

Adaptation to climatic changes and relevant strategy

D.Turbat

M.Sc in veterinary science, senior captain Specialist responsible for animal infectious diseases, State Emergency General Board,

Email: Turenkh199@yahoo.com

Abstract

Occurrences of disasters due natural, human and technogenic factors are increasing in the last years worldwide, their frequencies are becoming closer, and many human lives and health were lost, enormous properties and wealth are being destroyed, and nature and environment is being deteriorated due to such disasters.

Annual occurrences of more than 2700 disasters and technogenic accidents and huge loss in human lives and health, wealth, nature and ecology, caused by these disasters in our country exert adverse impacts on sustainable economic developments of the country.

It has been essential to stabilize the country's socio-economic developments by strengthening disaster management systems, implementing preventive and response measures for dangers and disasters of atmospheric origins due to climatic changes, training of public for safe living, reduction of vulnerability and increase of participation of central and local authorities, competent authorities, private sectors and public in protection activities from disasters.

Introduction

Besides of disasters such as drought, zud, snow and dust storms, forest and steppe fires, desertification, overheating and cold due to climatic warming, highly contagious animal infectious diseases, harmful rodents, insects, and accidents of industries and transport means, and due to improper use of explosives, chemicals and toxicants are increasing.

Formation of national potential of adaptation to climatic changes, continuous and expeditious study and solution of issues related to ensuring ecological equilibrium, and ways of overcoming with minimal loss the hazards resulted from the country's socio-economic fragility and risks have been one of the essential measures to be implemented at present time.

Constitution of Mongolia, Conception of national security, Complex policy of national development, State policy on ecology and agriculture, and conventions being implemented under international assistance and supports were guided for development of “National program for climatic changes”, adopted and enforced by resolution 2 of State Ikh Hural of Mongolia in 2011.

Emergency authority was assigned to report to the Government the results of their activities for warning potential natural and climatic disasters, providing the preparedness for mitigation of hazards of disasters, supporting activities of groups and teams for combating disasters, and improving risk management in collaboration with competent authorities within the framework of this program.

Study materials and methods

Statistical comparisons, conclusions and analyses were performed by using every day reports of disasters and accidents occurred nation wide.

Results of the study

In agriculture sector, 41.5% of our country's total human population are working and providing their livelihood, and they produce approximately 20% of annual GDP, and more than 80% of agricultural products.

Because agricultural sector is greatly dependent from natural and climatic conditions, although its activities encompass crop production with insufficient irrigation and vast rangelands all year round, the sector is under regular attentions of the state and government.

Studies show annually about 25-30 dangerous atmospheric phenomena occurred in the last 40 years, one third of them were at the level of disasters, they caused 5-7 billion MNT loss in average nation wide, while 10-12 billion MNT worth loss, caused by momental climatic disasters exclusive of droughts and zuds, is associated with collapse of system for combating natural disasters, increased concentrations of human populations and social assets, as well as more realistic informations of loss of disasters.

Because any information provided from competent authorities should be very realistic for organizing current actions, and activities and measures to be accomplished by individuals, enterprises and organizations based on weather forecasts, our country's meteorological

institute notifies their forecasts distinguishing notion, warning from dangerous phenomenon and preventive notices from disasters.

As well as introduction of methods and technologies for making risk assessments with each types of disasters caused by natural and human and technogenic factors, and surveillance and forecast of dangerous climatic phenomena and potential disasters, development of ways expeditious communications to customers, and improvement early notification system are becoming important activities and measures for prevention of dangerous phenomena, combating the merged disasters and overcoming them with minimal loss.

Ways of combating climatic changes and dangerous phenomena

Frequencies of natural disasters in Asia is increasing due to degradation of nature and environment originated from global climatic changes and improper human actions, and harms and losses in our country as a consequence is also increasing year by year.

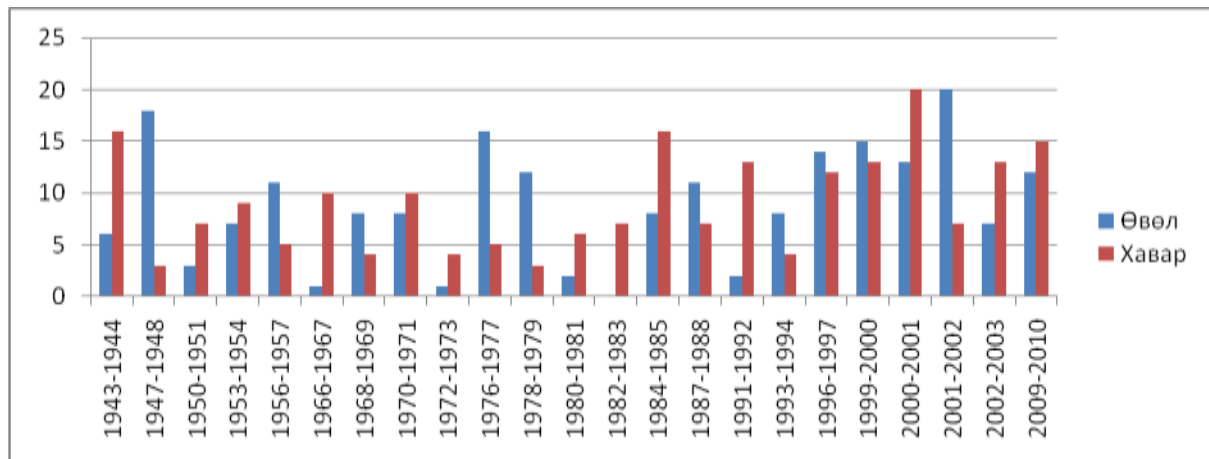
Because of severe continental climate and variability of climatic conditions with days or hours, larger natural disasters of atmospheric origins and technogenic accidents, and highly contagious human and animal infectious diseases occur all year round and they are causing enormous loss in the country's socio-economic situations.

Disasters appear mostly via drought, zud, forest and steppe fires, strong winds, snow and dust storms, hail, heavy shower, industrial and technical accidents, earthquake, and diseases in human, animal and plants.

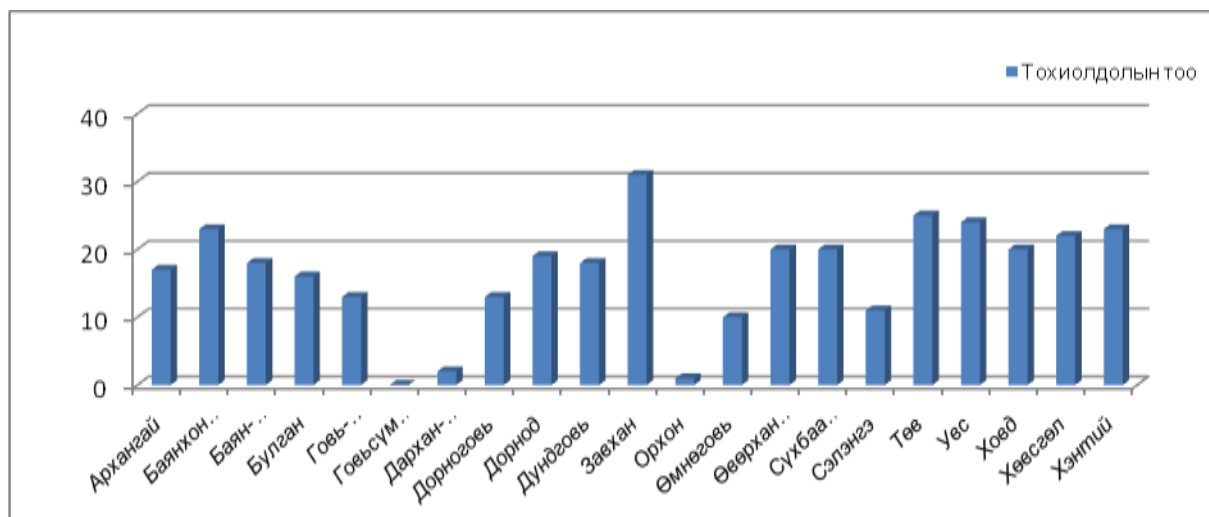
Main climatic characteristics of Mongolia are majority of cloudless days, longer and cold winter season, variable snow cover, shorter and cool summer, and lack of precipitations, and winds are abundant, air temperatures have greater fluctuations within a year, month and day, and instability is clearly observed in last years. In other words, cold reaching minus 30 to 56 degrees and below occurs in lowlands and valleys in January, while during warm season air temperature is 12-25 degree in average and reaches above 50 degree. On the other hand thawing of high mountain peak snow, glaciers and permafrosts in the territories of some aimags and soums occurs due to increase of average air temperature and it reveals warming is more obvious during cold seasons, and in the contrary cooling is observed during warm seasons.

Zud: - It has longer duration and occurs mostly during winter and spring.

In graph 1, zuds, encompassing above 50% of all aimags of our country, and causing difficulties facing livestock winter and spring encampments in the last 70 years /in 1944-1945, 1947-1948, 1954-1957, 1967-1968, 1971-1972, 1977-1978, 1982-1983, 1986-1988, 1992-1993, 1996-1997, 1999-2002, and 2009-2010/ are shown.



Graph 1. Zuds encompassing above 50% of all aimags of our country in the last 70 years



Graph 2. Zuds occurred nationwide in 1944-2010 (with each aimags)

In graph 2, occurrences of zuds encompassing whole territories of the country during winter and spring in 1944-1945, 1947-1948, 1977-1978, 1986-1987, 1999-2000, and 2009-2010.

With frequencies of zud, 31 zuds occurred in Zavkhan aimag, and more than 20 in Tuv,Uvs, Bayankhongor, Khentii and Khuvsgul aimags, while minimal occurrences or less than 10 were in Govi-sumber, Orkhon, Darkhan-Uul and Umnugovi aimags.

Occurrences in the last 10 years influence to remote regions and urban areas with concentrated populations.

3. Winds and storms – They last shorter period, occur mostly during spring and autumn, and sometimes they occur suddenly not allowing preventive measures.

They occur mostly in spring and frequency was 5- 6 years in 1939-1980, while it is occurring each year in the last years and loss and spheres are also increasing as shown in table 1.

Table 1. Loss due to strong winds and storms during some years in our country

years	2005	2008	2009	2010
Occurrences	23	25	16	32
Aimag, city/ soums, district / total	67/323	20/100	20/108	20/110
Affected people	12	71	25	7
Lost livestock /values mln MNT/	3000/150,0	414,9/20,745,9	328,1/16,403,3	1158/57,9
Destroyed assets /value mln MNT/	57/470,0	862/3,476,8	159/1,195,3	230/230,7

Another disasters occurred during spring is sudden heavy snowfall, snow and dust storms and flooding from melted snow. Loss due to flooding occurred in 1997-2009 was shown in table

Table 2. Loss due to flooding occurred in 1997-2009

Years	1997	1998	2006	2009
Flooding	44	2	32	10
Affected aimags, city	18	6	16	12
Affected people	50	7	9	26
Lost livestock /value mln MNT/	5553/157,6	23544/1177,2	7524/376,2	5059/252,9
Destroyed assets /value mln MNT/	18/1,8	39/35,1	68/971,3	161/4,201,010

Note: according to estimation of competent authority approximately 56.0 billion MNT worth (as of values in 2000) loss was caused due to major floodings in 1966-1996.



3. Droughts: It is a kind of disaster of atmospheric origin occurred in warm season. Drought means a phenomenon arrest of plant growth and drying of rivers and streams due to aridification resulted from long term absence of precipitation and it is characteristic with mass death of livestock and wild animals due to off feed and enormous loss in the living of herders,

Gobi aimags and neighboring territories are more affected from droughts. In graph 3, droughts occurred in 1944-2000 were shown.

In 1944 totla territory of our country was affected by drought and in 2000 more than 60% of total territory was arid and approximately 40% were affected by drought.

Conclusion:

It as been concluded that it is necessary to perform more detailed study on interrelationships and frequencies of disasters of atmospheric disasters, forest and steppe fires, highly contagious human and animal infectious diseases, and industrial and technical accidents.

Suggestions:

To use results of detailed study on interrelationships summarizing previous data, for prevention and fighting against disasters, and study relationships of droughts and zuds occurring in western and gobi region aimags.

References

1. N.Bayaraa, P.Damdin, Dangerous Phenomena and Disasters Occurred in Mongolia and lessons,
2. National program for climatic change, adopted by resolution 2 of State Ikh Hural in 2011
3. J.Tsogt, Ts.Munkhjargal, Report of research on “Disasterious climatic phenomena”