

## Distribution of Irrigation Subsidies in India (A Case Study of East and North Zone)

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### ABSTRACT

The agriculture subsidies play very important role in agriculture sector in every country. The government of India spends lot of money in various agriculture subsidies for growth of agriculture sector. The Government of India started the scheme of subsidies on purchase of various agriculture inputs (like fertilizer, electricity, irrigation etc.) to facilitate the farmers after independence. In this paper, an attempt is made to analysis the distribution of irrigation subsidies in different zones of India from 1980-81 to 2006-07. This paper showed that at national level as well as zone level the irrigation subsidy in Rs. crores, has increased in absolute terms during pre as well post liberalization periods. The present study suggested that government should adopt some criteria to distribute the irrigation subsidies among all the zones.

**Keywords:-** Agriculture, Economy, Distribution, Subsidies, Irrigation, Liberalization, Production.

### I. INTRODUCTION

The Indian agrarian economy on the eve of independence was critical in situation. It could be characterized totally primitive, deteriorative and turbulent. During the British imperial regime, no pervasive and conductive measures were taken to boost the agriculture. At the time of independence, Indian economy was in the worst state of affairs, the deficiency of food grains was quite alarming and aggravating (Chahal, 1999). The partition of country worsened the food situation in the country. This reduced the agricultural production and created difficulties both for food grains and commercial crops. The country was left with 82 per cent of the total population of undivided India as well as only with 69 per cent of land under rice, 65 per cent under wheat and 75 per cent under all cereals. The cultivators were under heavy debt and most of the holdings were uneconomic (Chahal, 1999).

After independence tremendous efforts were made to boost the economy through agriculture as one of the tools for development. The Government of India adopted a positive approach and hence a well defined policy of integrated production programmes with defined targets and a proper distribution programme was adopted along with other measures for the overall economic development of the country. Specific programmes like new agriculture technology were introduced to convert agriculture into a successful and prosperous business, to bring more land under cultivation and to raise agriculture production (Singh, 1994). In India, the adoption of new agricultural technique was costly than that of traditional method of cultivation. In traditional method, inputs were least expensive, on the other hand, inputs in modern technology like high yielding varieties of seeds, fertilizers, farm mechanization and irrigation were very costly and Indian farmers being poor were not in a position to buy these expensive inputs. On the recommendations of food grain price committee (Jha Committee), the Government of India started the scheme of subsidies on purchase of various agriculture inputs to facilitate the farmers (Singh, 1994).

Subsidies, by means of creating a wedge between consumer prices and producer costs, lead to changes in demand/supply decisions. Subsidies are often aimed at inducing higher consumption/production and offsetting market imperfections including internalization of externalities, achievement of social policy objectives including redistribution of income (Gulati, 2007).

A subsidy, often viewed as the converse of a tax, is an instrument of fiscal policy. Derived from the Latin word "subsidiium", a subsidy literally implies coming to assistance from behind. The objective of subsidies, by means of creating a wedge between consumer prices and producer costs, lead to changes in demand/ supply decisions. The forms of subsidies are a cash payment to producers/consumers is an easily recognizable form of a subsidy.

## II. REVIEW OF LITERATURE

The relevant literature was reviewed in detail to understand the nature and extent of the work done on the related topic. An attempt is made to analyze the nature of the work done during past in the related field. The brief review of literature has been given as under: -

Jogi (2001) stated that the provision of electricity and irrigation at concessions has encouraged inefficient use of a scarce resources such as water, distorted the inter-temporal resource allocation and promoted spatial, inter-personal and inter-temporal inequities. In Punjab 52.17 per cent of the total blocks in the state were over-exploited and 7.97 per cent of all blocks are dark areas as on 31.3.98. The over-exploitation of underground water has caused a fall in the water table in large parts of the state and this has entailed increased expenditure on deepening of tube wells. In case of canal irrigation it is found that 44 per cent of the water entering the canal has got lost in the canal itself, 27 per cent of the water is wasted by the farmers through excessive use and only 29 per cent is actually used by the crops. The author suggested that if government imposed charges on power and canal irrigation, then the farmers would use natural resources more efficiently. At the same time with the reduction subsidies the government should be able to increase investment in the power sector to improve quality and quantity supplied as well as to increase their efficiency reducing transmission and distribution losses and improving the quality of the service.

Dubash, et al., (2001) examined that water related subsidies in agriculture are virtually a universal phenomenon. In this study, the author calculated the per hectare irrigation subsidies in five states of India: Rajasthan, Maharashtra, Andhra Pradesh, Karnataka and Uttar Pradesh. For collecting data, State budget data and Indian National Sample Survey were used. The author analyzed that in practice, water tariffs has been set at very low rates. The capital expenditure on irrigation at national level has increased from Rs. 7.65 billion in 1985 to Rs. 110 billion in 2000. In 1997-98, in Maharashtra, irrigation subsidies were Rs. 3108 million, in Uttar Pradesh Rs. 2777 million, in Andhra Pradesh Rs. 2021 million, in Karnataka Rs. 259 million, in Rajasthan these were Rs. 182 million. The author also found that the magnitude of canal irrigation subsidies per hectare was Rs. 10149 in Maharashtra, Rs. 1117 in Uttar Pradesh, Rs. 1387 in Andhra Pradesh, Rs. 337 in Rajasthan and Rs. 242 in Karnataka. The author further analyzed that benefits of the subsidies were not distributed equitably, large size category farmers were receiving more subsidy than small and marginal farmers. The author suggested that broad policy and institutional reforms are needed to address the consequences of water related subsidies and a better understanding of the nature of water related subsidies, their magnitude, environmental impact and associated issues of equity is needed.

Malik (2016) showed that drip irrigation in India has expanded slowly. One reason cited is the high capital costs facing the smallholder-dominated agricultural sector. Governments have provided capital subsidies in response. This study finds that, rather than improving access to drip, the subsidy system holds the technology back, because its technical requirements, highly bureaucratic processes and pricing incentives turn many drip providers into rent-seeking agents rather than service providers to farmers, leading to price increases of 40% or more. If capital costs are truly the constraint on drip expansion in India, alternative models to address them are available. From the above studies, it may conclude that agriculture subsidies are a worldwide phenomenon.

### OBJECTIVES OF THE PRESENT STUDY:

1. To study the growth and distribution of irrigation subsidies in east and north zone of India.
2. To suggest ways and means for giving irrigation subsidies to farmers of India.

### METHODOLOGY:

The present study is related to irrigation subsidies in India 1980-81 to 2006-07. For analyzing the growth and distribution pattern of irrigation subsidies various states of east and north zones are selected. The east zone includes Haryana, Punjab, Uttar Pradesh, Jammu and Kashmir, Himachal Pradesh and Uttaranchal whereas north zone includes Bihar, Jharkhand, Orissa and West Bengal states. The present study has been divided into different sections. The first section provides an introduction to the concept of agriculture subsidies. The second section is related to the review of literature, objectives and methodology of the study. The third section deals with the zonewise irrigation subsidies in India. The last section presents the summary, conclusions and policy implications.

### III. IRRIGATION SUBSIDIES IN INDIA

In an agrarian economy like India, irrigation has played a major role in the agricultural production process. Irrigation development in the country has been taken up in a big way through Major, Medium and Minor irrigation schemes since independence. Agricultural prices, taxes and subsidy are powerful policy tools for a government that wants to advance its production or welfare goals. For its policies to be effective, it must predict how heterogeneous groups of farmers will alter their chosen crops and water use. A key determinant of a farmer's response is his or her access to water, especially where agriculture depends on irrigation from a canal. Other things being equal, downstream farmers in a canal suffer disproportionately from up-stream seepage. They also lose more water to theft, a widely observed phenomenon on canals in India and elsewhere. A government concerned about the welfare implications of existing prices should explicitly acknowledge that many farmers steal water. Conversely, a government concerned about the social cost of water theft must understand the contribution of its own price distortions (Ashra, 2007).

The irrigation subsidy in north zone of India during 1980-81 to 2006-07 is shown in table 1. The irrigation subsidy in Rs. Crores of different states is calculated by difference between expenditure and revenue of medium, minor as well as major irrigations. This table reveals that in all the states irrigation subsidy has increased except in Punjab, Jammu and Kashmir and Himachal Pradesh (in these states the irrigation has declined in 1996-97).

In Haryana, this has increased from Rs.35.03 crores in 1980-81 to Rs.481.81 crores in 2000-01 and further increased to Rs.903.7 crores in 2006-07. In Punjab, subsidy has risen up from Rs.9.55 crores in 1980-81 to Rs. 192.14 crores in 1990-91 and declined to Rs.166.14 crores in 1996-97 and again risen up to Rs.671.568 crores in 2006-07. Uttar Pradesh has got Rs.40.37 crores, Rs.637.51 crores, and Rs.2,826 crores in 1980-81, 1990-91 and 2006-07 respectively.

In Jammu and Kashmir, this has increased from Rs.2.91 crores in 1980-81 to Rs.34.05 crores in 1990-91 and declined to Rs. 20.79 crores in 1996-97 and again increased to Rs.72.29 crores in 2006-07, whereas subsidy has increased from Rs.0.19 crores in 1980-81 to Rs.9.62 crores in 1990-91 and declined to Rs.5.77 crores in 1996-97 and again increased to Rs.44.58 crores in 2006-07 in Himachal Pradesh.

The percentage share of Haryana declined from 8.78 in 1980-81 to 2.62 in 2006-07. The percentage share of Punjab has declined from 2.39 in 1980-81 to 1.60 in 1996-97 and increased to 3.18 in 2000-01, on the other hand in Uttar Pradesh, it has risen up from 10.12 per cent in 1980-81 to 16.27 per cent in 1990-91 and declined to 9.12 per cent in 1996-97 and further declined to 8.20 per cent in 2006-07. In Jammu and Kashmir, the percentage share has increased from 0.73 in 1980-81 to 0.87 in 1990-91 and declined to 0.21 in 2006-07. It increased from 0.05 per cent in 1980-81 to 0.25 per cent in 1990-91 and declined to 0.13 per cent in 2006-07 in Himachal Pradesh.

Table 1  
State-wise Distribution of Irrigation Subsidy in North Zone in India during  
1980-81 to 2006-07

(In Rs. Crores)

North Zone						
Years/ States	1980-81	1985-86	1990-91	1996-97	2000-01	2006-07
Haryana	35.03 (8.78)	70.67 (4.24)	131.67 (3.36)	373 (3.58)	481.81 (3.28)	903.7 (2.62)
Punjab	9.55 (2.39)	68.58 (4.11)	192.54 (4.91)	166.14 (1.60)	467.39 (3.18)	671.58 (1.95)

Uttar Pradesh	40.37 (10.12)	226.52 (13.59)	637.51 (16.27)	949.39 (9.12)	1283.7 (8.73)	2826 (8.20)
Jammu and Kashmir	2.91 (0.73)	15.95 (0.96)	34.05 (0.87)	20.79 (0.20)	39.17 (0.27)	72.29 (0.21)
Himachal Pradesh	0.19 (0.05)	4.48 (0.27)	9.62 (0.25)	5.77 (0.06)	15.78 (0.11)	44.58 (0.13)
Uttaranchal	–	–	–	–	25.65 (0.17)	237.42 (0.69)

Source: Government of India, Pricing of Water in Public System, 2010, Combined Finance and Revenue Accounts of different states.

Note: (1) Irrigation subsidies in Rs. Crores of different states are calculated by difference between expenditure and revenue of medium, minor as well as major irrigations.

(2) Percentages are shown in parentheses

The irrigation subsidy in east zone of India during 1980-81 to 2006-07 is shown in table 2. It is observed that in all the state of this zone the irrigation subsidy has increased throughout the study period.

In Bihar, this has increased from Rs.6.09 crores in 1980-81 to Rs.276.84 in 1996-97 and further increased to Rs.624.95 in 2006-07. In Orissa, irrigation subsidy has risen up from Rs.9.52 crores in 1980-81 to Rs.691.9 crores in 2006-07, whereas this has increased from Rs.18.07 crores in 1980-81 to Rs.219.96 crores in 1996-97 and further increased to Rs.297.4 crores in 2006-07 in West Bengal.

The percentage share has increased from 1.53 in 1980-81 to 4.64 in 1990-91 and declined to 1.821 in 2006-07 in Bihar. The percentage share has declined from 2.39 in 1980-81 to 1.46 in 1990-91 and increased to 2.01 in 2006-07 in Orissa, whereas in West Bengal, it has increased from 4.53 per cent in 1980-81 to 5.00 per cent in 1985-86 and to 0.86 per cent in 2006-07. It has increased from 0.37 per cent in 2000-01 to 0.72 per cent in 2006-07 in Jharkhand.

**Table 2**  
**State-wise Distribution of Irrigation Subsidy in East Zone in India**  
**during 1980-81 to 2006-07**

(In Rs. Crores)

East Zone						
Years/ States	1980-81	1985-86	1990-91	1996-97	2000-01	2006-07
Bihar	6.09 (1.53)	78.19 (4.69)	181.93 (4.64)	276.84 (2.66)	484.29 (3.29)	624.95 (1.81)
Jharkhand	-	-	-	-	53.77 (0.37)	246.95 (0.72)
Orissa	9.52	23.85	57.01	390.14	469.71	691.9

	(2.39)	(1.43)	(1.46)	(3.75)	(3.19)	(2.01)
West Bengal	18.07 (4.53)	83.36 (5.00)	145.32 (3.71)	219.96 (2.11)	298.51 (2.03)	297.4 (0.86)

Source: Government of India, Pricing of Water in Public System, 2010, Combined Finance and Revenue Accounts of different states.

Note: (1) Irrigation subsidies in Rs. Crores of different states are calculated by difference between expenditure and revenue of medium, minor as well as major irrigations.  
(2) Percentages are shown in parentheses

From the above table, it is concluded that in all the states (except in West Bengal) of east zone, the irrigation subsidy has increased in absolute terms throughout the study period.

The irrigation subsidy per hectare in north zone of India during 1980-81 to 2006-07 is shown in table 3. It is seen that Haryana is only state of this zone in which irrigation subsidy has increased during pre and post liberalization periods.

In Haryana state, this has increased from Rs.64.13 in 1980-81 to Rs.614.09 in 1996-97 and further increased to Rs.1,413.36 in 2006-07. This increased from Rs.14.12 in 1980-81 to Rs.826.69 in 1996-97 and declined to Rs.663.29 in 2000-01 and again increased to Rs.16,776.45 in 2006-07 in Punjab.

In Uttar Pradesh, irrigation subsidy has gone up from Rs.16.43 in 1980-81 to Rs.363.35 in 1996-97 and further gone up to Rs.474.44 in 2000-01 and declined to Rs.109.53 in 2006-07. In Jammu and Kashmir, irrigation subsidy has risen up from Rs.29.88 in 1980-81 to Rs.319.42 in 1990-91 and declined to Rs.193.04 in 1996-97 and again risen up to Rs.642.01 in 2006-07. This has increased from Rs.2.01 in 1980-81 to Rs.103.33 in 1990-91 and declined to Rs.60.93 in 1996-97 and again increased to Rs.470.75 in 2006-07 in Himachal Pradesh.

The percentage share in Haryana has declined from 14.91 in 1980-81 to 4.71 in 1990-91 and further declined to 2.30 in 2006-07, whereas in Punjab, it has increased from 3.28 in 1980-81 to 5.43 in 1990-91 and further to 27.34 in 2006-07. The percentage share of irrigation subsidy per hectare increased from 3.82 in 1980-81 to 5.29 in 1990-91 and declined to 0.18 in 2006-07 in Uttar Pradesh.

**Table 3**  
**State-wise Distribution of Irrigation Subsidy in North Zone India**  
**during 1980-81 to 2006-07**

(In Rs./ Hectare)

North Zone
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Years/ States	1980-81	1985-86	1990-91	1996-97	2000-01	2006-07
Haryana	64.13 (14.91)	126.17 (6.69)	222.45 (4.71)	614.09 (5.26)	787.91 (4.82)	1,413.36 (2.30)
Punjab	14.12 (3.28)	95.81 (5.08)	256.65 (5.43)	826.69 (7.08)	663.29 (4.06)	167,76.45 (27.34)
Uttar Pradesh	16.43 (3.82)	90.32 (4.79)	250.20 (5.29)	363.35 (3.11)	474.44 (2.90)	109.53 (0.18)
Jammu and Kashmir	29.88 (6.94)	154.85 (8.21)	319.42 (6.76)	193.04 (1.65)	351.30 (2.15)	642.01 (1.05)
Himachal Pradesh	2.01 (0.47)	46.00 (2.44)	103.33 (2.19)	60.93 (0.52)	166.46 (1.02)	470.75 (0.77)
Uttaranchal	-	-	-	-	-	1,913.13 (3.12)

Source: (1) Government of India, Pricing of Water in Public System, 2010, Combined Finance and Revenue Accounts of different states.

(2) Government of Punjab, Statistical Abstract, various years.

Note: (1) Irrigation subsidies per hectare of states are calculated by dividing the irrigation subsidies in Rs. Crores with gross cropped area of the concerned state.

(2) Percentages are shown in parentheses

From the above analysis, it is found that in all the states irrigation subsidy per hectare has declined except in Haryana throughout the study period. As post liberalization period (2006-07) is compared to preliberalization period (1990-91), it is observed that in Punjab, this has increased the maximum i.e. more than sixty five times, in Haryana more than six times and in Himachal Pradesh more than four times. In 1990-91, Uttar Pradesh has got 1.1 times more of irrigation subsidy than that of Haryana, whereas in 2006-07, this has increased by approximately thirteen times as compared to Uttar Pradesh. On the other hand, Jammu and Kashmir has got three times more and 1.36 times in 1990-91 and 2006-07 as compared to Himachal Pradesh.

The irrigation subsidy of east zone during 1980-81 to 2006-07 is shown in table 4. Irrigation subsidy per hectare of states is calculated by dividing the irrigation subsidy in Rs. Crores with gross cropped area of the concerned state. This reveals that in four states of the same zone, this subsidy has increased during pre as well as post liberalization periods.

In Bihar, this has increased from Rs.5.46 in 1980-81 to Rs.824.25 in 2006-07, whereas in Orissa this has risen up from Rs.10.88 in 1980-81 to Rs.596.23 in 2000-01 and further rose to Rs.1,620.37 in 2006-07. West Bengal has got Rs.23.71, Rs.167.77, Rs.242.81 and Rs.517.13 of irrigation subsidy in 1980-81, 1990-91, 1996-97 and 2006-07 respectively.

The percentage share of Bihar has increased from 1.27 in 1980-81 to 2.34 in 1996-97 and declined to 1.34 in 2006-07. In Orissa, the percentage share declined from 2.53 in 1980-81 to 1.26 in 1990-91 and increased to 4.07

in 1996-97 and again declined to 2.64 in 2006-07, on the other hand, the percentage share of irrigation subsidy has declined from 5.51 in 1980-81 to 0.84 in 2006-07 in West Bengal.

**Table 4**  
**State-wise Distribution of Irrigation Subsidy in East Zone in India**  
**during 1980-81 to 2006-07**

(In Rs./ Hectare)

East Zone						
Years/ States	1980-81	1985-86	1990-91	1996-97	2000-01	2006-07
Bihar	5.46 (1.27)	74.35 (3.94)	173.51 (3.67)	272.99 (2.34)	481.98 (2.95)	824.25 (1.340)
Jharkhand	-	-	-	-	-	934.35 (1.52)
Orissa	10.88 (2.53)	25.76 (1.37)	59.42 (1.26)	474.85 (4.07)	596.23 (3.65)	1,620.37 (2.64)
West Bengal	23.71 (5.51)	104.37 (5.53)	167.77 (3.55)	242.81 (2.08)	327.42 (2.00)	517.13 (0.84)

Source: (1) Government of India, Pricing of Water in Public System, 2010, Combined Finance and Revenue Accounts of different states.

(2) Government of Punjab, Statistical Abstract, various years.

Note: (1) Irrigation subsidies per hectare of states are calculated by dividing the irrigation subsidies in Rs. Crores with gross cropped area of the concerned state.

(2) Percentages are shown in parentheses

Above table reveals that during pre as well as post liberalization periods, irrigation subsidy per hectare has been increased in all the states of east zone in absolute terms, whereas a lot of variation is seen in percentage-wise analysis. In Orissa, this has increased the maximum i.e., more than twenty seven times and in Bihar near about five and in West Bengal more than three times. In 1990-91, Bihar has received approximately three times than that of Orissa, whereas in 2006-07, Orissa has got 1.96 times more of irrigation subsidy as compared to Bihar.

#### IV. CONCLUSION

It is concluded that in all the states of north zone, irrigation subsidy has increased except in Punjab, Jammu and Kashmir and Himachal Pradesh during pre as well as post liberalization periods. As the year 2006-07 is compared to the year 1990-91, it is observed that in Haryana, this has increased near about seven times, in Uttar Pradesh as well as in Himachal Pradesh more than four times, in Jammu Kashmir more than two times and in Punjab more than three times. As compared to Haryana in 1990-91, Uttar Pradesh has got 4.84 times, whereas in 2006-07, it has got 3.12 times more of irrigation subsidy and as compared to Himachal Pradesh, Jammu and Kashmir has got more than three times and 1.62 times more of irrigation subsidy in 1990-91 and 2006-07 respectively.

As post-liberalisation period (2006-07) is compared to pre-liberalisation period (1990-91), it is observed that in Orissa, this has risen up the maximum i.e. 12.8 times, Bihar more than three time and West Bengal more than two times. In 1990-91, Bihar has got 3.2 times more and West Bengal more than two times than that of Orissa, whereas in 2006-07. Orissa has received more than two times and 1.1 times more of irrigation subsidy as compared to Bihar and West Bengal respectively.

Findings showed that in all the zones there is unequal distribution of irrigation subsidies. At the end it is suggested that government should adopted some criteria for the distribution of irrigation subsidies.

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