

# Socioeconomic Impact and Environmental Status in Ujjani Dam Affected Area of Indapur Tehsil, Dist - Pune (MH)

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**Abstract:** Ujjani dam project provides the opportunity to study the current status of livelihoods of the people affected by the dam, and the aftermath of displacement and rehabilitation. The livelihoods of project - affected people (PAP) are still at risk from the development of the ujjani dam. In the case of the dam many studies that have been done on the resettlement and rehabilitation policy. Due to a large submersion of forest and agriculture land by the reservoir, over 4, 000 families were classified as affected according to the Government of India. Those who received official designation as Project Affected People (PAP) some studies estimate that the number of families and people affected is much greater than the number accounted for by the Indian government's policies. Some estimates project that nearly 10, 000 people have been affected by this phase of the dam development. The numbers of families living around the dam and reservoir who require compensation due to impacts of the dam. Some of the major's issues and conclusions that emerge from this review. It has invariably led to dispersal of communities, breakdown of traditional support systems and devaluation of their cultural identity and curtailed their access to natural resource base, affecting their mental and physical wellbeing. The resettlement and rehabilitation process is largely dependent and affected by the lifestyle of the families before displacement.

**Keywords:** Questionnaires Method, Physico-chemical parameters of soil water

## 1. Introduction

Project affected persons (PAP) is a broad term which includes all those who are adversely affected by Dam project. To focuses on Socio - economic status of these populations with the help of questionnaire and interview methods due to which to understand the present status of the project affected families. For the rehabilitation of families who have lost their houses and land in ujjani irrigation project, the authorities have selected some sites near Pandharpur for their rehabilitation. Environmental Assessment (EA) is a comprehensive process to identify and evaluate the potential effects of a proposed major project and ways to avoid adverse effects and led to dispersal of communities.

Hydrology is the study of the movement distribution and quality of water throughout the earth. The study of the distribution and movement of groundwater is hydrogeology. Climate change causes unpredictable fluctuations in rainfall and hydrology <sup>[1]</sup>The study of glaciers is glaciology and distribution of oceans is oceanography. The collective mass of water found on under and over the over a surface of a planet is called hydrosphere. Earth's approximate water volume is 1360, 000, 000 km<sup>3</sup> of this volume.

### a) Effects of dams on the atmospheric system

Variations in moisture percentage, temperature and air body movement caused by the water bodies differentiate the climatic conditions related to topography. Regional scaled climatic changes can be observed by these effects. As climate change increases, effective planning to avoid cost overrun will become nearly impossible. Climate change causes unpredictable fluctuations in rainfall and hydrology such alterations don't affect human health directly, but they

are notable from many plants and animals. Their secondary effects influence human being.

### b) Effects of dams on territorial biological system

Biological life of the river changes fast both in the reservoir and in downstream. During the filling works of the dam, while the land remains under water the land part of the region decreases. However, the water - land boundary extends. Thus plant, animal or human being settlement areas changes. Forests, agricultural areas may come under water. Compulsory changes occur in flora, fauna and the algae and the agricultural traditions of people in the region. This effect can extend for kilometers.

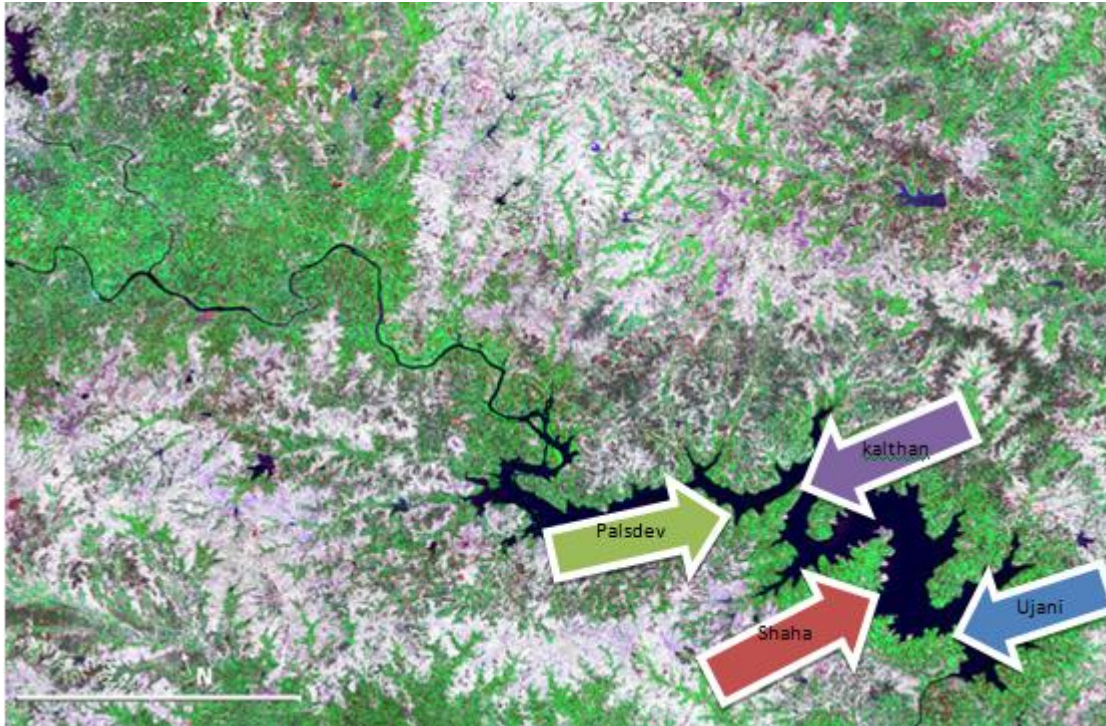
### c) Effects of dams on aquatic ecosystem

The decomposing of organism causes increase in the nutrient substance in water body in a short period of time. Therefore, BOD (biological oxygen demand) value of water increases. The plants covering the water surface as large green-dark bodies, macro flora grow upon the water surface.

### d) Effects of dams on human life

The dams are an important for development; they are not easily acceptable for the people whose agricultural areas, houses on the environment they are living in go under water. For example, when the ujjani dam was created in Solapur district in ujjani village, although a much better settlement area was provided for 20, 000 people in another location. the new settlement improve by this way and result in second ecological needs and changes. For example, drinking water, domestic water waste, water waste treatment etc. moreover, the social life becomes active, trade increases, cultural activities rise. Dams decrease the flood risk in the downstream, by their storing opportunity in their reservoir.

## 2. Map of Ujani Reservoir



Water is an essential component of our ecosystem and the essence of our life on an average each human being uses 50 liters of water per day in rural areas and 150 liters of water in urban areas. Besides this an important use of water is for irrigation for industrialization and for domestic consumption water as nature's resource has a geographical significance. The source of water is rain water or precipitation. In India

precipitation is not properly distributed throughout the year. It is received within 3 – 4 months of rainy season i. e. July to Oct. and that too in irregular manners.

### Photo plate: Ujjani Dam



**Ujjani Dam** also known as Bhima Dam or Bhima Irrigation Project, on the Bhima River, located near Ujjani village in Madha Tehsil of Solapur district of the state of Maharashtra in India. <sup>[2]</sup>

The Bhima River, which originates in Bhimashankar of the Western Ghats, and forms the Bhima Valley with its tributary rivers and streams, has twenty - two dams built on it of which the Ujjani Dam is the terminal dam on the river and is the largest in the valley that intercepts a catchment area of 14, 858 km<sup>2</sup> and when completed in June 1980 the cost incurred was of the order of Rs 3295.85 million. <sup>[3]</sup>

The reservoir created by the 56.4 m (185 ft.) high earth cum concrete gravity dam on the Bhima River has a gross storage capacity of 3.320 km<sup>3</sup> (0.797 cu mi). The annual utilization is 2.410 km<sup>3</sup> (0.578 cu mi). <sup>[4]</sup> The project provides multipurpose benefits of irrigation, hydroelectric power, drinking and industrial water supply and fisheries development.

### Geographical Information:

The Indapur Taluka is lies between 18°3' to 19°24' North and Latitude 73°20' to 75°18' East Longitude. <sup>[5]</sup>

**Choice of study area:**

The study area selected for the proposed study is the Indapur taluka of the pune district. It is a rain - shadow area of Indapur taluka and hence selected for this kind of study site near to industrial area. Palsdev, Kalthan No.1, Shaha, Pat. Kuroli. The focus of this study was to collect current data on the ability of displaced and project affected people to reconstruct livelihoods in the aftermath of the dam project. Livelihood is defined as the means of securing the necessities of life. The resettlement and rehabilitation has the potential to completely alter the strategies people had used to obtain livelihood and their ability to meet daily necessities for life.

**3. Objectives of the Study**

- 1) To analysis positive and negative impact of dam project on dam affected area.
- 2) To suggest proper planning strategy for development of dam affected area.
- 3) To analyze Physico - Chemical parameters of soil and water resources in the study area.
- 4) To explain conservation/management of soil and water resources in the Indapur taluka.
- 5) To suggest the measures of soil resources and water resources conservation.
- 6) To suggest proper planning strategy is adopted for tree plantation.
- 7) To adopt village with the help of NGO's, Government schemes and Public awareness.
- 8) To control pollution also reduce the problem of environmental degradation.

**Table 1:** Tallest dams in the world

Sr. No.	Dam	River	Country	Height
1	Jinping I	Yalong	china	305 M
2	Nurek	Vakhsh	Tajikistan	300
3	Xiaowan	Lancang	China	292
4	Xiluodu	Jinsha	China	285

**Table 2:** Largest Dams in India

S. No.	Dam	River	Location	Length (m)
1	Tehri	Bhagirathi	Uttarakhanda	575
2	Hirakud	Mahanadi	Orissa	16 Km
3	Bhakra	Sultej	Himachal Pradesh	518
4	Nagarjun	KrishnaNagarjun	Andhra pradesh	1.6

**Table 3:** Largest Dams in Maharashtra

S. No.	Dam	River	Location	Height (m)
1	Koyana	Koyana	Satara	103.2
2	Jayakwadi	Godawari	Aurangabad	41.3
3	Vihar	Vihar	Mumbai	25.6
4	Ekruk	Adela	Solapur	21.4

**4. Material and Methods**

In nature, the quality of natural water is ever changing because many constituents enter into natural bodies of water through various activities of man, disposal of liquid waste from industries and communities. This results in increased degradation in their quality. The water quality affecting the public health is caused by the presence of pathogens, particularly bacteria and viruses discharged from partially

treated or untreated sewage. The water is the life of millions of people it is closely related with our culture and civilization.

Systematic observations made at several points of water where effluents are being regularly discharged several serious pollution problems. Studies have been made to find out the effect of pollutants on the water quality of water and environmental aspects.

**5. Methodology**

Studies carried out on in Indapur Tehsil To analyze socio - economic aspects by interact with dam affected people in the study area by Questionnaires Method and analyzed the Physico - chemical parameters of soil and water from four sites Palsdev, Kalthan, Shaha.

**Water Analysis Methods:**

The Physico - chemical parameters of samples were analyzed by different techniques using TDS Meter, Chloro meter, PH meter, Turbidity meter. Analysis of further physico - chemical studies of soil and water with the help of analytical techniques.

**6. Observation****Research Tool: Questionnaire**

Socioeconomic impact analysis can be completed with a variety of tools. In this case, the socioeconomic impact analysis is retroactive, and the research aimed to quantify impact that has already occurred across a broad population. A questionnaire is the most efficient option allowed to cover a broad sample size, in a minimal time period, while generating uniform results [6]The goal of the questionnaire was to generate quantitative data linked to demographic data in a time efficient manner. Each questionnaire captured the participant's demographic background, their attitude toward the Dam. Socioeconomic impact analysis examines how an act of development could potentially impact a community, the social and economic aspects of the potential impact, and the community's attitude towards resulting changes [7]

**Table 4:** Economic development

Sr.	Facilities	Kalthan	Palasadev	Shaha	Kuroli
1.	General Stores	3	11	3	3
2.	Hospitals	0	6	0	0
3.	Medical Shops	0	2	0	0
4.	Roads	Concrete	Concrete	concrete	concrete
5.	a.2 Wheelers	98%	97%	80%	80%
	b.4 Wheelers	40%	30%	5%	5%
6.	Electricity	Yes	Yes	Yes	Yes
7.	Education	80%	90%	75%	75%
8.	ZP/High School	01	1	1	1
9.	Irrigation	Backwater	River, well	Backwater, well	Backwater, well
10.	Post Office	Yes	Yes	Yes	Yes
11.	Bank Service	Yes	Yes	No	No
12.	Filter Plant	Yes	Yes	No	No

**Table 5:** Geographical development:

Sr.	Socio - economical particulars	Kalthan	Palasadev	Shaha	Kuroli
1.	Forest Area	05 hect.	49.65 hect.	20.5hect.	30.5 hect.
2.	Village Area	1748 het.	1776 het.	1007 het.	1110 het.
3.	Agriculture Area	1746 het.	1401.89 het.	490 het.	520 het.
4.	Population	1118	3621	2364	2364
5.	Transport System	Private	Government, private	Government, Private	Government, Private
6.	Agri. Development	Cultivation	Cultivation	Cultivation	Cultivation
7.	Types Of Crop	Sugarcane, Banana	Sugarcane, Wheat	Sugarcane, Banana	Sugarcane, Banana
8.	Labor	60%	65%	70%	80%
9.	Proper Family	80%	90%	75%	55%
10.	Other Family	20%	10%	25%	45%
11.	Rehabilitate	80%	90%	85%	60%

Communities are centered around rivers and other bodies of water because they rely on the water as a resource. A dam interrupting a river leads to unpredictable social impact. First, many communities must resettle to provide land for the dam and the reservoir [8] (Yuksel, 2009).

The Physico - chemical parameters are susceptible to variations due to change in the prevailing environment over the reservoir water of the Ujani and also due to external influences. The Physico - chemical characteristics of the reservoir water of Ujani in the course of time.

## 7. Result and Discussion

Dams are not only important in economic growth, but also in overall economical and moral development. In many developed countries, dams have performed a key role in the development of the underdeveloped regions. Dams, which contribute to the national economy from many aspects like irrigation, drinking water supply, flood control, electricity generation, fishing, tourism, are also effective in increasing the standards of living. Irrigation benefits define the distinction benefits between dry and irrigated positions.

Apart from economic status, mental and physical health is a major indicator of the standard of living and wellbeing of people. A comparative study was conducted in rehabilitation sites the health of young children was most severely affected by the displacement.

Data samples from the various villages of Primary health Department are collected and analyzed the data. In most of the samples large amount of the diseases patients were found such people are mostly suffered from the water borne diseases. High concentration of contaminants and polluted water which is responsible for the diseases.

### Social and cultural impact of displacement:

Many dams are poorly constructed so that the benefit of electric production does not exceed the socioeconomic and environmental costs. [9] Sense of community is the most important elements of the socio - cultural life of people. Breakdown of community destroys many of these support systems which makes viable. Social networking, dignity, self - assurance, and command over their resources. The

protection of the catchment and upstream activities which result in pollution of the reservoir should be controlled therefore public awareness is most important. [10] The perspective of wealth, poverty, livelihoods, and lifestyles may differ greatly between those creating the policy and those affected by the rehabilitation and resettlement.

## 8. Conclusion

The focus of this study was to collect current data on the ability of displaced and project affected people to reconstruct livelihoods in the aftermath of the dam project. Livelihood is defined as the means of securing the necessities of life. The resettlement and rehabilitation has the potential to completely alter the strategies people had used to obtain livelihood and their ability to meet daily necessities for life. The recent completion of this project provides the opportunity to study the current status of livelihoods of the people affected by the dam, and the aftermath of displacement and rehabilitation. Socioeconomic Impact Analysis by Questionnaire Results as

### Analysis of Negative impact and Positive impact of Ujjani dam project on study area

Sr. No.	Site	Number of PAP	Rehabilitation peoples	Migrated Peoples	Negative impact PAP	Positive impact PAP
1.	Kalthan	1118	80.05%	19.95%	80.00%	20.00%
2.	Palsdev	3621	80.05%	19.99%	69.96%	30.04%
3.	Shaha	2364	80.04%	19.96%	79.95%	20.05%
4.	Pat. kuroli	4475	70.00%	30.00%	89.00%	11.00%

Displacement cannot be taken for granted as price to pay for development. People who have suffered due to displacement are by no means a small minority, but displacement cannot be justified by using utilitarian logic.

Rehabilitation cannot be treated as an appendage to the main project, It has to be handled with meticulous planning and execution Enormity and complexity of the whole process cannot be over emphasized Consideration of displacement and rehabilitation has to be an integral part of the whole project.

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