

# Effects of Floods on the Economy of West Pakistan

By

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## Introduction

Water, without which life in its varied forms would be impossible, is one of the most important basic resources of the world. We need it not only to quench our thirst or to meet our domestic needs, but also, in much greater quantities, to produce and process the food we live on and other material necessary for human welfare.

One of the unfortunate aspects of the water problem is that it cannot be preserved in the sense of, say, minerals which can be preserved in their natural form and saved until required. Any water unused is lost to useful purpose for ever. The waste of water, particularly river water, is most deplorable in the under-developed countries where a good deal of lee-way has yet to be made not only for developing hydel power to accelerate the pace of industrial growth, but also for augmenting agricultural production for supplying balanced food to the teeming millions.

It is an established fact that Pakistan's economy is predominantly agricultural. As such the importance of water resources to Pakistan can hardly be ever emphasised. In fact, in its far reaching implications, it can mean prosperity or poverty to an overwhelmingly large number of people in the country. The problem connected with water resources in our case ranges from a serious scarcity of water in certain parts of the country to disastrous floods during the wet season coupled with a dry season and inadequate water supplies for agricultural crops. Therefore while some areas are less productive due only to deficiency of water, others have the problem of too much water in the form of heavy rains during part of the year and too little during the rest of the year. Thus too much water in the absence of any effective flood control measures leads to floods which seldom fail to bring death and destruction in their train.

Since the birth of Pakistan, the menace of floods has been growing both in intensity and frequency, thus having adverse effects on the economic and social conditions of the country.

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In 1947, the rivers Ravi and Sutlej were flooded at a time when destitute refugees were pouring into the country in very large numbers. This only added to the already great hardships which the newly born country was enduring. The following year again the rivers Chenab, Jhelum and Indus were swollen and brought misery to refugees trying to settle here and there. In 1950, there came unprecedented floods in the history of the former Punjab Province which almost nullified a good deal of work done in the direction of rehabilitation of refugees and agriculture. In West Pakistan, the rivers were in spate in 1954 also and water levels of Ravi and Chenab were close to those of 1950 floods. In 1955, Ravi and Sutlej registered the maximum discharge ever recorded. During the following two years many rivers of this province were in spate. The furious and sweeping waters of the flooded rivers ravaged vast areas of the province as is clear from the following table :

**Table No. 1.**

Flood year :	Affected Area (Sq. miles)
1950	7,000
1954	*5,000
1955	*8,000
1956	29,065
1957	5,953

\*Estimate

The floods brought acute hardship and suffering to millions. The damage to agriculture and irrigation, industry and trade, transport and communications and other public and private properties was colossal. Millions of rupees urgently needed for the development of the country had to be spent on the provision of relief measures, both immediate and long-term, on reconstruction and restoration of devastated areas and dislocated public utilities and on rehabilitation of up-rooted people. In fact this recurring calamity has dealt a grievous blow to the economy of the country.

**Effects of Floods.** The effects of floods on the economy of a country may well be classified into harmful and beneficial effects which may fur-

they be classified into tangible and intangible effects and into direct and indirect effects. While tangible damages tend to lend themselves to an evaluation in terms of money, intangible losses do not. Direct damages are witnessed in the flooded areas while indirect losses are by no means confined to the flooded localities only.

### **I Harmful Effects**

#### **A. Tangible :**

- (i) Damage to real estates, lands, private and public properties. flood control and drainage works, etc.
- (ii) Damage to agricultural property, lands, products and irrigation works ;
- (iii) Interruption of utility services and transport and communication facilities.
- (iv) Loss of working hours and wages.
- (v) Reduced output, losses of business income and good will ;
- (vi) Disruption of markets and spoilage of certain foods on route ;
- (vii) Unusual expenditure and temporary rentals.
- (viii) Feeding and caring of refugees.
- (ix) Temporary flood protection and clearing up.
- (x) Higher rate of depreciation of property in inundated localities.

#### **B. Intangible :**

- (i) Loss of human life.
- (ii) Personal injury and sickness ;
- (iii) Degeneration of public morale ;
- (iv) Decrease in recreational opportunities.

The nature of losses suffered varies widely depending upon factors like intensity of the flood, topography of the area affected, time and conditions prevalent at a particular area etc. In some cases indirect flood damage may be larger than direct damage and vice versa. In some instances, the only damage known to have been done was indirect damage.

In case of Pakistan, being a land of villages, direct damage is invariably always higher in rural areas.

### **II. Advantages of Floods**

Though highly destructive, in the absence of effective flood control measures, floods are not altogether without benefits. Gushing

waters of a flood reach areas suffering from acute scarcity of water and contribute to the richness of crops to be raised, particularly those crops which demand abundant supplies of water to mature. Flood water also brings salinity with it which is deposited on the land when the water recedes. This salinity helps raise certain crops more quickly than the normal time.

Saline areas in particular, benefit from the flood waters which wash away a good part or the whole of salinity from the barren lands making them productive at least for a certain period.

Besides, flood water washes away refuse and filth of areas where the drainage system is not complete or is defective.

On the whole the flood damages are so numerous and varied compared with flood benefits that these advantages do not have any special significance. For the purpose of this paper, therefore the harmful effects of floods have been studied under the following five main broad heads :

- (i) Agriculture and Irrigation
- (ii) Industry and Trade
- (iii) Transport and Communication
- (iv) Public Income
- (v) General

**I. Agriculture and Irrigation :** Since Independence, West Pakistan has witnessed seven floods of varying intensity. As a result thousands of villages were inundated and millions of people were rendered shelterless during flood days. Vast areas of cultivated lands and standing crops were devastated. Thousands of maunds of foodgrain and fodder were destroyed. Large numbers of cattle heads were swept away. Nearly all the wells, tubewells and irrigation works in the affected areas were more or less damaged. The result was a drop in the production of processed food no less than in livestock and farm production. Disruption of marketing facilities and disorganisation of cooperative societies were also caused. In short the village economy of the affected areas was badly shaken during each flood.

**(a) Villages affected :** Rural areas especially those lying on either side of the rivers had to bear the brunt of the wrath of floods in this province. Naturally therefore, thousands of villages were affected, some were severely damaged while others were completely destroyed as is clear from the following table :

\*Table No. 2

Number of villages affected, damaged and destroyed by floods

Flood year	Number of villages		
	Affected	Damaged	Destroyed
1948	5,000 *	3,456	122
1950	10,000	4,538	1,100
1954	3,747	2,000	600 *
1955	6,945	2,913	500
1956	11,609	4,000 *	400 *
1957	4,498	2,000 *	300 *
Total	41,799	18,907	3,022

\* Estimates only

The figures show that during the last six floods about 18,907 villages were damaged while 3,022 were destroyed. Each time with the recession of the flood the Government made all possible haste to rehabilitate the flood affected people.

In 1957, the estimated extent of damage to private property (excluding houses), was put at Rs. 17 million. The corresponding estimates for the last six floods amounted to Rs 142 million. The Government took care to provide all possible facilities for the shifting of low lying *abadies* to high level places and for this purpose land was immediately made available.

The Co-operative Department contributed its share to help rehabilitate the rural economy of the Province. The Department reorganised cooperative societies in the affected areas and provided loans to the flood affected people at a very low rate of interest through the Credit Societies.

\* Statistics for the years 1950 to 1957 given in this & subsequent tables supplied by the Office of the Flood Relief Commissioner.

(b) **Damage to cultivated Area :—**Great damage was done to the cultivated area. Standing crops were destroyed by rushing flood waters. Stagnation of water in the cotton fields had adverse effects on the plant as well as on the yield. The sugarcane plants which were cultivated at low lying areas also suffered serious damage inspite of the fact that this plant can stand abundance of water.

The following table gives the acreage of cultivated area affected and destroyed and the value of crops ruined during the last six floods:—

**Table No. 3**

Cultivated Area Affected and Destroyed and the Value of Crop Destroyed.

Flood year	Area in acres		Value of Crops destroyed Rs.
	Affected	Destroyed	
1948	1,000,000*	754,000	*75,000,000
1950	1,765,544	700,724	70,611,317
1954	1,587,177	308,810	*30,000,000
1955	1,711,952	990,121	80,482,020
1956	2,180,489	798,956	79,290,108
1957	2,085,883	635,997	66,832,871
Total	10,331,045	4,188,608	402,216,316

\* Estimates

The table above shows that 4,188,608 acres of cultivated area were destroyed. The estimated value of crops ruined amounted to Rs. 402 million during the last six floods. The cause of recurring food deficits in the country since 1950 is also partly accounted for by the flood havoc.

Efforts were made by the Government at a few places to take advantage of the moisture provided by flood waters and of the silt brought down by it. But as there was shortage of cattle power for ploughing, the Government made arrangements for the cultivation of crops by providing some tractors. For this purpose 6 tractors were

(c) **Foodgrains destroyed** :—In addition to the damage to the standing crops, stocks of food grains (government as well as privately owned) kept for future use were either swept away or were spoiled by water standing for days together in the godowns etc. The following table gives the quantities of food grains lost to the country during the last six floods.

**Table No. 4**

Quantity of Foodgrains destroyed in floods.

Flood year	Foodgrain destroyed (in mds.)
1948	*50,000
1950	1,425,253
1954	54,392
1955	1,428,496
1956	1,228,164
1957	242,556
<b>Total</b>	<b>4,428,861</b>

\* Estimates

The table above shows that during the last six floods 4·4 million maunds of foodgrains, so urgently needed for the teeming millions of the country, were destroyed.

In 1957, the estimated value of foodgrains destroyed by floods was Rs. 2·9 million and the total estimate for last six floods amounted to Rs. 48·7 million.

(d) **Destruction of Fodder** :—The flood water also destroyed standing fodder crops as well as large quantities of stored fodder as is shown by the table below :—

**Table No. 5**  
Quantity of Bhoosa destroyed (in maunds).

Flood year	Bhoosa destroyed (in mds.)
1948	*1,000,000
1950	3,525,571
1954	*1,500,000
1955	1,788,016
1956	1,074,284
1957	1,134,749
Total	10,022,620

\*Estimates

The table above reveals that about 10 million maunds of bhoosa were destroyed during the last six floods. The maximum destruction was caused in 1950 when 3.5 million maunds of bhoosa were washed away. In 1957, the estimated value of bhoosa destroyed was Rs. 2.8 million and the estimate for the total loss was stated to be in the neighbourhood of Rs. 25 million.

As it was very necessary to procure bhoosa immediately to keep down the mortality rate among the cattle, the Government obtained bhoosa supplies from the surplus areas. The Government also introduced concessional rates for the carriage of bhoosa by rail from the surplus districts to the deficit areas. The consigner was to pay only 40% of the ordinary freight and the rest was to be debited to the provincial Government. An amount of Rs. 34,000/- was set apart for this purpose during 1950 floods.

The Forest Department also came to the help by allowing grazing and cutting of grass at nominal rates in various forested areas. Even some new areas were also opened for this purpose. Fodder scarcity however, did not last long as the fodder crops like SHAFTAL and Berseem flourish very well on the moisture provided by the floods.

(e) **Loss of Cattle Heads** :—The main cattle problems created during the floods were (i) encamping the animals from the affected areas to high level places (ii) checking the high mortality rate among the



cattle during the flood days (iii) providing the needed quantity of fodder (iv) opening veterinary centres to treat animals from minor ailments and for inoculation against diseases (v) burying the dead animals with disinfectants.

The Provincial Veterinary Department opened a large number of centres during each flood. In 1950 floods more than 100 centres were established where animals were treated and also immunised against contagious diseases. But inspite of all these efforts to bring the stranded animals to the cattle concentration camps a large number of cattle head were lost as is clear from the following table :

**Table No. 6.**

## Number of Cattle Head Lost During Floods

Flood year	Cattle Head lost
1948	2,877
1950	41,662
1954	5,135
1955	36,985
1956	2,500
1957	4,050
Total	93,209

The flood years of 1950 and 1955 were the most destructive for the livestock wealth of the country. There was the big problem of burying the dead animals with disinfectants which however the department carried out quickly.

If we take the value of an average animal at Rs. 100/- the loss sustained by the Province on this account amounted to Rs. 9.3 million.

(f) **Damage to Wells** :—A large number of irrigation wells, tubewells and karezes were swamped in water and the masonry work either cracked or collapsed. Other equipments such as the persian wheel, etc., also suffered a great damage.

The following table shows the number of wells, tubewells and karezes damaged during the floods :—

**Table No. 7.**

## Number of Wells, Tubewells and Karezes Damaged

Flood year	Wells, etc., damaged
1948	600*
1950	1,500*
1954	1,784
1955	800*
1956	150
1957	5,337
Total	11,171

\*Estimates only

It will be seen that during the last six floods about 11,171 wells and tubewells were damaged. Figures for the year 1957 also include Karezes damaged.

In 1957, the estimated cost of repairs to wells worked out to Rs. 1-4 million. On the basis of these figures the estimate of the total cost of repairs to 11,171 wells was put at Rs. 2·9 million.

(g) **Supply of Seeds** :—Great shortage of seeds was experienced in the post-flood days on account of sudden displacement of population and the washing away of foodgrains or the damage done to the stocks by flood waters. The Department of Agriculture was therefore entrusted with the procurement and supply of seeds. The Department organised a large number of seed agencies (400 in 1950) keeping in view the fact that it would be very difficult for cultivators to travel long distances to get seeds. These agencies distributed seeds with the help of man-power, pack animals, boats, etc.

The quantities of seeds supplied by the Department in 1950 are given below :

**Table No. 8.**

Quantities of Seeds Supplied in the Flooded Areas in 1950

Name of seed	Quantity (in Mds)
Wheat	266,846
Gram	31,065
Berseem	923
Lentils	25
Barley	20
Oats	300
Sanji	450
Sarson	275
Fieldpeas	1,000
Raya	20
Total	300,924

These seeds were procured from the surplus districts and transported to the deficit areas. Due to high transportation charges, their cost price at the distribution centres became prohibitive. Therefore the Government issued taccavi wheat seeds at a price of Re. 1/- less than the prices of wheat seeds prevailing in the various tehsils and in 1950 a sum of Rs. 500,000 was earmarked by the Government for this purpose.

(h) **Canals Damaged** :—Canals were also breached and damaged

during the floods. The Irrigation Section of the P. W. D. had to spend huge amounts on putting the canals in order.

The following statement shows the various canal sites which suffered damages during the 1950 flood in this Province :—

1. **Marala Headworks on Upper Cheuab Canal.**
  - (i) Left bund of the Marala Headworks on the Chenab.
  - (ii) 32 breaches in the Upper Chenab Canal.
  - (iii) 86 breaches in the Raya branch of U. C. Canal.
  - (iv) A very large number of distributaries were badly breached on the U. C. C. System.
2. **Khanki Headworks on Lower Chenab Canal System.**
  - (i) 3 breaches in the left bund of the Headworks.
  - (ii) A few breaches in the Lower Chenab Canal.
  - (iii) A large number of breaches in the Upper Gugera branch of the Lower Chenab Canal.
3. **Trimmu Headworks of the Haveli Canal System.**
  - (i) The left bund of the headworks breached at several places.
  - (ii) The Haveli Canal breached at 13 places and the cement lining was also washed away.
  - (iii) All the buildings except 3 pucca buildings including the Rest House fell down (the cost of all the buildings totalled about Rs. 4.5 lakhs).
  - (iv) Small damage to the distributaries.
4. **Panjnad Headworks.**  
There were some leakages in the left embankment.
5. **Bombanwala Bedian Link.**  
The syphon site was completely swamped.
6. **Balloki Headworks.**  
The Upper Chenab Canal bund was breached.
7. **Sidhnai Headworks and the Multan Canals.**
  - (i) The left marginal bund was breached.
  - (ii) The right bund was breached under the orders of the Commissioner Multan.
  - (iii) Damage to some channels on the Lower Chenab Canal system.

It was estimated that the total damage to the Canals amounted to about Rs 7 million.

## 2: Industry and Trade.

(a) *Industry.* Several towns and urban localities situated near the rivers were also flooded. Low lying industrial areas in the suburbs of cities and towns were particularly hard hit. Industrial Centres namely Sialkot, Nizamabad, Gujranwala, Shahdara and Badamibagh of the former Punjab Province had suffered a good deal due to devastation wrought by high floods. The factories remained submerged under water for days together and the flood water damaged machinery, equipment, buildings, raw material and finished products in many of the industrial concerns. There were cases when the industrial raw materials and other stores were washed off by angry waters.

In September, 1954, the N.W.R. carriage and wagon shops, the Loco shops, the Moghalpura Power House were heavily flooded and water was knee deep at certain places and waist deep at other places. About 203 mines were thrown out of action during 1956 in the Quetta and Kalat Divisions.

Some factories at a safe distance from the flood water were also forced to suspend operations because of lack of raw material due to disruption of means of transportation.

All this led to the closing down of factories for days together even after the recession of the flood waters thus resulting in fall in income and employment level and higher cost of production.

(b) *Labour.* Floods also caused displacement of labour by driving them out of their places of work to those of safety. The closure of several factories and smaller concerns rendered a large portion of labour force unemployed for periods ranging from days to weeks, and in some cases even for months together. All this brought suffering and distress to the dependents of the earning members especially those employed on daily wage basis. The loss of wages was a cause of much hardship especially to low-paid labour. All this loss of working hours taken collectively had its adverse effects on the economy of the country.

(c) *Prices.* The price structure of the flood ravaged areas in particular and of other areas in general did not remain unaffected. The prices prevailing in consumption centres rose and those in the production centres fell. But where the raw material supplies were cut off and electric current was disconnected due to floods, the production centres also experienced a rise in prices.

The following table shows the percentage change in wholesale prices of certain commodities at Lahore Market due to floods.

Table No. 9.

Showing Increase in Wholesale Prices due to Floods in Lahore.

Commodity	Prices per maund		Percent- age increase 1950	Normal percentage change (3 yrs. average)	Percentage change due to floods 1950
	Sept. 1950	October 1950			
Gram	9— 0	9—10	+ 6·9	+ 5·7	+ 1·2
Barley	5— 8	6— 6	+15·9	+ 7·4	+ 8·5
Rice Basmati	18— 6	20—12	+12·9	— 5·4	+18·3
Moong Whole	12— 8	13—14	+11·0	— 1·5	+12·5
Chillies Dry	42—11	53— 0	+24·2	+11·8	+12·4
Mash Whole	17—10	21— 2	+19·9	— 8·5	+28·4
Onions	2—13	3— 6	+20·0	+44·0	—24·0
Potatoes	15— 6	16— 0	+ 4·1	+ 9·7	— 5·6
Gur Desi	21—14	25— 8	+16·6	— 9·6	+26·2
Salt Rock	6— 2	7—14	+ 2·9	+ 0·5	+ 2·4
Firewood	2—11	3— 2	+ 1·6	0·0	+ 1·6
Cotton Desi (unginned)	29—10	31—14	+ 7·6	— 2·1	+ 9·7
Toria	23—10	24— 3	+ 2·4	+ 1·0	+ 1·4
Sarson Oil	66— 3	67—10	+ 2·2	— 2·4	+ 4·6
Cement (per bag)	7— 3	9— 6	+30·4	— 1·0	+31·4

Source: "Statistical Abstract of the Punjab".

Column 4 of the table above gives percentage increase of prices in October, 1950. After calculating normal percentage changes in column No. 5, the percentage changes due to 1950 flood were worked out and are given in the last column. It is clear from the table that the prices changed in varying proportions depending upon the supply and demand position of the commodities concerned. In the case of items appreciating in prices, the percentage rise ranged between 1·2 and 31·4. Cement recorded the highest percentage increase in prices because it was imported into Lahore from Wah and other producing areas and disruption of transport system affected its supplies at the consumption centre. Almost similar was the case for various other commodities which were brought into Lahore from outside. In the case of potatoes and onions although the price recorded a rise in October, 1950 yet when the percentage change due to flood was calculated it recorded a fall in the case of these two commodities. The reason was that Lahore being one of the production centres for these and other items, these could not be transported to other consuming areas leading to a relative % decrease in their prices.

Almost similar was the position in the case of retail prices of various commodities. The following table gives the General Index Numbers of Retail Prices at Lahore for August, September and October of 1949, 1950 and 1951.

**Table No. 10.**

General Index Numbers of Retail Prices at Lahore  
(Base : August, 1939 = 100)

Month	Flood year		
	1949	1950	1951
August	415	411	463
September	403	422	456
October	399	432	470

“Monthly Economic Survey”

The table above shows that compared with the indices of 1949 and 1951, there was a continuous rise in the general index numbers of retail prices during 1950 flood year. Serious efforts were made by the Government to rehabilitate the economy as early as possible and to bring the prices to normal levels. To achieve this end, great emphasis was laid on the opening of road traffic which went a long way towards the readjustment of supply and demand position of the commodities.

(d) *Cost of Living*: The general cost of living index numbers recorded a rise during the flood months, in sympathy with the rise in prices of certain foodstuffs and other necessities. The following table gives the cost of living indices for Lahore working classes for the months of August, September and October of 1949, 1950 and 1951.

**Table No. 11.**

Working Class Cost of Living Index Numbers at Lahore.

Month	Flood year		
	1949	1950	1951
August	416	382	389
September	399	391	390
October	397	409	389

The table above shows that during 1949, the indices recorded a downward trend during the three months under review. The following year being a flood year, the index number registered a rise of 9 points in Sept. and of 27 points in October compared with the month of August. The year 1951 was generally a normal year and the indices did not record any change during these months.

### 3. Transport and Communications.

Flood water caused direct as well as indirect damage to the transport and communication system of the Province. Railway and road tracks were breached at various places resulting in the contraction of commodity and passenger traffic, decline in earnings of rail and road transport, and in curtailment of employment and business activities associated with the transport industry.

(a) **Railways.**—The railway tracks at various places were inundated for days together. Some parts of the tracks were either washed away or were found hanging in the air. Some railway bridges were also breached by swollen flood waters. These breaches caused hold up of the traffic which in turn produced adverse influence on business conditions of the country.

The following statement shows the sections and railway stations between which the lines were affected during the 1950 floods :

Section	Railway Stations between which the line was affected
<b>MAIN LINES</b>	
1. Lahore-Lalamusa	Shahdara Bagh to Kamoke Wazirabad to Gujrat.
2. Khanewal-Multan	Shamkot and Kot Mela Ram.
3. Lodhran-Multan	Gilawala to Shujabad.
<b>BRANCH LINES</b>	
1. Khanewal-Shorkot Road	Khanewal to Darkhana.
2. Shorkot Road-Hundewali	Jhang-Maghiana to Shah Jewana.
3. Hundewali-Chak Jhumra	Burj to Lalian.
4. Qila Sheikhupura-Shorkot Road	Qila Sheikhupura to Buchiana.
5. Shahdara Bagh-Sangla Hill	Entire Section.
6. Sangla Hill-Wazirabad	Wazirabad to Jamke Chatta Hafizabad to Kaleke.
7. Wazirabad-Sialkot	Entire section was flooded and breaches occurred between Wazirabad and Sodhra and between Sambrial and Sahowala.
8. Sialkot-Narowal	Entire Section.
9. Shahdara Bagh-Narowal	Entire Section except between Narang and Mehta Suja Stations.

Section	Railway Stations between which the line was affected
10. Jassar-Chak Amru	Jassar to Bostan Afghanan, Tehsil Shakargarh to Chak Amru.
11. Raiwind-Kasur	Roakhanwala and Athilpur.
12. Kasur-Gandasinghwala	Several piers of bridges No. 42 had collapsed.
13. Kasur-Pakpattan	Bhila Hithar and Khudian Khas.

This statement shows that many important sections of the railway traffic were closed.

During the course of 1954 floods, more than 100 breaches occurred on the railway tracks of Lahore and Multan Divisions covering more than 26,000 ft. of broad gauge track. Apart from these breaches, various other sections of tracks were affected and many railway stations and godowns flooded with water.

Narowal-Sialkot section was the worst affected area. There were 25 breaches on this section aggregating a length of about 18,000 feet. The largest single breach recorded was 6,100 feet.

The depth of the water varied at various places. The maximum depth of 27 feet was recorded between Chiniot and Lalian stations.

Through communication on all the flood damaged sections of Lahore and Multan Divisions was restored after 16 days of disruption.

In addition to permanent gangmen, 4,060 temporary workers were employed in Lahore Division and 1,600 in Multan Division in 1954 for carrying out repairs to breaches and other damages done to the track and for protection works.

The estimated total cost of flood repairs and other damages to railway property during 1954 amounted to Rs. 1 million.

During the year 1957, flood damage to railway tracks and structures was estimated to about Rs. 6 million. The estimated cost of flood prevention and protective works exceeded Rupees 10 million.

**(b) Roads.**—The floods breached many important highways at several places and many culverts and bridges suffered serious damage. The Buildings and Roads Branch of the Public Works Department was faced with the problems of closing down small breaches, erecting temporary bridges on long deep breaches, making diversions in the flooded areas and restoring through traffic immediately.

It was not possible to start the restoration work until the floods had sufficiently subsided. The following highways were breached



during 1950 floods and the traffic remained closed for several days.

Statement No.

**Roads Breached**

1. Grand Trunk Road.
2. Lahore-Lyallpur-Jhang-Bhakkar-Darya Khan Road, Arterial No. 3.
3. Lahore-Montgomery-Khanewal-Kabirwala-Multan-Quetta Road, Arterial No. 4.
4. Lahore-Kasur Road upto Gandasinghwala, Arterial No. 5,
5. Delhi-Multan Road (Section Sulemanki to Multan) Arterial No. 6.
6. Lahore-Chiniot-Sargodha-Road, Arterial No. 28.
7. Sambrial-Gujranwala-Hafizabad-Jalalpur-Pindi Bhattian-Chiniot Road, Arterial No. 29.
8. Gujrat-Kunjah-Phalia Road.
9. Gujrat-Jalalpur Jattan Road.
10. Wazirabad-Sambrial-Sialkot Road.
11. Sialkot-Pasrur-Narowal-Basantar Nallah Road.
12. Bhai Pheru -Mangtanwala Road.
13. Mian Channu Tulamba-Saria Sidhu Road.
14. Jhang-Toba Tek Singh-Kamalia-Chichawatni-Burewala Road, Arterial No. 39.
15. Jhang-Chund Road.
16. Okara-Dipalpur Road.

These road breaches occurred during a single flood. The extent of damage to roads during the rest of the flood years could well be imagined.

It was estimated that during the 1950 floods, damage to roads, bridges and railway lines amounted to Rs. 10 million.

(c) **Communication.**—In the case of telegraph and telephone communications, however, there was only a brief interruption of a few hours, as otherwise the system kept functioning throughout the flood periods. Wireless equipment was also used to remain in touch with the affected areas.

The postal arrangements, however, were greatly upset during the flood days due to breach of rail and road transportation systems

Through communication, except by air for certain urban places was nearly impracticable.

#### 4. Public Income.

The Central as well as the Provincial Government sanctioned large amounts of public income as extra expenditure on the relief measures, rehabilitation schemes and on reconstruction of the affected places. The Government revenues also shrank due to fall in land revenue and abiana collections. The Government was prompt in advancing large sums as taccavi loans for various purposes. Flood relief cess was imposed on land revenue and flood relief Committees were organised to collect donations from the public for the help of flood stricken people.

(a) **Central Government Grants.**—The Central Government made substantial monetary contribution to alleviate the distress of the flood stricken people of this province as is clear from the table below :

**Table 12**  
**Central Government Grants for Flood Relief**

Flood Year	...	Grant in Rs.
1950	...	20,000,000
1954	...	—
1955	...	12,500,000
1956	...	6,700,000
1957	...	—
Total		39,200,000

The table above shows that the Central Government contributed about 39 million rupees to rehabilitate the economy of the province.

(b) **Provincial Government Share.**—The Provincial Government sanctioned the following amounts to provide relief to the people of flooded areas in this province.

**Table 13**  
**Provincial Government Grants for Flood Relief**

Flood Year	...	Amounts sanctioned (Rupees)
1950	...	535,000
1954	...	971,000
1955	...	2,000,000
1956	...	3,000,000
1957	...	1,000,000
Total		7,506,000

This amount was apart from the sums sanctioned for taccavi loans.

(c) **Taccavi Loans.**—Advancing large sums as Taccavi Loans was an important step to rehabilitate the flood stricken cultivators. These loans provided the farmer with the necessary means to resettle himself on his land.

The Taccavi Loans sanctioned in 1950 for the purpose are detailed below :

**Table 14**  
**Taccavi Loans Sanctioned in 1950**

			Taccavi Loans Sanctioned
<b>Under Agriculturists</b>			
<b>Loan Act XII of 1884</b>			Rs.
For Houses	...	...	2,804,100
For Cattle & Implements	...	...	572,650
For Seed	...	...	3,302,448
Total			6,679,198
<b>Under Land Improvement</b>			
<b>Loans Act XIX of 1883</b>			
For Fodder	...	...	407,802
For Wells	...	...	751,000
Total			1,158,802
Grand Total			7,838,000

The following amounts were sanctioned by the Government for Taccavi Loans during the subsequent flood years :

**Table 15**  
**Amounts of Taccavi Loans Sanctioned**

Flood Year	Amounts (in Rs.)
1954	2,200,000
1955	12,100,000
1956	8,000,000
1957	3,000,000
Total	25,300,000

Out of the total amount, about half was interest free. The amount of **taccavi** loan for the year 1955 included Rs. 10 million from the Central Government. The balance was contributed by the Provincial Government.

(d) **Remission of Land Revenue and Abiana.** As the damage caused to the standing crops was colossal and the cultivators were not in a position to pay for the crops which had been destroyed, the Government remitted the land revenue and **abiana** (water rates) at places where the crops had failed. This was a relief measure which by implications was an indirect financial help to the affected people.

The total remission and suspension given of land revenue and abiana during **Kharif** 1950 are given below :

**Table 16**

**Land Revenue & Abiana remitted & Suspended during Kharif 1950**

Head	Land Revenues & Abiana	
	Remission Rs.	Suspension Rs.
Land Revenue ...	825,650	69,390
Abiana ...	1,683,230	—
Total ...	2,508,880	69,390

An idea can be had from the table above that during one flood year only as against the total seven since Independence the Government had to remit about Rs. 2.5 million which was no mean loss to the exchequer.

(e) **Flood Relief Cess.** Flood Relief Cess was levied in 1950 at the rate of 2 annas per rupee or part of a rupee of the land revenue assessed and occupiers rates payable during **kharif** 1950. The total estimated realisation of this cess was expected to be of the order of Rs. 4.6 million.

(f) **Relief Funds.** A sum of Rs. 1.7 million was sanctioned for flood relief from the Quaid-i-Azam Relief Fund during 1950. During 1955 floods, about 800,000 rupees were collected and during the next two years 225,000 rupees were collected for relief fund. These amount were utilized for providing relief measures in various shapes. In 1957, Provincial Flood Relief Committee collected Rs. 230,000.

## 5. General

(a) **Loss of Human Lives.** Sweeping flood waters would spare none and human lives were no exception. Maximum loss of life reported was during 1950 floods when people were taken quite unawares and, men, women and children were known to have been drowned or washed away by several hundreds. The following table gives the number of human lives lost or missing and that of injured in floods :

**Table 17**  
**Human Lives Lost or Missing & Injured in Floods**

Year	Lost or Missing	Injured
1948	150	N.A.
1950	2,910	N.A.
1954	630	N.A.
1955	679	280
1956	160	181
1957	83	16
Total	4,612	477

As many as 4,612 souls having been drowned in the floods or having fallen victims to the after effects of floods was an irreparable loss to the bereaved families.

Figures of loss of human lives for the flood year of 1947 were not available. It was reported that on 27th September, 1947, about 1,000 Muslim evacuees from East Punjab were swept away by the flood in the River Beas.\*

To provide relief to the flood stricken people was a Herculean task. The flood sufferers were provided with clothing, food and shelter.

(b) **Diseases and Epidemics.** The health problems of the flood affected areas were the prevention and treatment of the following diseases :

- (i) Cholera
- (ii) Malaria
- (iii) Bowel diseases like Dysentery and Diarrhoea
- (iv) Pneumonia and other chest diseases.

Even when the flood receded, all the water did not subside, and stood for days and days together at many low lying areas. These places and other soft marshy grounds tended to become breeding places of different diseases carrying germs. The Government not only provided relief to flood evacuees and flood affected villages but also took measures for the prevention of cholera,

Malaria was another disease following in the wake of floods. The incidence of malaria was very high in the flood affected villages and the position was made worse by relapses. The spread of bowel diseases like dysentery and diarrhoea, and pneumonia and other chest diseases was also reported.

It was estimated that more than 75% population of the flood affected villages had suffered from one disease or another and at least one member of every family was bed ridden throughout the coming season. This situation gives an idea of the number of working days lost to the nation and its adverse effects on the economy of the country.

\* Civil & Military Gazette, 30th September, 1947

To cope with the health problem so created, the Health Department organised Mobile Medical Units consisting of doctors, sanitary and anti-malaria staff, increased the existing hospital accommodation, established temporary hospitals and dispensaries and procured essential medicines in large quantities.

The staff disinfected wells, carried out anti-malaria inoculations, distributed anti-malaria drugs and other medicines of diarrhoea and dysentery. D.D.T. was sprayed over the flood affected areas from the air with the help of the Pakistan Air Force.

(c) **Houses Damaged and Destroyed.** The flood water damaged or destroyed a large number of residential huts, houses and other buildings in low lying areas thus rendering thousands of people shelterless.

The estimate of the number of houses damaged and destroyed during the flood years is given below from which an idea of the extent of damage can be formed.

**Table 18**

**Number of Houses Damaged or Destroyed**

Flood Year	Houses Damaged	Houses Destroyed	Total
1948	91,502	87,000	178,502
1950	167,331	269,108	436,439
1954	23,552	41,215	64,767
1955	183,247	139,431	322,678
1956	89,565	75,033	164,598
1957	90,499	52,412	142,911
Total	645,696	664,199	1,309,895

The table above shows that 1,309,895 houses and huts were either damaged or destroyed during the last six floods.

The estimated value of damage done to houses was of the order of Rs. 25 million during 1957 and the total loss due to damage and destruction during the last six floods in terms of money amounted to about Rs. 231 million.

The Forest Department did its bit by helping the people rebuild their houses. The Department supplied large quantities of timber through the Flood Relief Timber Depots especially opened during the flood days. In 1950 floods, about one lakh **ballas** and **karris** were utilised by public. The people were allowed to remove **sarkanda** and other tall grass free or at very nominal rates for roofing.

(d) **Government Buildings.** Great damage was also caused to some buildings belonging to Government and Local Bodies. During the 1950 floods the Tehsil buildings at Daska, Pasrur, Shahdara, Kabirwala and Chiniot were seriously damaged, besides those of the Government College at Jhang and of various police stations. The buildings of schools hospitals belonging to the District Boards suffered extensive damage. When the 1950 floods receded, the District Boards approached the Government for an assistance of Rs. 7 million to repair the damaged buildings and to reconstruct the demolished ones.

(e) **Government Action.** As floods are in the nature of national calamities with widely dispersed adverse effects, the resources of almost all the Government departments like Agriculture, Co-operative, Animal Husbandry, Forest, Health, Transport, Civil Supplies, Meteorological, Public Works (Buildings & Roads and Irrigation Sections) were mobilised and so coordinated as to achieve the maximum result with the minimum effort and time.

During the Floods of 1950, a major portion of the Army was immediately mobilised to assist civil agencies. Pakistan Air Force played a no less prominent part in these operations—in the shape of dropping of food supplies etc.,—as much as 181,000 pounds of supplies were dropped. During 1955 floods, Air Force planes dropped 1000 maunds of foodstuff daily to the marooned people from the air for many days.

Information and relief centres were established to render assistance to those affected by the flood. Evacuation of inhabitants of low lying areas was undertaken. Tens of thousands of human beings rendered homeless and stranded here and there were picked up by workers of these agencies and brought to the temporary relief centres. 'Rescue Units' were mobilised to bring to safety persons trapped on the tops of trees and houses etc. The Government also granted relief money to each destitute family having lost its earning member.

In 1956, the West Pakistan Government installed more than 75 wireless sets for flood warning and reporting at various places near the rivers Sutlej, Ravi, Chenab and Jhelum.

(f) **Flood Commission.** After the 1950 flood receded, the Central Government appointed a Flood Commission to investigate and report on the causes that contributed to the flood disaster and to suggest measures to prevent and control such causes. The Commission submitted its Report in June 1951 which is still being kept as a secret document and no final decision on the Report has yet been taken.

(g) **Flood Protective Measure Committee.** This Committee was appointed in 1950 by the Provincial Government to recommend the equipment required at various places in the flood affected areas to meet any emergency in future.

**Total Damage.** It was not possible to arrive at an estimate of total damages suffered in each flood in this province. As already mentioned the flood damages are tangible as well as intangible. As

intangible damages cannot be evaluated in terms of money, these are usually omitted from the estimates.

The Provincial Flood Relief Commissioner's office estimated that in 1957 the total loss due to floods excluding cost of restoration of Government works of Public utility was of the order of Rs. 120.7 million. This estimate includes damage to private property and houses, value of foodgrains, fodder and crops ruined, cost of repairs to wells, cost of cattle-head lost and other miscellaneous damages.

On the same basis, an attempt has been made to evaluate, in terms of money, the total damage and loss caused by other five floods. The estimates which could be arrived at on the basis of the available information are given in the following table :

**Table 19**  
**Estimated Value of Loss Suffered Excluding Cost of Restoration of Government Works of Public Utility.**

Flood Year	Loss (Million Rupees)
1948	128
1950	212
1954	72
1955	185
1956	166
1957	120
Total	883

The figures given above reveal a very dismal picture of the economy of the country having sustained a colossal loss of Rs. 883 million during the last six floods. If these floods could have been prevented or made less damaging the amount thus saved could well have been spent on the development projects with tremendous results.

There are certain losses due to floods which make themselves felt only after considerable time has elapsed and which at any rate, do not lend themselves to an immediate assessment in terms of money. They result in holding up some or all of the development projects which might have long been under execution by necessitating diversion of Governmental machinery to the urgent task of combating flood and adopting flood control and flood relief measures. As these measures involve very heavy expenditure of money and other Governmental resources the implementation of some of the development projects already under way is delayed which has its repercussions on other sectors of development too.

It is to be noted that in a growing community, even if the floods remain the same, the direct and indirect damage increases with a rise



in the population. The great flood of 1849 in U.S.A. for example, washed through the unsettled Kansas River Valley without material damage, while in 1951, flood in that valley caused damages approaching one billion dollars.\*

In the U.S.A., it has been estimated that the current average annual flood damage over and above that prevented by flood control works now in operation would be at least \$500 million. Heavy flood damage during recent years may raise this average to nearly \$600 million annually. The present annual flood loss and that which may be anticipated in future years is so great that even U.S.A.—a very rich nation—cannot afford so great a strain on its economic and physical structures.\*

### Conclusions

Flood problem with the passage of time has become increasingly acute and is exhibiting the dangerous tendency to become more or less permanent. It is well known that Pakistan was self-sufficient in respect of food at its inception and was in the happy position of exporting a certain quantity of surplus wheat in 1948 and 1949. But the floods coming with almost regular frequency have been one of the factors responsible for converting the country into a deficit area. Large amounts of precious foreign exchange worth millions of rupees have been spent every year to import food which in its economic implication, is entirely non-productive expenditure.

To meet the agricultural and industrial requirements of a growing population and to alleviate food shortages in the country, additional agricultural production is essential. For this purpose, further irrigation and power development depends to a great extent on the storage of flood water now wasted, and on the carry-over of these waters from one season to another, for releasing in dry seasons.

In the U.S.A., a good deal of success has been achieved and significant progress made in devising methods for delaying the flows by resorting to what is known as water control through "Watershed Management" also called Drainage Basin Management. The effects of such control on water yields, flood control and soil conservation are tremendous. But in our country very little has so far been done in this direction.\*

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\* Flood Control, Journal, January 1953, P. 32—33.

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