

Impact of Climate Change on Food Security in Afghanistan

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Abstract: *Climate change and its toll, warming temperatures and decreasing precipitation levels over the last fifty years have led to innumerable weather anomalies which have caused droughts, floods, unseasonal precipitation, falling ground water tables, desertification, and loss of biodiversity in Afghanistan. Among all population groups rural communities in Afghanistan are particularly vulnerable from the effects of climate change and especially increasing of food insecurity because their livelihoods is strongly depends on agriculture activities. Therefore, rural households are taking some of desperate measures to cope with and adapt to climatic conditions. Because the poorest people particularly subsistence farmers and pastoralists are often already living on marginal land and most suffer from climate change. The impacts of climate change on food security and livelihoods are most worrying and need to be addressed most urgently. Therefore, climate analyses help to know which areas have expected to take place biggest changes in rainfall, temperature and other physical climate parameters. Thus, from such kind of climate information can be found what impacts of these changes will actually observe on poverty and food security and how can be increase people's livelihood from the food and income.*

Keywords: Climate Change, Food Security, Drought, Flood, Food Insecurity

1. Introduction

The terrain of Afghanistan in the South Asian is mostly rugged by mountains and it plains in the north and southwest. 12.13% from its lands is arable land or its irrigated land is 27,200 square kilometers out of 652,230. Permanent crops in Afghanistan are 12.3% and other crops are 87.7%. Total renewable water resources are 65 cubic kilometers and its freshwater is withdrawal. Total domestic is (2%), industrial (0%), agricultural (98%) and consumption is 23.26 cubic km/year, and per capita is 779 cubic m/year. Food productions in Afghanistan are opium, hashish, wheat, rice, barley, pulses, oilseeds, fruits, nuts, vegetables, and sheep. Its annual harvest is estimated about 4.8 million metric tons of cereals. Agricultural productions in Afghanistan are 47.2% of GDP. (WFP (World Food Program)). 78.6% of active labor force is involved in agriculture, but unemployment is at least 35%. 36% of population in Afghanistan is below poverty line, and annual per capita income is \$800 (219th in the world).

Afghanistan is a landlocked, mountainous country. It has cold winters and hot summers. That means Afghanistan has arid and semiarid climate. Its population is estimated at 25.5 million in 2009/10 and the area is 652,863 km² administratively the country is made up of 34 provinces, which are further divided into 398 districts and administrative centers and over 47,500 villages (Afghanistan Statistical Yearbook, 2008/09). Agricultural activities are the main livelihood strategies for the Afghan population, as 55 percent of households are engaged in farming and 68 percent have any type of livestock. However, productivity in the agricultural sector is relatively low, as for instance reflected by the 30.6 percent contribution of agriculture to the GDP in 2008-09 (NRVA 2007/08).

Climate change and variability affects in many parts of life and one of is in the agriculture sector which by loss of access in food, drinking water, and their utilization could

potentially cause hunger, malnutrition, lack of household and individual incomes. It will exacerbate food insecurity and lack of progress of the world. The agriculture sector particularly crops yields in Afghanistan is more vulnerable by climate change and extreme weather events such as, droughts, heavy rainfall, low and unseasonal precipitations, glacier retreat, higher frequency of hot days and cool nights. Receiving of climate change impacts on various sectors and creation of adaptation plans to cope with these rising issues in the future of Afghanistan are very important (Maletta, 2007).

The poor developing countries such as Afghanistan due to inadequate infrastructure instability, not having national efforts for mitigation, and lack of policy for mobilizing against the adverse impacts of climate change on livelihoods have been most affected. Measures of climate change and food security are the main related issues of Afghanistan that are taken by various national and international sectors to reduce the impact of these issues and the challenges that remain. The measures should be address through the new programming by the government and selected communities of international donors in Afghanistan.

2. Food Security in Afghanistan

Food security and distribution and agriculture is a major problem for the Afghanistan given its 30 year history of violence and the scale of Taliban and insurgent operations. Food security trends over the past years have shown recurrence of food insecurity above 30% (Fig 1). Malnutrition threats to Afghanistan's rural population is related to the finding and rules for the allocation of irrigation water. Large fluctuations in annual and seasonal stream flows along with poorly developed rules for assigning water have created economic and food security risks for many Afghan farmers especially those who live in downstream areas (Shobair 2001; and Alim 2004). A major challenge that Afghan water managers is facing are: the need for good hydrologic, economic, agronomic and institutional data that

they can describe the country’s irrigated agriculture. In addition, the capacity of relevant data into a framework that it can connect economics, crop production, and food security has been remained by years of damaged irrigation infrastructure, periodic drought and ongoing military conflict. Because Afghanistan has an inflexible

arrangements for allocation of irrigation water in drought period which can caused undermine food security. Thus, Afghanistan is facing with insecurity situation.40% of Afghans do not have enough food all of the time and 60% part has also not enough food that often enough.

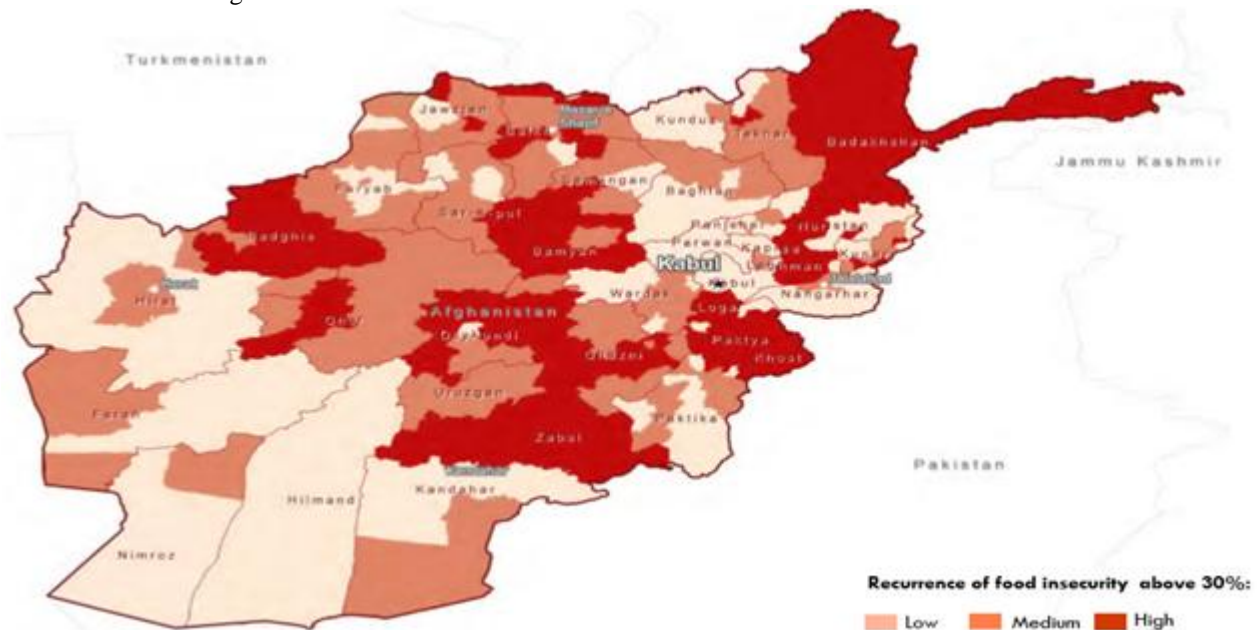


Figure1: Food Insecurity above 30% in Afghanistan

Source: Afghanistan National Risk and Vulnerability Assessment

Food Insecurity Due to Climate Change in Afghanistan

Statistics on food insecurity in Afghanistan show roughly 9.3 million people making up an estimated quarter of the Afghan population are in need of food assistance. Six percent of the population are severely food insecure in terms of current consumption and coping capacity. Female-headed households than others are more severely in food insecure and subsist on a generally poor diet. Internally displaced people particularly those living in tents also represent a high share of the food insecure population. Children are disproportionately affected by food insecurity and forty percent of children under five years old are malnourished. There are significant variations in levels, causes, and repercussions of food insecurity across geographic and economic groups in the country. There is correlation between food insecurity and geographic characteristics. For example, in high elevation locations access to food and livelihood alternatives remains in limited. Therefore, the Central Highlands and the Northeast of Afghanistan

consistently suffer food insecurity. Also, food insecurity is more pronounced in rural areas where estimated 80 percent of the country’s population resides. Widespread poverty, lack of job opportunities especially in rural areas, low and nonexistent household savings, conflict and insecurity, increasing population, insufficient agricultural production, inadequate access to land and water, declining land fertility, drought, lack of support to those in need of food by different communities, migrating of rural residents, and returning immigrants from neighboring countries are the principal causes of food insecurity in Afghanistan. Afghanistan is one of the fastest urbanization country in the world with an annual urban growth rate of 3.14 percent. The number of urban residents in Afghanistan has surged from 4.6 million in 2001, 7.1 million in 2012, more than 9 million in 2015 which contributing more food insecurity in cities especially among impoverished and displaced households (Table: 1).

Table 1: Food Insecurity in Afghanistan

Residence	Food Security Status							
	Very Severely Food Insecure		Severely Food Insecure		Moderately Food Insecure		Total Food Insecure	
	1,000s	Perc	1,000s	Perc	1,000s	Perc	1,000s	Perc
North	221	6.2	327	9.2	491	13.8	1,039	29.1
North-East	284	18.3	561	15	466	12.5	1,711	45.8
Central Highland	426	15.2	301	10.8	352	12.6	1,080	38.5
Central	305	4.6	529	8.1	752	11.5	1,587	24.2
South	40	4.1	57	5.8	135	13.8	232	23.7
East	155	5.5	209	7.4	308	11	672	23.9
West	185	6.1	213	7	326	10.7	724	23.8
South-West	135	7.2	201	10.8	264	14.1	599	32.1
National	2,152	8.5	2,397	9.5	3,095	12.2	7,645	30.1

Source: CSO (2014)⁴

Implications of Climate Change on Food Security in Afghanistan

The UN (United Nations) has done in April of 2010 based on a 14 province survey and the climate data through reanalysis a method which combines climate models with observations (satellite and rain station data). Thus, based on this the quantify change in climate trends by each climate indicator (spring rainfall, heavy rainfall, temperature etc.) between the period 1950–1980 and the period 1981–2010 received. The UN report notes that the rural population which accounts for 74 per cent of Afghans that they faces particular challenges. The proportion of poor households is 26 per cent.

There are some events due to climate change that can threatens food security in Afghanistan such as, more and longer droughts, loss of vegetation cover, shortage in ground

DROUGHT

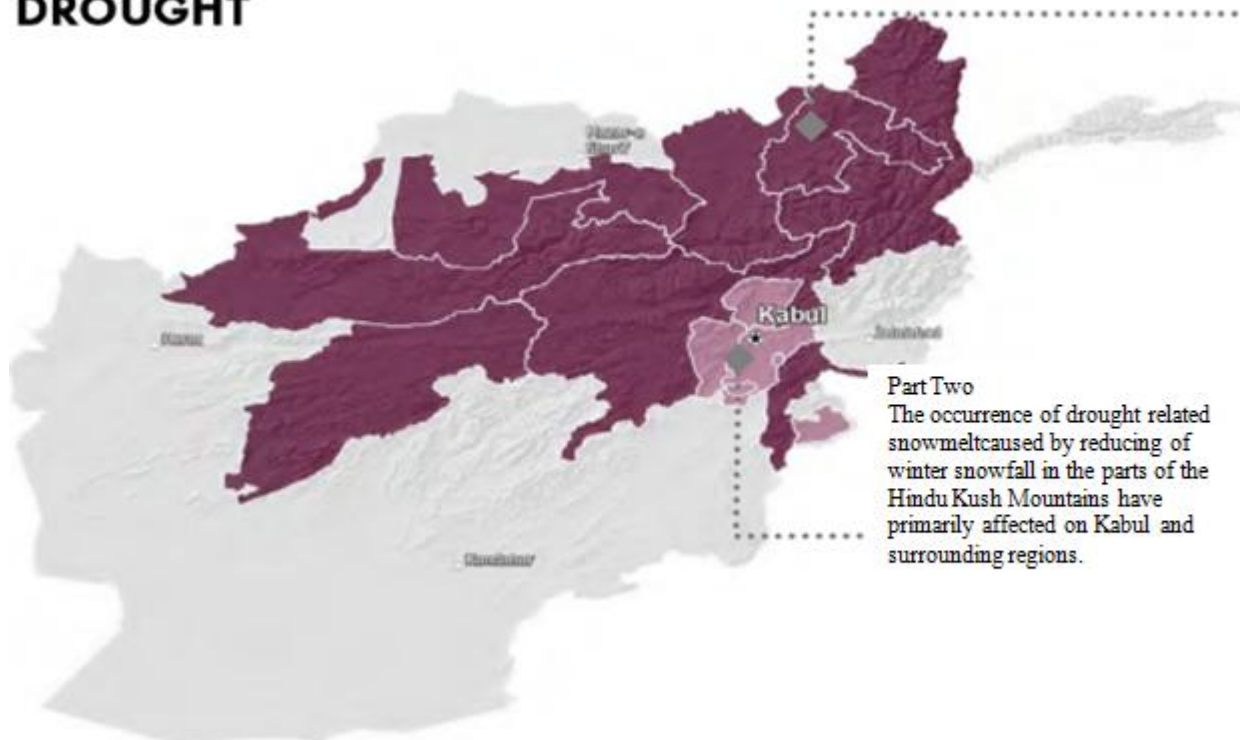


Figure 2: Vulnerability in Food Security in Afghanistan Due to Climate Change (Drought)

The climatic risk of drought related to lack of rainfall has increased over the past thirty years across the main areas of the country which negative impacts on food security are concentrated in the north and another parts of the of Afghanistan. These are areas where the livelihoods are highly dependent on rainfall and where the observed decline in spring rainfall has a direct impact on households' capability to produce food and earn income (shows in the part one of figure2).

The incidence of drought related to snowmelt that is caused by reduce of winter snowfall in the parts of the Hindu Kush Mountains has primarily affected on Kabul and its surrounding regions. These densely populated areas which produce much of the country's vegetables, fruits, and cereals and heavily dependence on irrigation from the Kabul River and its tributaries which are partly fed by snowmelt from the Hindu Kush (shows in the part two of figure 2).

water table, shortage of irrigation systems and rainfall for agriculture and livestock, increased number of floods and can also affected on social, economic, cultural, and political parts.

To understand how the occurrence of droughts and floods has changed over the past few decades used a combination of different climate indicators. For drought and flood due to too little or too much rain should look at the changes of spring precipitations', heavy precipitation events, and evapotranspiration. For the drought and flood from too little or too much snowmelt on upstream mountain areas should look at the changes at the number of snow days per year, winter precipitation, and spring temperatures' in the Central Highlands, Hindu Kush and Pamir mountains (Figures: 2and 3).

Negative impacts of floods caused by heavy spring rainfalls have been detected across a different livelihood zones from the mountainous areas in the northeast and center of the country to the hilly border areas in the southeast to the plain arid areas in the southern provinces. These zones have heavy precipitation events which have increased by 10 to 25% in the past thirty years and here livelihoods are dominated by agriculture and pastoralism which are highly sensitive to flooding (shows in the part two of figure 3).

Direct impacts of riverine floods caused by increasing of spring snowmelt in the spring season have concentrated along rivers in the eastern part of the Helmand river basin. There is increased risk of floods related to snowmelt and livelihood vulnerability is increased by this flooding (shows in the part one of figure3).

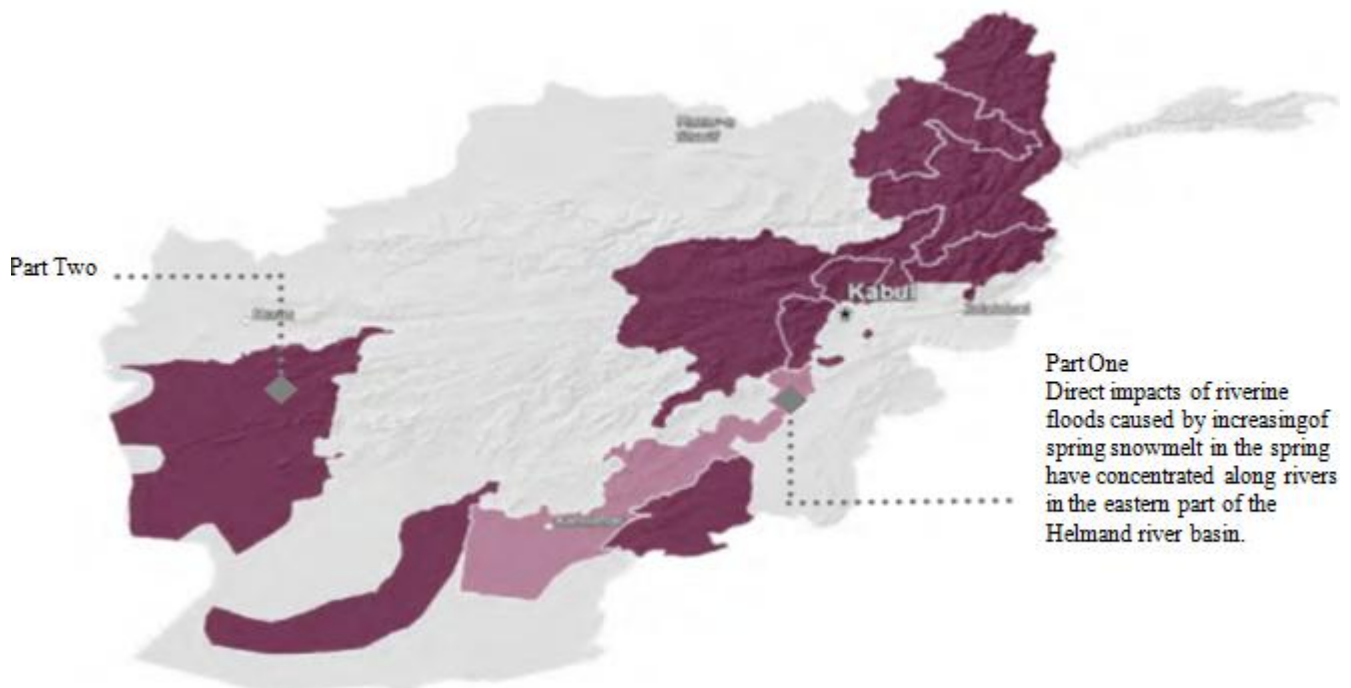


Figure 3: Vulnerability in food security in Afghanistan due to Climate Change (Floods)

Source: Afghanistan - National Risk and Vulnerability Assessment 2005

Aid of food security in Afghanistan

Food aid programs in Afghanistan do not fully meet the growing food needs of the population since it typically support people during in acute crises such as, natural and human-made disasters. For example, in Kandahar province severe food insecure people tend to have access on one meal per a day which it is often consisting from bread. However, children and pregnant women which are suffering from malnutrition are targeted beneficiaries of some food aid programs. Another forms of assistance which are tradition from are that wealthier families in the community assist their poorer neighbors and relatives through food and clothing donations. This tradition is more common in rural areas due to closely knit ties within extended families than in urban areas. However, this assistance is ad hoc and can be unreliable. Another source of locally based food assistance in some communities is the use of zakat and Islamic tax which are collected by the elders and distributed to the poorer people.

Many mosques with announcements make donations during Friday prayers for individuals or families which are facing a tragedy such as funeral. Mosques during the month of Ramadan also provide Iftar(Iftar fasting) free of charge for everyone to aid food insecure. At the other times in the year, the poor people may congregate outside mosques to beg food and money, but mosques do not play a direct and ongoing role in feeding the poor.

Unified analytical framework for discovering water allocation for adapting on water supply shortages the region that are more flexible to reduce risk of food insecurity. This also has contributed the weak capacity of irrigated agriculture and provide a high wage percentage for Afghans who are making their life with production of agriculture. The contribution of this analysis is to create, describe, and apply a framework which can be enable the water managers

and water stakeholders to improve food security and raise farm net incomes when irrigated agriculture is faced with large, unexpected, and periodic changes in water supplies. It can address the important and relevant issue of how water governance and allocation rules can be made more flexible in adapting to water shortages. The analysis to identify water allocation system and its sharing that can minimize lack of economic benefits and food insecurity by water supply in the inevitable drought occurs. An integrated decision framework for water resources should developed which can unifies crop, water, and farm data.

The uncertain value of current agricultural aid efforts for classic agricultural aid may or may not solve these problems at the scale required for successful population strategy. Many Afghan farmers do not have enough land to feed their families with less earn provide living. Aid to individual farmers may or may not have enough effect to really improve this situation in Afghanistan and can be reduce a little poverty relief and food security. No aid organization has provided any significant and punctual data on any aspect of the effectiveness of its efforts.

The data from the World Food Program (WFP) are only slightly better. This program directly and indirectly affects roughly all Afghans since it reduces the pressure of poverty on the entire economy. The problem is that the WFP reporting like most aid reporting does not inscribe corruption, extortion, distribution problems, or any other measure, and cannot cover the gross number of the Afghans who are supposed to get benefit from these programs. Failure of the aid reporting is the difficult of understanding of different dynamics that affect the agriculture sector and poverty on a large scale in Afghanistan. Aid organizations equate the effects population distribution on agriculture with the effects of changes in geography, climate, and hydrology. While, these factors cannot be lumped together they must be

examined separately in order to get an accurate picture of the situation on the area.

While food insecurity results in a host of negative consequences such as, the forced sale of land and other assets, family conflicts, poor health outcomes, early marriages of girls, begging, and taking children out of school in order to send them to work. Some of these consequences are used as a coping strategies that although they might solve the immediate problem of food insecurity for families, but create additional hardships in the future that are even more difficult to overcome.

3. Conclusion

The climate of Afghanistan has changed in the past years and will further change over the coming decades. The results have included by increasing of unpredictability of weather patterns, frequent droughts, extreme weather events such as, heavy rain and snow, frequent floods, unseasonal rain and snow, shrunk glaciers and natural water reservoirs, lowering ground water tables in most areas in the country, extreme desertification and loss of forests and pasturelands, loss of biodiversity, and in conclusion food insecurity across to the country. Moreover, future climate predictions indicate strong likelihood of worsening conditions in all those portions.

Throughout the country, socio-economic impacts of these events have been significant and adverse. Especially food insecurity because around three quarters of Afghanistan's population live in rural areas and have traditionally depended on agricultural productions getting income. They have lost a substantial part of their arable lands due to droughts and floods by prolonged climatic stresses.

4. Recommendations

Because throughout of Afghan country, socio-economic impacts of climatic events have been significant and adverse. Therefore, these some suggestion for solution and access to food security are addressed:

- The government should recognize the degree of food insecurity and should be disseminate the information serious about the food insecurity to increase awareness about sources of secure foods. Humanitarian agencies should develop preparedness plans for each regional part of contingency humanitarian.
- Traditional institutions should be encouraged the farmers to take an active role in providing food to the needy. The traditional system assistance has to support the poor families for providing food and other foodstuffs.
- Three quarters of rural households rely on agriculture for their livelihoods. These are generally small scale farmers engaged in subsistence agriculture with limited capacity to improve and increase agricultural yield without external support. Interventions on food security should be made to emphasis for improving, developed, and better livelihoods.
- The most acute and chronic situations of food insecurity and responsibility of scheming to alleviate them should identify to be active coordination among aid agencies and community authorities.

- Media should be alerted from the seriousness of food insecurity throughout in Afghanistan and take an applied action for public awareness messaging to the needy.

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