

Disaster Management is Planet Management: Facts, Challenges, and Forecast for 2008

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Abstract

This summary contains some of the most crucial data, and describes the challenges for creating safe, sound and secure communities in 2008.

WORLD POPULATION

The 200 million square miles of Earth surface (60 million sq. miles land area, 140 million sq. miles water) contain the entire human population of currently 6.6 billion people. The surface is segregated by 265 nations, dependent areas, and other entities.

About 50% of the world's population today lives in urbanized areas.

33% belong to the Christian religion (of which 17% Roman Catholics, 6% Protestants, 4% Orthodox, 1.25% Anglicans, and others), 20% are Muslims, 13% are Hindus, 6% Buddhists, 0.37% Sikhs and 0.23% belong to the Jewish faith. 13% belong to other religions, 12% are non-religious and 2.4% are atheists.

ECONOMY

The global economy grew at 5.4% in 2006 to US \$66 trillion. The population grew 1.1% to 6.6 billion, and the average world per capita income increased by 4.3%.

However, only two percent of the world's population own more than 50% of the global wealth, while the poorest 50% of people own just 1%. In other words, the income of the 225 richest people on the planet is equal to those of the poorest 2.7 billion people, about 40% of the world population.

According to the International Monetary Fund, the annual gross domestic product (GDP) at purchasing power parity (PPP) per capita ranges:

- from around US \$1,000 or less (many African

Countries such as Niger, Eritrea, Sierra Leone, etc.)

- to about US \$37,000 (most industrialized nations such as the United Kingdom, Canada, Sweden)
- to approximately US \$44,000 for the USA
- to more than US \$70,000 for Luxembourg and Bermuda.

The GDP – PPP list, unlike the nominal GDP, does reflect differences in the cost of living in different countries. In the nominal GDP, people in more than 100 countries have an annual income of less than US \$5,000. Of that people in nearly 50 countries do earn less than US \$1,000 a year.

DISASTER COSTS

According to Munich Re, one of the world's largest re-insurance companies, 950 natural disasters were recorded in 2007, which is up from 850 last year, and the highest figure since the company started keeping systematic records in 1974.

The damage caused by natural disasters in 2007, mainly earthquakes, hurricanes, flooding, and wild fires amounted to US \$75 billion (EUR 52 billion). One of the costliest events was Storm Kyrill that affected large parts of Northern and Western Europe in January of 2007. Kyrill was unusual in that its field of hurricane-force winds was very broad, resulting in insured losses of about US \$5.8 billion (EUR 4 billion) and total economic losses of some US \$10 billion (EUR 6.9 billion). Germany alone accounted for half of

these losses.

Two flooding events in June and July in Great Britain each led to insured losses of about US \$3 billion (EUR 2.1 billion) and total economic losses of US \$4 billion (EUR 2.8).

A mid-April winter storm in the US resulted in losses of US \$1.57 billion (EUR 1.1 billion), and the October wildfires in California amounted to insured losses of at least US \$1.9 billion (EUR 1.3 billion).

The deadliest natural disasters in 2007 included the South Asia flooding from July to September, which claimed around 3,000 lives, as well as November's tropical cyclone Sidr in Bangladesh, which accounted for the loss of 3,300 people.

GLOBAL HEALTH

The world's average life expectancy has increased from 48 years in 1955 to 67 years today (USA today 77 years). Life expectancy in India at mid-century was around 32 years and had risen to 64 years by 2000. The global population seems to change from high mortality and high fertility, to low mortality and low fertility.

But again, due to HIV/AIDS and other public health issues, from sanitation to nutrition, today's life expectancy in poorer nations is almost half that of the industrialized, richer nations.

CLIMATE CHANGE AND GLOBAL WARMING

The Intergovernmental Panel on Climate Change (IPCC) reported that CO₂ emissions rose faster than its worst-case scenarios projected during 2000-2004 and may, without significant actions, rise 25% - 90% over the 2000 levels by 2030. It is estimated that China surpassed the United States in carbon emissions in 2006 by 8%. The USA actually decreased its CO₂ emissions by 1.4% from the previous year.

One of the consequences of global warming are rising sea levels which, according to NASA, will threaten more than 630 million people living in coastal areas.

The trend in respect to weather extremes shows that climate change is already taking effect, and more related catastrophes should be expected in the future. Decision-makers should not be misled by the absence of mega-catastrophes in a single year 2007.

As example, and mainly unnoticed from the general public, a record amount of Greenland's ice sheet melted in the summer of 2007, exceeding the previous high mark by 19 billion tons. In addition, for the first time on record, the Northwest Passage, a shipping route connecting the Atlantic and Pacific Oceans across the Arctic, became a navigable waterway.

A team of scientists discovered in September of 2007 that large tracts of Arctic sea ice were merely three feet deep, down from six feet only six years ago.

One study shows that the average global temperature has risen to the warmest level of the past 12,000 years. Temperatures are only 1.8 degrees Fahrenheit below the maximum temperature of the past million years.

ENVIRONMENTAL ISSUES

In addition to Global Warming and subsequent Climate Changes, large areas of our planet are subject to overpopulation; industrial disasters; air, water, and soil pollution; loss of vegetation due to overgrazing, deforestation, and desertification; loss of wetlands, wildlife, and non-renewable mineral resources including hydrocarbons; soil degradation, depletion, and erosion.

The human population increased from 1 billion in 1820, to 2 billion in 1930, to 3 billion in 1960. From there, it nearly exploded to 4 billion in 1974, 5 billion in 1988, and 6 billion in 2000.

Subsequently, unsustainable exploitations of ecosystems are currently under way in large parts of Asia, Africa and South America. The above human activities increase the risk of nonlinear and irreversible changes in the environment, which may have catastrophic effects on human health and development.

WATER CRISES

Water is essential for all forms of life on earth, from plants, to animals, to humans. Life on earth can't exist without water. Because of overpopulation, mass consumption, misuse, and pollution, the availability of drinking water per capita is inadequate and shrinking as of the year 2006. The 2003 UNESCO World Water Development Report predicts that within the next 20 years, the quantity of water available to everyone may decrease by 30%. It is estimated that 90% of all wastewater in underdeveloped and developing countries goes untreated into local rivers and streams.

Currently, 40% of the world's inhabitants have insufficient

fresh water for minimal hygiene, and at least 1 billion people routinely drink unhealthy water. In China alone 300 million people do not have clean water, and about 750 million do not have access to improved sanitation. Half of China's 617 largest cities face water deficits, and the capitol city, Beijing with a population of nearly 18 million, is among the most water-short.

In the year 2000 more than 2.2 million people worldwide died from waterborne diseases related to the consumption of contaminated water, or drought.

According to a UN climate report, the Himalayan glaciers that feed Asia's biggest rivers - Ganges, Indus, Brahmaputra, Yangtze, Mekong, Salween and Yellow - could disappear by 2035 as temperatures rise. Approximately 2.4 billion people live in the basin of these rivers. In India alone, the Ganges provides water for drinking and farming for more than 500 million people. India, China, Pakistan, Bangladesh, Nepal and Myanmar could experience severe floods followed by droughts in coming decades.

Due to today's extensive use in agriculture, high-tech manufacturing, and energy production, water is increasingly more precious than ever in our history. As another example, according to the WWF (World Wildlife Fund) untreated wastewater from China's Yangtze River basin has become the single largest polluter of the Pacific Ocean.

Therefore, water is a strategic resource around the globe and will be one of the critical and causative elements for future political conflicts.

Necessary resolutions, from improved water management, to sustainable use, or even energy-intensive desalination are far from being achieved particularly in underdeveloped or developing countries.

EDUCATION AND EMPLOYMENT

80% of the population (87% male and 77% female) over age 15 can read and write, which is one of the major achievements of our times. However, over two-thirds of the world's 785 million illiterate adults are found in only eight countries (India, China, Bangladesh, Pakistan, Nigeria, Ethiopia, Indonesia, and Egypt); of all the illiterate adults in the world, two-thirds are women.

The combined unemployment and underemployment in many non-industrialized countries is 30%; developed nations typically have a 4% - 12% unemployment rate.

MIGRATION

Subsequent to the gap in economic power and employment opportunities, 74 million so called "south to south" migrants move each year from one developing country to another, and 84 million so called "south to north" migrants move from poor states to rich ones.

The massive internal and transnational migration increases the world's population of "slum" dwellers by at least 25 million every year. These legal or illegal settlements are located at the fringes of urban margins, with insufficient housing, sanitation, employment, or other infrastructure. This is causing serious problems in the political, social, and economic arenas. Today's and the future's record-setting populations in those urban shanty towns have little or no access to education, healthcare, or the urban economy. Subsequently, these areas are breeding grounds not only for diseases, but for all kinds of violent activities including street gangs, illegal militias, religious militants, and terrorists.

In 2006, ethnic and cultural clashes were the cause of continued territorial fragmentation and internal displacement of estimated 6.6 million people, and cross-border displacements of 8.6 million refugees around the world. Just over one million refugees were repatriated in the same period.

One of many examples is the current situation in Zimbabwe, a country in the southern part of Africa. Political and economic turmoil with rampant unemployment, skyrocketing inflation, food shortages, etc., continued to create havoc for the population of 12 million in 2007. Up to 3 million people are believed to have fled to neighboring countries in recent years. An estimated 1.8 million Zimbabweans are infected with HIV/AIDS.

SCIENCE AND TECHNOLOGY

Two hundred years ago most of today's technologies, from nuclear, to pharmaceutical, to aviation and other modes of mass transportation, did not exist and were not even envisioned. It the late 1890's Henri Becquerel as well as Pierre and Marie Curie discovered a new phenomenon which came to be called radioactivity. At that time neither these three Nobel Prize winning physicists nor the public could visualize the subsequent progressions, from the first atomic bombs in 1945, to the commercial use of nuclear power in the early 1950's, to the Chernobyl disaster in April of 1986.

Following the explosion of the nuclear power plant in the

Northern Ukraine, a plume of highly radioactive particles went into the atmosphere and drifted over parts of the western Soviet Union, Europe, and Northern America. In the aftermath of the nuclear meltdown, at least 400,000 people had to be evacuated and resettled away from the highly contaminated exclusion zone near the disaster site.

Worldwide, millions of people, livestock and wildlife alike became exposed to unhealthy levels of radioactivity.

These consequences were not foreseen by the scientists who started working in the early 1900's with uranium salts and radium. They received various radiation burns, much like sunburn, and thought little of it.

A similar development can be identified through the progress of the chemical industry. In 1872, fifteen sulfuric acid manufacturers founded the Manufacturing Chemists' Association of the United States, predecessor of the American Chemistry Council. Four years later, in 1876 the American Chemical Society was established. The organic compound Methyl isocyanate (MIC) was discovered in 1888 as an ester of isocyanic acid. About 100 years later, on December 3, 1984 the accidental release of MIC from a chemical plant in the city of Bhopal, India led to the immediate death of approximately 4,000 people, caused more than 100,000 injuries and exposed probably up to half a million people to the toxic substance.

In 1996 a female sheep named Dolly was the first mammal to be cloned from an adult somatic cell, using the process of nuclear transfer. This was remarkable because it proved that a cell taken from a specific body part could create a whole individual. Previously it was believed that a specific cell could only produce replicas of the same body part from which it was obtained. The animal was cloned by Ian Wilmut, Keith Campbell and colleagues at the Roslin Institute in Edinburgh, Scotland, and lived normally for six years.

Since then many other large mammals have been cloned, including horses, cows, goats, pigs, rats, mice, rabbits, cats, horses and mules. In April of 2005 "Snuppy", the world's first cloned dog was born. Cloning technology is now considered a promising tool for preserving endangered species. However, like the researchers, physicists and engineers in the 19th century, we will experience the still unknown advances, threats, and unintended consequences of the production of identical genetic clones, and other modern technologies in the times to come.

In the US, Federal government does not support research involving cloning human embryos, but Americans already eat genetically modified corn and soybeans.

Today, the continued and exponential growth in science and technology, from biotechnology, to communication and information, to new technologies such as robotics and nanotech, raises both hopes (e.g., to solve many of humanities' current challenges) and fears (e.g., development of even more destructive weapons used in conflict and terrorism).

OUTLOOK

Due to climate change and global warming an increase in the severity of weather related disasters (from flooding to drought) has to be expected.

In addition, the vulnerability of countless communities towards natural and manmade disasters is rising significantly all over the globe. More and more people with more goods and wealth settle in ever more perilous locations. As a prime example, some of the largest global metropolitan areas and economic powerhouses are located along the Pacific Ring of Fire, an area that is prone to severe earthquakes and volcanic activity. This includes the greater areas of the Tokyo Bay with a population of nearly 40 million, Los Angeles with a population of nearly 20 million, or the San Francisco Bay with a population of more than 7 million.

Similar trends continue not only along the hurricane-prone coastal regions of the Southeastern United States, but in most urban centers around the world. Even without an increase in frequency or magnitude in weather events, geological occurrences or manmade calamities, the growing number of people and assets in exposed areas increases the susceptibility to damages or injury.

The threat of a global pandemic by an emerging virus is today as relevant as it was at the beginning of mankind. The most recent SARS (Severe Acute Respiratory Syndrome) outbreak between November 2002 and July 2003, with 8,096 known infected cases and 774 deaths (a mortality rate of 9.6%) worldwide, proves that a contagious virus can still create havoc on a global scale.

The current spread of the highly pathogenic H5N1 virus in birds is considered a significant pandemic threat. So far, the avian H5N1 virus can't be transmitted from human-to-human, but an infection can't be treated and is mostly lethal. Of the 340 people infected as of Dec 2007, 209 have died,

leading to a mortality rate of 65%.

The growing competition among states over depleting resources, from water to hydrocarbons, and increased fanaticism over issues such as ethnicity, culture, race, and religion, boost the potential for international conflicts.

With global access to information and weapons more factions evolve to settle territorial disputes or historical/religious/cultural claims, by means of violence, terrorism and war.

Armed conflicts between the uniformed forces of independent states are currently on the decrease. At the same time, stateless, but oftentimes multinational groups that are detracted from the sustenance and welfare of local populations, increase their efforts to destabilize governments and societies through violent activities.

Once any system starts to deteriorate, it may reach a certain tipping point beyond which a catastrophic break-up may not only become explosively rapid but also irreversible.

Gunnar J Kuepper

Facing those and other extraordinary threats and challenges in the near future, the author is not extraordinarily impressed by 200-pages of Emergency Management policies and procedures that describe the process of how and when the owner of a flooded tennis court is reimbursed and to what extent. This is neither a service to our communities, nor to global health and welfare nor in any way related to the monumental task of emergency management.

For the entire report “Disaster Management 2008 – Facts, Challenges and Forecast” or for more information contact Gunnar J Kuepper at GJK@edmus.info.

ABOUT THE AUTHOR

Gunnar J Kuepper is Chief of Operations with Emergency & Disaster Management in Los Angeles, California. This independent firm advises private, non-profit, and governmental institutions throughout the world in emergency management programs and conducts comprehensive vulnerability studies. He has analyzed, lectured, and published his findings of emergency management programs and the response operations in many catastrophic incidents, ranging from natural disasters, to human-caused accidents and technological failures, to acts of terrorism and ultraviolence.

Among his many professional activities, Gunnar serves since

1999 as a Principal on the NFPA 1600 Standard Committee and since 2007 as a Director of the California Emergency Services Association.

Gunnar was most recently re-elected for his 5th term as the Region 9 President of the International Association of Emergency Managers (IAEM). He represents more than 400 emergency managers who protect a population of nearly 50 million in Arizona, California, Hawaii, Nevada, and the Pacific Trust Territories.

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