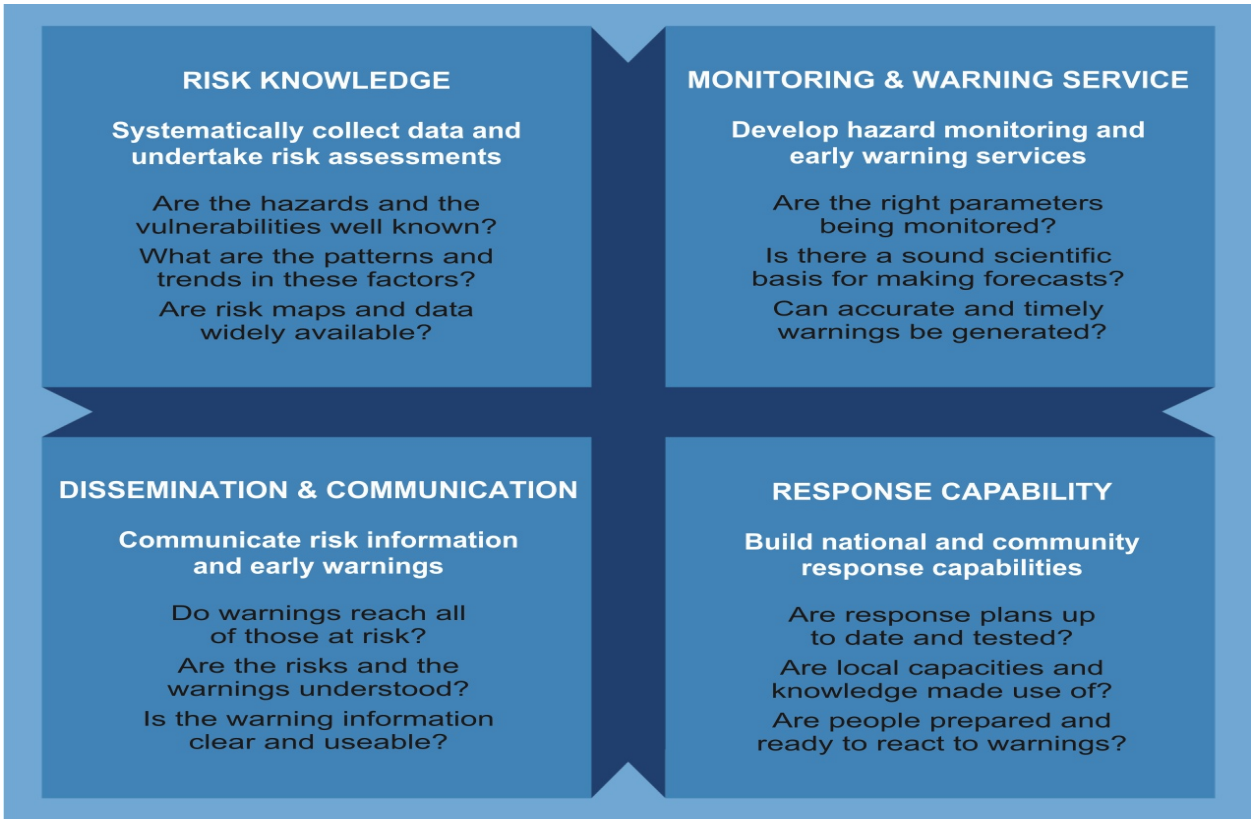
Early warning system

An early warning system is a warning system that can be implemented as a chain of information communication systems and comprises sensors, event detection and decision subsystems for early identification of hazards. They work together to forecast and signal disturbances that adversely affect the stability of the physical world, providing time for the response system to prepare for the adverse event and to minimize its impact. To be effective, early warning systems need to actively involve the communities at risk, facilitate public education and awareness of risks, effectively disseminate alerts, and warnings and ensure there is constant state of preparedness. A complete and effective early warning system supports four main functions: risk analysis, monitoring and warning; dissemination and communication; and a response capability



1. Disaster risk knowledge based on the systematic collection of data and disaster risk assessments
2. Detection, monitoring, analysis and forecasting of the hazards and possible consequences
3. Dissemination and communication, by an official source, of authoritative, timely, accurate and actionable warnings and associated information on likelihood and impact
4. Preparedness at all levels to respond to the warnings received

Types of early warning systems

There are various ways of classifying early warning systems.

1) **By type of hazard**

Early warning systems have been developed and implemented for:

- Geological hazards like tsunamis, earthquakes, volcanic activity, and landslides
- Hydro meteorological hazards including severe weather in land and at sea, floods, droughts, hurricanes, typhoons and cyclones, tornados, cold and heat waves, etc.
- Forest fires
- Biological hazards including insect plagues like locust outbreaks and harmful algae blooms
- Health hazards including vector-borne diseases, viruses and other types of diseases

2) **By the level at which it is operated**

- Community or people-centred early warning systems, operated at a more local level by a municipal government or a community. The most typical systems of this kind address flood.
- National early warning systems operated by a national-level government agency like a meteorological department, a geological observatory or institute, a health or an agricultural ministry.
- Regional systems operated at a more regional level.
- Global systems operated at the international level by international organizations like the WHO and FAO.

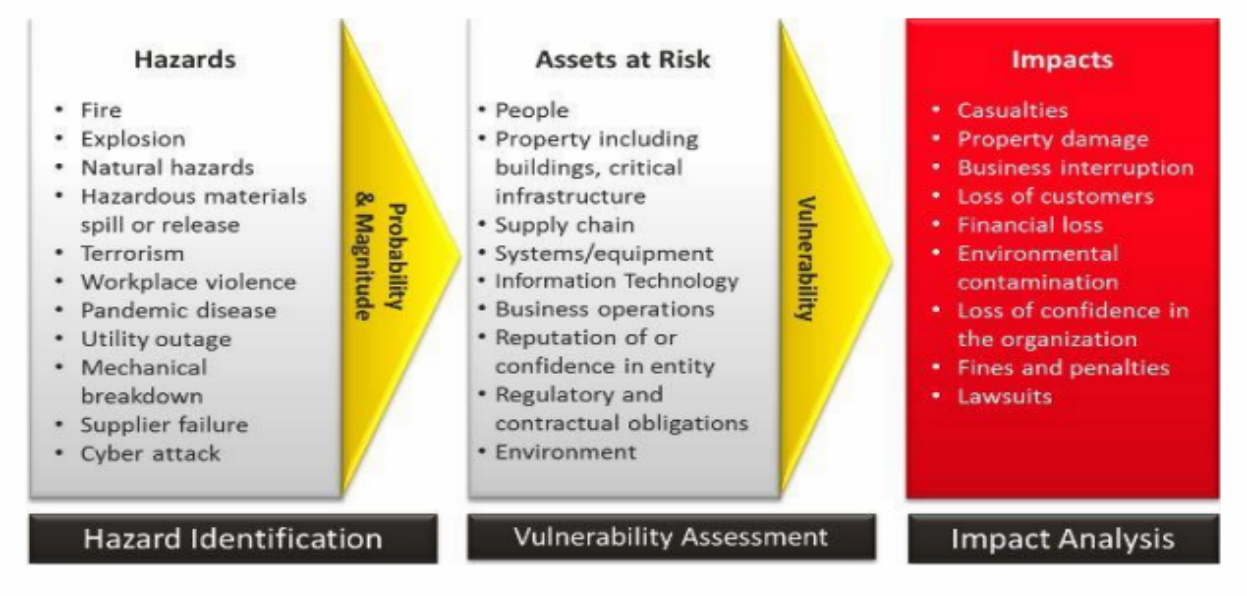
What is a risk analysis?

It defines as a risk , as the probability of harmful consequences casualties, damaged property, lost livelihoods, disrupted economic activity, and damage to the environment resulting from interactions between natural or human-induced hazards and vulnerable conditions. Risk assessment is a process to determine the nature and extent of such risk, by analyzing hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend. Risk assessment, therefore, is an integral part of decision and policy-making processes and requires close collaboration among various parts of society.

Risk assessment is a term used to describe the overall process or method where you:

- Identify hazards and risk factors that have the potential to cause harm (hazard identification).
- Analyze and evaluate the risk associated with that hazard (risk analysis, and risk evaluation).

- Determine appropriate ways to eliminate the hazard, or control the risk when the hazard cannot be eliminated (risk control).



Comprehensive risk assessment consists of the following steps:

1. Understanding of current situation, needs and gaps.

2. Hazard assessment: to identify the nature, location, intensity and likelihood of major hazards prevailing in a community or society.

3. Exposure assessment to identify population and assets at risk and delineate disaster proneareas

4. Vulnerability analysis to determine the capacity (or lack of it) of elements at risk to withstand the given hazard scenarios.

5. Loss/impact analysis to estimate potential losses of exposed population, property, services, livelihoods and environment, and assess their potential impacts on society.

6. Risk profiling and evaluation to identify cost-effective risk reduction options in terms of the socio-economic concerns of a society and its capacity for risk reduction.

Why is risk assessment important?

Risk assessments are very important as they form an integral part of an occupational health and safety management plan. They help to:

- Create awareness of hazards and risk.
- Identify who may be at risk (e.g., employees, cleaners, visitors, contractors, the public, etc.).

- Determine whether a control program is required for a particular hazard.
- Determine if existing control measures are adequate or if more should be done.
- Prevent injuries or illnesses, especially when done at the design or planning stage.
- Prioritize hazards and control measures.
- Meet legal requirements where applicable.

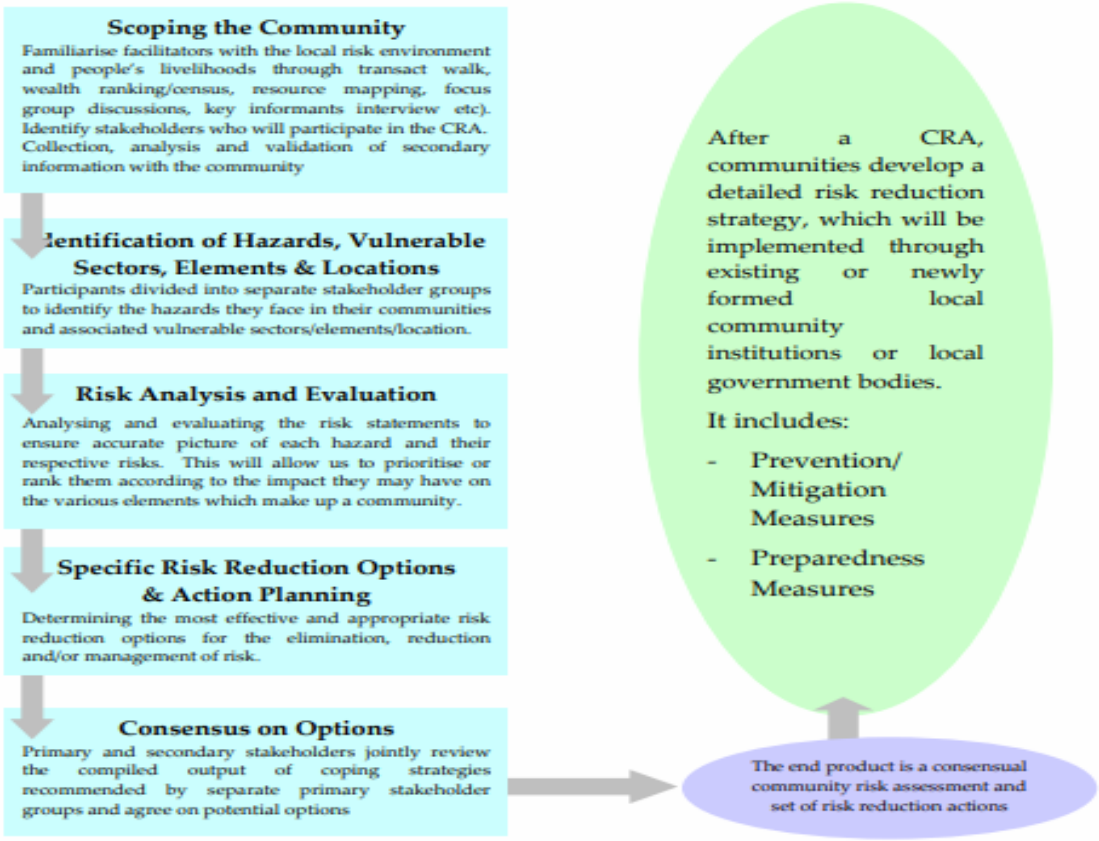
Risk Analysis for Individuals:

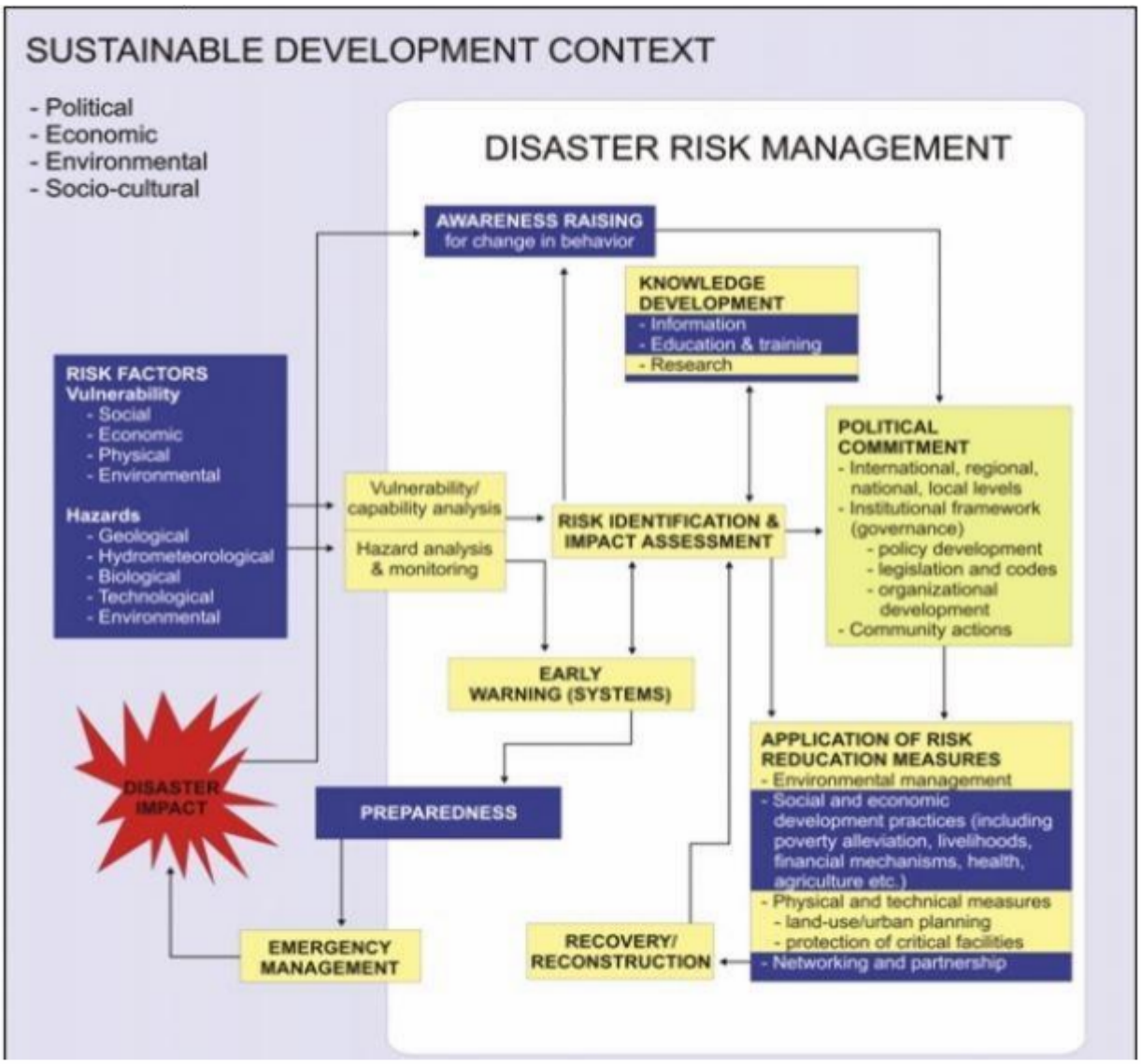
Personal risk assessment is the process by which to identify hazards, define the risks associated with that hazard, and determine the best way to eliminate or control the hazard. Personal risk assessment requires taking a thorough inspection of the workplace in order to identify all of the situations, processes and equipment that may cause harm. Having identified the risks, you then evaluate how likely the risk is to occur and its probable severity. You then make decisions regarding the measures that can be taken to control the harm

Risk Analysis for communities:

CRA (Community Risk Assessment) is a participatory process for assessing hazards, vulnerabilities, risks, ability to cope, preparing coping strategies and finally preparing a risk reduction options implementation plan by the local community. CRA uses scientific information and predictions and participatory discourses to identify, analyse and evaluate risk environment of a particular community, reach consensus amongst the community on actions that are needed to manage the risk environment. The method recognizes that the vulnerability, loss, reduction or mitigation strategy and coping mechanism vary from community to community and group to group (women, person with disability, landless, farmers-fisher folks, etc) of a same community. So it ensures representation of professional, community and other groups and that their points of views are reflected. CRA encourages community participants to respect others' concerns. A flowchart below shows the CRA process sequentially.

Figure 1: Flow chart showing major steps of CRA





Frame work of Disaster Risk Reduction