



Effects of climate change in Afghanistan

Assistant professor: Abdullah Nawrozi

Head of Agronomy department, Agriculture faculty, Bamyan University

Email: nawroziabdullah@gmail.com

Abstract:

Climate change and its effects on human life have become one of the major research priorities and have seriously affected human life.

Climate change is one of the most important challenges facing humanity in the current century, and its effects seem to be very severe in Afghanistan, especially in the agricultural sector.

The climate of a region such as temperature, humidity, atmospheric pressure, wind, rainfall, seasons “climate change “and the other metrological characteristics affect more than just a change in the weather; attributed to the relatively long period of time. These climates changes have fundamental role in shaping natural ecosystems, human economies and cultures that depend on them.

A change in climate can affect for example; human activities (health, education, economics, livelihood income), agriculture forming, (soil fertility and soil degradation, plants production, species of plants), animals live, (food production, food security, biodiversity) and availability and use of water resources (ground water and surface water).

Furthermore, most of plants are pollinated by wind, birds and insects, if during pollination of plants a change in the timing of raining or temperature happens, some of these birds, and insects might due to climate change have to travel from one place to another place.

Short-term climate change is natural and it will have less negative impacts, but long-term climate change, such as successive droughts can have long time negative effects.

Keyword: The importance of climate change, the effects of climate change on people's lives and vulnerable areas.

Introduction:

Adaptation is the process of reducing the adverse effects of climate change on human and natural systems. Some of developed countries to comply with the conditions of climate change have long-term strategic plan. Therefore, the negative effects of climate change conditions in these countries may be less than to those countries that do not have

long-term strategic plans in this area. In recent years, adaptation has emerged as a top priority on the international development agenda.

In the 2010 climate conference in Cancun, Mexico, parties to the United Nations Framework Convention on Climate Change (UNFCCC), In the Cancun Adaptation Framework, committed to “reducing vulnerability and building resilience in developing country Parties, taking into account the urgent and immediate needs of those developing countries that are particularly vulnerable. (Global Environment Facility (November 2004)

Afghanistan is frequently ranked among the countries most vulnerable to climate change due to a combination of low adaptive capacity and high exposure to climate fluctuations. Over the past four decades, armed conflict has destroyed the country’s infrastructure, damaged its institutions, and led to widespread poverty and underdevelopment, which collectively underpin Afghanistan’s vulnerability and lack of adaptive capacity to climate change (UNEP. (2003).

The population and the economy are almost completely dependent on agricultural production, particularly subsistence farming, and key sectors, including water, energy, agriculture, are among the most vulnerable to climate change

The country is regularly hit by extreme weather or climatic events, causing substantial economic damage and loss of lives, showing that even today Afghanistan is not sufficiently adapted to the current climate(Central Statistical (2015–2016).

The importance of research

Climate change is one of the most important challenges of the current century all over the world. Occurrences of high-intensity floods, global warming, untimely cold, mote frequent droughts, rising sea levels, outbreaks of pests and plant diseases, depletion of the ozone layer, global warming and melting of permanent ice are some of the issues discussed in climate change, has raised more in the world this decade.

However, the most serious effects of climate change in Afghanistan in the coming decades will be reflected in rainfall, water resources, health status, environmental diversity, food storage, and so on. Afghanistan is one of the countries that will face rising temperatures, declining rainfall, declining ice days, rising hot days and so on over the next decade.

The reduction of production capacities in this sector and the crisis of water, soil and environment resources of the country, which has increased in recent years, will intensify. In such circumstances, monitoring and managing the consequences and harms of climate change can reduce these harms to some extent and prevent the complete destruction of production capacity (Environment News Service (October 11, 2012).

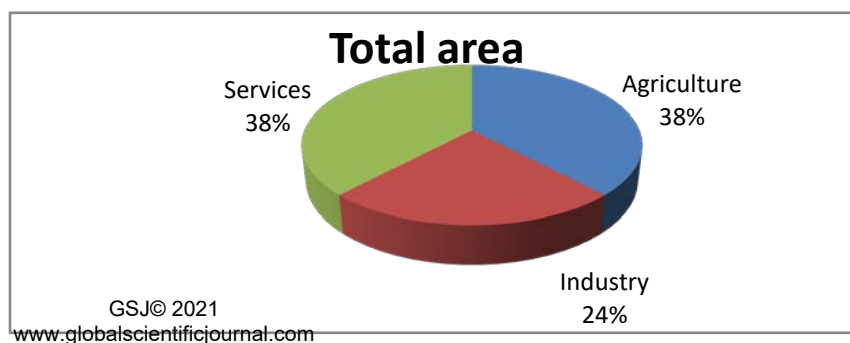
Research objectives:

- To understanding the effects of climate change in Afghanistan.
- To know the significance of climate change.

Causes of Climate Change

Natural Causes: The Earth's climate can be affected by natural factors that are external to the climate system, such as changes in volcanic activity, solar output, and the Earth's orbit around the sun. But human activities sometimes cause more climate change for example: production of greenhouse gases, especially carbon dioxide (CO₂), which causes increasing in the temperature.

Human Causes: Climate change can also be caused by human activities. Such as: burning of fossil fuels, in



developing countries people cut trees and use them for cooking and heating homes, human activities the dominant product of fossil fuel combustion is carbon dioxide. greenhouse gas, the overall effect of human activities, the industrial revolution has been a warming effect, human activities cause decrease in the water resource for instance; use ground water and surface water for agriculture and irrigation, urban uses and consumption of water in the home, these costs are the result of drought and impact on the global warming Environment (News Service (October 11, 2012).

Afghanistan Facts & Figures

Total Area: 647,500 sq km

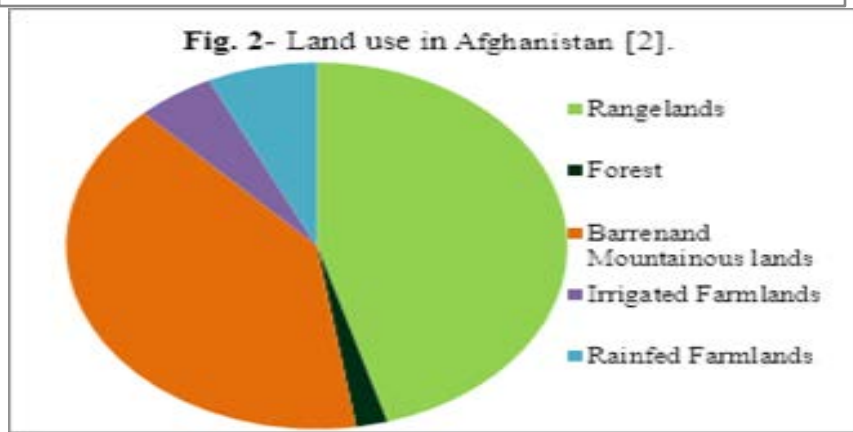
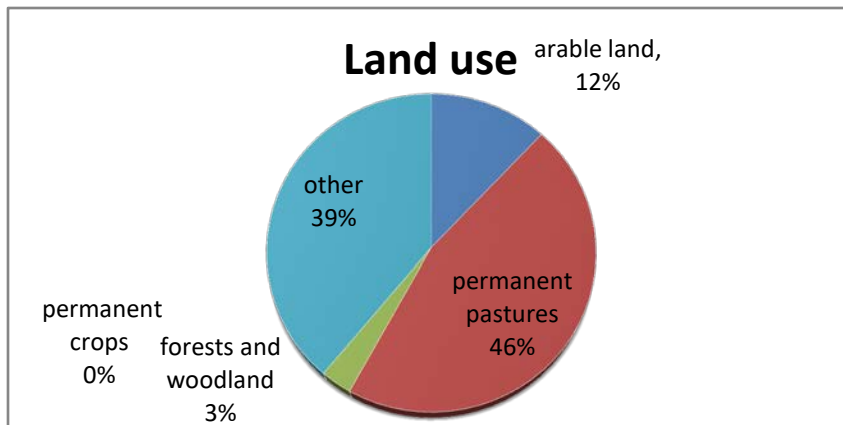
Irrigated land: 30,000 sq km

- Industry: 24%
- Services: 38%
- Agriculture: 38%

Land use:

- arable land; 12%,
- permanent pastures; 46%,
- forests and woodland; 3%,
- permanent crops; 0%,
- other; 39%

Climate: Arid to semiarid; cold winters and hot summers.



Effects of climate change in Afghanistan

Climate change is not a potential future risk in Afghanistan, but a dangerous reality that is already being felt by thousands across the country. While many development gains have been made in the country over the last decade, this progress is in danger of being eroded by the effects of climate change and natural disasters. Indeed, the Global Adaptation Index still ranks Afghanistan among both the most vulnerable *and* the least prepared countries in the world.

All of the human are directly or indirectly depend on natural resources, such as, water, natural gases, oil, coal, soil, stones, plants and Etc. climate change will have effect on all of these resources. Climate change in the world due to its increasing production of greenhouse gases in the atmosphere appears, more from big factories and industrialized countries in the developing world, and is the problem of countries like Afghanistan that have no role in creating it. Afghanistan is one of the most vulnerable countries in the world to the impacts of climate change (UNEP (Oct 11, 2012).

Afghanistan’s climate is continental, with temperatures ranging from 30°C in summer to -20°C in winter. In spring, late frost can affect agriculture, mainly fruit production. Average annual rainfall is estimated at around 250 mm and varies in different parts of the country from 1200 mm in the higher altitudes of the northeast, to 60 mm in the southwest. Snow falls regularly in the mountainous regions and higher altitudes of the Northeast and the Central

Highlands, while the rest of the country has varying snow fall. Annual evapo-transpiration (ETP) rates are relatively low in the Hindu-Kush (900 – 1,200 mm) due to long and severe winters. They vary between 1,200 mm and 1,400 mm in the northern plains and reach up to 1,800 mm in the southern and south-western plains (ICIMOD, 13 Oct 2009).

Climate change, increasing floods, cyclones and droughts abnormal changes in the country and is threatening sustainable development in Afghanistan. Successive droughts, seasonal changes, have been increased flooding and loss of land cover in mountainous areas in Afghanistan.

The worsening climatic conditions in Afghanistan will continue to impact upon socio-economic development of Afghanistan, creating stresses for specific vulnerable groups. Agriculture and water resources management are likely to be severely impacted by changes in climate.

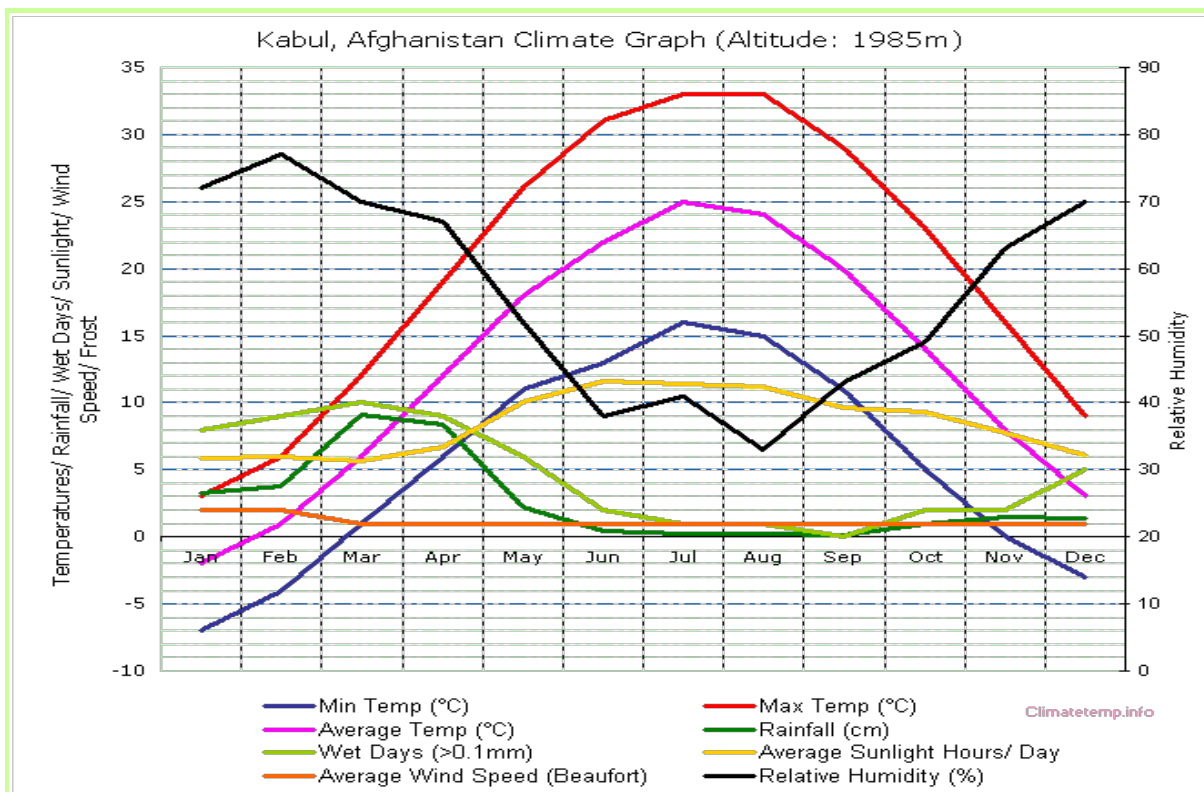
Agriculture: The vulnerability of the agricultural sector to increased temperatures and changes in rainfall patterns and snow melt is high. Increased soil evaporation, reduced river flow from earlier snow melt and less frequent rain during peak cultivation seasons will impact upon agricultural productivity and crop choice availability (UNEP. (2003).

Social Development: The poor are most vulnerable to the effects of climate change in Afghanistan climate change is likely to compound existing food security issues and impact heavily upon those dependent on the agricultural economy. Low level of agricultural production, unemployment and poverty are among the factors that seem to some experts, the number of youths armed opposition groups has spread.

Human health: Climate change will undermine Afghanistan's ability to achieve its goals in reducing malaria morbidity and mortality by 50%-80% within 5 years. Climate change is one of the factors for the rise in temperature, in addition to reducing agricultural land and forested areas, therefore increasing the air pollution; finally has most negatively affects in the human respiratory system(UNEP. (2003).

Water Resources: Uncoordinated water management policies can reduce adaptive capacity and increase vulnerability. Many of the agricultural activities in Afghanistan are dependent on the flow of rivers that originate in the central highlands area. Climate change reduces the amount of annual rainfall in the rainy season, rises in winter and spring temperatures will lead to more rapid and earlier snow melt, the cumulative effects of more frequent and intense droughts on reservoirs and groundwater could threaten the water supply of entire communities in the most arid regions of Afghanistan(UNEP. (2003).

Afghanistan Climate Graph



1

Effect of climate change on agriculture sectors in Afghanistan

Agriculture is the main source of income for the Afghanistan economy. Despite the fact that only 12 percent of Afghanistan’s total land area is arable and less than 6 percent is currently cultivated, more than 80 percent of Afghanistan’s population is involved in farming, herding or both. The U.S. Department of Agriculture (USDA) is helping Afghanistan revitalize its agricultural sector through a variety of activities aimed to strengthen the capacity of the Afghan government, rebuild agricultural markets, and improve management of natural resources (Mehdi Rezaie, October, 17, 2011).

The climate change is causing successive droughts, health problems and damage to green environment, animals and agriculture products in the country (Global Environment Facility (November 2004)

Climate change is predicted to cause raise in mean annual temperature a fall in annual rainfall and an increase in the intensity of rainfall despite an overall decrease in precipitation. With every very passing decade, Afghanistan has lost 2 percent of its rain and snowfall due to Climate Change and its accompanying impacts on local and regional climates. The same study establishes that average temperature across Afghanistan has increased by 0.6°C since 1960 Mehdi Rezaie (October, 17, 2011)



Over the years because of climate change, the Afghan people have suffered a lot from damages in this area, like declining in agricultural production and prices rise in the market.

Reduce agricultural land and forest area, and increase the soils degradation and desertification. During severe droughts from 1998 to 2006, and again in 2008-2009, the country suffered significant losses of crops, including wheat, rice, maize and potato.

(UNEP (Oct 11, 2012)

Problems; Climate change is the long-term shift in the earth's weather patterns and temperatures. The current period of warming is largely the result of an increase in greenhouse gas emissions due to human activity and has far-reaching consequences for global economies, health and food production.

Afghanistan is one of the smallest contributors to greenhouse gasses but one of the greatest sufferers. 80% of the population are reliant on natural resources as their primary source of daily food and income, but environmental issues such as overgrazing, deforestation and environmental degradation are having devastating effects on their rural livelihoods.

Hazards in the near future; the most significant challenges are expected to relate to drought. Since the early 1960s, the country has begun witnessing an increased frequency of drought; however, rather than remaining a cyclical (and temporary) event, drought could become the norm in Afghanistan by the year 2030.



Models do point towards significant warming across all areas of Afghanistan, with average predicted increases in temperature possibly up to 6⁰C by 2090.

Flooding events are likely to be exacerbated by more rapid snow melt in the spring as a result of these higher temperatures. Further, the drought and flooding-related events will have a larger impact due to the associated dynamics of desertification and land degradation, loss of vegetation and the current unsustainable management of much of the land area. (USAID (May 18, 2013)

In terms of the biological diversity of the country that has evolved to live within Afghanistan's environment, climate change on this scale could have devastating consequences, particularly given the already-degraded environment.

Socio-economic conditions are also set to worsen with the onset of climate change. Reduced river flow from earlier snow melt and lower levels of precipitation during cultivation of crops provide just two examples of how the agricultural sector will be affected.

Water resource will also become problematic with livestock and crops lost to flooding or drought, and whole livelihoods destroyed. The poor and those who rely on subsistence agriculture could be particularly affected, with food security and water availability issues becoming ever-more pressing.

Deforestation; Deforestation impact on land, it is one causes for soil became uncover, also increased flood and runoff then increasing the soil erosion by water, deforestation negative effect on biodiversity to loss or decreasing biodiversity and loss types of species of plant and trees, furthermore; Reduce the permeability of the soil after that the ground water became decreasing however deforestation causing to rising temperature (USAID (May 18, 2013).

Conclusion

After research and studies conducted in this section, it has been concluded that climate change is one of the major and fundamental problems in the world today. Afghanistan is also one of the countries that has suffered the most from climate change.

Climate change has had the most negative effects on the agricultural, health, natural resources and negative sectors on the economy of the Afghan people. If the Afghan government and relevant departments do not pay serious attention to this, the people of Afghanistan will face serious problems and huge losses in the next few years.

According to various reports, there is a shortage of policy documents in Afghanistan has not been able to provide a framework for tackling climate change issues, there is no national development strategy for climate change. Even recently, the Afghan government has achieved its goal of define the reduction of greenhouse gas emission by 2030 and the measures and financial assistance to achieve it has done. Lack capacity delivery is the most problematic because of the progress in the implementation of policies and disrupts the implementation.

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