# Climate Change Education Inside and Outside the Classroom



**UNESCO Course**

**Module 1**

# Module 1

## Climate Change Mitigation, Adaptation and Disaster Risk Management

# MITIGATION AND ADAPTATION

- **MITIGATION** focuses on avoiding, reducing or, at least, delaying climate change mainly by reducing greenhouse gas emissions into the atmosphere

- **ADAPTATION** is necessary for responding to climate change that is already unavoidable because of past greenhouse gas emissions (there is considerable time lag before an emission contributes to global warming)

- **MITIGATION** and **ADAPTATION** are complementary aspects of a climate change strategy. Both call for lifestyle change. Both have to be factored into sustainable development plans.

# CLIMATE CHANGE MITIGATION (1)

Mitigation efforts focus upon reducing greenhouse gas emissions. For instance:

- Reducing emissions released from burning fossil fuels by power stations, factories, buildings, motor vehicles and airplanes
- Reducing deforestation (including burning and decomposing of wood)
- Capturing greenhouse gases released from garbage and human waste
- Reducing meat eating as cattle and farm animals emit methane (the second most important greenhouse gas)

# CLIMATE CHANGE MITIGATION (2)

- But some argue that 'deep mitigation' strategies are needed that address the underlying driving forces behind high levels of greenhouse gas emissions:

  - Rolling back mass consumerism, especially in high income societies
  - Moving away from a growth economy that exploits more and more natural resources
  - Prioritizing local economies as an antidote to globalization and the continual movement of people and goods around the world
  - Educating for a reconnected, non-exploitative relationship with nature

# CLIMATE CHANGE ADAPTABILITY AND VULNERABILITY

- Adaptability is the degree to which a system (e.g. community, region) can adjust in response to or anticipation of climate changed condition;

- Adaptability can reduce vulnerability, i.e. the extent to which climate change may damage or harm a system;

- Vulnerability is made worse by other stresses such as poverty, unequal access to resources, food insecurity, economic globalization, conflict and disease.

# SIX STRATEGIES FOR CLIMATE CHANGE ADAPTATION

- **Taking steps in advance to prevent losses**, for example building barriers against sea-level rise or reforesting hillsides to stop landslides
- **Taking steps to reduce losses**, for example using drought resistant plants in case of drought
- **Spreading or sharing losses**, for example setting a national disaster relief tax after a disaster
- **Changing how an activity is done**, for example mulching soil to reduce water loss
- **Changing the site of an activity**, for example relocating farming away from steep hill slopes and/or to where there is a surer source of water
- **Restoring a site with fit-for-purpose protection**, for example rebuilding a sacred site in a hazardous location with protective barriers
  - Inspired by: UNEP & UNFCCC, (2002). Climate Change Information Kit, Climate Change Information Sheet 9.

# WISE PRACTICES TO COPE WITH CHANGE

**2005 – Hurricane damage to coast and infrastructure**

**2005 – Hope Town School students work to plant dunes as part of a Sandwatch project**



Photo credits Candace Key

# WISE PRACTICES TO COPE WITH CHANGE

**2009 - Dune stabilised with sea oats**

**2011 – post H. Irene – the sea oats worked to hold the dune in place**





Photo credit: Candace Key

# GROUP ACTIVITY: ADAPTATION OR MITIGATION?

- Work in groups of 4 to arrange the cards you have been given in two columns: 1) examples of ADAPTATION and 2) examples of MITIGATION.

- Consider the following questions as you work on the activity:
  - Is there a relationship between adaptation and mitigation actions?
  - Can your group identify examples of an adaptation or mitigation action that might lead to unanticipated problems elsewhere?
  - As a group, try to decide on the 2 most important mitigation and adaptation actions from this set of examples.
  - Be prepared to share your ideas informally with the other groups.

# CLIMATE CHANGE AND DISASTER RISK REDUCTION

Climate change will affect disaster risks in two ways:

- First, through the likely **increase in weather and climate hazards**.

- Second, by **increasing the vulnerability of communities to natural hazards**, particularly through ecosystem degradation, reduction in water and food availability, and changes to livelihoods.

- Climate change will add yet another stress to those of **environmental degradation and rapid unplanned urban growth**, further reducing communities' abilities to cope with even the existing levels of weather related hazards.

(Edited from the International Strategy for Disaster Reduction (ISDR) (n.d). Climate Change and Disaster Risk Reduction: Briefing Note 01)

# DISASTER RISK REDUCTION: DEFINITIONS AND INSIGHTS

- 'Disaster Risk Reduction (DRR) is any activity carried out by a village, community, aid agency or government that helps prepare for, reduce the impact of, or prevent disasters. These activities can be policies, strategies, or practices that are developed and applied to minimize vulnerabilities and disaster risks throughout a society.'

  [Save the Children (n.d.) Reducing Risks, Saving Lives]

- 'Natural hazards by themselves do not cause disasters – it is the combination of an exposed, vulnerable and ill-prepared population or community with a hazard event that result in a disaster.'

  [International Strategy for Disaster Reduction (ISDR) (n.d). Change and Disaster Risk Reduction. Briefing Note 01]

# DISASTER RISK CALCULATION

- Disaster risks multiply with the intensity of the hazard and with social and environmental vulnerabilities of the society and the environment. In turn, they may be reduced by society's ability to cope with the hazard, as shown in the following equation:

$$\text{Disaster Risk} = \frac{\text{Natural Hazard x Vulnerability}}{\text{Capacity of Societal System}}$$

# DISASTERS: NUMBERS AND TRENDS

## Top 10

### Disasters by number of deaths - 2010 [2]

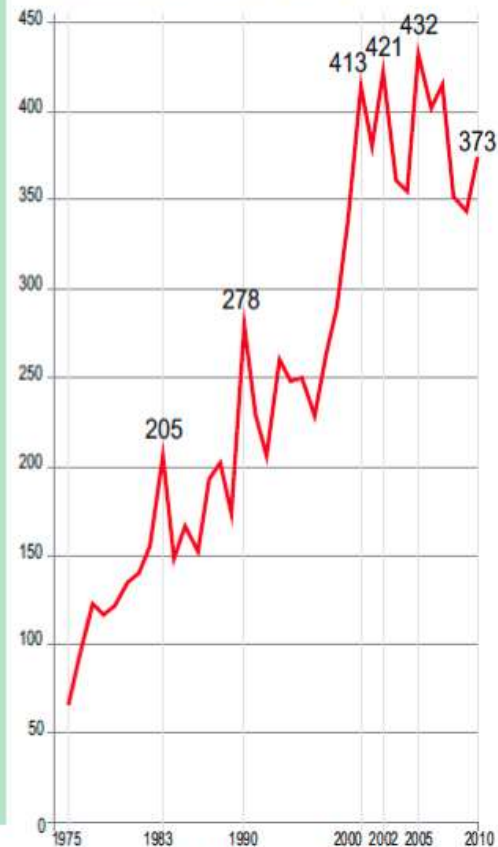| | | |
|---|---|---|
| Earthquake, January | Haiti | 222570 [3] |
| Heat wave, June-August | Russia | 55736 |
| Earthquake, April | China, P Rep | 2968 |
| Flood, July-August | Pakistan | 1985 |
| Landslides, August | China, P Rep | 1765 |
| Flood, May-August | China, P Rep | 1691 |
| Earthquake, February | Chile | 562 |
| Earthquake, October | Indonesia | 530 |
| Cold wave, July-December | Peru | 409 |
| Landslides, February-March | Uganda | 388 |

(2): Includes the reported missing persons

### Number of reported disasters by country - 2010

| | |
|---|---|
| China, P Rep | 22 |
| India | 16 |
| Philippines | 14 |
| United States | 12 |
| Indonesia | 11 |
| Australia | 8 |
| Mexico | 8 |
| Russia | 8 |
| Pakistan | 7 |
| Viet Nam | 7 |

### Total killed and affected people by disasters per 100,000 inhabitants - 2010

| | |
|---|---|
| Haiti | 40 098 [3] |
| Chile | 15 747 |
| Somalia | 15 506 |
| Thailand | 14 855 |
| Zimbabwe | 13 422 |
| Cook Island | 11 010 |
| China, P Rep | 10 902 |
| Pakistan | 10 691 |
| Mauritania | 9 383 |
| Benin | 9 301 |

### Time trend of reported disasters, 1975-2010 [4]

205
278
413 421 432
373

(4): Disasters = Country-level disasters

# CATEGORIES OF RISK REDUCTION STRATEGIES

- Awareness-raising in the community

- Setting up early warning systems

- Putting emergency preparedness plans in place

- Developing coping mechanisms

- Building personal and community resilience

- Dissemination and advocacy (communicating and sharing good practice)

# SCHOOL LEARNERS' CONTRIBUTIONS TO DISASTER RISK REDUCTION

- As **analyzers** of risk and risk reduction activities

- As **designers** and **implementers** of DRR interventions at community level

- As **communicators** of risks and risk management options (especially communications to parents, adults or those outside of community)
  - *Creative and performance arts (including street theatre, puppetry, art displays, song and dance)*
  - *Writing pamphlets, notices, newspaper pieces*
  - *Using photography and video to illustrate risks*

- As **mobilisers** of resources and action for community-based resilience
  - *Campaigning, petitioning, writing to local and national leaders*

- As **constructors** of social networks and capital
  - *Using the Internet to connect with youth around the world and share ideas on climate change DRR*
  - *Working with community-based organizations*