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## Review

# Flood Disaster in Pakistan and its Impact on Agriculture Growth (A Review)

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The main aim of this paper is to study the flood disaster in Pakistan and its impact on agriculture growth of Pakistan during the flood period of 2010-2014. Pakistan has during the last five consecutive years of 2010, 2011, 2012, 2013 and 2014 faced floods and flash floods. It has been responsible for damages to crops, seeds, households, food grains, livestock and infrastructure. In September 2014, heavy monsoon rains and floods in the catchment areas of India's eastern rivers of Jhelum, Ravi, Sutlej, and Chenab, resulted in flash floods in Punjab, Gilgit Baltistan and Azad Jammu and Kashmir (AJ&K). Over 1 million acres of cropland and 250,000 farmers were affected, in most cases resulting in the loss of standing food, fodder or cash crops.

**Keywords:** Flood disaster, Agricultural Growth, Monsoon, Socio Economic & Infrastructure

## INTRODUCTION

A series of natural disasters has been hit by Pakistan in recent years. In October 2005, there was a 7.6 magnitude earthquake in 2010, 2011, 2012, 2013 and 2014 there was severe flooding. These disasters had a massive cumulative effect on the economy of Pakistan. In 2010 monsoon rains caused massive floods in Pakistan which killed nearly two thousand people, affected more than 20 million and made at least 7.8 million people food insecure and inflicted over US\$ 16 billion in economic loss.

Agriculture accounts for 21% of Pakistan's GDP, 45 per cent of employment and 60 per cent of exports. This disaster resulted in a loss of 2.5 million tons of rice, 7.5 million tons of sugarcane, 0.7 million tons of cotton and 0.3 million tons of maize.

In September 2014, severe and late monsoon spell, coupled with major water discharges through the eastern rivers, especially in Chenab river, resulted in massive floods in Azad Jammu & Kashmir (AJ&K), Punjab and landslides in Gilgit-Baltistan (GB) at an unprecedented scale, both in terms of volume and spatial coverage. Despite forecasts of below-average rainfall, heavy downpours began in first week of September 2014, which

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damaged crops, infrastructure and human settlements, thus adversely affected national economy directly and indirectly.

According to available sources in September 2014, more than 2.5 million people were affected by the floods and rains, 367 persons lost their lives and 129,880 houses were fully destroyed. Over 1.0 million acres of cropland and 250,000 farmers were affected, in most cases resulting in the loss of standing food, fodder or cash crops. The estimated cost of the recovery effort was US\$439.7 million.

### Review of Literature

According to Nott (2006) the causes of flood can be divided into two physical (climate forces) and human influenced (urban development and vegetation clearing) categories. Most of the floods are due to natural forces world widely and in most of the cases it is due to prolonged rainfalls. Cutting trees has changed the patterns of floods which are due to the human impact. Flood cannot be considered as natural disaster until it damages the human lives or property.

The European Union (EU) Floods directive (2007), defines a flood as a temporary covering by water of land that is not normally covered by water. In the sense of "flowing water", the word may also be applied to the inflow of the tide. This water comes from the overflow of sea, lakes, rivers, canals, sewers or from rainwater.

Flooding is normally caused by natural weather events such as heavy rainfall and thunderstorms over a short period, prolonged rainfall or extensive rainfall. It can also be caused by high tide combined with stormy conditions. It is predicted that climate change will increase the risk of flooding in the UK and other parts of the world (Petak and Atkisson, 1982). Ministry of Agriculture and fisheries (2004, p. 1) also reported that "risk is also experienced when there is heavy downpour or portion of rainfall or thawing snow flows overland away from the area it originally precipitated, this is called runoff".

According to the study conducted by the International Flood Initiative (2003), floods are causing the most of the water related natural disasters which are not only damaging human and material assets but also the cultural and ecological resources. Ariyabandu and Wickramasighe (2005) observed that women are more affected than men due to their family responsibilities. Moreover women have more knowledge and skills to deal with such natural disasters but most of the time they are ignored in policy making.

Odunuga et al. (2012, p. 367) also established "that Flood occurs when there is overflow of urban drainages over the streets to extent that it cannot be absorbed by earth surface and consequently results to property damage, traffic obstruction and nuisance as well as health hazards".

According to Sinclair and Pegram (2003) stated that floods cannot be prevented but their effects can be

minimized by introducing advance warning systems. More over many poor people live near river banks because these are the only unoccupied areas available for poor populations. These people are at more risk not only due to their location but also due to lack of financial resources they own.

Flood may also result from overflowing of a great body of water over land and extreme hydrological events or an unusual presence of water on land to a depth which affects normal activities (Olajuyigbe, 2012; and PointBlankNews.com). It also occurs as a result of combination of meteorological and hydrological extremes as well as activities of man on drainage basin (Adeaga, 2008). Floods often cause damage to homes and businesses if they are located in natural flood plains of rivers (Tinh and Hang, 2003).

Flood causes many socio-economic and political dimensions which further give birth to many complex problems. Some of the problems are displacement of people, infrastructure damages such as destruction of roads, crops and loss of cattle and livestock. These destructions delay the ongoing development and political processes (Theron 2007). Theron (2007) further added that these destruction results into shortage of food in long run.

The effects of flood on man cannot be overemphasized because it cut across all spheres of man's life. This includes man's physical environment, man's health and agriculture products. Flood, depending on its volume and velocity can damage any type of structure, including bridges, cars, buildings, sewerage systems, roadways, and canals. It can also result into contamination of water.

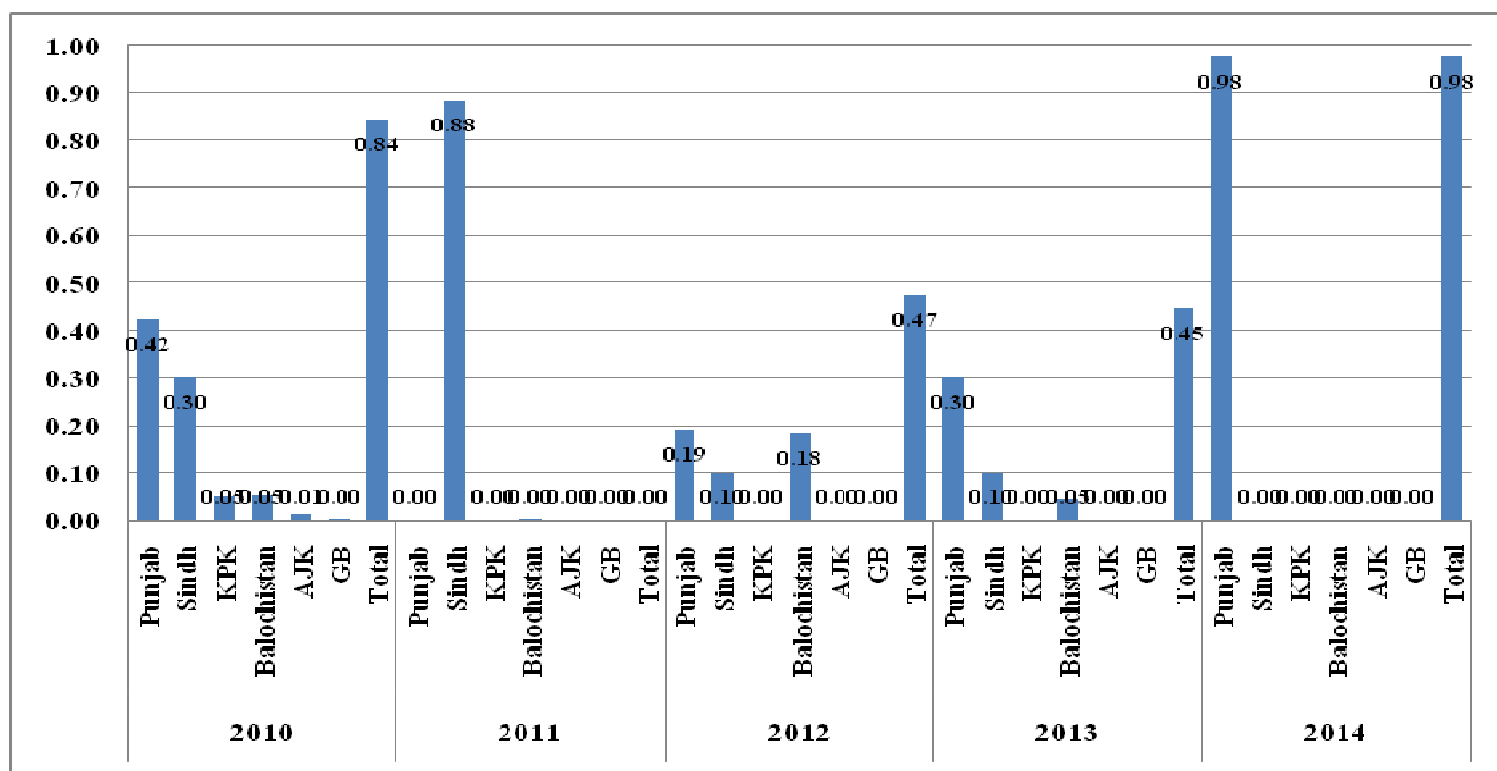
### Flood Disaster Impacts on Pakistan Agricultural Growth

The impact of floods on Pakistan's economy is colossal as the economy grew on average at a rate of 2.9 % per year during the last five years. The Pakistan Economic Survey shows that Pakistan lost a total of 5,072 lives and \$19 billion to the floods in 2010, 2011, 2012, 2013 and 2014. Agricultural affected area of crops due to flood in Punjab, Sindh, KPK, Baluchistan, Azad Jammu & Kashmir and Gilgit Baltistan during the period 2010-2014 are shown in the figure 1.

In 2010 flood disaster, the crops affected area of Punjab was 0.42 million hectares, Sindh was 0.30 million hectares, KPK was 0.05 million hectares, Baluchistan was 0.05 million hectares and Azad Jammu & Kashmir was 0.01 million hectares. The total area of crops affected in 2010 was 0.84 million hectares. In 2011 flood, only Sindh crops area was affected in total 0.88 million hectares. In 2012 Punjab and Sindh crops area was affected by flood and total area was 0.47 million hectares. In 2013 Punjab, Sindh and Baluchistan crops area was affected by flood and total affected area was 0.42 million hectares. Similarly in 2014, only Punjab crops area was affected by flood and was 0.98

Year	2010	2011	2012	2013	2014
Punjab	0.42	0.00	0.19	0.30	0.98
Sindh	0.30	0.88	0.10	0.10	0.00
KPK	0.05	0.00	0.00	0.00	0.00
Baluchistan	0.05	0.00	0.00	0.05	0.00
AJK	0.01	0.00	0.00	0.00	0.00
GB	0.00	0.00	0.00	0.00	0.00
Total	0.84	0.00	0.47	0.45	0.98

**Figure 1.** Flood Affected Area of Crops in Million Hectares during 2010-2014  
Data Source: NDMA Pakistan 2010-2014



**Figure 2**

million hectares. Graphically it is shown in the figure 2 with province wise.

**CONCLUSION**

2010 flood affected 20% of country total landmass underwater causing total damage of over \$10 billion. Baluchistan and KPK suffered predominantly from flash floods; whereas Punjab and Sindh suffered mainly from slow-rising riverine floods. 2011, floods and mudslides have affected the Guanche District in Gilgit-Baltistan, causing damage to hundreds of houses and to crop areas. In 2012, 5 million people, 14,270 villages and 1.1 million

acres of crops were affected by flooding. In August 2013 triggered flash floods and caused widespread losses and damage across Pakistan. Nearly 1.5 million people, almost 80,000 houses, and 1.5 million acres of crops were affected. 2014, heavy monsoon rains and floods in the catchment areas of India's eastern rivers of Chenab, Ravi, Sutlej, and Jhelum, resulted in flash floods in Punjab, Gilgit Baltistan and Azad Jammu and Kashmir (AJ&K). The floods killed 367 people and affected more than 2.5 million people, and 129,880 houses were damaged or destroyed. Over 1 million acres of cropland and 250,000 farmers were affected, in most cases resulting in the loss of standing food, fodder or cash crops. Non-farm sources of livelihoods and services affected include many small enterprises,

manufacturing and processing businesses and loss of wage employment due to disruption of the economy.

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