

Environmental Change and Forced Migration: A Critical Issue of Kazakhstan

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Abstract: *The impact of ecological factors on migration captured a lot of attention over the recent decade. Environmental changes associated with natural phenomena, anthropogenic impacts and climate change encourages increased migration trends, modify their destinations and forms of migration relevant to environmental factors. We can analyze migration issues effectively by using Lee's "push-pull" model. Lee's model usually analyzes political, economic, demographic, environmental factors which are assumed to push people out of places of origin and lure them into destination places. To understand the migration processes in Kazakhstan Lee's model is effective. Kazakhstan before disintegration to till now is the backbone of Central Asia. Kazakhstan environment change is the result of both anthropogenic exploitation and natural disturbances. Natural disasters like floods, droughts, wind storms, epidemics, and earthquakes disturb the environment of Kazakhstan time to time. When Kazakhstan was under Soviet Union, maximum nuclear testing programs conducted. Several areas have exposed to high level of nuclear radiation which leads to radioactive pollution for a long period of time. Semipalatinsk is one of them. Diseases like breathing problem, tissue related problem, cancer, eye infection are common. People are bound to leave their native places and resettled in other places which we called forced migration. To become a world superpower Soviet Union make this place worst to survive because the environment of this region is radiated due to explosion. The Aral Sea represents one of the world's major human induced environmental problem areas. The forced cultivation of cotton during the Socialist era was the main cause of water diversion for irrigation. The problem became worst when water used for irrigation wasted due to lack of proper management and infrastructure. Other major issues which affect the environment are air pollution, decreasing level of underground water, dust storms, salinity etc. Air pollution in Kazakhstan is the fundamental result of industrial smokes, mineral extraction, inadequate industrial policies and management. In Kazakhstan, the cause of maximum internal displacement of people is due to adverse environmental conditions like in Kyzylorda province and in East- Kazakhstan where Semipalatinsk and the Aral Sea are located respectively.*

Keywords: Anthropogenic disasters; Environmental change; Aral Sea; Semipalatinsk; Internal displacement.

1. Introduction

Kazakhstan declared his independence on 16 December, 1991, after the collapse of the Soviet Union. Kazakhstan is a large Eurasian country and ninth largest country of the world. Kazakhstan is divided into fourteen Provinces: Atyrau, West Kazakhstan, Mangystau, Kostanay, Aktobe, North Kaz, Kyzylorda, Akmola, South Kaz, Karagandy, Almaty, Zhambyl, East Kazakhstan and Pavlodar. The capital is Astana, where it was moved from Almaty in 1997 which is the largest economic city. South Kaz, Almaty, Atyrau and Karagandy province are most populated regions of Kazakhstan due to their good economic performance. Aktobe and Mangystau is the least populated province of Kazakhstan. Kazakhstan is located in the north part of Central Asia and the physiographic of Kazakhstan is diverse with rocks, hills, mountains, deltas, taigas, steppes, plains and deserts. Some of the important lifeline rivers are flowing in this country like Syr Darya, Ili River, Ishim River, Ural River, Charyn River and Irtysh River. The Aral Sea, Lake Balkhash and Lake Zaysan are the most important water sources which provide water for various purposes. Kazakh steppe occupies about one- third of the country's area. This steppe area is basically consisting of sandy and grassland regions. Kazakhstan is rich source of hydrocarbons and minerals. This country has huge reserves of uranium, lead, zinc, manganese, copper, coal, iron, chromium and gold. Kazakhstan is economically progressive and sparsely populated country. Most important agricultural products of this country are cotton, wheat and livestock. The environmental problems of this country are diverse and often specific to certain areas. In short, the most significant

environmental problems are regarding radiation, desertification, salinization, sand storms, pollution, contamination, droughts, floods, soil erosion and landslides. The surface area of Kazakhstan is 57% unexploited land, 23% agricultural lands, 5% water and 1.75% water. The climate is continental and precipitation varies between arid and semi- arid conditions (Arustan, J. 2009). Kazakhstan is the only state of Central Asia that managed to overcome the Soviet planned economy and establish market relations in a proper manner. Kazakhstan is now a market economy. Industry (30%) and services (50%) represent most of the GDP, with agriculture making up about 6% of total GDP. The employment rate is at 7.1% with 19% of the total population living below the poverty line. But despite the economic success Kazakhstan was living in poverty, i.e. one in six people in the population had consumption expenditure below the poverty line (World Bank, 2002). The poverty rate is higher in rural areas and massive problems of food, health, water, education and public transportation.

2. Research Methods

The study will be historical, analytical and descriptive in nature. The study will be based on primary and secondary sources. The primary sources consist of the various governmental documents and reports, press statements, debates, speeches and interviews. The secondary sources include books, articles, magazines, newspaper reports, internet sources, etc. The study will be based on materials published mainly in English language and translations. The study will try to use materials in Russian language also.

Internet sources and documents from relevant websites will also be used.

3. Causal factors and environmental problems in Kazakhstan

Kazakhstan is a vast country so that it is difficult to obtain a proper understanding about human-made and natural disasters which have playing a significant role in internal migration. The main difficulties lie in the nature of the causal factors for migration and in the complex interconnection of environmental factors with social and economic issues. The primary environmental causal factors are desertification of Aral Sea, radioactive radiation, protracted nature, health issues and poor water resource management. The nature and extent of the impact that environmental degradation has on local economic conditions is central issue. Let us look at the main cause of forced migration in Kazakhstan.

Economic issues were important because environmental degradation made impossible to healthy earn for a proper survival. Agriculture, fishing, industries, livestock were heavily affected by degradation of the environment. Social issues were important but less important to economic one. Poor community life, less effective health care services, and worsening of education were identified by almost one-third of the residents. These problems are also relevant in today also.

Some deeper analysis of environmental issues clearly shows the influence on the common people and migration patterns in Kazakhstan. Kazakhstan environmental degradation is the result of both anthropogenic and natural disasters. The below given data is important to understand the importance of natural disasters for environmental degradation.

<i>Disaster type</i>	<i>Date</i>	<i>No. Affected</i>
Earthquake	23 May 2003	36,626
Extreme Temperature	Nov 1997	600,000
Flood	24 Feb 2005	25,000
Flood	26 May 1993	30,000
Flood	13 May 2001	3,668
Flood	April 2000	2,500
Epidemic	9 December 1998	593
Epidemic	January 2000	114
Epidemic	1999	166
Wild Fires	17 August 1997	8,000

Source: 'EM- DAT: The OFDA/CRED International Disaster Database, www.em-dat.net- Universite catholique de Louvain- Brussels- Belgium'

Kazakhstan is the best example of both natural and anthropogenic disasters. Natural disaster includes earthquake, landslide, famine, sandstorm, drought, flood and extreme heat and anthropogenic disaster includes desertification, deforestation, salinization, epidemics, dumping radioactive materials, over mining, toxication of rivers by industrial waste, overuse of chemical and fertilizers, oil spill, radiation and global warming which are more prevalent here. The Aral Sea crisis which is the best example of man-made disaster.

One of the well known environmental crisis concerns the impact of radiation, pollution and waste from the former nuclear test sites on the local population. Semipalatinsk which stretches up to Pavlodar and Karaganda Provinces. The Semipalatinsk Nuclear Testing Polygon (SNIP) was established in 1947. The nuclear testing was in peak in between 1949 to 1989, totally 470 overland and air blasts with number of underground explosions. These tests resulted the formation of small and big atomic lakes through which radioactive gas emissions spreaded into land and air and created environmental problems and the consequences were very painful because people were bound to leave that places due to health problems. These tests not only affect the people but it also affect on agricultural activities, ecosystems, rivers, landscape and socio-economic conditions. Another testing sites which located in the Kurmangazy region of the Atyrau Province. This site was active from 1966 to 1970 due to underground nuclear testing. This area is also known for oilfields so that besides high radiation, there is pollution of water by heavy metals.

In Kazakhstan, water is the key development factor. In between 1991 and 2000, water related disasters were composed of the following percentages: 50% flood, 11% drought, 28% epidemics, 9% landslides and 2% famine. In some of the regions, the collapse of water leads to food insecurity, human security, unemployment, poverty and others. The Kyzylorda Province of Kazakhstan is worst affected by environmental change. This Province situated in the Aral Sea Basin. Before the drying of the sea, there were good amount of fishing cooperatives, shipyards and ship repairing centers but due to drying of the sea caused thousands of people unemployed and migrated from there to other places. About 15% of arable land of this Province become desert due to lack of water annually and 25% of the pastures lost in the southern part of the Aral Sea (UNDP, 2005). So this Province facing the most serious water related problems and undergone population declination. Kyzylorda is one of the most poverty stricken provinces of the country, with poor water supply and low public health.

Water related problems like floods especially along the Syr Darya, flowing through Zhambyl, south Kazakhstan and Kyzylorda and meets in the Aral Sea. Floods and landslides are prominent in the Almaty Province and the surrounding areas especially northern shore of the Caspian Sea. Human factors are largely influencing the natural disasters in this region like deforestation. In 2004- 05, flooding in the southern Kazakhstan largely caused by the over filling of water in Chardara water reservoir during a time of heavy precipitation and the release of water from power dams and the tributaries of the Syr Darya. So this shows that storage of water in many parts of the country creates problem sometimes and offering the sudden disaster. In 2001, flooding in East Kazakhstan affected about 4,600 people and damaging the huge public properties. A drought which leads to desertification in various territories of the country has leads to steppe fires.

Earthquakes are also prevalent in Kazakhstan. In southern Kazakhstan, 650,000 square kilometers with 6 million residents and 40% of the country's industrial facilities are in danger because of earthquakes. Massive earthquake in

Zhambyl Province on May 2003 affected about 20 villages and about 36,000 people (UNDP, 2005).

Uranium mining, military nuclear testing and dumping of radioactive wastes are the important contributor of radiation and situation become unfavorable when there is poor waste management and treatment. Air pollution is one of the major problems apart from water pollution. Air pollution is the consequences of oil refineries, inappropriate amount of the extraction of minerals, poor drainage systems and inadequate industrial management. Acid rain damaged the environment of some parts of the country. Emissions from ferrous and non-ferrous metallurgical plants, transportation, oil and gas complexes and chemical factories lead to the air pollution. Some of the most polluted cities are Almaty, Karaganda, Shymkent and Rider. Opencast mines, pits, open funnels are the rigorous agents of air, land and water pollution.

Aralsk town is also known as Aral which is a small town. This town was formerly a fishing town and had small port and harbor on the banks of the Aral Sea. At peak time when this area was rich in water it provided thousands of people employment in fishing sector and reserved of huge fish at Soviet Era. But drying of Sea due to the Soviet economic policies and over irrigation make this region deserts. Today this area is suffering from sand storms and sample of desertification. This Sea left fertile plains due to huge amount of chemicals, fertilizers, minerals and salts. The land surrounding the sea is heavily polluted and sand storms from deserts which previously full of water make this area worst for survival. Population of this area decline significantly so today high out-migration makes this area almost empty. Many fishing industries, ships, boats, equipments are now under deserts.

The Karachaganak gas field is one of the biggest gas fields in the Western Kazakhstan where production started from 1984. Some other important gas and oil fields like Kashagan and Tengiz oil fields which emits huge amount of sulphur dioxide, nitrogen oxide, methane, carbon monoxide, benzene and hydrogen fluorides. The local people of surrounding areas or towns or cities influenced by these gases and leads to many health issue problems like cerebral circulation dysfunction, respiratory problems (like asthma, chest pain, choking, bronchitis, coughing), heart attacks, cancer, birth defects, headaches, eye problems, nausea, skin irritations and vomiting. The most prominent gas of these fields is sulfur. The arable land of nearby areas is become poisonous due to mixing of oil and in some places soil smells like oil.

4. Nature of Migration

Migration is the most complex phenomenon of population change. It provides an important network for the diffusion of ideas and information and indicates symptoms of economic and social change and can be regarded as a human adjustment to economic, social and environmental problems. Migration is the component of change which is most difficult to project because of the uncertainty associated with the decision to change one's place of residence (Demko,

Schnell and Ross, 1970). In general, human migration is interrelated systematically with population change and in particular with fertility and mortality. Migration process has no fixed time and place. Migration may take place suddenly and may transfer thousands of people from one place to other internal or international level and changing the composition and size of the original population substantially. So the estimation of migrated people is unpredictable. Migration is closely associated with socio-economic changes, economic instability, political transformation, ethnic conflicts, cultural identity, environmental and ecological factors.

Migration of people started in Kazakhstan since 1970s but the years right after the collapse of the Soviet Union, i.e. 1991- 1995, were characterized by a outflow of Volga Germans, ethnic Russians and other ethnic groups to their homelands. By, 1994, ethnic migration slowed down and gave a way of economic emigration. During heavy economic and political transition entire families left Kazakhstan followed by the worsening of the socio-economic conditions, disappearance of many jobs and professions and escalation of the unemployment rate. About 1,209,814 people emigrated from Kazakhstan between 1995 and 2005 (Human Development Report, UNDP, 2005). When Kazakhstan was in the phase of economic reforms, overcoming the economic crisis and getting a good position in the Central Asian region, migration trends reversed. Kazakhstan government efforts and attractive programs attracted ethnic Kazakh repatriates from all over the world back home. Financial support from the Kazakh government to help families settle in a new place resulted in 550,000 repatriates arriving from Mongolia, Uzbekistan, Turkmenistan, Iran and Kyrgyzstan. But these inflows were very few to fill the gap. Despite of the government efforts immigration to Kazakhstan was limited and less attractive for Kazakhs since they are being settled mostly in the northern regions among Russian ethnics which is less populated region and less developed. According to the UN report, the population of Kazakhstan will decrease from 15,640,000 to 13,941,000 during the period of 2000 to 2050 (UN report, New York, 2003). Kazakhstan is economically stronger than other Central Asian countries. The new job opportunities and high demand of labors, many labors migrates from China, Uzbekistan, Kyrgyzstan and Tajikistan came to Kazakhstan for work and settlement. This trend became possible because of the lack of jobs and poverty in Central Asian countries, coping less successfully with transition, and gapping of wages between other Central Asian states and Kazakhstan. Thus, Kazakhstan called a host country of Central Asia.

Arrival of thousands of labor migrants shifted the negative balance of migration to a positive one. The statistical data shows the progressively rising of the guest labors or workers in between 2000 to 2007 (Table: 1). In 2006, the authority of Kazakhstan detected 16, 4500 foreign workers working illegally in Kazakhstan. According to Kazakh Labor Ministry, the demand for labor is going to grow by 60,000 people annually, and will reach 1.2 million foreign workers by 2015 (Jolasov, 2009).

Table 1: In and out migration in Kazakhstan between 2000 to 2007

Kazakhstan	2000	2001	2002	2003	2004	2005	2006	2007
Emigrants	155749	141710	120223	73890	65530	52139	33690	42435
Immigrants	47442	53548	58211	65584	68319	74807	66731	53397
Balance	108307	-88162	-62012	-8306	2789	22668	33041	10962

Source: Agency of Statistics of the Republic of Kazakhstan

Internal displacements or movements of people within the country are another important characteristic of modern migration processes taking place in Kazakhstan. Some parts of Kazakhstan are characterized by ongoing, long term and active internal migration processes. Internal movements are largely due to the adverse environmental conditions. We can understand the outward migration of people through some charts and statistics. The UNDP Human Development report for 2003 directly linked water-related problems to the 'unplanned migration' of many people from villages and small towns.

According to Shestakov and Streletsky (1998),

'The reasons of the migrants are obviously tied to the ecological crisis, or, alternatively, the ecological factor becomes a catalyst triggering popular reaction to prevalent socio-economic conditions. For instance, the lack of jobs is mainly due to the drying up of the Sea: fishing ceases, followed by the closing down of fish processing, fish cannery and ship-repairing enterprises; pasture and farm land get degraded due to Salinization and desertification, leading to the reduction of livestock and agricultural

production. Mean while many rural settlements were depended entirely on fishing and cattle breeding.'

Previous surveys indicated that majority of internal residents and migrants of regions with large number of outward migration flows, list lack of proper work as the primary cause for leaving. People are unable to feed or maintain their families. About 80% of migrants interviewed named 'lack of work' as the main motivating factor for moving internally. Only around 10% indicated 'ecological disaster' (IPPF survey, 2001- 03). In 1998, Shestakov and Streletsky estimated that per annum about 75,000 persons left the Aral Sea zone. 'even by conservative estimates it can be stated that, directly or indirectly, approximately 80% of total migration flows occurs for purely ecological reasons or is caused by the socio-economic difficulties which are the result of ecological degradation'. The Kyzylorda provinces and the East Kazakhstan where the Aral Sea and the Semipalatinsk Nuclear Testing Site are located respectively, we can see the outflow of people internally through given table (Table: 2).

Table 2: Trends of migration in Kazakhstan and the selected areas affected by ecological disaster in between 2000 to 2007.

Regions	In And Out Migration	2000	2001	2002	2003	2004	2005	2006	2007
East-Kazakhstan	Out- migration	41727	42592	47989	39900	45140	38066	33152	34530
	In- migration	25836	27798	32487	29737	30826	26566	24158	24532
	Balance	-15891	-14794	-15502	-10163	-14314	-11500	-8994	-9998
Kyzylorda	Out- migration	11775	10898	11420	10586	9882	9954	10503	12134
	In- migration	4733	4319	6690	6310	4828	6919	6925	7646
	balance	-7042	-6579	-4730	-4276	-5054	-3035	-3578	-4488
Kazakhstan	Out-migration	432448	413438	389315	365648	383458	350766	328747	354175
	In-migration	324141	325276	327303	357342	386247	373434	361788	365137
	Balance	-108307	-88162	-62012	-8306	2789	22668	33041	10962

Source: Agency of Statistics of the Republic of Kazakhstan

According to the data, the population of the East Kazakhstan where the Semipalatinsk Nuclear Testing Polygon (SNTP) has decreased in between 2000 to 2007 and it will continue to decrease. The increasing trend of population in the Semei city reflects the displacement of people from affected area to urban areas. The main reason of displacement is

unemployment and poor health of the people due to radioactive elements. The population of East Kazakhstan and Abay region decreased in between 2000 to 2008 and even today condition is same (Table: 3).

Table 3: Population trends of the East Kazakhstan Province in between 2001 to 2008

POPULATION	2001	2002	2003	2004	2005	2006	2007	2008
Semei city	294235	294188	294889	297282	301984	305473	308129	310257
Abay region	17626	17442	17128	16870	16344	16101	15937	15833
East-Kazakhstan Province	1499097	1482550	1465931	1455412	1442097	1431180	1424513	1417384

Source: Agency of Statistics of the Republic of Kazakhstan

The Kyzylorda (Aral Sea) province faced harsh problems especially related to water and has undergone sharp declination of population. According to survey, majority of people founded low living standard and unemployment as the major problem. Poor water quality, sand storms, water supply and environment related problems come under

secondary problems and illness and poor health conditions come under tertiary problems, especially among children and young women. But in recent years, the population of Kyzylorda has increased (Table: 4). Apart from same trend found in the Aral town of this province. Despite of the outflows of the people, many people do not leave the

affected place because they have no proper means to move away or they have attachment to their ancestral lands.

Table 4: Population of the Kyzylorda Province, 1999- 2007

Population	1999	2006	2007
Aralsk region	68288	70798	71543
Kyzylorda province	595503	618249	625070

Source: Agency of Statistics of the Republic of Kazakhstan

Pavlodar is one of the important industrial areas of Kazakhstan and known for electric power, refined oil, ferroalloys, coal, agricultural and chemical products. But the environmental problems leads to lack of unemployment, low quality of water, low level of living stand standards and various diseases. So, outward migration is also active in this province. The outward migration from the affected regions especially surrounding areas of the Aral Sea due to the anthropogenic disasters has also impacted the urban centers like Astana, Atyrau and Almaty.

Natural disasters also played an important role in the outmigration and internal displacement in Kazakhstan. Most natural disasters have caused acute onset displacement with the possibility of return. Currently, more focus on technology help in the prevention and early warning systems which reduced the risk of displacement of people but in rural areas conditions are worse.

5. Lee's Migration Model or Intervening Obstacles Model

This model was proposed by Everett S. Lee in 1966 in his paper called 'A Theory of Migration'. He categorized the elements which influence migration as follows: (a) factors associated with migrant's origin, (b) factors associated with a migrant's destination, (c) obstacles between the two which called intervening obstacles and (d) personal factors (Lee, 1966). Lee assumed the origin and destination area in form of plus, minuses and zeros forces. A plus indicates the favorable elements which help to hold migrants; the minus indicates the unfavorable elements which migrants dislike and zeros are characteristics to which the potential migrant is different. Thus when one adds up the pluses, minuses and zeros for the origin and destination, the region with the greatest assets has the greatest influence on the decision to move. But one another type of circumstances must be considered by the migrants before deciding to relocate which called by Lee as 'Intervening Obstacles'. Intervening Obstacles may prevent migration or may reduce the numbers moving. Intervening Obstacles include such things as the cost of making the move and the psychic costs associated with breaking ties with family and community both of which are related to distance (Kumar, S., 2006, P. 11). The positive (plus), negative (minus) and neutral (zero) factors which were responsible for internal out- migration into international migration in all five Central Asian states after the disintegration of USSR as shown in table (Table: 5).

Table 5: Projection of Central Asian Emigration on Lee's Migration Model

	<i>At Origin Place</i>	<i>At Destination Place</i>	<i>Intervening Obstacles</i>
Positive Factor	High growth rate of population High percentage of young age population Large amount of labor force	Better social provisions Higher economic growth rate Good transportation facilities Employment opportunities Political and ethno- religious tolerance Faster globalization of economy	Government Policy Breaking ties with family and community Environmental problems Cost of movement Distance of destination from the origin place Political problems
Negative Factor	Unemployment Low wages Political disturbances Ethnic, religious and linguistic oppression	High wage rate Presence of less number of workers Low population growth rate High percentage of old age dependency ratio High per unit production change	
Neutral Factor	Choice of emigrants	Choice of migrants	

Source: Sanjay Kumar (2006), 'Migration Patterns in Central Asia', Jawaharlal Nehru University, New Delhi, India, P. 239-240.

Lee's Migration Model divides factors causing migrations into two groups of factors: push and pull factors. Push factors are things that are unfavorable about the area and pull factors are things that attract one to another area. According to him, push and pull factors may be different for different people. Decision to migrate is the results of two factors: first, pressure at the migrants permanent place of residence (Push) factor and second, inducements from a number of potential destinations (Pull) factor. Some of the important push and pull factors are shown in table (Table: 6).

Table 6: Some important push and pull factors responsible for migration

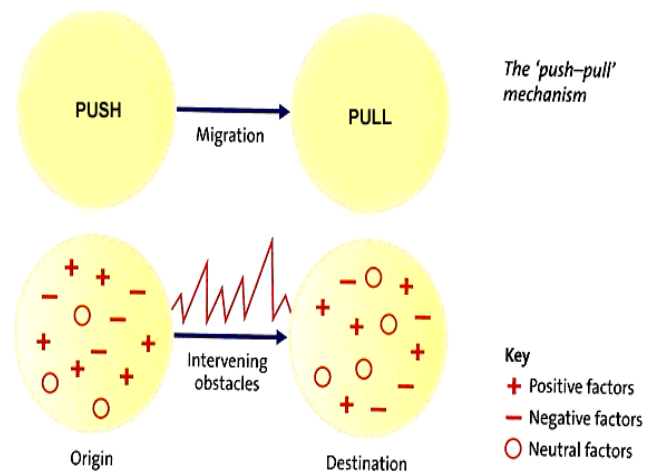
<i>Push Factors</i>	<i>Pull Factors</i>
Droughts or famine, floods, landslides, desertification, pollution, forest fire, earthquakes, dust storms, epidemics, radioactive emissions, health problems, poverty, wars and conflicts, poor housing, water scarcity, poor administrative support, slavery, death threats, unemployment, limited opportunities, lack of medical facilities, inadequate climatic conditions, political fear, loss of wealth and limited lands.	Employment , open market, high wages, less labor competition, better medical facilities, education, better social provision, better living conditions, inhabitable climate, better water facilities, industries, better administrative support, ethno- religious and political tolerance.

There is a close relationship between Lee's push and pull model with origin and destination points. Push factors exist at origin point and pull factors exist at destination point. Both push and pull factors are complementary. It means that migration can only occur if the reason to push factor is remedied by the corresponding pull factor at destination point. The best example regarding this is labor migration. Peoples are migrated from rural areas (push) to urban areas (pull) because of the availability of jobs in urban areas. If the intervening obstacles exist between them, than the flow of migration between two places can hindered. The number of migrants is directly proportional to number of opportunities at a given place and inversely proportional to number of intervening opportunities or obstacles. Therefore, migration of people from one place to another is not only associated with the distance between places and population in the two places, but also with the number of obstacles or opportunities between each place.

Push and Pull models usually identify various environmental, economic, demographic and social factors which are push migrants out of their native place or origin and forced them into destination places or safer places. This model is very important to understand the environmentally-induced forced migration and internal displacement in Kazakhstan. Since 1970s, the environmental problems came into existence because of the over- exploitation of resources by the Soviet government. Over- irrigation, over- production of cotton, extension of agricultural land, uneven extraction of minerals, deforestation, over use of chemical fertilizers, loss of biodiversity due to construction of canals and industries led to natural and anthropogenic disasters in Kazakhstan. The most important environmental problems which pushed the victims to leave their origin place are salinization, desertification and sand storms, radioactive radiations from open pits and dumping sites, droughts, floods, landslides, epidemic, pollution, land degradation and most important scarcity of water. It has to be seen that maximum number of victims shifted to nearby towns or villages. The internal migrations were more active in form of rural to rural and rural to urban displacements. They favored inter- regional migration because some of the environmental problems like floods, droughts, landslides and earthquakes do not provide much time to the victims to take their basic needs with them.

Due to the lack of money and basic amenities they are not much capable to travel long journeys with their family so preferred neighboring areas. Only young generations preferred to go big towns or cities for employment purposes. The important evidences of environmentally- induced forced migration and internal displacements can be seen in the Aral Sea basin regions, Semipalatinsk, deserts areas and earthquakes zones of Kazakhstan. Peoples of down streams regions of Central Asia are always in fear of floods because of the melting of glaciers and uneven precipitation. Maximum migrants of natural disasters are voluntarily in nature it means that they have chance to return their original places after some times but some of man- made disasters caused the permanent migration of victims. Some places like Muynak and Semipalatinsk where maximum peoples were leave their places permanently because environmental problems directly heat the socio- economic conditions of the

people. Poor health problems, lack of potable water, poisonous environment, unemployment, food security and poor government support pushed the victims to leave the affected places. The environmental problems largely influenced the children, women and old persons. Out of the five important drivers (economic, political, demographic, social and environmental) of migration, environmental driver is largely influenced the migration activities in Kazakhstan especially after the disintegration of USSR in 1991. Lee's push model can be directly implemented in Kazakhstan in the field of forced migration due to environmental change.



6. Situations After Migration of the Migrants

Migrants are broadly divided into two parts. One is those groups who migrated in search of jobs in the big towns and cities and another one is those groups or families who migrated and resettled in other places with or without the support of government. Young people are largely migrated in the big cities for employment purposes. Those migrants who migrate in search for jobs, majority one manage to find jobs and they learn different professions. Maximum employed person send remittances and played a role of guardian. But the resettled people faced some negative situations. In maximum cases, migrants faced much more complications than the previous one. The allotment of land was limited, problem of pure drinking water, livestock did not get pasture land for grazing and faced more financial burden. To restart their economic life needed money for agriculture, business, transportation, construction of new houses in the new place. The money which they were gets from government not sufficient. Some residents did not like new places so that either they sell their allotted houses or leave that place. Almost one third of the migrants had a critical time finding new effective jobs, which slowed down or endangered their installation and consolidation in the new place. Social integration and different culture in the new place was also the important challenge. In maximum cases, people had no hope to resettle their native place especially in the Aral Sea region and in Semipalatinsk. People who migrated from natural disaster regions like flood affected regions have hoped to resettle their native places.

7. Conclusion

Kazakhstan is used to be part of the Soviet Union and their environment still carries the mark of the Soviet legacy. Among of them land, water, air, nuclear and chemical pollutions are very burning issues. Kazakhstan is facing acute environmental problems and most importantly forced migration flows occur internally. The major environmental problems in Kazakhstan owes from the Soviet period. Soviet Union was a self-dependent country which manifestly depended on its own resources. To fulfill the basic needs of Soviet population and for agricultural and industrial development, it became indispensable to annex the new areas in its territory. For that purpose, Soviet Union focused on Kazakhstan which was at that time under the control of Soviet Union. In order to satisfy its self-interest, Soviet Union commenced the new exploration of mines, oil and gas fields, establishment of industries, nuclear and military testing sites, construction of new irrigated canals, divergence of water resources and most importantly huge convergence of grasslands into agricultural fields, which were diluting the conducive environment of Kazakhstan. Additionally, some of the Soviet government policies like 'Glasnost' of Mikhail Gorbachev and 'Virgin Land Policy' of Nikita Khrushchev intent to robust their economy some extent exploited the resources of Kazakhstan during Soviet period. Huge encroachment on environment similarly disturbed the local ecology of environmentally affected areas. Environmental problems grew up speedily after the disintegration of Soviet Union in 1991 because Kazakhstan had faced social, political and economic crises. The central control vanished and new boundaries and borders caused the division of natural resources. Different crises and demographic pressure induced over exploitation of agricultural lands and water resources which resulted the biggest man-made disaster of the world in terms of drying of about 80% water of Aral Sea. The largest displacements of victims are one associated with the drying of the Aral Sea.

The rise of forced migration was one of the painful outcomes of the disintegration of USSR. Political instability, ethnic conflicts, economic crisis and unemployment, blind exploitation of resources and environment problems forced many people to abandon their native homes and resettled in safer places internally and internationally. Migration is a traditional coping mechanism but in recent decades these traditional patterns have changed due to rapid changing socio-economic and environmental conditions. Migration basically occurs when livelihoods cannot be fulfilled by the dwellers. My research is on environmentally-induced forced migration and internal displacement in Kazakhstan. According to the definition of forced migration, 'any person who migrates to escape conflict, persecution, repression, ecological degradation, natural and man-made disasters or other situations that endanger their lives, freedom or livelihood' (IOM, 2007), environmental factors are also responsible for migration and the term 'internal displacement' was highlighted in Kazakhstan after the dissolution in 1991 because before dissolution all Central Asian countries came under USSR. Internal migration in Kazakhstan is characterized by rural to rural, rural to urban, urban to rural and urban to urban migrations. Migration issues are effectively analyzed by Lee's 'Push-Pull' model.

This model is suitable for study the environmentally-induced forced migration because this model usually identifies various economic, political, environmental and demographic factors. For my research, environmental factors are assumed to push migrants out of places of origin (environmentally-affected areas) and lure them into destination places (safer places) which explained in a detailed way. So, this model makes convenient to analyze the forced migration processes of Kazakhstan. Natural disasters (earthquakes, floods and landslides), environmental change (land degradation, desertification and deforestation) and human-made disasters (radioactive pollution and industrial accidents) have all been lead to forced migration. Slow onset environmental migration, with the possibility of return or permanent migration, is frequently caused by different environmental problems. But it is difficult to predict because of the different types of migration (return, seasonal, repeat, temporary and permanent), the multi-causality of intervening variables and the complexity of environmental outcomes. The impact of Kazakhstan's internal displacement can be seen both in the areas from which the people move out and area to which people move in. Both areas undergo a quantitative as well as qualitative change in their social, economic and demographic structure. Environmental factors directly or indirectly both cause migration. Directly, when disasters like floods and landslides certainly hits and victims do not get much time to recover and migrated to nearby areas temporarily or permanently but mostly temporarily for their safety and indirectly, disasters like droughts, desertification, land degradation and pollution, deforestation, radiations and salinization affect the areas slowly and when situations like unemployment, poverty, food insecurity and health issues come people prefer to migrate from native places by mostly thinking of permanently displacement because of the closeness of maximum doors of survival except those persons who are emotionally or religiously attached from their native places like old persons. Maximum environmental migrants are internal because of the some factors: (a) disasters like floods, forest fires, landslides and avalanches do not provide much time to victims to travel long distances because of the financial crisis and lack of basic requirements, (b) Maximum victims are villagers who are dependent on local resources, (c) women, children and old victims are not able to go far from native place except young persons who go big towns and cities for employment. Young peoples who migrate to big cities for employment send remittances to their families.

In Kazakhstan, for future perspectives some of my key recommendations which can help in prevention and conservation of environmental problems, assistance and to reduce the environmentally-induced forced migration are: an awareness campaign is needed to explain the consequences of overgrazing, desertification, land degradation deforestation and methods of control; more focus on sustainable development; a long term programme is needed for resettlement and proper medical facilities who lived in the settlements affected by radioactive waste of uranium mines; better planning and policies required before the resettlement of migrants; need of revival from traditional indigenous methods in the field of agriculture and animal husbandry; regional industries which were functioning

during Soviet times also need revival. This will require for attracting investors, analysis of the potential for revitalization and a full inventory of existing infrastructure; government should establish a continuous financial support in the form of small allowance for migrants; the human rights of victims need to be better protected; a regional cooperation scheme should be implemented properly; need of better linkages between environmental degradation and migration, especially from a quantitative point of view and reboost the adaptative actions.

References

(* indicates a primary Source)

- [1] Anderson, B and B. Hancilova (2011), "Migrant Labour in Kazakhstan: A cause for concern", *Journal of Ethnic and Migration Studies*, 37(3): 467- 483.
- [2] *Asian Development Bank (2009), *Climate Change and Migration in Asia and the Pacific*, ADB Press: Philippines.
- [3] Bakewell, O. (2011), *Conceptualising Displacement and Migration: Processes, Conditions and Categories*, pp. 14- 28.
- [4] Barannik, Borysova and F. Stolberg (February, 2004), "The Caspian Sea Region: Environmental Change", *Springer*, 33(1/2): 45- 51.
- [5] Brown, O. (2007), *Climate Change and Forced Migration: Observations, Projections and Implications*, Geneva: UNDP.
- [6] Bulesheva, D and Joldasov (March, 2009), *Environmental Change and Forced Migration Scenarios: Final Activity Report*, EACH- FOR. <http://www.each-for.eu>.
- [7] Castles, S. (2002), *Environmental Change and Forced Migration: Making Sense of the Debate*, Refugees Studies Centre, Geneva: UNHCR.
- [8] Clarke, J. W. (1984), *Geology and Possible Uranium Deposits of the Fergana Region of Soviet Central Asia*, Open- File Report, Virginia: UNDIGS.
- [9] EACH- FOR (February, 2008), *Environmental Change and Forced Migration Scenarios: Specific Targeted Project*, General Overview Study NIS and Central Asia. <http://www.each-for.eu>.
- [10] *Eurasian Development Bank (September, 2009), *The Impact of Climate Change on Water Resource in Central Asia*, EDB, Almaty.
- [11] Halvorson and J. P. Hamilton (November, 2007), "Vulnerability and the Erosion of Seismic Culture in Mountainous Central Asia", *International Mountain Society*, 27 (4): 322- 330.
- [12] *IOM, ILO & OSCE (2007), *Handbook on Establishing Effective Labour Migration Policies*, IOM Press: Geneva.
- [13] Ivaschencko, K & Danzer (2010), "Tajik Women Migrate in Response to the Financial Crisis", [Online: web] Accessed 23 May 2013 URL: <http://siteresources.worldbank.org/INTGENDER/Resources/October2010-5.pdf>.
- [14] Kumar, Naresh (1991), *Changing Patterns and Determinants of Internal Migration in Gujarat, 1971 and 1981*, M. Phil. Dissertation, New Delhi: Jawaharlal Nehru University.
- [15] Lioubimtseva, E and G. M. Henebry (2009), "Climate and Environmental Change in Arid Central Asia: Impacts, Vulnerability and Adaptations", *Journal of Arid Environments*, 73 (2009): 963- 977.
- [16] Medecins Sans Frontiers (1999), *Karakalpakstan: A Population in Danger*, Tashkent: MSF.
- [17] Mirzabaev, Sommer, Shideed and R. Gupta (2009), *Research Prospectus: A Vision for Sustainable Land Management Research in Central Asia*, Tashkent: ICARDA.
- [18] Moreno, A. P. (September, 2002), *The Environmental Problem in the Karakalpak Republic*, Enero de: UNISCI.
- [19] Nalbandyan, H. (2003), "Central Asia Today", *Manju Jain*, 16 (1/2): 99- 122.
- [20] Peter, R and Craumer (1992), "Agricultural Change, Labor Supply and Rural Out- Migration in Soviet Central Asia", *Geographic Perspectives on Soviet Central Asia*, New York and London: Routledge, pp. 132- 80.
- [21] Piguët, E. (January, 2008), *Climate Change and Forced Migration*, Switzerland: UNHCR.
- [22] Reuveny, R. (2007), "Climate Change- induced Migration and Violent Conflict", *Political Geography*, 26 (2007): 656- 673.
- [23] Rodionova and Nyussupova (2011), *Demographic Situation and the Level of Human Development of the Republic of Kazakhstan: Regional Aspects*, Russia: Bulletin of Geography.
- [24] Shkapyak, Delovarova and F. Kukeyeva (2013), "Migration Processes in Central Asia: Main Directions and Key Issues of Regional System", *Middle- East Journal of Scientific Research*, 15 (11): 1505- 1510.
- [25] Spoor, M. (1995), "Agrarian Transition in Former Soviet Central Asia: A Comparative Study of Uzbekistan and Kyrgyzstan", *Journal of Peasant Studies*, 23 (1): 46- 63.
- [26] Strickman, R and M. Porkka, *Water and Social Changes in Central Asia: Problems Related to Cotton Production in Uzbekistan*, Helsinki University of Technology: Water & Development Publications.
- [27] Terminski, B. (2012), *Environmentally- Induced Displacement: Theoretical Frameworks and Current Challenges*, Geneva.
- [28] TishKov, Zayinchkovskaya and Vitkovskaya (2005), *Migration in the Countries of the Former Soviet Union*, GCIM.
- [29] *United Nations (2011), *Statistics on International Migration: A Practical Guide for Countries of Eastern Europe and Central Asia*, UN: Geneva.
- [30] Vag, A. (2009), *Environmental Change and Environmental Migration Scenarios: Final Activity Report*, EACH- FOR. <http://www.each-for.eu>.
- [31] Vag, A. (May, 2009), *Environmental Change and Forced Migration Scenarios: Synthesis Report*, EACH- FOR. <http://www.each-for.eu>.
- [32] Warner, Koko (2011), "Environmental Change and Migration: Methodological Considerations from Ground- Breaking Global Survey", *Springer*, 33 (2011): 3- 27.