

Environmental Degradation and Human Security in Kazakhstan

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Environmental degradation is decline in the the environmental standard through depletion of natural resources such as air, water and soil, with destruction of ecosystems and the extinction of the wildlife, with many species becoming endangered. It is defined as any change or interference with the environment perceived to be deleterious to the environment (Johnson, 1997). Environmental degradation is a continuing process compromises the natural environment some way or the other, adversely affecting the biodiversity and the general health of the environment. The process of environmental degradation can be entirely natural, or it can be further accelerated or caused by human activities. It has been recognized, by many international organizations, as one of the major threats which the planet Earth is facing. As the conditions conducive for human existence are only available on planet Earth, therefore, if the environment here becomes irreparably compromised, it could lead to the end of human existence (Mahon, 2014).

Human security means security of an individual from any type of fear or threat. In the domain of international relations, human security is not a new concept. Its existence is as old as human birth. But formally it came up in the 1994 UNDP report. The UNDP 1994 report originally argued that human security as a concept requires paying attention to both, freedom from fear as well as freedom from want (UNDP, 1994). The other forms of security like national security, Regional security, and global security are all based on the human security. From a long time, the notion of human security has gained and is gaining worldwide acceptance.

Links between :

The connection between human security and environmental security takes both conceptual as well as pragmatic approach to various environmental issues such as soil erosion, desertification, water degradation, demographic shifts, food security and agricultural prospects, urbanization trends, hazard-induced migrations which adversely affect human security. Environmental security forms one of the most important part of human security and it aims to protect people from the short and long term effect of deterioration of the environment due to human activities. In developing countries, one of the greatest environmental threats is lack of access to clean water resources. In industrial countries, air pollution is one of the major threats. Global warming, which is caused by the emission of greenhouse gases, is another complex environmental security issue. Kazakhstan is also facing the above mentioned problems. The whole question of 'Freedom from Want' and 'Freedom to Fear' is necessary to give a

broader and more effective view to the question of security (Sanjeev *et al.*, 2003).

Human beings are utilizing world's major renewable natural resources like agricultural soils, forest trees, range grasses, and ocean fishes at a rate which is exponentially exceeding their natural abilities to renew these resources. Humans are introducing pollutants into the atmosphere in various forms like gaseous wastes, liquid and solid wastes, at levels increasingly beyond the levels at which they can dissipate or decompose. Humans are drastically encroaching upon what remains of relatively wild nature throughout the world. Throughout the world, agricultural land, fresh-water supplies are becoming ever scarcer. Indeed, human expropriation of land, fresh water, and other natural resources continue to rise at an exponential rate, which is in direct competition with the interests of the wildlife. In 1850, humans and their livestock accounted for but 5% of total terrestrial animal biomass. A century later this percentage had reached about 10%; at present it is just over 25%; and within 10 years due to displacement by humans of the terrestrial wildlife this value will have risen to 30% or more. The various above-noted indicators of rising levels of environmental degradation began to appreciably exceed biospheric sustainability roughly around 40 or 50 years ago. This degradation can be ascribed to a bundle of things like increasing human numbers leading to increasing human needs, desires, and technological abilities; and unwillingness of human society to deal with the problem in regionally and globally unified and otherwise required fashions, such disinclination exacerbated by the immense and growing North-South disparities in wealth, and further exacerbated by the immense and growing numbers of displaced persons (Westing, 2001).

Causes of environmental degradation :

There are various ways in which environmental degradation takes place. The changed life style and developed and developing regime is the main cause of environment degradation. The resources have simply become depleted. Air, water, and soil are all natural resources and being natural they are vulnerable to depletion because of overuse, like other natural resources like minerals and oil deposits. Habitat pressures also forces animals into a smaller area and highly contribute to resource depletion, due to consumption of a high volume of material in a small area. Pollution is the major cause of environmental degradation. Pollution means that environment has become toxic due to presence of unhealthy pollutants in it. Pollution can be caused due to various reasons like vehicular emissions, agricultural runoff, accidental chemical release from factories, and poorly-managed harvesting of natural resources (Mahon, 2014).

Release of exorbitant amount of gases, which are really harmful to the environment, by various industries is one of the biggest reasons for all kinds of environmental degradation. Release of gases like CO₂, SO₂ and NH₃, etc. is the main culprit for ozone holes and global warming. Deforestation is one of major problem as it decreases the number of trees, which clean the environment, provide oxygen and hence affect the rain patterns worldwide. Mining creates immense amount of pollution, mainly because the pollutants which it releases can harm the entire respiratory system. Other pollutants can come from indoor pollution, like by cooking on traditional 'choolahs' and because of cottage industries like 'bangle-making'. The increase in the number of vehicles on the road also increases pollution which directly affects humans. The hydro-carbons released from the engines of the vehicles are the cause of creation of lower level ozone which is harmful to human beings. Urban Heat Island is a direct cause of the large number of construction activities which are being carried out in today's time. Urban heat island causes trapping of these pollutants. Urban Heat island is caused due to the solar radiation which is trapped by concrete and cement, as they can trap heat extremely well. Soil degradation being a continuous cycle, ultimately leads to desertification and degradation of land quality as it allows the eroding agents to directly act on cultivable land. The increasing population creates a load that the entire environment has to bear, not only in terms of food and lodging requirements, but also in terms to deal with the amount of waste that it generates and the capability of the environment to sustain this

growth (Mukherjee, 2012).

Improper Management of Solid Wastes is one of the main causes of environment degradation, as the physical and chemical characteristics of the solid waste are known have very high organic content. The waste is not processed before disposal; hence deteriorate the environment in the following manner. Air pollution is caused due to bad odour of wastes, fugitive dust, windblown litter etc. Surface and ground water gets contamination by the leachate which comes out from the dumping yards. Anaerobic decomposition of these solid wastes takes place inside the dumping yards and results in the emission of really harmful gases like CH_4 , CO_2 , etc. These gases lead to global warming and are one of the main reasons of the rising temperature in summer. Poor Sanitation System is also another cause; as a large area is not covered with sewerage system. A large part of the population use septic tanks for the purpose of disposal of domestic solid wastes, and to the worst, the slum dwellers use open spaces as their toilet. When a standard minimum distance is not maintained between the ground water sources and the septic tanks, the ground water sources are bound to get polluted. Loss of wetlands and waterbodies also forms another cause. For large scale construction of buildings, apartments, slums etc. wetlands and water bodies like lakes, ponds etc. were and are filled up. Water bodies not only increase the natural recharge of ground water but also make the local climate cooler. Destruction of water bodies is one of the reasons of excessive heat in environment and the rising temperature. Deforestation is also taking place at a large scale. Trees absorb pollutants like NO_2 , SO_2 , O_3 , and CO through the pores present on the leaf surfaces. Through the leaves and branches of the trees small particulate matter such as pollen, dust, smoke, and ash are trapped and filtered. Other than this, the roots of the trees increase soil permeability, which further results in reduced surface run off of water from storms. Cutting of trees is one of the reasons of excessive heat in summer (Sabat, 2012).

Type of Environmental Degradation? :

The environment of Kazakhstan began to suffer significant harm during the Soviet period. Between 1949 and 1991 the Soviet government conducted about 70 per cent of its nuclear test in the state of Kazakhstan, most of them in the north-eastern area near the city of Semipalatinsk (which is now Semey). Nearly 500 nuclear explosions took place both above and below the ground near Semipalatinsk, while around more than forty nuclear detonations occurred at other places in western Kazakhstan and in the Qyzylqum desert. In the late 1980s Kazakhstan decided to bring an end to the nuclear tests. It held large demonstrations against the nuclear testing, and in 1991 the government of Kazakhstan finally put a full stop to the entire practice. But, the testing grounds, and perhaps even underground aquifers (water-bearing layers of rock, sand, or gravel), remain highly contaminated due to the affect of nuclear tests which had already taken place. Out of every three children born in the Semipalatinsk region, one has mental or physical defects, and about half the population of the area suffers from significant immune system deficiencies (Sandra, 2013). Radioactivity in Kazakhstan is higher than the global average by two to three times and the radioactive and toxic pollutants associated with former defence industries and test ranges, which were based throughout the country, still poses long-term health risks to the citizens of Kazakhstan (UN ECE, 2000).

The Aral Sea was once the fourth largest inland waterbody on Earth with a surface area of 66,000 km. The sea is located in Central Asia and is shared by the Republic of Karakalpakstan in Uzbekistan and Kzylorda region in Kazakhstan (Glantz, 1999). The destruction of this sea and its ecosystems creates the example of one of the greatest man-made environmental disasters in human history. The ecological catastrophe has been related with a sharp decline in the status of the health of the human population in this region. The environmental deterioration and destruction is expected to continue and the health outlook is still grim. In order to bring improvement in the health sector of this region, there is a requirement for immediate assistance from the international community (Glantz, 1999).

The destruction of the Aral Sea has lead to a loss of thousands of jobs, especially in fishing

related activities (Small *et al.*, 2001). Due to loss of support from the former Soviet Union, the local economy has been largely affected. Correspondingly, the health status of the population has also decreased rapidly. The infant mortality rates in the this region are said to have sadly increased from about 25 per 1000 live births in 1950 to 70-100 per 1000 live births in 1996 . Upheaval, dislocation and poverty are the main reasons for such high mortality rate in this region. The hospitals and health centers in the Aral Sea region lack even the essential medicines and equipment, and thus majorly struggle to deal with the effects of even not so complex diseases (Small *et al.*, 2001).

The shrinking of the Aral Sea in Central Asia is considered one of the most dramatic instances of a natural area being destroyed due to human activities. However, the real tragedy is its consequences on the health and well being of the people living there and the ecological balance of the region, which is drastically affected (Ataniyazova, 2003).

Since the early 1960's, the Aral Sea has shrunk to less than half its original because of the drive initiated by the Soviet government to increase cotton yields in the arid lands of Central Asia. In order to increase cotton yield, excessive irrigation took place which substantially decreased inflow to the Aral. Hence, Aral's shoreline began to recede swiftly. This lead to various environmental problems in the Aral Sea Basin, one of them being destruction of wildlife habitat as a result of desertification .The Aral Sea crisis is also correlated with a number of health issues, including respiratory infections and parasitic diseases. Efforts to address this crisis have majorly focused on preventing further shrinkage of the Aral Sea, as the damage is so severe that it is irreversible (International project, 1914-2014).

Kazakhstan also faces the big time problem of urban pollution, more specifically in its eastern cities, due to the harmful emissions from lead and zinc smelters, uranium-processing mills, and other hazardous industries. In recent years, environmental activist groups in Kazakhstan have begun lobbying and creating pressure for tighter emission controls. Other environmental issues in Kazakhstan include soil pollution, which is caused due to the overuse of pesticides in agricultural activities and the increasingly polluted waters of the Caspian Sea (International project, 1914-2014). The major environmental concern for human security arises due to large amounts of industrial wastes and absence of appropriate waste management system. 'By 1998, accumulated hazardous industrial wastes amounted to almost 3 billion tonnes' (UN ECE, 2000) . Industries are located mainly in the eastern region of Kazakhstan, which is highly rich in natural resources. Inappropriate waste disposal system and the large quantity of hazardous industrial wastes pose a substantial risk of lead poisoning (UN ECE, 2000).

Air pollution in Kazakhstan is another major environmental problem. Acid rain not only damages the environment within the country but also affects neighboring countries. Pollution cause because of industrial and agricultural sources has also damaged the nation's water supply. According to UN sources, in some cases, contamination of rivers cause by industrial metals is 160 to 800 times beyond acceptable levels. Pollution of the Caspian Sea is also a problem (International project 1914-2014). As a result of rocket launches, natural composition of the air has changed and has consequently become unsuitable for living organisms to breathe .As per UNDP's report, problems of air pollution have reached drastically acute level in Kazakhstan for a long time. In Kazakhstan, emissions of hazardous substances into the atmosphere stand at around 2.5 billion tons per year. Today, around 5 million people in Kazakhstan live in areas having polluted air, and about 2 million live in areas of highly polluted air (UNDPKAZ, 2006).

The environment of Kazakstan has been badly damaged because of human activities. Most of the water inKazakstan is also polluted by industrial effluents, pesticide and fertilizer residue, and, in some places, because of radioactivity. The sea began to shrink rapidly when irrigational activities sharply increased and other demands also created burden on the only significant tributaries, the Syrdariya and the Amu Darya (Kazakhstan Environmental Problems, 1996).

Effects of environment degradation :***Health problem :***

The condition of the population's health is affected by prevailing social-economical circumstance, sanitary and epidemiological situation, preventive and established public health measures and the ecological conditions present in the country. One of the main ecological factors increasing the population's morbidity and influencing citizen's physical level of development, reproduction possibilities, liability to morbidity and life duration seems to be the apparently high level of air pollution in the atmosphere. Inhaling polluted air into the windpipe and bronchial tubes affects alveoli, where the dirt enters in the blood and lymph. Its consequences are extremely adverse (Seinfeld and Pandis, 1997).

The World Health Organization states that more than 100 thousand people in Kazakhstan die every year because of the diseases caused due to air pollution. For last 10 years from 1996, the death rate has been exceeding the birth rate. It was only in 2008 that this figure changed in a positive way. The structural analysis and level of disease for last year's show direct dependence on a degree of influence of a complex of harmful polluting substances, adverse meteorological conditions and of some other factors rendering adverse influence on health of the population, leading to high level of disease. Higher morbidity rates are also linked to increasing incidences of conditions such as tumors, respiratory diseases, nervous system and sensory organ disturbances, gastrointestinal disease and circulatory diseases. Poor air quality has been cited as a major factor in leading to these conditions. Pollution has been found to have a chronically damaging and deteriorating impact on the health of the population in Kazakhstan (tumors, cancer, respiratory diseases, damage of organs and systems, reduction of total resistance and cardio-vascular diseases). Health status of the population is negatively affected by the unfavorable environmental situation, emissions from industries and technogenic hotspots (Salinko, 2011).

Poverty :

Environment degradation directly and indirectly leads to poverty, unemployment and migration. There is a trend of 'feminization' of (rural) poverty in many CEA countries, for which there exists at least two explanations. Firstly, to complement rural household income and to find employment, a large number of men temporarily migrate to Russia, and the one's residing in the poorer countries move to slightly wealthier countries (often looking for jobs in agriculture). Due to this temporary migration many rural households encounter a temporary absence of male labour. Though remittances might well counter some of the effects for these rural households (Mughal, 2006), but the brunt is basically borne by women. Secondly, in terms of workload, women are majorly entrusted with primary responsibility for the nearby small household plots (next to their work to guarantee household food and health). Also, in Tajikistan, Turkmenistan, and Uzbekistan, where women toil under difficult conditions for meagre wages, they tend to be involved in harvesting cotton. In the latter two countries, school youths, particularly girls, are involved in these activities (Spoor, 2007).

Land degradation renders serious social and economic impacts in Kazakhstan. The condition of the environment is directly proportional to the impact it has on living standard and health of the population, especially the effect on the socially vulnerable segments of the population. Major impacts include: (i) decrease in productivity of agricultural crops as a result of arable lands degradation; (ii) decrease in efficiency of high risk for livestock production caused by steppe/desert steppe and pasture degradation and lack of emergency fodder; (iii) loss of the individual and national income generating capacity of wildlife management and fisheries in connection with population reduction of target species caused by over-harvesting and habitat destruction; (iv) deterioration of drinking water quality and resulting in health problems; (v) shortage of timber and non-timber forest products, especially for local vulnerable groups, and loss of environmental services from forests. The impacts of

land degradation on rural populations further increase their vulnerability and therefore drive pressure on them to further exploit land resources for short-term production and benefit (Youlin, 2011).

At present the process of desertification is marked nearly in all administrative areas of Kazakhstan. Prevention and where feasible reversal of land degradation plays a significant role in Kazakhstan's sustainable development programme. About 43 per cent of the overall population of roughly 15.1 million inhabitants is residing in rural areas and the majority of it is dependent on income, derived directly or indirectly from the agrarian sector (Youlin, 2011).

Conflicts:

Ethnic conflict held to get the economic benefits, the main ethnic group of the country want to secure their jobs and other economic rights but on the other side other ethnic groups also want basic income right to fulfill their basic needs. In Kazakhstan, there are many ethnic conflicts which exists amongst Kazak, Russian, chains Uyghur, Uzbek, Ukrainians, and more or less all of them aim for job security and basic needs .

Migration :

Lester Brown of the Worldwatch Institute introduced the concept of environmental refugees in the 1970s. This concept was subsequently addressed in 1985 United Nations Environment Programme policy paper written by E. El-Hinnawi, which was entitled 'Environmental Refugees'. There have been several attempts to promote the concept rather the idea that a new category of refugees is required in order to protect people who have to move due to environmental factors. Myers defined environmental refugees as people who can no longer get a secure livelihood in their homelands because of environmental factors like drought, soil erosion, desertification, and many others (Myers, 1993).

Displaced people may not always receive the support they need in places of destination. Many a times people are displaced to places which lack in adequate infrastructure, because of which they become directly dependent on the environment for survival, leading to overexploitation of natural resources further leading to not only lack of potable water, soil degradation, deforestation, but also pollution and potential epidemics. Due to such circumstances, a range of maladaptive activities can drive these migrants to further stress the ecosystems and the natural resources, which may lead to a number of secondary environmental catastrophes (Wamer, 2008).

The processes of globalization are linked with rapid changes in global political and economic systems which have significantly contributed to a sharp intensification of international migration. During the last two decades migration gained a few new features and is now represented by new trends like globalization of migration, acceleration of migration, differentiation of migration, feminization of migration, growing politicization of migration, proliferation of migration transition and increasing prevailing role of economic or labor migration. (Castles and Miller, 2009). Push factor are economic, political problem, environment, conflict etc .In the rural areas agriculture is the main source of employment and income, which is closely linked with environment degradation, thus employment insecurity is biggest push factor (Delovarova, 2013). The choice of Astana further provided an opportunity to look at migration movements in the newer context of the relocation of the Kazakh capital from Almaty to Astana in 1997 (Alexander M. Danzer, 2013).

Government measures on environmental degradation :

Article 31 of the Kazakh Constitution states "the state shall set an objective to protect the environment favorable for the life and health of the citizen" (Article 31 Constitution of the Republic of Kazakhstan, 1995). The Constitution also states that 'officials shall be held accountable for the concealment of facts and circumstances endangering the life and health of the people' (NDPKAZ, 2006).

The Kazakhstan parliament, through its central executive bodies, such as the Ministry of Environmental Protection, the Ministry of Economy and Budgeting, the Ministry of Energy and Mineral Resources, the Ministry of Agriculture and the Agency for Land Resource Management, is developing a legal framework for natural resource use and environmental quality management (Kazakhstan Governmental Agencies Web Sites for more information see <http://en.government.kz/documents/govprog>).

The Ministry of Environmental Protection of Kazakhstan (MEP) plays the role of the central executive body in the area of environmental protection. It has various functions and many responsibilities to fulfill which include pursuing national environmental policy, state environmental impact assessment for projects in the area of environmental protection, administering state supervision and most importantly enforcing laws. The MEP oversees and remains vigilant about country's compliance with ratified conventions and interstate agreements regarding environmental quality and conservation of bio-diversity. The MEP also controls emissions and discharges of pollutants, issues permits or licenses to enterprises setting the standard of volumes and composition of pollutants, and provides state environmental expertise for environment related projects (UNDPKAZ, 2006).

The first law in Kazakhstan which regulates public relations in the area of environmental expertise is the "Law on Environmental Expertise", which was adopted on March 18, 1997. This normative legal act defines the basic terms and competence of the state agencies and identifies the required and obligatory objectives of environmental expertise. This law also regulates the primary and principal issues related to the order of environmental expertise. Article 16 of the Law on Environmental Expertise regulates the issues of environmental impact assessment (EIA). EIA details are specified in a *Temporary instruction on procedures of environmental impact assessment*. This document basically requires that this documented procedure should be applied to all types of planned economic activity, without any exception (UNDPKAZ, 2006).

The initiatives of the Central Asia Countries on land management promotes introduction of the 10-year program (2006-2016) on resources and activity mobilization through the National Action Plan for "(i) strengthening of political, legislative and institutional frameworks for creation of conditions promoting sustainable land management; (ii) increase of the capacity of key institutes responsible for planning and introduction of land interventions management and local societies directly exposed to land degradation; and (iii) improvement of land management and natural systems through the cumulative influence of corresponding favorable conditions and target project investments" (Yang Youlin, 2011).

In 2001, Kazakh government enacted a program on "the functioning and development of languages for 2001–2010". The official goals of the program were to expand and strengthen the communicative function of the state language, *i.e.* Kazakh, to preserve the culture of the Russian language and to develop and retain the languages of ethnic minorities. In 2006 an amendment was made to this program to contain concrete measures to establish the state language as the mandatory language in the fields of public administration, legislation and legal proceedings until 2010 (Vdovina, 2008).

Conclusion :

Environmental degradation is one of most serious problems faced by any nation. Environment and human security is a very close concept, environment security being one of the most focused points on the national and international level. Its aim is to provide the clean water, air pure air and hygienic place to live. In the way of development the concepts of environment degradation has come around as an obstacle. The effects of environment degradation are on reproduction as the new born babies suffer from various mental and physical ailments. The effect of environment is very complex with social and economic issues correlated with it. Environment degradation causes poverty, unemployment, migration and ethnic conflict etc. But Environment degradation is also a result of poverty and unemployment. It means that all of them form a part of a cycle which keeps going on. All the seven

most crucial area of human security in UNDP 1994 are directly or indirectly closely related with environment degradation.

The country ran up against serious ecological problems, especially in areas with a high degree of industrial development and a heavy dependence on mineral extraction activities. It has become necessary to resolve these problems. Articles 31 ensure that the state shall set an objective to protect the environment which would be favorable for the life and health of a person. Officials shall be held accountable for the concealment of facts and circumstances endangering the life and health of the people, if they won't act in accordance with law.

Kazakhstan has ratified the three Rio conventions (United Nations Framework Convention on Climate Change, Convention on Biological Diversity, and Convention on Combating Desertification) and has signed the Kyoto Protocol. It has accession status to the Montreal Protocol on Ozone Depleting Substances, the UN ECE Convention on Long- Range Trans boundary Air Pollution. It is a party to the UN ECE Convention on the Trans boundary Effects of Industrial Accidents and has ratified the UN ECE Convention on the Protection and Use of Trans- boundary Watercourses and International Lakes as well as the Aarhus Convention on Access to Information, public participation in decision making and access to justice in environmental matter. Kazakhstan also cooperates with Japan and the Asian Disaster Reduction Center because Kazakhstan is in an earthquake danger zone. Almost one hundred years ago an earthquake also destroyed Almaty. Kazakhstan has not remained on the sidelines with respect to environmental security and international aid.

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