

Endangered environment, Endangered health

Global warming and the attendant climate change that comes with it have been acknowledged as new threats to global health security. This year's World Health Day theme - World Health Day 2008: protecting health from climate change - further underscores the urgency of dealing with global warming.

In a statement released to the media, World Health Organization Director General Dr. Margaret Chan warned that the rising global temperature "can affect some of the most fundamental determinants of health: air, water, food, shelter and freedom from disease." "The core concern is succinctly stated: climate change endangers human health," she added.

The tolls from climate change-induced deaths are already staggering. In a summary report of the World Health Day 2008: protecting health from climate change, the following annual death tolls were released:

- 800,000 from pollution-related diseases
- 1.8 million from diarrheal diseases caused by lack of potable water and unsanitary conditions
- 3.5 million from malnutrition
- 60,000 from natural disaster.

This issue of Health Alert discusses key issues surrounding global warming. The editorial, "What price development?" shows how the race for economic progress practically leaves the environment in ruins. "Hazards of climate change," meanwhile, discusses in details how climate change poses a challenge in global health security.

"Investments and profits in mining: implications on health" shows how the mining industry affects the environment and the people's health. The author maintains that current mining practices employed by transnational corporations leave the community more vulnerable to diseases and disasters.

Climate change also alters the weather pattern, resulting in more severe disasters. The last two articles, "Tsunami postscript: rebuilding a nation after a disaster" and "Towards achieving disaster-resilient community," offers valuable tips on how to deal with disasters.

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What price development?

By Ross Mayor

The environment has been a major casualty in mankind's quest for economic development.

The Industrial Revolution was the main engine that brought unprecedented economic wealth to the global community in a relatively short period. Such wealth, however, came with a steep cost: environmental degradation.

The revolution was aided, to a large extent, by the abundance of natural resources available back then. Industrialists wasted no time in plumbing the deep earth for oil to fuel its machineries. Trees were felled down and mountains were blasted to extract precious metals and minerals hidden in its bowel. As mankind marched towards a progressive civilization, it left in its wake a plundered environment.

Pollution

Water and air pollution have grave health consequences, such as high incidences of cholera and respiratory diseases. Developed countries have been quick to address the persistent problem of pollution by imposing stringent measures.

In contrast, least developed and developing countries continue to reel from the health costs of pollution. In the "World's Worst Polluted Places," released by Blacksmith Institute, poor countries dominate the list; two cities/provinces each in India (Sukinda and Vapi) and China (Linfen and Tianying) made it to the top ten. The cities/provinces are either located in mining areas or industrial estates. Because of the extractive nature of these industries, water, soil, and air in the mentioned regions are severely contaminated with toxic chemicals. In Tianying, lead in soil and air is ten times the national average, while in Vapi, its groundwater is contaminated with mercury.

In these areas, researchers found that there are higher incidences of cancer, skin and respiratory diseases, and birth defects.

Denuded forests

Data from the Food and Agricultural Organization (FAO) show that 13 million hectares of forests are lost every year due to deforestation. Although the rate of forest loss is going downward, the slow progress is still not enough to cover what has already been lost. According to FAO, for the 2000 – 2005 period, 37 countries lost at least one percent of their forest cover every year. In contrast, only 20 countries managed to expand their forest covers by at least one percent.



Economic development trade-offs: smogs in urban areas

Deforestation skews ecological equilibrium, often with disastrous consequences. Forests are home to a variety of species, all of which rely on each other for survival. The loss of a specie's

habitat could spell extinction for that particular specie, which could trigger a domino effect in the food chain.

With a diminishing forest cover, a community is more prone to flashfloods and landslides since there are no more trees to hold the soil together. The people of Aurora, a Philippine province, know this all too well. When a typhoon hit the province in 2004, it triggered a flashflood – blamed on rampant illegal logging in the province - which claimed the lives of thousands of people. In the aftermath, thousands of illegally cut logs were seen floating – along with the bodies of victims who drown in the flood.

Nature strikes back

As nature struggles to regain its equilibrium, mankind is now facing a new threat: global warming. As the earth's temperature rises, it brings about a myriad of interrelated problems.

With global warming, glaciers and sea ices are melting at a faster rate. The Intergovernmental Panel on Climate Change warns that by 2080, sea level could rise by a low of nine centimeters to a high of 69 centimeters.

Island-nations dotting the Pacific and Indian Oceans, as well as coastal communities, are at risk of being totally engulfed by a rising sea level. The World Wildlife Foundation reported that many villagers in Saoluafata in Samoa have already moved further inland because of the receding coastline. Tuvalu and Kiribati, on the other hand, face the possibility of a potable water shortage because saltwater has already penetrated some of its groundwater sources.

In a press release, the United Nations Economic and Social Commission for Asia and the Pacific warned that the Asia-Pacific region is more vulnerable to the threat due to the double burden of higher population density and lower natural resource endowment per capita.

“Asia and the Pacific has a population density that is 1.5 times the global average, the lowest freshwater availability per capita of all global regions, a biologically productive area per capita that is less than 60 per cent of the global average and arable and permanent crop land per capita that is less than 80 per cent of the global average,” it says.



Urban areas and polluted waterways.

Equitable and sustainable use of resources

Environmental degradation has political and economic dimensions, and it is not a mere coincidence that poor countries are often the ones bearing the brunt of environmental plunder. Least developed and developing countries are rich in natural resources, but through international trade instrumentalities and government corruptions, these resources are mined and extracted by transnational corporations. The communities affected are left holding an empty bag, as they struggle to deal with the health consequences of environmental degradation.

Equitable use of resources should also be prioritized - along with sustainability - in the development of an earth-friendly agenda. Talks of environmental sustainability would be rendered meaningless unless the issue of equitability is addressed.

Sources:

FAO Forest Resources Assessment 2005.

<http://www.fao.org/forestry/28813/en/>

World Wildlife Foundation.

http://www.panda.org/about_wwf/what_we_do/climate_change/problems/impacts/sea_levels/index.cfm

Photos: Dr. Delen dela Paz

Other useful sources of information:

Blacksmith Institute.

www.blacksmithinstitute.org

Intergovernmental Panel on Climate Change. **www.ipcc.ch**

United Nations Economic and Social Commission for Asia and the Pacific. **www.unescap.org**

Hazards of Climate Change

by Jennifer Ng

The unusual changes in season and temperature due to climate change may bring not only extremely unpredictable weather on people's door steps, but also epidemics and still unknown diseases, as well as food insecurity.



The United Nations Environment Program (UNEP) pronounced that climate change is one of today's most critical global challenges. Its effects have far-reaching and terrifying consequences that could lead to sickness and death. The World Health Organization (WHO) expressed its deep concern, particularly on climate change's effects on human health. The WHO said climate change has caused the recent increase in many infectious diseases, such as the HIV and AIDS, hantavirus, hepatitis C, SARS, among others.

"The total current estimated burden is small relative to other major risk factors. However, in contrast to many other risk factors, climate change and its associated risks are increasing rather than decreasing over time," the WHO said. For instance, projections from the health institution showed that by 2030, some regions experiencing climate change will

likely see a 10 percent increase in diarrhea incidences.

Getting Sick

"Vectors, pathogens and hosts each survive and reproduce within a range of optimal climatic conditions: temperature and precipitation are the most important, while sea level elevation, wind, and daylight duration are also important," it said.

Further, climate change also

increases changes in various vector-borne infectious diseases, particularly for malaria in regions bordering current endemic zones. The organization even singled out malaria as a disease of great public health concern. The WHO considered this as the disease that is most sensitive to long-term climate change. In its recent study, the WHO found that in the last century, malaria epidemics were periodically experienced in the Punjab region of India brought about by excessive monsoon, rainfall, and high humidity.

In fact, reports said that malaria has already reached Bhutan and new areas in Papua New Guinea for the first time. In the past, mosquitoes that spread the disease were unable to breed in the cooler climates there, but warmer temperatures have helped vector-borne diseases to flourish.

Singapore, on the other hand, has seen a correlation between rising temperatures and the number of dengue fever cases. Dengue fever cases increased ten-fold in areas in Singapore with a mean annual temperature of up to 26.9 Celsius in 1978 to 28.4 Celsius 20 years later.

This year, the Philippines' Department of Health (DOH) projected that there will be around 40,000 dengue cases during the rainy season or from June to October.

The DOH already reported 10,497 dengue cases from January to April or a 36.4 percent increase from last year's 7,697 cases.

The agency said the regions with the most reported cases are the National Capital Region with 2,750, Central Luzon with 1,736, and Central Visayas with 1,384. Deaths from the disease also increased from 88 to 116 during this period, mostly in Central Visayas.

Other Dangers to Health

Malaria and other vector-borne diseases are not the only risks to health posed by climate change. There are other risks that bring even more unquantifiable health impacts.

These include health impacts caused by changes in air pollution; the altered transmission of other infectious diseases; insufficient food production due to the effect of climate change on plant pests and diseases; drought and famine; population displacement due to natural disasters, crop failure, water shortages; destruction of health infrastructure; conflicts over natural resources; and direct impacts of heat and cold.

Climate change alters weather patterns, resulting in increased precipitation and more severe storms and hurricanes. The death toll of such natural disasters is quite staggering: in Myanmar alone, an estimated 20,000 died from a cyclone that ripped through the country.

The warmer climate also poses a threat to global food security.

Due to these, the WHO warned that the world may see more malnutrition cases in the near future and estimated that by 2030, a significant increase will be seen in Southeast Asia, posing greater health risks for a significant part of the world's population. A preview of things to come happened early this year when southeast Asia experienced a rice shortage due to downfall in productions.

Reports even stated that Asia-Pacific is already experiencing the effects of global warming. Estimates say that climate change was directly or indirectly linked to some 77,000 deaths each year in the region. The WHO said that this accounted for about half the global total of deaths blamed on climate change.

This figure, however, does not include deaths linked to urban air pollution, which kills more than 400,000 people in China every year.

Further, heat-related deaths in Shanghai, China, jumped three times above the norm in 1998 when a massive summer heat wave drove

temperatures to about 40 degrees Celsius.

"Overall, although the estimates of changes in risk are somewhat unstable because of regional variation in rainfall, they refer to a major existing disease burden entailing large numbers of people," the WHO said.

Because of the frightening consequences of changing weather patterns, the UN has appealed to various governments all over the world to seriously find ways to address climate change.

Whether or not this appeal will be considered remains to be seen. But while the UN waits for a concerted effort from major economies such as the United States to address climate change, global weather conditions continue to deteriorate and cause untold misery to billions of people.

Overall... they refer to a major existing disease burden entailing large numbers of people.

Photo courtesy of the Save the Abra River Movement.

Investments and Profits in Mining: Implications on Health

by Ma. Jennifer Haygood-Guste

While sustainable mining in general is essential for the development of economies, unchecked exploitation leading to plunder of these resources have gross social, health, environmental and political implications to local communities and host countries.

The recent boom in commodity prices has aroused growing investor interest in opportunities for mineral extraction in low-income countries. In last developed and developing countries, most foreign direct investments (FDI) are in extractive industries. Kazakhstan, Mali, Mongolia and Papua New Guinea are among the countries that have emerged as major recipients of FDI in metal mining.[1]

Foreign companies account for varying shares of metallic mineral and diamond production in individual host countries. Based on the value of production at the mining stage, of 33 major mining countries of the world, foreign affiliates were responsible for virtually all production in 2005 in some least developed countries, such as Guinea, Mali, the United Republic of Tanzania and Zambia, as well as in Argentina, Botswana, Gabon, Ghana, Mongolia, Namibia and Papua New Guinea. In another 10 major mining countries – a mix of developed, developing, and transition economies – foreign affiliates accounted for between 50 percent and 86 percent of all production.[1]

Social Implications of Mining

Minerals account for a small share of world production and trade. Nonetheless, their supply is essential for the sustainable development of a modern economy. They are basic, essential and strategic raw materials for the production of a wide range of industrial and consumer goods, military equipment, infrastructure, inputs for improving soil productivity, and also for transportation, energy, communications and countless other services. [1]

As such, mineral exploitation continue to be undertaken mostly by transnational corporations in developed countries and in the developing



Mining exacts a huge toll on the environment.

and underdeveloped countries where policies and regulations tend to be weak. As regulations in these countries tend to be lax, mining corporations tend to be negligent of their social responsibilities to the local communities and even to the mineworkers; as well as adhering to environmental standards.

However, with new investments in mineral exploitation these countries are confronted with *challenges* the economic concerns, extending to environmental, social (including health) and political dimensions.

Activities in the extractive industries can have health and safety impacts not only on people working in those industries (occupational health and safety of mineworkers), but also on nearby communities, for example, through air and water pollution resulting from those activities.

Health concerns in Mining

Mining in general has been identified as among the most hazardous industries. However, the occupational safety and health implications vary significantly between

different mining activities and countries.

In the working environment of a surface mine, for example, airborne contaminants (such as rock dust and fumes), excessive

noise, vibration and heat stress can create health problems for mineworkers who are subject to a frequent and prolonged exposure to them. They are exposed to various potentially toxic or harmful materials or agents, including, but not limited to, fuels, reagents, solvents, detergents, chemicals, coal dust, silica dust, diesel particulate matter (DPM), asbestos, noise, welding fumes, poisonous plants, trona dust, and metal dust.[1][2]

The impact of environmental accidents is larger in scope, destroying marine ecosystems, agricultural lands and displacing whole communities from their sources of livelihoods. People living near a mining area also experience long-term health complications which are often debilitating.

Environmental disasters and health issues

One of the major and more controversial issues surrounding mining especially large-scale industrial mining operations is the spate of environmental disasters major mining corporations (and lately, medium and junior mining corporations) are involved in.

Environmental disasters mostly involve the collapse of mine tailings dams containing toxic chemicals from treating mineral ores, that spills into rivers and oceans, agricultural areas and contaminating main water systems and food sources. More often, corporations walk away leaving the local communities and governments to pick up the pieces from the immense devastation wrought by the mining corporation's gross disregard for environmental standards and safety of the local communities.

The Marcopper Mine Tailings disaster in Marinduque in 1996 is one of the biggest industrial mining disaster in recorded history. On 24 March 1996, toxic mine tailings at the rate of 5-10 cubic meters per second were disgorged into the Makulapnit and Boac rivers. It was estimated that the

total amount of mine sludge spilled into the rivers was 1.5 million cubic meters. On top of the economic and environmental devastations it caused, it also affected the people's health. Years after the disaster, heavy metal poisoning, respiratory problems, and skin lesions were the top health concerns in the affected communities. [3][4]

United front

As conditions and experiences of mineworkers and communities in developing and underdeveloped countries across the globe are identical, peoples in these countries have the option to organize, unite, mobilize and assert for their sovereign rights as a people over their mineral resources. United, they have the power to lobby for development policies and projects that responds to their development needs.

One the major and more controversial issues surrounding mining...is the spate of environmental disasters major mining corporations...are involved in.

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[1] UNCTAD. "World Investment Report 2007"

[2] Scott, Douglas F. and Grayson, Larry R. "Selected Health Issues in Mining". (Spokane Research Laboratory, National Institute for Occupational Safety and Health, Spokane, WA and University of Missouri, Rolla – undated)

[3] Corpuz, Victoria T. "The Marcopper Toxic Mine Disaster - Philippines' Biggest Industrial Accident" (Third World Network - <http://www.twinside.org.sg/title/toxic-ch.htm>)

[4] Patterson, Kelly. "Oxfam International report highlights continuing problems at Marinduque." (April 14, 2005, <http://www.minesandcommunities.org/article.php?a=1272>)

Photo courtesy of the Save the Abra River Movement.

Tsunami postscript:

Rebuilding a nation after a disaster

By: Gireesha de Silva

The quick response of the Sri Lankan government, civil society organizations and the international community helped Sri Lanka recover from the tsunami's destruction.

The December 2004 tsunami generated an unprecedented challenge for the countries affected in terms of a staggering human death toll, displacement and destroyed infrastructure and assets.

In Sri Lanka, the tsunami affected around one million people and devastated over two thirds of the country's coastline. In its aftermath, more than 1,500 children were orphaned; more than 35,000 lives were lost; while another 20,000 were injured. Common infrastructure and public utility supplies were severely affected, further hampering relief and rescue missions in remote coastal areas. The total cost of relief, rehabilitation and reconstruction efforts in Sri Lanka was estimated at around USD 2.2 billion.

Tsunami-affected areas were vulnerable to the spread of communicable diseases with the displacement of people, deterioration of sanitary conditions, lack of clean drinking water and shelter, disruption of health infrastructure resulting in a delayed and ad hoc distribution of medical aid. With this backdrop, the government was faced with an enormous challenge of addressing the immediate health needs of affected populations.



To control the spread of diseases among the displaced, essential supplies and medicines were distributed:

- mosquito nets
- emergency first aid kit
- malaria kits
- chlorine tablets
- testing and sanitation kits
- vitamins

Rebuilding a nation

After the initial relief stage, which focused on bringing immediate relief to the people, the government commenced the next stage: rebuilding a nation battered by tsunami.

Recovery and reconstruction activities were organized under four thematic

areas: getting people back into their homes, restoring livelihoods, health and education-protection, and national infrastructure development. The government and development partners also worked on a number of cross-cutting themes such as environment, gender, legal aspects, and disaster preparedness.

A round-the-clock tsunami operation cells were established in each district, with teams and working groups tasked to oversee the distribution of medical donations and supplies. Together with its development partners, the Ministry of Health (MoH) identified medium and long term priorities to attend to:

- Restoration of services and reconstruction/renovation of health clinics and hospitals completely or partially damaged by the disaster
- Provision of essential medical supplies and drugs
- Mobility of medical teams and personnel
- Health protection and disease prevention of over 500,000 internally-displaced population (IDP)
- Addressing the mental and psychosocial needs of the affected communities
- Restoration and improving basic health and nutrition services and interventions
- Developing an early warning system and disaster management unit in the MoH

Challenges

However, there were also a number of issues faced by the government and the development partners, for which possible solutions were found. Some of the issues were coordination of health activities at all levels soon after the disaster, developing, communicating and maintaining standards to all stakeholders, construction and rehabilitation of health facilities, addressing the human resource shortages, emergency preparedness system and plan, logistics and distribution, monitoring of IDPs' health and quality of life and ensuring the sustainability of services.

Relief partners

The massive outpouring of assistance from civil society and the response of the international community with humanitarian aid including rescue teams, medical and food supplies, equipment and personnel was exemplary. This demonstration of human solidarity and kindness helped to curb any outbreak of disease among affected communities. The health practices and knowledge of the people also contributed to reduce health risks.

Responding to the crisis, partner-organizations of the People's Health Movement (PHM) – Sri Lanka established centers to assist the displaced. Sarvodaya, one Sri Lanka's biggest charities and a member of the PHM, worked to sustain the displaced by providing cooked meals, clothing, and

attending to their basic health needs. Special attention was paid to maternal and infant care. As it was necessary to maintain good health and hygiene practices amongst the displaced people information campaigns were conducted in the tsunami shelter sites. Awareness among the residents were raised by distributing leaflets and posters in the sites. Volunteers from Sarvodaya also visited these sites providing health education to the displaced.

On long term reconstruction and recovery efforts Sarvodaya constructed shelters, preschools

Disaster Management

The holistic approach adopted by the government not only led to the quick recovery of Sri Lanka; it also resulted in the adoption of a national strategy for dealing with emergencies and disasters:

- A draft of national health sector emergency preparedness plan, which includes a revised mental health policy (now approved and under implementation), and a national nutrition policy with clear guidelines on infant and young child feeding and revised breast feeding policy
- Training of community health officers
- Awareness raising campaigns among displaced communities
- Setting up of women's centers in some districts to respond to gender-based violence

and playgrounds. The beneficiaries also received household utensils and educational material.

Reference: Post Tsunami Recovery and Reconstruction, December 2006

Photo courtesy of Sarvodaya

Other useful source of information:

Sarvodaya. www.sarvodaya.org

Towards achieving disaster-resilient communities

By Katharina Anne D. Berza

Active community participation can mitigate the effects of disasters.

Disasters bring destruction to the population, environment, and economy as a whole. It can pose serious and massive threats to lives, properties, and infrastructures.

Natural and human-induced disasters like flood, volcanic eruption, earthquake, tropical cyclone, and development aggression can displace millions of individuals and thousands of families in one year alone. In fact, more than one million families or over four million individuals were affected by disasters in 2007.

Vulnerable population

Vulnerability refers to factors or causes that hinder a community's capacity to prevent or recover from the destructive effects of disasters. A population's socio-economic situation is one of the primary considerations in measuring their vulnerability to disasters. Meaning, the lower a family is in the social strata, the more vulnerable they become to the effects of disasters. Clearly, poverty and lack of political empowerment can be considered as one of the major causes of the country's high vulnerability to the effects of disasters.

Reactive and relief-centered

To date, there are different approaches to disaster management depending on an institution or group's orientation. Unfortunately in the Philippines, the practices that prevail in disaster response are reactive and relief-centered. There is more focus on emergency responses that tend to react *after* disasters occur. During these events, responses become tied-up in relief distributions that merely depend upon donations. In the end, when relief goods deplete, majority of the vulnerable populations struck by disasters find it almost impossible to bounce back to their normal way of life.

Community-Based Disaster Management

Community-based disaster management or CBDM is an approach pioneered by the Citizen's Disaster Response Center (CDRC). It traces its roots in the 1980s when the country was rocked by massive disasters that displaced thousands of families.

Pioneer members involved in different humanitarian groups realized that effects of disasters can be mitigated if the communities' capacities are enhanced and developed. By identifying vulnerable communities as the prime movers in disaster mitigation, CDRC developed its motto and core principle, "*helping people help themselves*".

Disaster management involves different components:

Emergency response – activities that are carried out to arrest further deterioration of life, property and remove affected families from life threatening situations. This consists of measures that will address immediate needs of the affected population such as relief delivery, search and rescue, evacuation, resource generation, and conduct of assessments.

Preparedness – is the enhancement and development of capacities to heed emergencies. Also, this involves a community's ability to warn and prepare its members even before a disaster happens. Preparedness activities consist of evacuation drills, counter-disaster plans, and formation of volunteer teams.

Mitigation – ensures a community's capacity to identify the causes of their vulnerability and works heavy on strengthening their livelihood and other areas of improvement. Mitigation should involve *structural* and *non-structural* measures.

Rehabilitation – programs make certain that affected communities will gradually recover from the effects of a disaster. This involves rehabilitation of production areas to ensure food security, structural recovery, and strengthening of people's organizations.

To make people safer from the onslaught of disasters, the promotion of disaster preparedness is vital. Disaster preparedness consists of measures that enable at-risk communities and individuals to provide timely and appropriate response to disaster situations.

What is the comprehensive approach to disaster management? A comprehensive approach to disaster management is one that involves communities and develops their capacity to prevent or withstand the effects of disasters. It is a comprehensive approach that equally values preparedness, emergency response, mitigation, and rehabilitation.

Effective disaster management strategies can convert at-risk communities into resilient ones. Vulnerable sectors of the urban poor, peasants, fisher folks, workers, indigenous peoples, women, and children must be directly involved in disaster management work. They should not be deemed or referred to as mere recipients or victims who do not have the capacity to empower and mobilize themselves.

Sources:

2007 Disaster Statistical Report: Changing Times, Changing Climate, CDRC

*Center for Research on the Epidemiology of Disasters. <http://www.unisdr.org/eng/media-room/facts-sheets/2007-disasters-in-numbers-ISDR-CRED.pdf>**

Disaster Preparedness Training Manual. CDRC. <http://www.cdrc-phil.org/cdrc.HTM>

Ibon Databank

United Nations International Strategy for Disaster Reduction. <http://www.unisdr.org/>

Selection and management of evacuation centers

As part of disaster preparedness contingency, evacuation in times of catastrophic natural or human-induced disasters must be planned ahead to optimize safety of all community members. Here are some essential tips in the selection and management of evacuation centers:

1. Identify the area
 - Must be safe
 - Plan the shortest and safest route with alternate paths in case of emergency
 - Identify an assembly point
 2. Complete list of evacuees
 3. Schedule of evacuations (if evacuation is to be done in batches)
 4. Availability of a disaster emergency pack containing a portable radio, lamp or flashlight with new and spare batteries, water containers/ bottles, spare clothing, canned or dried food, first aid kit
 5. Create evacuation management plans and necessary committees such as public relation and information, security, food, health, training and education
- In choosing evacuation centers, it is very important to consider the cultural characteristics of the evacuees especially in areas where indigenous peoples live. Indigenous knowledge is deemed important as these are very rich in survival know-how. Traditional beliefs can be taken into consideration provided that these will not pose danger to the community.
- Water fit for drinking and other purposes must be available to ensure health and sanitation within the evacuation center premises. The evacuation center should relatively be higher than the level of the recent flooding so that there will be no risk of the flood water flowing in the direction of the center. Elevation will also reduce the risk of contamination of water sources. It is advised that the soil type be able to absorb water and body wastes.
- These areas should also be safe from different hazards. Evacuation areas should be places that can accommodate the affected population and possess safe and sturdy structures that will protect against the elements. Ideally, evacuation centers should have areas where families can plant disaster-resilient and easy to grow crops as food contingency. Moreover, a specific place is appointed to serve as sanitary garbage disposal system.
- Lastly, evacuation centers should ideally be accessible to transportation. But if this is not possible, community leaders must at least ensure that there is communication with other groups or institutions.

A Community Guide to Environmental Health by J Conant and P Fadem, 2008

Summary: "Covers topics: community mobilization; water source protection, purification and borne diseases; sanitation; mosquito-borne diseases; deforestation and reforestation; farming; pesticides and toxics; solid waste and health care waste; harm from mining and oil extraction. Includes group activities and appropriate technology instructions." Available for \$28 (book); \$18 (CD); \$36 (book and CD) from Hesperian Foundation, 1919 Addison St., #304 Berkeley, California 94704, USA. Email bookorders@hesperian.org.

Protecting Health from Climate Change – World Health Day 2008

The World Health Day 2008 focuses on the need to protect health from the adverse effects of climate change. WHO selected this theme in recognition of the threat posed by climate change global public health security. This publication discusses the global situation of climate change and its impact on global health, food security, and on children. It also suggests strategies to mitigate the impacts of climate change. Download from http://www.who.int/world-health-day/toolkit/report_web.pdf.

Children in the New Millenium: Environmental Impact on Health, 2002

Illustrates the link between environment and the wellbeing of children with the intention of increasing the awareness and deepening the understanding of issues on environmental health. It provides information as a basis for action in improving children's health and that of the environment. Published by United Nations Environment Programme. <http://www.unep.org/ceh/main01.html>

Climate Change And Human Health: Present and Future Risks, 2006 by Anthony J McMichael, Rosalie E Woodruff, Simon Hales

This review article summarizes the "epidemiological evidence of how climate variations and trends affect various health outcomes." It reviewed researches with focus "on estimates of future regional food yields and hunger prevalence." An emerging broader approach addresses a wider spectrum of health risks due to the social, demographic, and economic disruptions brought about by climate change. Evidence and anticipation of adverse health effects will strengthen the case for pre-emptive policies, and will also guide priorities for planned adaptive strategies." *The Lancet Vol 36:859-869, March 11, 2006.* http://nceph.anu.edu.au/Staff_Students/Staff_pdf_papers/Rosalie_Woodruff/Lancet_2006.pdf

Websites**<http://www.greenpeace.org/international/>**

The website of Greenpeace International states that "Greenpeace exists because this fragile Earth deserves a voice. It needs solutions. It needs change. It needs action." The website provides information on global and country specific unified actions to address climate change.

<http://www.who.int/globalchange/climate/summary/en/index13.html>

This site provides the section "Climate Terminology For Health Practitioners" and frequently asked questions related to climate change and health.

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