

504-027.551(497.7)

551.583-027.511(497.7)

Scientific article

**IMPACT OF THE GLOBALIZATION ON THE MACEDONIAN
ENVIRONMENT AND SECURITY**
**ВЛИЈАНИЕТО НА ГЛОБАЛИЗАЦИЈАТА ВРЗ ЕКОЛОШКАТА
БЕЗБЕДНОСТ НА МАКЕДОНИЈА**

Biljana Stevanovska, MA in Environment and Security

e-mail: biljas@t-home.mk

ABSTRACT

Problems with human security are met with protests against the current globalization. Some sudden accidents are not related to globalization (i.e. plane crash), but many trends are global movement (wars, a surge of unemployment, economic crisis). Consequently the protection of nature comes to globalization by engaging all local, national and intergovernmental institutions. World population is threatened by the continued atmosphere temperature increase, which in many nations is the foundation for a series of disasters such as drought, flood, desert storm, landslides, elevated sea levels, fires and pandemics. Impacts on health from climate change can be direct and indirect, through changes in agriculture, mutations in the food. Any emissions exceeding the threshold put the planet at risk of irreversible melting of a significant layer of ice of Greenland, thereby releasing large amounts of methane into the atmosphere (greenhouse gas). Local projections of climate change indicate that different climatic regions in Macedonia will react differently to a large scale in various aspects of life, especially health, agriculture, or water supply. The main blame for environmental degradation would not be sent to globalization itself as such, but towards the address of neo-liberalism as a special kind of globalization.

Key words: globalization, health and agricultural risk, vulnerability.

АПСТРАКТ

Проблемите со човековата безбедност се исполнети со протести против актуелната глобализација. Некои ненадејни несреќи не се врзани со глобализацијата (пример паѓање на авион), но голем број движења се глобални (војни, напливот на невработеност, економската криза). Следствено и заштитата на природата доаѓа до глобализација со ангажирање на сите локални, национални и меѓувладини институции. Светската популација е загрозувана од постојаното покачување на температурата на атмосферата, што за многу нации претставува темел за низата катастрофи, како што се суша, поплава, пустинска бура, лизгање на земјиштето, покачено ниво на морето, пожар

и пандемии. Влијанијата врз здравјето предизвикани од климатските промени може да се директни и индиректни, преку промени во земјоделството, мутации во храната и слично. Секое надминување на границата на емисиите ја води Планетата во ризик на неповратно топење на поголем слој од мразот на Гренланд, а со тоа ослободување на големо количество на метан во атмосферата (стакленички гас). Локалните проекции за климатските промени упатуваат дека различните климатски региони во Македонија ќе реагираат различно во голем размер и во различни области, особено здравство, земјоделство, водоснабдување. Главната вина за деградацијата на животната средина, би се упатила на адресата на новолиберализмот, како посебен вид на глобализацијата, но не и на самата глобализација како таква.

Клучни зборови: глобализација, здравје и земјоделски ризик, ранливост.

INTRODUCTION

People often draw parallels between the high vulnerability of the nation and intense globalization. Problems with human security are met with protests against the current globalization. Some sudden accidents are not related to globalization (plane crash), but many high-risk movements such as global war, a surge of immigrants unstable jobs, economic crisis, depleted natural resources, large floods, HIV-AIDS, are daily product of globalization. Indeed, some technologies associated with globalization (satellite monitoring on the weather and telecommunications), do help predict natural disasters, but on the other hand, global technologies, such as cargo marine transportation services for world trade, air transport and oversees nuclear power plants contribute to pollution global goods, i.e. air, water and soil. Despite the benefits, today computers contribute to greater use of paper for writing, which is negative for the world's forests. Especially a big impact the solid waste piled up in all corners of the world, which raised the whole trans-global organizations in efforts to recycle. Greenhouse effect, millions of years was a blessing for the Earth, but, it seems that in the last century turned into a serious threat to humans, caused by human activities. With industrialization and population growth, the consequences on greenhouse gases from burning fossil fuels, cut logging and clearing of land for use in agriculture, are constantly increasing. To improve environmental conditions at the time of global development, intergovernmental mechanisms would have to overcome all measures to remove the degradation of nature and to introduce prevention. So, instead of applying the polluter-pays system, the principle of the Kyoto Protocol and Climate Convention on greenhouse gases, it is necessary to impose similar limits on emissions of sulphur dioxide, cutting of forests, use of pesticides etc.. Consequently protecting the nature comes to globalization by engaging all local, national and intergovernmental institutions. Even institutions convey to globalization by establishing intergovernmental environmental

organizations aware of the existence of climate change, such as Greenpeace, UNDP, GEO, GEF and WWF. However, positive globalization effects, the contemporary trans-planetary communications and organizations, in turn, allow a rapid distribution of humanitarian assistance or peacekeeping missions in all parts of the world. Most anticipated consequences of global economic development are:

- More floods, more hurricanes: low landed countries like India, Maldives and islands will suffer the consequences for the sinking of the territory, or landslides.
- Less ice and snow: the trend of ice-melting is faster. In regions dependent on water from the mountains (6% of the population), this phenomenon causes drought.
- More extreme weather events, warmer waves, torrential rains, hurricanes: In the Mediterranean region through central Europe to Russia and Ukraine over the past century registered are lower amounts of annual precipitation down to 20%.
- Increased sea levels, due to melted ice, thermal expansion of sea, which with elevated 2 cm up to 1 meter height. Predicts that high sea levels will rise within the 9-88cm by 2100, but with significant regional variations.

THE EFFECT OF CLIMATE CHANGE ON POPULATION

Because the phrase climate change has become a regular description of natural disasters, the numbers of debates for our survival are organized around. But as it happen next debate, no doubt that changes are happening daily though global area down to everyone's house, and forest and desert. Pollution of natural media knows no administrative borders but affects all countries and continents, although arising in certain local sources. Impacts on health from climate change can be divided into direct and indirect. The direct impacts include diseases associated with temperature, extreme weather events, the effects of air pollution and spread of spores and moulds. The indirect effects include diseases associated with contamination of food, direct pollution, lack of drinking water and vector transmitted diseases. Warmer temperatures combined with increased ambient UV radiation and urban air pollution can highlight the photochemical smog and heat waves that will cause the hot flashes, exhaustion, convulsions and worsening of chronic lung problems, heart and kidney diseases. Global warming affects the occurrence of allergies and their intensification due to extended periods of flowering and pollen season in some plants, as well as the geographical spread of some plant species into new areas. Warming will have an impact on food safety, in terms of reduced yield, the risk of bacteria, etc. We are going to face poverty, food shortages and female workload will become more difficult.

THE EFFECT OF INCREASED TEMPERATURE

According to the official report of the Intergovernmental Panel on Climate Change (IPCC) projections show a possible rise in global temperature by 1.4 to 5.8° C in 2100. World population is threatened by the continued increase of atmospheric temperature, which in many nations is the foundation for a series of disasters such as drought, flood, desert storm, landslides, elevated sea levels, fires and pandemics. If G-77 countries agreed to limit the temperature increase worldwide for new 2°C, it means for Africa the 3-3.5°C., it means survival for 55 million. People will find at risk, while drying up of water will affect the new 350-600 million people. The whole southern world will be like holocaust, similar to classic stuffed people in oven, so heated people will die without water and food. The impact of increased temperature will be especially apparent in urban areas than rural. This difference in America is 12, 5 °C for a city of 1.000.000 inhabitants, and Europa is smaller, with a maximum difference of 8, 7 °C for Amsterdam. Arctic will warm up to 15°C will melt snow and ice, but will absorb more solar radiation. This will reduce the level of rainfall by 20% in western and southern Africa, Central America, the Mediterranean and coastal Australia. In contrast to India and similar areas will be more intense precipitation in 20%.

Considering the causes of climate change, we pull back to an issue of major emission of greenhouse gases from industry, traffic and urban planning. As emissions in one country spread across atmosphere towards the entire world, so the global anthropogenic emission of non-CO₂ substances (methane, nitrogen dioxide, CO, NMVOC) is equivalent to 9.000 MtCO₂eq for 1990 with forecast to grow by 44% by 2020. It is certainly usual scenario with all the planned reductions and opportunities for mitigation, according to the legal framework. Methane emissions will increase from 5,816 MtCO₂eq to 7,904 MtCO₂eq, and nitrogen oxides by 2,871 MtCO₂eq to 4,057 MtCO₂eq. These gases have a cumulative assimilation. Although the number of landfills and the index of production and consumption worldwide in many countries are in increasing degree, the use of methane already is reduced, and somewhere there is a sectorial reduction, such as policies for reduced use of fertilizers and more efficient farming techniques. The largest globalization effect is noticed in changing the industry in countries in transition, such a closing the giant industry and mines during the transition, and subsequent gasification. In all countries except Eastern Europe there is an increase of substances that reduce the ozone layer. On the global level the aggregated ozone depletion gases are harmful to the planet, so the governments are posting limits through the Montreal Protocol and the Kyoto Treaty. Contracts as part of the global control still have no impact, because they are not signed by China, Brazil, India and the United States, the countries that show absolute increasing of emissions, respectively, up 197%, 104%, 86%, 64% and 58%. Global world glass-house-gases emission is dictated by rapid industrialization, international trade, population growth, unequal policies for mining

pits and waste reusing. The Population Survival Secure Area on planetary level, looking on side of protective ozone layer, according to scientists, moves to emission of gases and particles from 350ppm. Planetary industrialization has reached 390ppm, so the scientific society appeals on efforts to reduce emissions to the limit, which allows long survival of wildlife and slowing the warming of the atmosphere. Any exceeding of the threshold leads the planet at risk of irreversible melting of a significant layer of ice of Greenland, thereby releasing large amounts of methane into the atmosphere (greenhouse gas).

GLOBAL COST OF POLLUTION

Climate change will cost the world around fifth of GDP in 2030. Individually each country goes to cover own risks with 19% of GDP. Developing countries are most vulnerable, due to inability to finance the risk of climate change. Prevention activities account for 40-68% of economic losses worldwide. Global economists calculated that it takes 2,5% of Gross World Product to achieve lifestyle changes, with such a radical step that would create jobs, develop new technologies and similar changes, as did the Cold War in 1950/60th. If countries need large portion of GDP to fund the pollution prevention, while nobody specifies where the finances flow from, then the poor countries remain to one solution with trading with carbon credits, instead of spending household budget. Europe is aware that countries will earn much money thanks to principle of trading CO₂ credits. Developing countries on the other hand, never had restricting emissions; so many governments do not know how much they loose through the trade. It is a new beginning of a new colonialism.

VULNERABILITY OF MACEDONIA FROM CLIMATE CHANGE

Local projections of climate change indicate that different climatic regions in Macedonia will react differently to a large scale. Region with continental climate in the south-eastern part of Macedonia, near Ohrid and Prespa Lake, seems to have the weakest response to climate change in large scale in the context of changes in the absolute temperature and precipitation. The northwest Macedonia prevailing influenced by mountain-alpine climate, would have the strongest reaction on climate change. The expected change in temperature in Macedonia is much larger than the expected global change. The average annual temperature in Macedonia until 2100 may be increased to 3,8°C, and the average summer temperature can be increased by 6°C. The range of daytime temperatures is expected to decline in winter and to increases in summer. Hardly is expected change in precipitation during the winter time, generally, but the second national report on climate change indicates a reduction to 19%. The most worrying fact is the amount of precipitation in summer, which is predicted to decrease down to 23% by 2100, but in some places up to 84%. This would mean that in terms of increased temperature, the

consumption of drinking water is expected to increase to 30%. Factors of irrigation, increased evaporation and drought, are added to consumption (40% of the total water consumed in the country). Climate change will also affect the incidence of extreme hydrological events, floods and droughts, which have already been registered in increased frequency compared to the past. On the other hand in some areas with different climatic conditions, local intense rains occurred will affect the appearance of erosive processes that would adversely reflect on agriculture, forestry and water resources. Increased water temperature will adversely affect the water balance and the wildlife that lives in water, primarily because of reduced amount of oxygen in the water. Reduced water flows, will increase the concentrations of pollutants in water, discharged by industry and agriculture.

The biggest impact will have the agriculture.

All parameters necessary for proper agricultural production are changing in the direction of creating unfavourable conditions for agricultural production. Climate change will have a negative impact on all major agricultural regions, although the most threatened region is the Povardarie, especially in the Crna Reka River and Bregalnica River. Highly sensitive areas are the south-eastern region (Strumica), the southern part of the Vardar Valley (Gevgelija), valley of Skopje and Kumanovo (Ovce Pole), too. Less threatened agricultural areas are: Pelagonija Valley, and lakes region. Crops from climate change will suffer loss of yield of 21% to 84% by 2100. Increased temperature, decreased moisture in the soil and lack of water for irrigation will contribute to reducing the organic component of soil and increasing erosion and salination, which directly affect her fertility. Especially the impact will be higher over mountain areas and Povardarie, with consequences in the change of organic matter from biomass, temperature regime and soil moisture. Most sensitive regions of soil salinization are in parts of Ovce Pole and Pelagonia Valley. Increasing temperatures will increase heat stress and reduce productivity in domestic animals. Due to rising temperatures and humidity the natural habitats of insects will increase, so that a large number of typical tropical diseases could be transferred among our domestic cattle. Climate change will cause deterioration of the quality of food products, due to the occurrence of pathogens and biotoxins in it. According to research in several regions in Macedonia, it is evident that the health condition of forests is poor. In particular there is mass dry oak, pine, fir migration to the north area and higher mountain elevations, which will completely change fitocen situation in Macedonia. This will lead to physiological stress of trees that result in increasing the amount of dry timber, which is easily combustible per unit area and thus will increase the number of forest fires. The entire range of forest disturbances will increase the population of certain forest pests. Macedonia is characterized by a high degree of biological diversity. As a result of climate change we can expect that

various types of biological communities (ecosystems) cannot migrate either in horizontal or in vertical direction, so most of them will disappear. There are several species that are highly dependent on temperature (change of vegetation, the provision of food, etc.). The increase in temperature will cause problems with nutrition for certain domestic species, and therefore this will change their life cycle.

Health effects

Climate change impacts completely the public health. This includes direct influences on rising diseases and conditions with lethal consequences, which are associated with changes in temperature. The health impacts caused by extreme weather conditions (floods, droughts and storms) and aero pollution are most frequent. Other health risks are result of indirect influences from distribution of diseases related to drinking water and food, or transmitting vectors (zoonosis). The public health is endangered by shortage of food and water in general. According to the predicted scenarios for trends of mortality as a result of increased temperature in the period 2035 year, the projected growth from 10% of monthly value is in the months April, May and June, compared with the period 1995-2004. Recent studies on food transmitted diseases show that salmonella sp. is frequent incubator for 5-10% for every 1°C raised of the average weekly air temperature below 5°C. According the scenarios of climate change there is projected increase in seasonal index of salmonella sp. diseases in 2030, during the winter months, as result from the rise of temperatures in average, despite the summer months, which were not so extreme.

Specific losses

Damage caused by floods directly affects the already fragile agriculture and local rural economies. In June 2004, climate change manifested through the occurrence of high, intensive rainfall, caused flooding and storm water in 26 municipalities in the country located in the upper flow of the river Vardar and central southern and south-eastern part of the country. Economic losses experienced during the flash floods in 2004 show that 96.46% of the total damage is attributable to the Agricultural Production. Drought with a similar frequency and intensity do accelerate the social and economic conditions in rural areas of southern and eastern part of Macedonia. For example, a prolonged drought in 1993 damaged large part of the real yield on agriculture in many cases which led to total devastation of cultures. The damage caused by the drought in the country was 7.6% of total national income. Flooding landslides, land dropping, and the new damages since 2010, this is yet to be assessed. The limit of the target value for the protection of human health for ozone layer is exceeded in Kumanovo, Veles, Kicevo, Tetovo, Bitola and mostly in s.Lazaropole. The maximum daily 8-hours values of concentrations of carbon monoxide

exceeding the limit value for protection of human health, especially in Skopje and Bitola, which should be reached in 2012. The number of allowed overcoming the daily limit value for protection of human health for suspended particles of size to 10 micrometres is exceeded the entire territory. Communal noise is above limits in most of regions. Measurements of the presence of heavy metals in soil do exceed the recommended maximum permissible concentrations of mercury, cyanide, sulphide and all other heavy metals, especially in Buchim, Kavadarci and Zhelezara-Skopje. The measured substances in water, the ammonia, nitrite, nitrate, nutrients, iron, cadmium, zinc, lead, copper, nickel, chromium and manganese etc., are in average high concentrates, which in periods are under the limited level, and in some above. According to saprobiological analysis, the Macedonian waters are of moderately polluted quality. All those measures show the high physical risk for the public health and survival of the animals in the country, that in future must be taken seriously if we are planning the sustainability in all aspects of living in the country.

CONCLUSION

Climate change largely brought heavy tasks for developing countries, especially those struggling with poverty. The situation creates a cruel environment for development. There is no money that would pull back the former healthy picture or would repair the damage, but additional donations would help to solve part of the problems. Expected climate change in XXI century will negatively impact on almost all sectors in our country. Because of the importance of the consequences of future climate change, we need to make special projects for modernization and establishment of a complete monitoring system for changes in Macedonia, and systems at the local level. The growing poverty does not recognize the principles of sustainable development, so does the manifest of excessive use of illegal logging, excessive use of other bio-resources, especially excessive hunting and fishing, unsustainable agricultural development etc. Uncontrolled urbanization, deagriculture (in the traditional sense) and industrialization are the main processes that disrupt the ecological balance (considering arising presence of pollution through cumulative effects). Generally seeing, the country has difficulties coping with extreme hydrological events (droughts and floods) due to a lack of financial, institutional capacities, and legal instruments. Even the average climate change, can also cause large problems in resources management. In order to mitigate the negative impacts of climate change in sectors, we must address adaptation priorities within an intersectional national plan. For developing countries such as Macedonia, which have no significant contribution to global emissions of greenhouse gases, the adaptation to change is the need and priority. The main blame for environmental degradation would be sent to the address of neoliberalism as a special kind of globalization, not to globalization itself as such. Thus, our obligations for the Planet are

joint venture, because the environment is part of globalization, we share bit of space and people and animals are together sinking or swimming in the problems around.

LITERATURE:

1. Betts Richard PhD, (2009), Climate Impacts, Met Office Hadley Centre, UK.
2. Dalby, S. (2002) Environmental Security, Mineapolis: University of Minesota Press.
3. Conference on climate change, COP15-Conference of Parties of UN, in Copenhagen, Denmark, 7-19.12.2009, web page [www://en.cop15.dk/frontpage](http://en.cop15.dk/frontpage)
4. First national report of Republic of Macedonia towards the UN framework convention on climate changes, (2006), Ministry of Environment.
5. Kendrovski Vladimir, PhD, Conditions with situation assessment on vulnerability of health sector and adaptation measures suggested for the expected climate change consequences in RM, 2008.
6. Ristevski Pece, State Advisor, Hydro-meteorological Institute. Agro-climate zones of the republic of Macedonia, and analysis on climate, vulnerability in period 1926-2005, Skopje, 2010.
7. Presentation, Climate and climate variations in Macedonia in 1926-2005, IPCC-Climate change 2001: WG II: Influences, adaptation and vulnerability, Ministry of Environment,
8. El Hassan bin Talal, Prince of Jordan, speech on opening COP15 Conference, 2009
9. Jerichow, Rie, Cost of climate change: Pay now, or pay a lot more later, British Met Office, UK, 08/10/2009
10. Bergant Klement, PhD, (2006) Scenery of climate change in Macedonia, methodology and results, Nova Gorica, Slovenia.
11. Second National Report of Macedonia for Framework Convention of UN for Climate Changes, Ministry of Environment, 2008.
12. Predictions of Climate changes in Macedonia, with assessment of vulnerability and measures for adaptation in sectors, Ministry of Environment, Skopje, 2007
13. Donevska Katerina PhD, (2006) Assessment of vulnerability and sector adaptation of water resources, Second National Report of RM towards UN Climate Changes Framework, Ministry of Environment,
14. Report of State Committee, 2004.
15. Millennium Development Goals 7, Sustainability of environment in Macedonia, UNDP, 2010
16. Filipovski Gjorgji, Degradation of soil, Skopje 2003
17. Macedonian Informative Centre, Yearly report of data for environment quality in 2007, Ministry of Environment, Skopje, 2008

- 18.** National strategy of Mechanism for clear development for the first period of obligations in the frame of Kyoto Protocol, 2008-2012,
- 19.** Ki-moon, Ban, UN Secretary-General, University of Copenhagen meeting, Copenhagen, 2009.