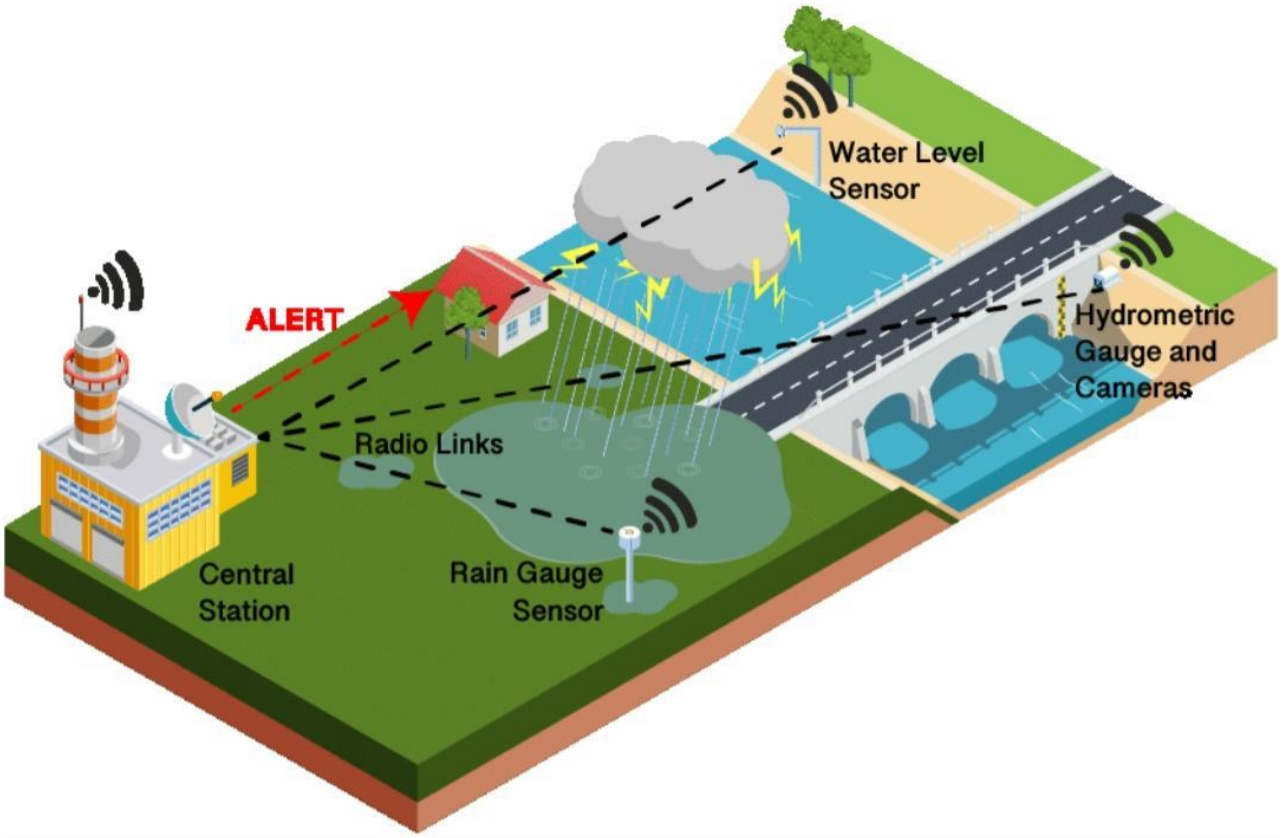
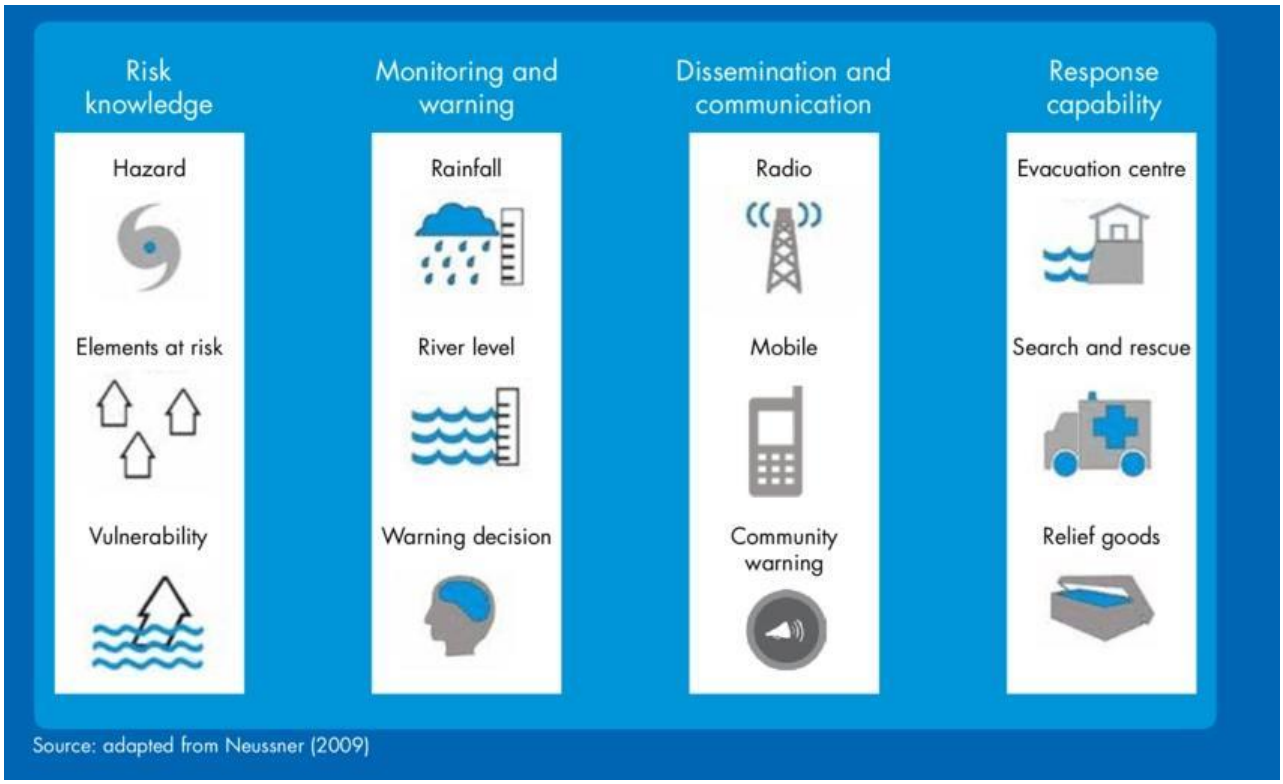
FLOOD MONITORING AND EARLY WARNING SYSTEM






Water Level Sensor
ALERT
Hydrometric Gauge and Cameras
Radio Links
Central Station
Rain Gauge Sensor


Risk knowledge
Hazard
Elements at risk
Vulnerability
Monitoring and warning
Rainfall
River level
Warning decision
Dissemination and communication
Radio
Mobile
Community warning
Response capability
Evacuation centre
Search and rescue
Relief goods
Source: adapted from Neussner (2009)

here’s the stimulation in simpler terms:

1.Collect Data Function:

Imagine we have a device that measures river water level and rainfall.

We make up random numbers to pretend we’re getting readings from these devices.

We return these pretend readings.

2.Generate Warning Function:

We set certain levels that we consider dangerous for the river water level and rainfall.

We check if our pretend data is higher than these danger levels.

If both are too high, we say there’s a flood warning for both.

If only the river level is too high, we warn about that.

If only the rainfall is too high, we warn about that.

If neither is too high, we say there’s no flood warning.

3.Main Simulation:

We start a loop that goes on forever (until we stop it).

In this loop, we:

Pretend to collect data (river level and rainfall).

Pretend to generate a warning based on this data.

Get the current time.

Print the time and the warning.

Wait for 15 minutes before doing it all over again.

So, it’s like pretending to check data from devices, deciding if there’s a flood, and logging this information every 15 minutes.

program

```
import random

Import time


# Simulated data collection function


Def collect_data():


 # Simulate data from a river gauge and rainfall sensor


 River_level = random.uniform(0.0, 10.0) # Simulated river level


 Rainfall = random.uniform(0.0, 50.0) # Simulated rainfall
```

```
 Return river_level, rainfall

# Simulated warning generation function

Def generate_warning(river_level, rainfall):

 # Set threshold values (you should determine appropriate values)

 River_level_threshold = 8.0

 Rainfall_threshold = 30.0

 # Check if thresholds are exceeded

 If river_level > river_level_threshold and rainfall > rainfall_threshold:

 Return “Flood Warning: River level and rainfall exceed thresholds”

 Elif river_level > river_level_threshold:

 Return “Flood Warning: River level exceeds threshold”
```

Elif rainfall > rainfall_threshold:

Return “Flood Warning: Rainfall exceeds threshold”

Else:

Return “No Flood Warning”

Main simulation loop

While True:

river_level, rainfall = collect_data()

warning = generate_warning(river_level, rainfall)

timestamp = time.strftime("%Y-%m-%d %H:%M:%S")

print(f"{timestamp} - {warning}")

Simulate data collection interval (e.g., every 15 minutes)

time.sleep(900) # Sleep for 900 seconds (15 minutes)

Here's a simple algorithm for a flood monitoring program in Python:

1. Import the necessary libraries.
2. Define a function to generate random water level data.
3. Generate the water level data using the function.
4. Define a function to check if a flood warning is needed based on the water level.
5. Check if a flood warning is needed using the function.
6. Print the appropriate message based on the flood warning status.
7. Run the program