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## Man-Made Hazards in Developing Countries Across the World

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### Introduction

Human civilization has made tremendous progress in science, technology, and industrialization over the last few centuries. However, this progress has also brought with it several risks and threats created by human activities. These threats are known as **man-made hazards**. They arise not from natural forces such as earthquakes or floods, but from **human negligence, errors, or intentional actions** that disturb the environment, society, and economy.

Developing countries across the world are particularly vulnerable to these hazards. Rapid industrialization, urbanization, lack of environmental awareness, weak governance, and poor disaster management systems make them more prone to human-induced disasters. Unlike natural hazards, man-made hazards can often be **prevented or minimized** through better planning, education, and regulation.

This paper aims to discuss the **meaning, causes, types, examples, and remedies** of man-made hazards in developing countries. It highlights how such hazards affect the environment and human life, and what steps can be taken to reduce their impact.

### Meaning and Characteristics of Man-Made Hazards

**Man-made hazards** (also known as anthropogenic hazards) refer to **harmful events or conditions caused directly or indirectly by human activities**. They can be sudden (like industrial explosions) or gradual (like climate change and deforestation).

#### Definition:

According to the United Nations Office for Disaster Risk Reduction (UNDRR), "Man-made hazards are events that are caused by human actions or inactions leading to injury, death, damage to property, and disruption of society."

#### Characteristics of Man-Made Hazards:

1. **Human Origin:** Caused or triggered by human activities, technology, or negligence.



2. **Preventable Nature:** Most can be prevented or controlled through safety measures.
3. **Localized Impact:** Often limited to specific areas such as industrial zones or urban centers.
4. **Socio-economic Impact:** Affect livelihoods, health, economy, and environment.
5. **Long-Term Consequences:** Some, like pollution or nuclear waste, can last for decades.

Developing countries face such hazards more frequently due to unplanned development, weak enforcement of laws, lack of technology, and poverty-driven dependence on unsafe practices.

### **Types of Man-Made Hazards in Developing Countries**

Man-made hazards can be classified into several types depending on their source and impact. The major categories are discussed below.

#### **Industrial Hazards**

Industrial hazards occur due to accidents or negligence in factories, chemical plants, and other industrial establishments. These include **chemical spills, gas leaks, explosions, and fires.**

##### **Causes:**

- Poor maintenance of machinery
- Negligence of safety norms
- Lack of employee training
- Use of outdated technology
- Absence of disaster management plans

##### **Examples:**

- **Bhopal Gas Tragedy (India, 1984):** One of the world's worst industrial disasters. A toxic gas leak from the Union Carbide pesticide plant killed over 15,000 people and affected thousands more.
- **Tianjin Chemical Explosion (China, 2015):** Massive explosion in a warehouse storing dangerous chemicals caused widespread damage and death.

##### **Remedies:**

1. Strict enforcement of safety laws and regular inspections.
2. Employee training and mock drills.



3. Modernization of old industrial equipment.
4. Use of proper waste disposal and containment systems.
5. Strong emergency response systems.

### **Environmental Pollution Hazards**

Pollution is one of the most severe man-made hazards affecting air, water, and soil quality. It results mainly from industrialization, deforestation, and urban waste.

#### **Causes:**

- Emission of smoke and gases from industries and vehicles.
- Discharge of untreated industrial and domestic waste into rivers.
- Excessive use of fertilizers and pesticides in agriculture.
- Uncontrolled urbanization and lack of waste management.

#### **Examples:**

- **Ganga and Yamuna River Pollution (India):** Industrial waste and sewage have made major rivers unsafe for drinking or bathing.
- **Beijing Air Pollution (China):** Heavy smog due to industrial emissions and vehicle exhaust affects millions of residents.
- **Lagos (Nigeria):** Improper waste disposal and burning of plastic create severe air and land pollution.

#### **Remedies:**

1. Adoption of clean and renewable energy sources.
2. Strict pollution control laws and monitoring.
3. Urban waste recycling and treatment plants.
4. Afforestation and green cover development.
5. Awareness campaigns promoting sustainable habits.

### **Transportation and Urban Hazards**

Developing countries face high risks of accidents and congestion due to **unplanned urbanization and poor transportation systems.**

#### **Causes:**

- Poor road design and maintenance.
- Overcrowded public transport and reckless driving.
- Lack of traffic management and enforcement.
- Unsafe urban settlements near industrial or transport hubs.



### Examples:

- **Road Accidents in India:** India records over 150,000 road fatalities annually due to unsafe driving and poor roads.
- **Dhaka, Bangladesh:** Overcrowded city with limited road space leading to traffic jams, pollution, and frequent accidents.

### Remedies:

1. Improved road infrastructure and maintenance.
2. Strict implementation of traffic rules.
3. Promotion of public transport and non-motorized vehicles.
4. Urban planning with safety and sustainability in mind.
5. Public awareness on road safety.

### Deforestation and Land Degradation

Uncontrolled deforestation for agriculture, mining, or urban expansion causes **soil erosion, loss of biodiversity, and climate imbalance.**

### Causes:

- Expansion of farming and grazing lands.
- Illegal logging and timber trade.
- Mining and infrastructure projects.
- Poverty-driven fuelwood collection.

### Examples:

- **Amazon Rainforest (Brazil):** Deforestation for cattle ranching and soy farming.
- **Indonesia:** Large-scale forest clearance for palm oil plantations.
- **Africa:** Forest loss due to charcoal production and agriculture.

### Remedies:

1. Reforestation and afforestation programs.
2. Promotion of sustainable agriculture and eco-tourism.
3. Legal protection for forest areas.
4. Use of alternative fuels to reduce dependence on firewood.

### Nuclear and Radiological Hazards

Developing countries using nuclear energy for power or research face risks of radiation leaks and nuclear waste mismanagement.

### Causes:

- Inadequate safety measures in nuclear facilities.



- Poor waste disposal systems.
- Lack of trained personnel.
- Political instability or terrorism.

#### **Examples:**

- **Chernobyl Disaster (Ukraine, 1986):** Although in a developed region, its lessons are vital for developing countries.
- **Fukushima Daiichi (Japan, 2011):** Demonstrated how human and natural factors combined to cause disaster.
- **Mayapuri Radiation Incident (India, 2010):** Improper disposal of radioactive material from medical equipment exposed many people to radiation.

#### **Remedies:**

1. Strict monitoring and maintenance of nuclear plants.
2. Safe disposal of radioactive waste.
3. International cooperation for nuclear safety standards.
4. Regular safety training and awareness for workers and nearby populations.

### **Technological and Cyber Hazards**

As developing nations embrace digitalization, **cyber-attacks, data theft, and technological failures** pose growing threats.

#### **Causes:**

- Weak cybersecurity systems.
- Lack of trained IT professionals.
- Overdependence on digital infrastructure.
- Cyber warfare and hacking.

#### **Examples:**

- **Ransomware Attacks:** Several hospitals, banks, and government offices in developing countries like India and Nigeria have faced data breaches.
- **Social Media Misinformation:** Leading to social unrest and panic situations.

#### **Remedies:**

1. Strengthening cybersecurity infrastructure.
2. Data protection laws and awareness programs.
3. Regular security audits for government and business networks.
4. International collaboration on cybercrime prevention.



## War, Terrorism, and Armed Conflicts

Man-made hazards also arise from **political instability, terrorism, and wars**, which destroy infrastructure and displace millions.

### Causes:

- Political rivalries and ethnic conflicts.
- Economic inequality and unemployment.
- Availability of weapons and weak governance.

### Examples:

- **Syrian Civil War:** Caused massive destruction, refugee crises, and chemical weapon use.
- **Terror Attacks in Pakistan, Nigeria, and Kenya:** Resulted in large-scale civilian deaths and economic loss.

### Remedies:

1. Promoting peace, education, and political dialogue.
2. Strengthening law enforcement and intelligence systems.
3. International cooperation for counterterrorism.
4. Rehabilitation and support for affected communities.

## Agricultural Hazards (Chemical and Pesticide Misuse)

In developing nations, overuse of fertilizers, pesticides, and poor irrigation practices have led to **soil pollution, water contamination, and health problems**.

### Causes:

- Lack of knowledge among farmers.
- Excessive chemical use for quick results.
- Inadequate government regulation.

### Examples:

- **Punjab, India:** Heavy pesticide use causing cancer and groundwater contamination.
- **Africa:** Use of banned pesticides without safety measures.

### Remedies:

1. Promotion of organic and sustainable farming.
2. Training for farmers on safe chemical use.
3. Government monitoring of agrochemical markets.
4. Encouraging traditional eco-friendly farming practices.

## Waste Management Hazards



Improper disposal of solid, liquid, and electronic waste leads to pollution and health risks.

**Causes:**

- Lack of waste segregation and recycling.
- Urban overpopulation and informal dumping grounds.
- Poor governance and lack of technology.

**Examples:**

- **Electronic Waste in Ghana and India:** Informal recycling releases toxic fumes and heavy metals.
- **Landfills in Nairobi (Kenya) and Mumbai (India):** Cause methane emissions, fires, and diseases.

**Remedies:**

1. Modern waste treatment and recycling plants.
2. Public education on waste segregation.
3. Banning of single-use plastics.
4. Extended producer responsibility (EPR) for industries.

**Common Causes of Man-Made Hazards in Developing Countries**

The major reasons behind frequent man-made disasters in developing regions include:

1. **Rapid industrialization without safety planning.**
2. **Weak governance and lack of enforcement of environmental laws.**
3. **Corruption and negligence by industries or officials.**
4. **Lack of awareness among citizens and workers.**
5. **Inadequate infrastructure for waste disposal and pollution control.**
6. **Poverty and dependence on unsustainable livelihoods.**
7. **Political instability and conflicts.**

These underlying factors make developing nations more vulnerable to both sudden and long-term human-induced crises.

**Remedies and Preventive Measures**

To minimize man-made hazards, a **multi-dimensional approach** involving government, industries, and citizens is essential.

**1. Governmental Actions**

- Enforce strict safety and environmental regulations.
- Strengthen disaster management agencies.





- Promote renewable energy and pollution-free industries.
- Introduce urban planning laws to prevent overcrowding and unsafe settlements.

## **2. Industrial and Technological Measures**

- Regular audits and risk assessments.
- Use of clean technologies and safety equipment.
- Proper waste management and recycling.
- Emergency preparedness and response training.

## **3. Educational and Community Actions**

- Environmental education in schools and communities.
- Awareness campaigns about safe agricultural and industrial practices.
- Participation of local communities in monitoring pollution and deforestation.

## **4. International Cooperation**

- Exchange of technology and expertise between nations.
- Adoption of global safety standards (e.g., ISO, IAEA).
- Support from organizations like UNDP, UNEP, and WHO for capacity building.

## **Conclusion**

Man-made hazards are a serious challenge facing the developing world. Unlike natural disasters, they are preventable and largely within human control. However, lack of awareness, weak laws, and economic pressures often lead to negligence and repeated disasters.

From industrial accidents like the **Bhopal Gas Tragedy** to environmental crises such as **river pollution, deforestation, and urban waste problems**, these hazards threaten human health, ecosystems, and sustainable development.

The only long-term solution lies in **responsible human behavior**—balancing development with environmental protection. Governments must enforce safety regulations, industries must adopt cleaner technologies, and citizens must cultivate eco-friendly lifestyles.

If developing countries integrate sustainability into their policies and culture, they can reduce these human-made threats and move toward a safer, healthier, and more prosperous future.



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