

Periodic Research

Changes in Physical Conditions of the Tehri Dam Oustees

Abstract

This paper documents the changes in physical conditions of the rural Tehri Dam oustees resettled in both rural and urban areas. The themes covered in the study include housing conditions, basic facilities and infrastructure, like education, health, road, electricity, potable as well as irrigation water. The effect of displacement on the physical conditions of the people seems to be a mixed bag, with improvements in the housing and several basic facilities, but a lack of other essential facilities like irrigation water and clean environment, required for good health.

Keywords: Tehri Dam, Oustees, Housing, Basic Facilities, Resettlement Sites.

Introduction

With the increase in population and its needs it becomes necessary to create additional infrastructural facilities. This infrastructure provides the basis for economic and social development. Hence all welfare States take up planning and development of infrastructure. Large scale developmental projects, involving billions in investment, are implemented so that maximum benefits may accrue to the maximum populace. Such large projects include dams, roads, railways, large industries, urban development and Special Economic Zones. Tehri Dam on Bhagirathi river in the Indian Himalayan state of Uttarakhand is one such large scale project. The project has also led to displacement of thousands of families. These rural and urban oustees have been resettled in various resettlement sites, the former in the foothills and the latter mostly in the Himalayan zone. The present paper is related to the changes in physical conditions, often called as physical displacement (Kumar, 2018), of the ousted people of the dam project before and after displacement.

Review of Literature

Kumar (2018) discussed physical, economic and, especially, social deprivation amongst the displaced tribal population of Jharkhand State due to Jadugura uranium mine and processing unit. Price & Singer (2016) adopted a theoretical, multidisciplinary approach to the growing global problem of forced displacement due to developmental projects, and other reasons, in Asia-Pacific region.

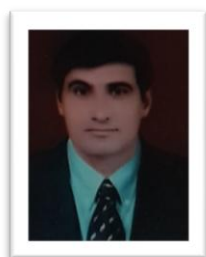
They tried to find new approaches and solutions, with possible global applications and involving the perspective of public welfare, to study the effects of displacement. Obour et al. (2015) reported that, in comparison to older dam projects of Ghana, there is much improvement in regard to resettlement of the oustees in Bui project. Still, there is much scope for improvement in various aspects of resettlement of the displaced people.

Fujikura & Nakayama (2015) studied large dam projects of Asian countries, other than India and China, after an interval of one decade and documented different complex factors of, and consequences rising from, displacement.

Tilt, Braun & He (2009) enumerated different kinds of effects on infrastructure and housing, amongst other socio-economic effects, in the displaced people of Lesotho Highland Water Project of Southern Africa and large scale projects of Manvan Dam on upper Mekong river in Southwest China. They also described various lessons to be learnt from these projects.

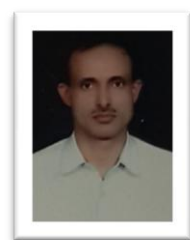
According to Murickan et al.(2003) at least 5 crore people were displaced between 1951 and 1995 in Kerala. Most of these people were poor and marginalized, but such people were not rehabilitated in any manner.

Das, RayCahudhury & Basu (2000) took up involuntary migration in South Asia and found very high role of government developmental



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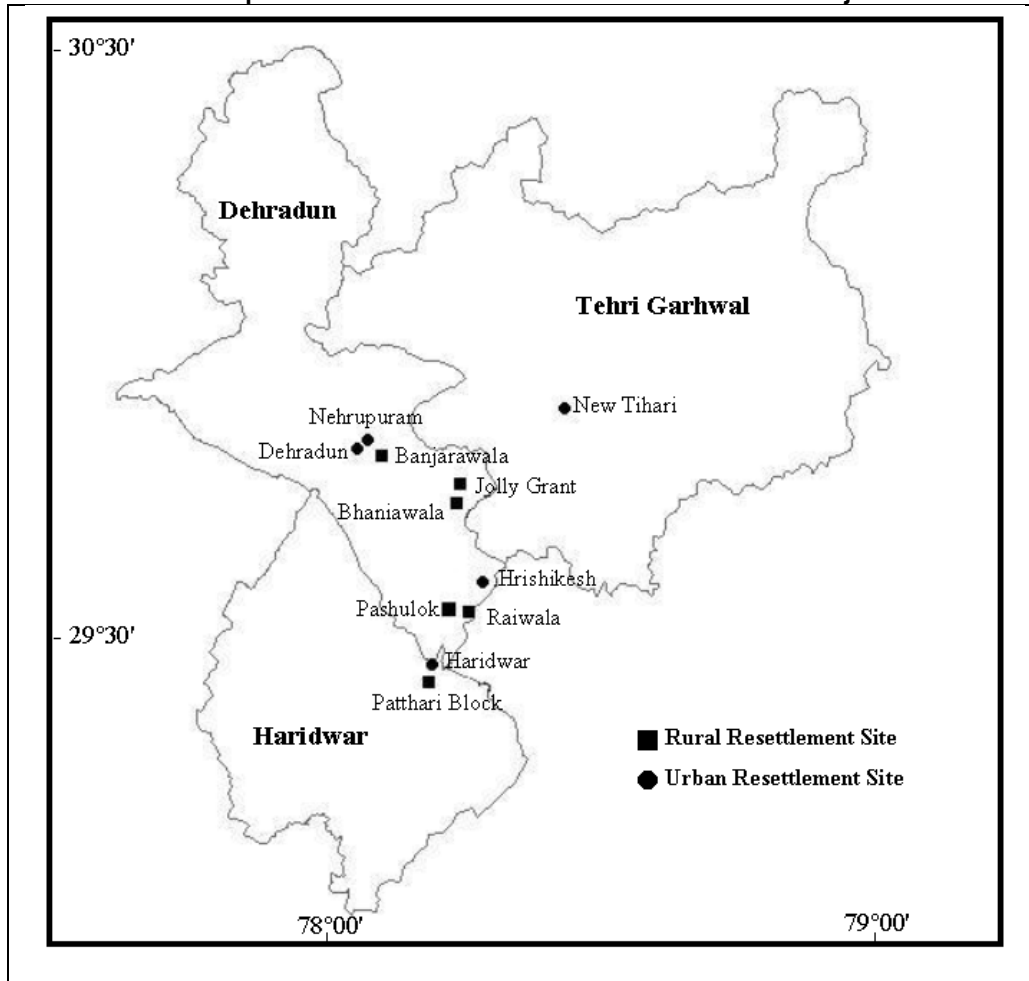
projects in this process. In the present world, large dams have become the most important factors of displacement.

The Study Area

The people displaced due to the construction of Tehri Dam on Bhagirathi river, a tributary of the fabled Ganges river, lived in the Bhagirathi Valley lying in Tehri Garhwal district of the Himalayan Uttarakhand State (28 degree 7 min to 31 degree 4 min N latitude; 77 degree 7 min to 81 degree 1 min E longitude). Some of them also lived in the Uttarkashi

district. The urban oustees belonged to the now submerged old Tehri town, while the rural oustees were living in 109 villages of Bhagirathi Valley. The displaced urban people have mostly been resettled in the New Tehri town, Haridwar and Dehradun cities; while the rural oustees have mostly been relocated to the rural areas of Dehradun and Haridwar districts (Map 1). The people resettled in rural areas of Dehradun and Haridwar are living in the foothill zones, as compared to their earlier mountainous abodes.

Map 1: Rural and Urban Resettlement Sites of Tehri Project



Objective of the Study

Objective of the study is to analyse the changes in housing and physical facilities of the displaced rural people of Tehri Dam Project.

Hypothesis

The research was based on the original hypothesis that basic facilities available to the Tehri Dam oustees have declined after displacement.

Methodology & Information Sources

The study is based on fieldwork carried out amongst the 565 oustee households of the Tehri Dam during April-June 2013. This sample contained 479 households resettled in rural areas and 86 households resettled in the urban areas. The six rural (Pashulok, Jolly Grant, Bhaniawala, Raiwala &

Banjarawala in Dehradun district; Pathri in Haridwar district) and four urban (New Tehri in Tehri Garhwal district, Nehrupuram & Ajabpur Kalan in Dehradun city, and Haridwar) resettlement sites were selected by random sampling. The surveyed families included only the rural oustees of the Project, resettled in rural as well as urban resettlement sites.

Results & Discussion

Housing Quality

Before displacement, the rural people of the submerged area of Tehri Dam lived in comparatively small-sized houses because of limited availability of plane area in the hills. About 88 percent households had houses of size lesser than 2000 square feet, the average area being 971.92 square feet. In the rural

resettlement sites, all households have been allotted plots of the size 200 square metres (2120 square feet). This has resulted in increase in average size of the houses.

The rural oustees living in the urban resettlement sites reported decrease in house area.

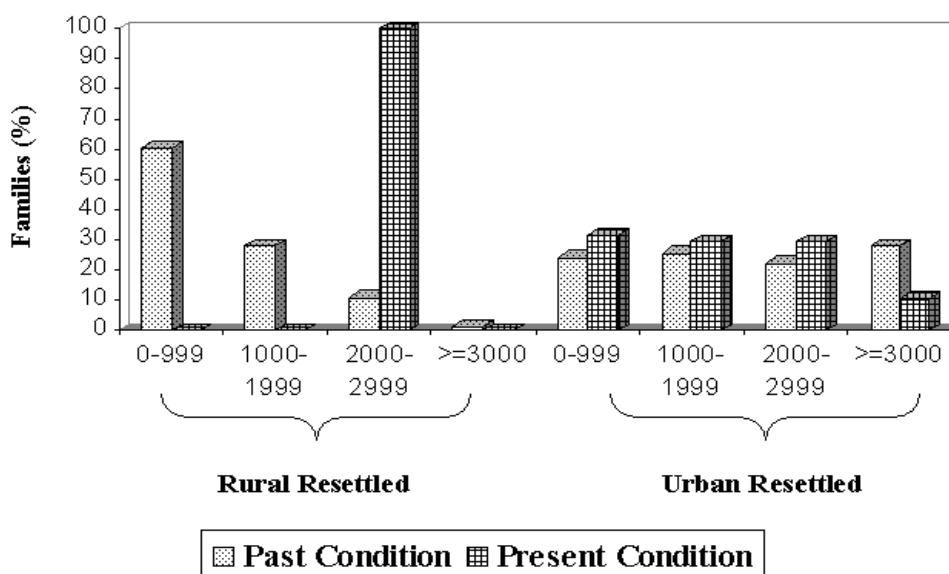
Houses of 2000 square feet or greater area are now only 40%, whereas earlier half of the households had houses of this size. This is directly related to the more costly and limited land in the urban areas (Table 1 and Figure 1).

Table1: Past and Present House Sizes of Rural Ousteers of Tehri Dam

House Area(sq ft)	Rural Resettled		Urban Resettled	
	Past Condition	Present Condition	Past Condition	Present Condition
0-999	289(60.3)	-	21(24.4)	27(31.4)
1000-1999	133(27.8)	-	22(25.6)	25(29.1)
2000-2999	52(10.9)	479(100)	19(22.1)	25(29.1)
>=3000	05(1.0)	-	24(27.9)	09(10.4)
Total Households	479	479	86	86

Note: Figs. in parenthesis are percentages.

Fig.1: House Areas (Sq. Feet) of Rural Ousteers of Tehri (Past & Present)



Pressure of persons living in the houses is an indicator of housing quality and it is shown by average number of persons per room. At present, around three-fifth of the households are living in houses with average of upto 2 persons per room, whereas earlier ratio of such families was around 46% only. Earlier on, families with two and more persons per room were 54%, which has now decreased to around 40 per cent.

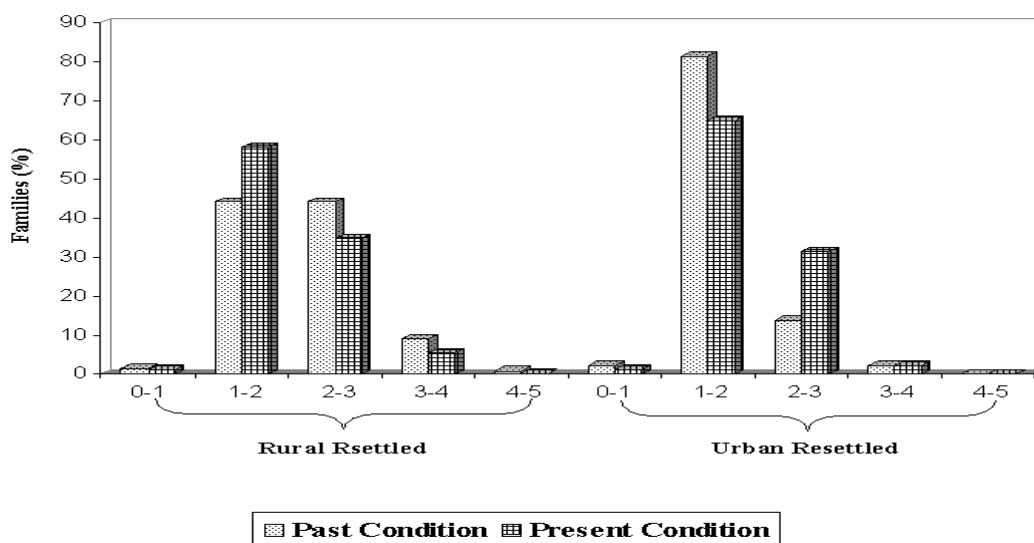
In the urban resettlement sites, one-third of the families are living in houses with a population pressure of two or more persons per room. Before displacement, households with such pressure on housing were only 16 per cent. Thus, amongst the people resettled in urban areas the pressure of population on houses has increased as compared to the past. This may be due to the smaller sizes of the houses found there in (Table 2 and Figure 2).

Table 2: Population Pressure on Houses of Tehri Project Ousteers (Past and Present)

Persons/Room	Rural Resettled		Urban Resettled	
	Past Condition	Present Condition	Past Condition	Present Condition
0-1	08(1.6)	06(1.3)	02(2.3)	01(1.2)
1-2	211(44.1)	279(58.2)	70(81.4)	56(65.1)
2-3	211(44.1)	167(34.9)	12(14)	27(31.4)
3-4	44(9.2)	26(5.4)	02(2.3)	02(2.3)
4-5	05(1.0)	01(0.2)	-	-
Total Households	479	479	86	86

Note: Figs. in parenthesis are percentages.

Fig. 2: Population Pressure (Persons/Room) in Old & New Homes of Tehri Oustees



Before displacement, houses in the hilly regions of Tehri were built with stone and wood, freely available as common property resources. The roofs were generally made with slate stone and these were supported by wood. At the resettlement sites, pucca roofs are made with cement and concrete, while the floors are mostly made with grit and cement, even stone and marble (Table 3).

Table 3: Past and Present House Types of Tehri Oustees

Aspect	Before Displacement		After Displacement	
	Type	Household No.	Type	Household No.
Roof	Stone-Wood	548 (96.99)	Brick-Cement-Concrete	515(91.2)
	Concrete	17 (3.01)	Pucca (Other)	50(8.8)
Floor	Stone	546 (96.64)	Brick-Cement-Grit	527(93.3)
	Pucca (Other)	19 (3.36)	Pucca (Other)	38(6.7)

Note: Figs. in parenthesis are percentages.

Availability of Facilities

Before displacement, around 84 percent people were using untreated naturally-flowing water, diverted by pipes, for drinking purposes while another 16% used water directly from springs. At present, around 95% people have got access to treated tap-water. Nearly 63 percent rural households of the Tehri Project area had access to electricity earlier. The ratio now is about 98% of the households. In the survey it was reported that 57 percent households had primary schools available in their villages, while 6.7% households had access to secondary schools in the village itself. Now cent percent rural and urban resettled people have access to primary schools, while 54% of the rurally resettled people and hundred percent of the urban resettled people have access to secondary schools at their sites. Before being

displaced 52% of the school-going age children were going to school. At the resettlement sites, the proportion is 85.5% for the rural and around 95% for the urban resettlement sites.

In regard to medical facilities, only about 8% households had Primary Health Sub-Centres or Primary Health Centres in the village. For the rest of the families, this facility was available at a distance of more than 10 kilometres. Now 61% of the rurally resettled people report about having such medical facilities at their living places, nearly 18% has such facilities at a distance of 5 to 10 km, while another one-fifth households can access such facilities at a distance of 10 kilometres or more. In case of veterinary medical facilities, about 40% households have these facilities within their villages. Earlier cent percent households had to go 10 kilometres or more to avail such facilities.

Accessibility due to increase in road availability has increased now. While the urban areas are well connected, 87 % of the households in the rural resettlement sites report about having pucca roads. Before this, villages connected with such road were reported by only one-third of the displaced people. Nearly 28% households earlier on had access to unmetalled roads only. Another 39 percent households had no road connectivity per se, but had to use footpath in order to reach the nearby roads. The road connectivity has increased after this resettlement.

The older villages in the Himalayas had no availability of wells and tubewells for irrigation, but the administration, and the people themselves, constructed small canals-called 'guls'. Such households were around 55 percent. In the resettlement sites, leaving aside Pathri resettlement village, there is a general shortage of canals. Hence, about 78.3% of the resettled families use either wells or tubewells to irrigate their fields or they depend entirely on rainfall. Only the remaining 21.7% households have access to canal irrigation. This

shortage of irrigation water often creates conflicts amongst the families.

The Tehri Dam oustees reported that pure air, water and food in the hills high up in the Himalayas were reasons enough for their good health earlier. Around 94.3% households said that their health was good before being displaced. Now living in the urban, highly dense and somewhat polluted plain areas the health of the people is not so well as before. About 81% of the rural resettled, and 76% of the urban resettled, people report of having good health. Nearly one-fifth of the rurally resettled people, and one-fourth of those living in the urban areas, find their health to be bad or much bad (Table 4).

Table 4: Displacement and Health Condition of Tehri Ousteas

Condition of Health	Displacement Area	Resettlement Area	
		Rural	Urban
Good	533(94.3)	387(80.8)	65(75.6)
Bad	32(5.7)	80(16.7)	16(18.6)
Extremely Bad	-	12(2.5)	05(5.8)
Total Households	565	479	86

Note: Figs. in parenthesis are percentages.

Conclusion

Discussion of the findings from the study reveals a mixed situation for the Tehri Dam oustees. The housing conditions seem to generally have been improved. Road, education and health facilities have also been provided at a higher level. The resettled people are now using treated drinking water and have

greater electricity availability. The irrigation infrastructure is not up to the mark. Irrigation water was available as a common property resource in the Himalayan abodes, but is now a rarity. Incidences of poor health seem to have increased slightly after being relocated to the lower sites in the plains.

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