

New Challenges of the Extreme Events. Impact Study Concerning the Risk Assessment

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Abstract. This study aims to provide a better understanding of the impact of risk posed by the extreme events such as pandemics and the road traffic accidents on the security dimensions and especially on the economic and financial as well as social and political security. The authors focused on the new challenges concerning the extreme events by analyzing the statistical data collected from the international institutions such as the World Health Organization and the United Nations Organization as well as the reports and the articles published in prestigious journals. The results lead to a new perspective on these extreme events and obviously reveal the necessity of identifying solutions to diminish their negative consequences and to restore order and functionality. In this respect, we appreciate that action must involve not only the international regional or national institutions but each individual.

Keywords: pandemic risk, impact, extreme events, road traffic accidents.

1. Introduction

Extreme events often involve dramatic consequences, as life losses and injuries, property damages, serious economic and social problems or environmental degradation. In the case of pandemics, the most obvious is the impact on human security considering the security care threats and the measures to ensure the protection of people against the diseases and the unhealthy lifestyle [1]. Currently, the characteristics of pandemics that threaten human security make difficult the involvement of the responsible authorities to completely prevent this risk. Moreover, the global nature of a pandemic is that it represents not only a problem of a nation, but a problem of the entire region or the entire international medical system.

Road accidents have also a significant human impact. According to the World report on preventing injuries due to road accidents [2] every year die in Europe, in these circumstances, around 130,000 men and 33,000 women. If we also consider the social, psychological and economic consequences of a person death we realize the need for identifying more effective road safety measures that need to be implemented by individuals, groups, human community, responsible state institutions, economic organizations and civil society.

2. Impact studies on pandemics

2.1. The impact on human security

Ability of individuals to defend themselves from a pandemic, which contributes to decrease its lethality, heavily depends on their living standards, their ability to procure information as well as the necessary means to protect themselves and their families. In contrast, low access to information and low income increase the vulnerability of the population at pandemic risk. Also, this link that follows a clear economic dimension of

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the human security can be also found in the food security domain. For example, studies have shown that a complete and balanced diet can substantially increase the body's ability to resist infection, a situation particularly valid for diseases affecting the immune system.

Also, another impact on medical safety considers the psychological consequences a disaster has on people affected. It should be noted that most studies on emotional effects of disasters on human psyche refers to natural disasters such as floods, earthquakes, etc. But there are few data regarding such effects caused by pandemics.

Experts can estimate the impact of future pandemics, based on assessing the impact of past pandemics. In this respect, studies indicate that the next pandemics are expected to have a low impact compared to the extreme events in the past [3], such as the Spanish flu in 1918, which was considered the most lethal pandemic. Spanish flu was caused by H1N1 avian influenza virus and killed as many as 40-50 million people worldwide.

The 2009 flu pandemic was an influenza pandemic, first reported in Mexico, in April 2009 and subsequently spread to all parts of the world. Thus of July 2010, worldwide more than 214 countries and overseas territories or communities have reported laboratory confirmed cases of pandemic influenza H1N1 2009, including over 18337 deaths [4] (see Table 1). So, the World Health Organization estimates are millions less than that associated with the pandemics of 1918, 1956, and 1968.

Table 1 The reported number of fatal cases for the 2009 flu pandemic

Region	Deaths
WHO Regional Office for Africa	168
WHO Regional Office for America	At least 8523
WHO Regional Office for Eastern Mediterranean	1019
WHO Regional Office for Europe	At least 4879
WHO Regional Office for South-East Asia	1900
WHO Regional Office for the Western Pacific	1848
Total	At least 18337

Source: World Health Organization, Pandemic (H1N1) 2009 - update 109, Weekly update, http://www.who.int/csr/don/2010_07_16/en/index.html.

2.2. The impact of the pandemics on the security dimensions

The economic cost of a pandemic risk is still a subject of dispute among the experts. Considering an international system characterized by globalization and interdependent economic markets, we can also expect global economic effects of the pandemics. However, as with the current global economic and financial crisis, states may take various measures depending on the level of economic development. Thus, a well developed economy will absorb the shock caused by a pandemic easier than a weak economy. Under these circumstances, national economies will be forced to redirect capital and jobs to areas where can be safer and lucrative used. There also will be changes on the market when analyzing the supply and demand. The demand will focus more on medical care (treatment, hospitalization), on pharmaceutical products (sanitary masks, gloves, antimicrobial solutions, etc.), encouraging venues from these industries. On the other hand, pandemics can affect other industries such as food producers (especially in the case of zoonotic diseases), retail and wholesale, restaurants, transport, tourism and educational systems.

Another result highlighted in the literature concerns the insurance companies, where the pressure caused by the pandemic risk could lead to economic losses. For example, the U.S. Government estimates show that if occurs a pandemic compared to Spanish flu in 1918-1919, only the costs for insurance in the case of death

amounts to 133 billion dollars [5], costs that should be added to the health insurances (the insured person receives a certain amount in case of disability).

We appreciate that the economic impact of pandemic posed by AIDS is bigger than that of influenza pandemics. The main reason for this is that AIDS remains an incurable disease, which has not a homogeneous geographic distribution, although cases of illness have been identified worldwide. Areas recording the highest disease rates, especially the Sub-Saharan Africa, are also associated with high rates of economic risk, leading them in a vicious circle where poverty is a premise for rapid development of disease and spread of the infection among population. In many developing states, the effects of the pandemic AIDS, combined with the economic recession of the 70s and 80s, have undermined economic and demographic growth as well as the living conditions of the next generations [6].

However, the impact studies [7] show that even a pandemic with minimal effects on the population can lead to considerable negative consequences on the global economy. In the worst case scenario, a pandemic would cost 142 million people lives and economies in developing states would be reduced by no more than a half when compared to normal conditions. Economic losses in this scenario would amount to 4.4 trillion dollars, or 12.6 percent of annual world GDP. In addition, in this scenario, the markets would completely close, which would generate more serious effects in terms of living standards and incomes in the developing countries but would increase the demand, in North America and the European developed countries. One of the social losses is the significant impact that the pandemics have on *education*. In this respect, the young people are one of the most vulnerable segment of the population as they have not an immune system resistant to influenza viruses, at the same time being exposed to a greater risk of contracting AIDS.

The consequences of the pandemic risk can be highlighted even at *the political level*. Perhaps the most obvious in this case would be a significant decrease of public confidence in government's ability to prevent or react to such disasters, especially when we are dealing with an incurable disease (such as HIV / AIDS) or with an influenza pandemic caused by a new type of virus, which would make the responsible authorities need time to react.

In this context, experts underlined the bioterrorism threat, understood as a deliberate attack using viruses, bacteria, toxins, etc. to affect the civilian population for achieving a political aim. Thus, there is a link between the pandemic risk and another security risk, the international terrorism. This involves a considerable political pressure on the security issues as, at the base, terrorism is still a political act.

3. Impact studies on road traffic accidents

3.1. Human impact of road traffic accidents

Road accidents are common worldwide, causing 1.2 million deaths and 50 million injured annually [8]. The extent of an accident is assessed by its consequences consisting of deaths, injuries (temporary or permanent incapacity to work) and property damages. Severe accidents usually contain all the mentioned aspects. Studies concerning the human role in producing the road traffic events show that human being is the main actor in traffic accidents. Among factors influencing the risk of road traffic accidents, the literature highlighted: driver's physical and mental condition, alcohol and drugs consumption affecting sensory capacities and orientation in space and time of the road traffic participants, insufficient or excessive speed of the vehicle used [9]; relatively low age, not wearing a seatbelt (for drivers and occupants) or a protective helmet (for motorcyclists and cyclists); the violation of traffic laws on public roads.

The experts claim that the road traffic accidents have a complex impact on individuals and their families as well as the human community. The complexity is given by: many areas of its impact, interdependence and interaction of traffic accident impacts, effectiveness of road safety measures taken both by the individual driver and the responsible institutions and the diversity of road traffic risks.

3.2. Impact of road traffic accidents on the security dimensions

In terms of *economic costs*, injuries due to road accidents are estimated at 1% of gross national product (GNP) in low income countries, 1.5% of GNP in middle income countries and 2% of GNP for high-income countries [10]. Direct economic cost of road traffic accidents is estimated worldwide at 518 billion U.S.

dollars. In this respect, the economic cost for low income countries of 65 billion U.S. dollars is exceeding the total amount representing the development aid received by these countries. Using data and more complex methods of calculation, the annual cost (direct and indirect) of injuries due to road accidents in EU countries, representing 5% of fatal accidents in the world, exceeds 180 billion EUR.

Also, road accidents affect not only the national and regional economies, but also the families budget [11]. Although road traffic accidents cause significant damages, the investments in scientific research concerning the road safety issues are insignificant when compared to other health hazards.

The *social and the psychological impacts* are interdependent in terms of their consequences equally affecting people who have suffered various injuries in road traffic accidents. In this respect, life, work, social norms and values support some temporary or permanent changes. These consequences are more significant in the case of long term or permanent changes experienced by the injured person.

The social impact of road traffic accidents is enormous. Whole families are affected by poverty due to the death of their members or because they have to support the costs of the medical services for the victims. This trend is an increasing national problem, contributing to the demographic crisis and imposing an additional burden on annually venues or savings.

Mental damage in road traffic accidents refers to long-term anxiety as well as fear or phobia of victims to drive their vehicles. Some people may experience depression, feelings of guilt or anger, while in the case of children trauma resides in a repetitive behavior. These symptoms may occur after a short interval (one month) or may appear and then disappear. Signs may persist several months and the consequences can be so severe as to affect personal and professional life of the victims.

Road traffic accidents have a negative *impact on the environment* by affecting the air, soil and water. In this respect, transportation of petroleum products has become a real threat in terms of pollution, especially on the long term. The road accidents frequency with negative visible consequences increased lately, with the high demand on petroleum products. According to the report *Climate for Transport Change* [12] presented in Brussels by the European Environment Agency, road traffic accidents involve annually 20,000 deaths and more than 100,000 premature deaths due to urban traffic pollution, representing about 40% of CO₂ emissions in transport sector. Whether due to negligence, carelessness, superficiality, weather conditions or other factors, these technical accidents have serious consequences, especially regarding long-term pollution, equally affecting both the environment and the human health.

The impacts on road traffic accidents are interrelated and their effects are cumulative. In this context, there is a need to adopt concrete measures to enhance road safety concerning both the individuals in their role as drivers, cyclists, motorcyclists or pedestrians and the institutions with responsibilities in this field. Lives losses, serious injuries, the costs of remedying the economic and financial consequences of road traffic accidents, the considerable psychological effects of these events as well as the attacks upon the environment require consistent measures to enhance road safety.

4. Conclusion

According to experts 300 new diseases have emerged in the past 70 years and the outbreaks will increase as humans come into a closer contact with wildlife [13]. Moreover, uncertainty has raised serious concerns about the capacity of the international community to respond to the possibility of a major threat to health and human security. Thus, among the issues that need to be examined in detail are the capacity of countries to deal with pandemics and road traffic accidents and the type of challenges faced by states in the prevention of these extreme events.

We appreciate that an improved ability to manage extreme events is essential to protect the public and the infrastructure and to maintain a sustainable economy. In this respect, it is very important our ability to investigate the impact of the pandemics and the road traffic accidents. This will be achieved only from increasing our scientific understanding of the magnitude and frequency of these extreme events as new challenges.

5. Acknowledgements

This article was written within the framework of the research project entitled **"Interdisciplinary Research for Active Economic-Financial Strategies Design in High Risk Events. Natural Hazards and Technological Accidents – PROSTRACT**, funded by the National Plan for Research, Development and Innovation, Program 4 - Partnerships in priority areas, for which the authors are grateful.

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