A BRIEF REVIEW ON REASONS AND IMPLICATIONS OF THE INCREASING DISASTER LOSSES

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1. Introduction

Ever since the beginning of human history, natural disasters have been closely associated with human beings. According to the statistics, economic losses caused by meteorological disasters in China account for over 70% of the total losses by all natural disasters. Each year the stricken crop areas damaged by various meteorological disasters reach 50 million hectares, and the stricken population amount to over 400 million, the total economic loss equals 3%-5% of GDP in China. Moreover, the losses of meteorological disasters increase rapidly, according to the German insurance company Munich Re, the costs of major disasters raised more than tenfold in the second half of the twentieth century, from an average of about $4 billion per year in the 1950s to more than $40 billion in the 1990s, in inflation-adjusted dollars.

2. Reasons for the increasing disaster losses

Many factors account for the dramatically increasing costs of weather-related disasters in recent decades. Time-series analysis of loss records has shown that the increase of some weather related hazards in the US can largely be explained by changes in socio-economic factors, most importantly population growth and the accumulation of capital in areas that are at risk from natural hazards. Some other scholars however have argued that climate change and consequent shifts in extreme weather events may have an important contribution to the increase in losses from weather related disasters.

2.1 Population growth

Population growth may result in the increase of disaster losses. Natural phenomena are likely to affect more people because earth's population has increased. According to the United Nations Population Fund, this stands at about 6.5 billion people and is projected to reach 9.1 billion people in 2050. Compared with densely populated area, disaster with the same magnitude hit sparsely populated areas will therefore cause less damage. High population density means more deaths in a disaster, at the same time, growing population pressures have led many people to settle on vulnerable flood plains and hillsides. Satellite photographs taken of the China's Yangtze River over the past decade show increasing numbers of people moving into the most flood-prone areas, so in a flood in 1998 resulted in 3700 deaths, dislocated 223 million people, inundated 25 million hectares of cropland, and cost $30 billion. In China, The flood prone area accounting for 8% of national territory is inhabited by nearly 50% of the total population, where the gross industrial and agricultural product is estimated to be 2/3 of the national total. This is a very important problem.

2.2 Ecological degradation

Ecological degradation exacerbates flooding and landslides. Human activities, like deforestation, excessive land reclamation, large scale road construction, mining in mountainous and hilly areas and wetlands destruction, will inevitably degrade the soil and water, which will further result in floods or landslides. The soil erosion rate along the Yangtze River has doubled since the 1950s. Devastating landslides and floods have been exacerbated in recent years by deforestation and dikes that have hemmed in the Yangtze River and eliminated wetlands. Excessive logging of hillsides is partly to blame for the worst floods on the Yangtze River in China in 1998, and in that flood, over 550 people died as a result of mud slides.

The destruction of forests also results in natural water storage loss and silting of rivers and lakes and has raised the level of the rivers more and more. The Yangtze River flow rates in the summer of 1998 were below the historic highs but water levels are setting records because of the silting of river beds. Dongting Lake, a major regulator of the Yangtze floods, shrunk from 6,000 km^2 in 1700 to 4,350 km^2 in 1949 and by another third to just 2,820 km^2 by 1980. When tropical storms hit the Caribbean in September 2004, there was nothing to stop storm waters gathering and wreaking devastation in Haiti because of deforestation.

2.3 Urbanization and industrialization

Disasters are also a consequence of development and industrialization. In Europe, experts believe that countries such as France and Germany are more adversely affected by floods today because major rivers, such as the Rhine, have been straightened to ease commercial traffic. Urbanization increases runoff two to six times over what would occur on natural terrain. The rapid urbanization will result in bigger and more frequent floods on the one hand and more economic losses on the other. More importantly the damage of the system/network of communication, water supply, electricity supply, oil and gas supply, information net work in one place will affect the system in other places of the same city or other cities, which may paralyze the whole system of a region. The Chinese rush toward industrialization and economic modernization has indirectly contributed to the severity of the flooding. The government of Hunan Province in China in May 1992 tore down one kilometre of dikes in the name of opening up new agricultural land. The result was that 80,000 hectares of farmland and 700,000 people lost their protection from flooding.

2.4 Irrational land use and plan

Land reclamation for agriculture in flood-prone areas and accompanying human settlements increase flood vulnerability and losses by floods. Man-made irrational production activities, such as the filling in of lakes and rivers, have reduced their ability to regulate the floodwaters. The most densely populated 10% of Chinese territory which produces 70% of its agricultural and industrial product lies below the flood level of China's rivers, so China has been frequently hit by big floods and suffered from flood disasters. Owing to the reclamation of the flood plain and detention lakes, the detention area for the lower Yangtze has been reduced to about a half of that in 1954. The Jingjiang detention area and other man-made detention areas not been employed for flood storage as in 1954's flood event.

2.5 Poor and bad dwelling conditions

Poor and bad dwelling conditions also lead to the increase of disaster losses. There's a huge relationship between the damage and poverty, and disasters disproportionately harm poor people in poor countries. In several countries, poor people are looking for spaces that are not already used to build their houses or their communities, and those spaces are usually at higher risk for natural disaster. Those countries typically have densely populated regions, shoddily constructed buildings, sparse infrastructure, and grossly inadequate public health capabilities. Moreover, there are increasing numbers of people living in areas such as coastlines, and they have the potential for more devastating disasters. Thus, while the world's poorest 35 countries make up only about 10 percent of the world's population, they suffered more than half of the disaster-related deaths between 1992 and 2001.

2.6 Inadequate prevention capacity and preparation

One reason for the Yangtze River flood of 1998 is that the dikes and reservoirs are only built to counter floods that might come once every 10 to 20 years. That is a far lower standard than in the US or Japan. More silt and less water storage capacity in the Yangtze River basin will mean that even with less water, floods will become more serious than ever before. Hurricane Katrina in the United States is also a good example, The storm struck a city whose levees had not been maintained or strengthened for years, and government agencies' response to the emergency was at first inadequate. Early warning systems and education are essential to prevent and militate against the effects

of natural disasters. In its World disasters report 2005, the International Federation of Red Cross and Red Crescent Societies notes that a simple phone call saved thousands of lives when the giant tsunami waves hit India in 2004.

2.7 Climate change

Climate change-whether helped by human behavior or not-is playing a role. Hurricane experts say the world is in the midst of a routine, cyclical climate change that causes the Caribbean to heat up, increasing the frequency of powerful storms. But whether climate change is becoming an increasingly significant factor for the increase of hurricane impacts on society up to now constitutes an open debate. The seasonal floods afflicting China every summer are caused by the Asian monsoon winds, which sweep rain clouds from the oceans toward China in the spring and summer, in 1998, however, the rains began earlier and were heavier than usual, and the Chinese dikes were not prepared nor properly fortified to withstand the tremendous downpour.

3. Implications for research and policy

There are significance for research, policy and action if we understand these factors that lead to the increasing losses of disasters. Disasters stem from a complex mix of factors, including climate change, socioeconomic factors, and inadequate disaster preparedness and education on the part of governments as well as the general population. The escalating costs of disasters could be attributed in part to climate change, but in most case, the effect of human activities was greater than that of global warming. So some disasters experts reject the term “natural disasters”, arguing that there is almost always a man-made element. In the Yangtze River flood in 1998, government officials initially denied that were anything but natural, but at last recognized the human factor in worsening "natural" disasters.

Both natural climate change and human factors should be considered in disaster research and decision-making. But if we only consider disaster losses, much more attention should be given to human activities and corresponding ever-growing societal vulnerabilities to disaster. Compared with the long-term climate change control, we could improve disaster vulnerability more directly and the function is immediate, though this is complicated and difficult because of the limited land resources and increasing population pressure. There is a need to reach a common understanding and agreement from all concerned of this solution.

Natural disasters would not have such a devastating effect on people’s lives if they were not exposed to such risks in the first place. Adaptation to extreme weather events should play a central role in reducing societal vulnerabilities to climate and climate change. Today many countries are working to improve their disaster preparedness. Some experts also believe the most practical approach to preparedness of disaster may be to focus on reducing the risks rather than factors behind the risks, so preparation should focus on making people less vulnerable to disasters.

Most tools needed to reduce disaster vulnerability already exist, such as risk assessment techniques, better building codes and code enforcement, land-use standards, and emergency-preparedness plans. PAHO has expanded its programmes to focus not only on preparedness but also on mitigation. This involves reducing secondary deaths and destruction that can occur in the aftermath of a disaster, and implementing building codes that require hospitals, schools, military bases other vital structures to be built to withstand such disasters. Many effective actions are possible to reduce disaster losses even in the face of poverty and dense population. Mitigation of GHG emissions should also play a central role in response to anthropogenic climate change, though it does not have an effect for several decades on the hazard risk.

Application of the insurance and fund is no doubt a feasible way to reduce disaster effectively, It has been demonstrated by the past several years of practices that the insurance can play a very important role in reconstruction of afflicted regions and in rearrangement of victims and that the use of a large amount of insurance money accelerated greatly the economic rebuilding in disaster areas. Microfinancing is another avenue, giving poor people the means to improve their economic situation so that a disaster does not hit them as hard as it would otherwise, and also by lending them money to use in recovering from it.

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