



End Term Impact Evaluation of Resettlement Action Plan and Community Development Activities of Rampur Hydro Electric Project



Report Prepared by
C.S. Vaidya
Ranveer Singh

AGRO-ECONOMIC RESEARCH CENTRE
HIMACHAL PRADESH UNIVERSITY
SHIMLA-171005 (INDIA)

April 2015

About the Centre

The Agro-Economic Research Centre (AERC) of Himachal Pradesh University was established in December 1972 by the Ministry of Agriculture, Government of India to carry out research and investigations in the field of Agricultural Economics in Western Himalayan Region consisting of Himachal Pradesh and Jammu & Kashmir. This is one of the 12 AER Centres established by the Government of India. The thrust areas of the Centre include study of changes in rural economy; adhoc investigations of problems of interest to the Ministry of Agriculture, Government of India; research on fundamental problems relating to agricultural economics of the country and to provide technical advice to the Government of India and State Government on agro-economic issues. The AER Centre is fully financed by the Ministry of Agriculture, Government of India. The Centre has also been taking up some adhoc studies on behalf of or in collaboration with some other national and international agencies like World Bank, USAID, GTZ, ICIMOD, CIP, NJPC, SJVN and different Departments of State Government. The faculty members guide the Ph. D and M. Phil students of departments of Economics and Geography.

While program evaluation and impact evaluation studies continue to dominate the work program of the Centre, a large number of adhoc policy oriented studies have also been undertaken over these years. The research studies carried out by AER Centre cover a wide spectrum of issues in the field of agricultural economy. The AER Centre has expertise in conducting impact evaluation and economic feasibility studies for agriculture, horticulture, animal husbandry, forestry and rural development related activities. The Centre expertise in conducting techno economic feasibility of agricultural projects. Details at: www.aercshimla.in



End Term Impact Evaluation of Resettlement Action Plan and Community Development Activities of Rampur Hydro Electric Project



**Report Prepared by
AGRO-ECONOMIC RESEARCH CENTRE
HIMACHAL PRADESH UNIVERSITY
SHIMLA-171005 (INDIA)**

April 2015

ACKNOWLEDGEMENTS

The present study on “End Term Impact Evaluation of Implementation of R&R Plan and Community Development Activities in Rampur Hydro Electric Project (HP) – 412 MW” was sponsored by Rampur Hydro Electric Project, SJVN. The authors gratefully acknowledge financial assistance from the RHEP, SJVN for carrying out this study report.

The authors are grateful to Mr. K.K. Gupta, Head of Project (H.O.P.), F. Badaik, Additional General Manager (R&R), Ms. Alka Jaiswal, Senior Manager (R&R), Mrs. Kausalya Devi (Senior Officer), R&R and other staff of RHEP, SJVN for their help in providing needed data and information, suggestions and support in preparation of this document.

We are highly thankful to Professor A.D.N. Bajpai, Hon'ble Vice-Chancellor, H.P. University, Shimla for his constant encouragement and valuable guidance in completing this study and making it worthwhile.

Suggestions and comments were received at various stages of this study from Dr I.U.B. Reddy, Senior Social Development Specialist at the World Bank, New Delhi Office. Our sincere thanks to him.

The authors are thankful to Dr. Pratap and Mr. Narender Kumar, Research Investigators, Agro-Economic Research Centre, H.P. University, Shimla for coordinating field survey and computerisation of data. We are also thankful to the team of field data collectors, Mr. Sujan Singh, Mr. Inder Singh, Mr. Pawan Kumar, Mr. Lokesh. The secretarial assistance is provided by Mr. Chaman Lal and Mrs. Meera Verma of this centre.

Shimla: 17th April 2015

Authors

CONTENTS

Abbreviations

Executive Summary(i) - (ii)

Chapter 1: Introduction.....1

- 1.1 Purpose of the Study
- 1.2 Objective of the Study
- 1.3 Scope of the Study
- 1.4 Structure of the Report

Chapter 2: Approach and Methodology.....3

- 2.1 Approach and Sample
- 2.2 Data Collection
- 2.3 Data Analysis

Chapter 3: Socio-Economic Impact of R&R Interventions.....5

- 3.1 Demographic Profile
- 3.2 Occupation Profile
- 3.3 Changes in Income Pattern
- 3.4 Changes in Housing Conditions
- 3.5 Ownership of Assets
- 3.6 Changes in Land Ownership and Cropping Pattern
- 3.7 Animal Husbandry
- 3.8 Household Expenditure and Consumption Pattern
- 3.9 Impact on Overall Living Standards

Chapter 4: Status of R&R Interventions.....12

- 4.1 Compensation to Landless and Homeless Families
- 4.2 Resettlement Assistance
- 4.3 Blast Damage Compensation
- 4.4 Crop Damage Compensation
- 4.5 Assistance to Non-title Holders
- 4.6 Support to Local Schools
- 4.7 Promotion of Fairs and Festivals
- 4.8 Promotion of Sports
- 4.9 Support to Advance Skill Development
- 4.10 Women Empowerment
- 4.11 Distribution of Pressure Cookers
- 4.12 Employment Opportunities to Local People
- 4.13 Health Improvement Initiatives
- 4.14 Impact on Women
- 4.15 Conclusion

Chapter 5: Impact of Community Development Activities21

- 5.1 Status of Community Development Works
- 5.2 Impact of Community Development Works

Chapter 6: Consultations and Community Perceptions.....24

- 6.1 Outcome of Consultations
- 6.2 Perceptions of Project Impacts

Chapter 7: Conclusions26

Annexures29

ABBREVIATION

AERC	Agro-Economic Research Centre
B. Tech	Bachelor of Technology
BAMS	Bachelor of Ayurveda Medicine and Surgery
BCA	Bachelor of Computer Application
BDS	Bachelor of Dental Surgery
BOD	Board of Directors
CD	Community Development
CPSU	Central Public Sector Undertaking
Ha	Hectare (1ha = 2.5 acre, 12.50 bighas)
HH/hh	household
ITI	Industrial Training Institute
LADA	Local Area Development Agency
PIC	Public Information Centre
PAAFs	Project Affected Area Families
PAFs	Project Affected Families
PAP	Project Affected Population
PTI	Physical Training Instructor
R&R	Resettlement & Rehabilitation
RHEP	Rampur Hydro Electric Project
SIE	Social Impact Evaluation
SJVN	Satluj Jal Vidyut Nigam

EXECUTIVE SUMMARY

The Rampur Hydro Electric Project (RHEP) has been constructed on the right bank of river Sutlej in District Kullu near to Rampur town with an installed capacity of 412 megawatts. The land has been acquired from four revenue villages of Bayal, Koyal, Averi and Duttnagar for the construction of project infrastructure and other activities. A total of 100 hectares of land were acquired/diverted from forest land for project activities of which 29 hectares were privately owned in these four villages. This has impacted the population, directly or indirectly. In order to mitigate any adverse impacts on the livelihoods and other social and economic fabric of the societies, SJVN implemented Resettlement & Rehabilitation plan for project affected families (PAFs) along with various community development initiatives. After the completion of RHEP, the efficacy of such measures has to be evaluated and the present study is an attempt in this direction.

Objectives and Methodology: The main objective of the study is to evaluate the final impact of R&R activities on PAFs. This has been done by comparing the current values of relevant parameter with same during the base line study (2005) and also with the control sample. The scope of the study required the primary and secondary data to be collected on selected indicators in respect of persons living in the project vicinity who will be directly or indirectly affected as a result of project activities. The data was collected on specifically designed schedules. The project affected families (PAFs) were located in villages Bayal, Koyal, Averi and Duttnagar. The 92 PAFs residing in these four villages were census surveyed (66% of total affected families) along with a control sample of 80 households located in four project affected and also in villages Brow and Randal. In addition to household survey, the study also relies on focused group discussions with village leaders, Panchayat officials and other key stakeholders. The data was collected during the period December 29, 2014 to January 4, 2015 by team of seven experienced field investigators.

Main findings: All the land acquisition and resettlement and rehabilitation activities

planned under RAP have been completed. As regards community works due to change in the Implementation arrangement with district administration as an implementing agency, while most of the works are completed, but still few works are in progress and will continue. The main work pending is the implementation of integrated drinking water scheme for the affected villages. The outcome of household level survey and consultations is summarized here. The data reveal that the family size of the PAFs has declined from 4.55 to 4.21 persons per family. The sex ratio has declined marginally (from 1037 to 1013 females per 1000 males). The literacy has increased from 83 to 88 per cent. The workers in total population remained almost constant at 59.50 per cent and as a result the dependency ratio also remained constant at about 0.66. During current survey about 66 per cent workers reported agriculture as the main occupation which increased from about 60 per cent during base line period. No person from PAF was now working as agricultural labor but wage labor increased from 4.32 to 4.65 per cent. There were now more people engaged in business (8.96 % against 5.60 % earlier) and working in government and private service (19.35% against 15.52% in base period).

Majority of households rationally invested the compensation amount in purchase of land (18% households), in fixed deposits (68% households) and house construction (46% households). The percentage of households having some running business declined from 12 to 10 per cent, households having shops increased from 9 to 10 per cent and those having taxies remained constant at 7 per cent.

The average annual household income (at 2005 prices) during the base line period was Rs.120639 while in 2014 it increased to Rs.387204. At current prices the base line income comes to Rs.251472. In 2014 income of control households is Rs.152405. Thus, the average income of PAPs is increased by 54% from baseline income at current level and 87% higher than of controlled population. As regards in income changes among individual families as many as 79 families (87%) have

reported increased income compared to baseline income at current level. Hence, it is quite clear that the income of PAFs has improved considerably when compared with base line income or control household income. The average per capita monthly expenditure, on current prices, of PAFs on food items has increased from Rs.5302 to Rs.6226 and that of non-food items from Rs. 2473 to Rs. 3572 per month, showing improvement in their consumption pattern and standard of living. This is reflected from the finding that now 95 per cent households have televisions, against 72 per cent earlier, 90 per cent households have refrigerators, against 72 per cent earlier and now 95 per cent households have LPG connections, against 82 per cent earlier. Same way, 7 per cent households now have 2-wheelers against 6 per cent earlier and 42 per cent households now have 4-wheelers against 12 per cent earlier. Among those whose income have declined, 11 out of 12 families have improved in terms of their ownership of assets. Thus 99% of PAFs have improved their living standards measured in terms of real incomes or ownership of assets over baseline and also compared with controlled population. This also compares with the perceptions expressed by 74 per cent sample responded saying that their standards of living is improved and another 24% mentioning that their living standards is more or less same as before.

A significant change has been noticed in the housing situation. Now more people live in pucca (permanent) houses (100% as compared to 95% earlier), more families now have separate toilets (91% as compared to 68% earlier), and have separate kitchen within house (95% as against 79% earlier). The average size of house has increased from 578 ft² to 985 ft² and the average number of rooms has gone up from 3.7 to 6.85 per house. However, the average size of land holding of the families has declined from 0.83 ha to 0.45 ha due to loss of land for the project. As compared to 2005 data the overall yield rate of maize has not changed but that of wheat has increased from 1792 to 2632 Kg./ha and that of paddy from 3137 to 3495 Kg./ha. The value

productivity of land, at current prices, has doubled from Rs. 121328 to Rs. 242340 per hectare. Number of all types of livestock owned by the PAFs has declined; during 2005 on an average a family owned 2.2 livestock which declined to 1.46 only in 2014. Similarly, the number of milch cattle declined from 1.99 to 0.86 per household.

Conclusions. The data collected from the sample PAFs clearly shows that the overall living standard of the families has improved due to R&R activities of RHEP. Following changes are noteworthy: There is significant increase in the proportion of workers in the regular employment, especially with SJVN and with its contractors as daily wage earners. The earning capacity has been increased. Diversification of income and employment avenues through income generation schemes, towards business and other self-employment activities, is taking place and 99% have improved their living standard when measured with real incomes or ownership of assets over baseline and also with controlled population, there is improvement in the housing standard. The quality of health care has also improved due to enhancement of consultation and diagnostic facilities with the introduction of mobile health unit, which tours villages in the project area. The RHEP has taken measures to strengthen the existing infrastructure facilities, including health facilities and education and roads which are providing immense benefits to the PAFs in the project area.

Project affected families have received full and adequate compensation. The compensation amount has been used rationally and judiciously by the families. Overall situation of all the project affected people is better now. During the post commissioning stage, the project affected families will receive 100 units of electricity per month for 10 years and the long term residents in the affected villagers will receive annuity payment out of revenue generated out of sale of 1% free power provided to the State Government by project entity.

Introduction

1. Satluj Jal Vidyut Nigam (SJVN) a Central Public Sector Undertaking (CPSU) under the Ministry of Power, Government of India (GOI) is a joint venture between the GOI and Government of Himachal Pradesh (GOHP). The Rampur Hydro Electric Project (RHEP) has been constructed on the bank of river Satluj in District Kullu and Shimla in Himachal Pradesh. The execution of the project was started in the year 2007 for which 29 hectares of private land has been acquired from 167 land owners in District Shimla and Kullu. These 167 land owners comprise of 139 Project Affected Families (PAFs), out of these, 19 are physically displaced and 57 became landless after acquisition of their lands.

2. It is a hard fact that a well knitted socio economic structure gets disrupted by involuntary displacement of the local communities due to construction of any project. SJVN being a responsible corporate citizen is highly concerned of this fact and therefore, is committed to improve or at least restore their lost socio-economic status in the post impact period and enable them to cope-up with the new scenario of socio economic condition. With this view SJVN besides duly compensating the affected families for their lost land and assets, has also formulated and adopted a Resettlement & Rehabilitation (R&R) Plan which included a community development plan also with a budget outlay of Rs. 53.84 crores. The R&R Plan was approved by Board of Directors (BOD) in its meeting dated 16th March, 2006 and since then it is under implementation. The main provisions envisaged in the R&R Plan for the PAFs are house plot for houseless families, rehabilitation grant for landless families, support for income generation, health care services, education facility, technical education for capacity building, drinking water, infrastructure works in the area etc. In order to mitigate any adverse impacts on the livelihoods and other social and economic fabric of the societies, SJVN implemented R & R plan for project affected

families along with various community development initiatives. After the completion of RHEP, the efficacy of such measures has to be evaluated and the present study is an attempt in this direction.

3. The R&R implementation in RHEP has been started in year 2006 and a midterm impact evaluation was carried out by an external agency SMEC, New Delhi. However, as per provision of R&R strategy as stipulated under Para 5.63 of Resettlement Action Plan (RAP) final evaluation is required to be carried out to review the R&R implementation progress and undertake verification and consultation with affected people and submit the evaluation report. Hence, present study on Final Impact Evaluation of Implementation of R&R Plan and Community Development Activities, Rampur Hydro Electric Project (HP) – 412 MW has been under taken with the purpose of:

1.1 Purpose of the study

4. The purpose of the study is:

- To evaluate the impact of implementation outcome of RAP, Community Development Plan and LADA Plan implementation on PAFs and local communities in RHEP and to contribute to the justification of its implementation in the future projects of SJVN.
- To assess the impact of compensation and assistance provided to the affected people in improving their living standards and contribution of community development programs for local area development.

1.2 Objective of the study

5. The objective of this study is to independently evaluate the impact of R&R implementation on the PAFs and local communities residing in the vicinity of the project. Further, the objective is to access whether capacity development and institutional changes as well as other pre-requisites for

sustainability have been attained as a part of impact of R&R implementation. More specifically, the study has following objectives:

- a) Evaluation of the social impact of R&R implementation and related interventions with regard to education, health, community development, cultural practices etc. like scholarship scheme, technical education scheme, mobile health van, infrastructural facilities to schools, grants for promotion of cultural practices.
- b) Evaluation of economic impact of R&R implementation and related intervention with regard to changes in living standards in terms of income, occupation, consumption, ownership of assets (land and land based as well as households), yields, housing conditions, savings and indebtedness etc.
- c) Evaluation of the broader impact of R&R implementation and related interventions with regard to capacity development and socio political institutional changes as a part of the pre-requisites for sustainable development.
- d) Evaluation of the impact of infrastructural development works with regard to the easement felt by the local communities.

1.3 Scope of the study

6. The present study covered RAP, Community Development Plan and LADA Plan implementation on PAFs and local communities in RHEP and related interventions carried out in RHEP from the year 2006 onwards. The main focus of the evaluation is on extending R&R benefits to the PAFs and local communities under R&R Plan of RHEP and impact thereof. The impact evaluation has been done with the present condition of the PAFs and local community's vis-à-vis the condition prevailing at the time of acquisition of the land as well socio-economic condition of controlled population of similar socio-economic background. Both

positive and negative impact has been measured in both quantitative and qualitative way. Perception of PAFs and local community regarding impact felt by them are studied.

7. The main areas of impact analysis carried out include: occupation and income, housing, household and agricultural/livestock assets, investment and consumption patterns and impact of support provided by the project to welfare schemes and local infrastructure development.

8. The key indicators measured in the study include: changes in per capita income, occupation, housing conditions, house hold assets, consumption pattern, etc against the baseline data available in RAP.

9. The impact analysis is category wise of PAFs i.e. landless, houseless, vulnerable group, tenant, and other local residents etc. as well as overall impact on the whole affected community. The scope of the study also includes identification of the key outstanding implementation actions and proposes any remedial measures that are necessary to achieve the intended objectives of R&R and community development activities.

1.4 Structure of the report

10. The present study has been divided into seven chapters. The subject matter of the first chapter is introducing the problems and presents the objectives of the study. The second chapter highlights the approach and methodology adopted for the study and classification of the sample etc. In the third chapter Socio-Economic Impact of R&R Interventions have been presented. Status of R&R Interventions has been presented in fourth chapter and Impact of Community Development Activities is the subject matter of fifth chapter. The Public Consultations and Community Perceptions have been presented in sixth chapter. Seventh chapter highlights the conclusions and recommendations of the study.

Approach and Methodology

2.1 Approach and Sample

11. The main objective of the study is to evaluate the final impact of R&R activities on PAFs. This has been done by comparing the current values of relevant parameter with same during the base line study (2005) and also with the controlled sample households. Hence, 'with and without' and 'after and before' approaches have been used in the present study. The scope of the study required the primary and secondary data to be collected on selected indicators in respect of persons living in the project vicinity who will be directly or indirectly affected as a result of project activities. The project affected families were located in villages Bayal, Koyal, Averi and Duttnagar. The 92 project affected families residing in these four villages were census surveyed along with a control sample of 80 households located in four project affected and also in villages Brow and Randal. The distribution of sample of project affected and control sample households, has been presented in Table-2.1. In addition to household survey, the study also relies on focused group discussions with village leaders, Panchayat officials and other key stakeholders.

2.2 Data Collection

12. A well designed schedule for data collection has been used for the study. The

data has been collected by personal interview method by employing the trained investigators. The sample survey has been supplemented with community meetings involving the community leaders and other influential persons to evaluate their aspirations and perceptions about accomplishment and impacts. These meetings have been convened in each of the selected villages and simultaneously, public consultations have been done in which all interested persons were allowed to participate. The public consultations have the objective of evaluation of public opinion at large about the project's social impact.

13. The data on amount of various grant and compensation distributed to the affected families, community works carried out under the project have been obtained from the RHEP website. Besides, the study has also referred the following documents:

- The list of compensation recipients as per Award announced by Land Acquisition Collectors.
- The list of PAFs supplied by Deputy Commissioner (Kullu) and Deputy Commissioner (Shimla).
- The Resettlement and Rehabilitation Plan and Community Development Plan of RHEP.

Table-2.1: Classification of Sampled Households

Village	PAFs	Controlled HH	Total
Bayal	62	3	65
Koyal	22	18	40
Averi	1	11	12
Duttnagar	6	17	23
Brow	0	1	1
Randal	1	30	31
Total	92	80	172

- R&R Scheme of RHEP as mutually agreed by SJVN and Govt. of HP.
- Monitoring reports prepared by AERC, HP University.
- Mid Term SIE report submitted by SMEC.
- Rampur Hydro Power Project Land Acquisition, Resettlement, Community Development Practices by World Bank.

2.3 Data Analysis

14. The data has been analyzed with simple tabular analysis for arriving at the results of study. The results of the study were also presented through Pie and Bar diagrams. The data was collected during the period December 29, 2014 to January 4, 2015 by team of seven experienced field investigators.

Socio-Economic Impact of R&R Interventions

15. This chapter presents the comparative background of project affected households during current and baseline periods. The situation of control sample has also been presented along with wherever required. This forms the background for evaluation of economic impact with respect to relevant parameters like income, occupation, housing conditions, asset ownership pattern and consumption etc., as a result of implementation of R&R policies. The results have been summarized in Table 3.1 and details can be referred to from annexure 3.1 to 3.28. All the households surveyed belonged to Hindu religion and had Hindi as their mother tongue.

3.1. Demographic Profile

16. There are no significant changes in the demographic profile of the sample, the percentage of male being about 51 per cent during current evaluation as compared to about 49 per cent during base period. Family size and sex ratio declined in current period as compared to base year (Fig. 1 and 2).

17. The dependency ratio increased marginally to 0.67 from 0.66 during base period but this situation is far better than the control sample which has a dependency ratio of 1.16, Fig. 3.

Fig. 1: Changes in Family Size in Project Area (Persons / Family)

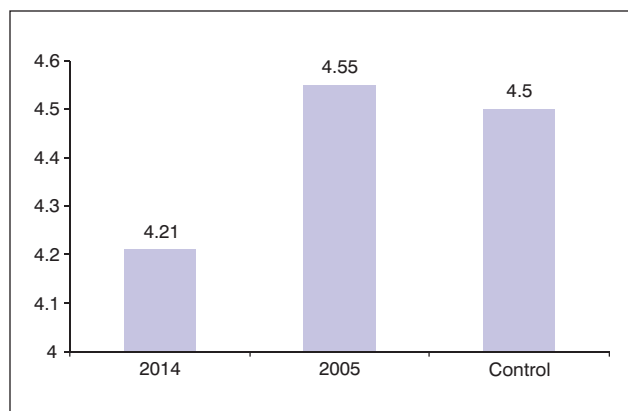


Fig. 2: Changes in Sex Ratio in Project Area (Females / 1000 Males)

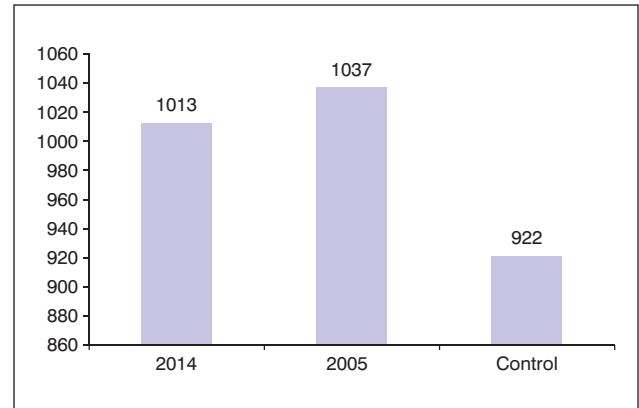
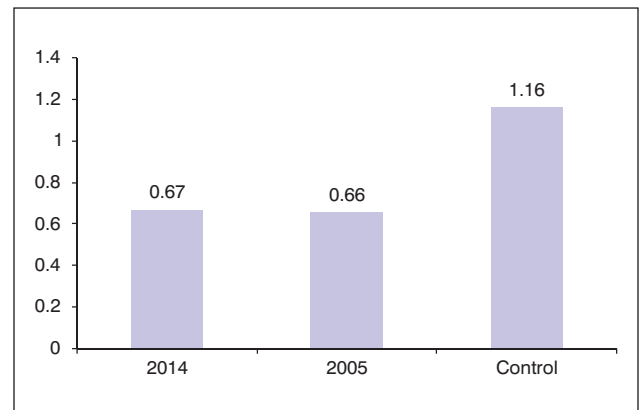


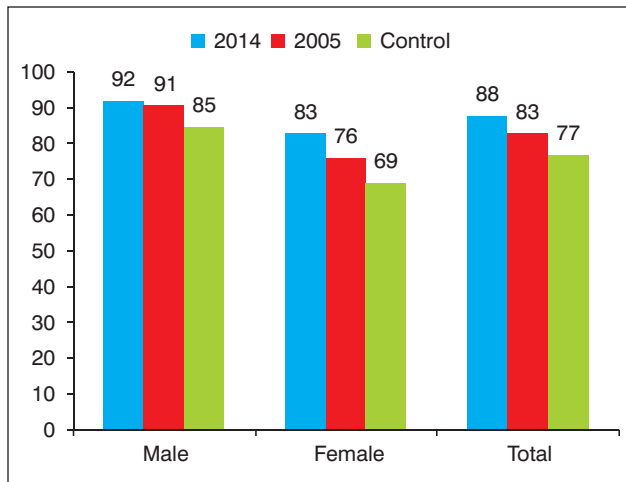
Fig. 3: Changes in Dependency Ratio in Project Area (Non Worker / Worker)



3.2. Educational Profile

18. The percentage of illiterates has gone down from about 17 per cent to about 12 per cent during current period. There is appreciable increase in the percentage of persons have qualification of Senior Secondary level and above. As such the literacy level among males has increased from 91 per cent to 92.14 per cent whereas in case of females it has increased from 76 to 83 per cent from base period, Table 3.3. Combined together the literacy level increased to more than 88 per cent from 83 per cent during base period (Fig. 4).

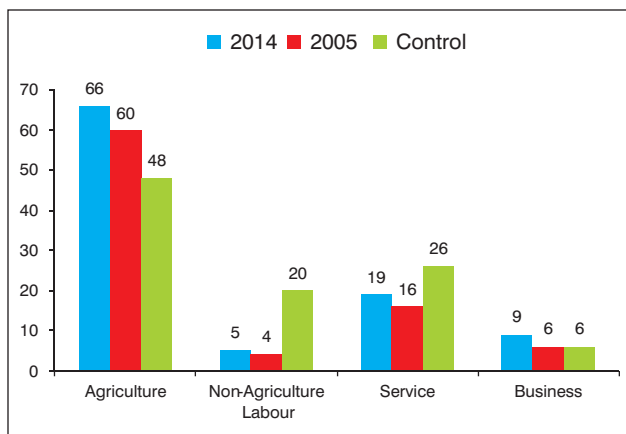
Fig. 4: Changes in Literacy in Project Area (%)



3.3. Occupation Profile

19. Agriculture is the main occupation of workers. The percentage of male workers engaged in agriculture declined by about 3 per cent whereas the percentage of female workers increased from about 71 percent to 92 percent. This scenario is the result of alternate and comparatively higher paying job opportunities made available mainly by RHEP. Women had to compensate the labour requirements by working on farms. There were about 3 percent workers working as agriculture labor which occupation is now completely absent. The percentage of workers engaged in non-agriculture labor, service, business and rural artisans witnessed an increase during the evaluation period (Fig. 5).

Fig. 5: Changes in Occupation Pattern of Workers in Project Area (% of workers)

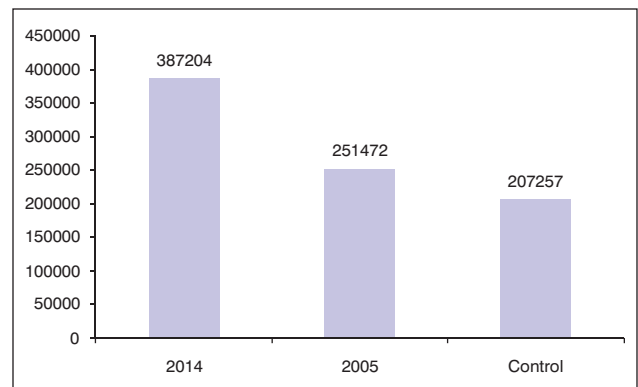


3.4. Changes in Income Patterns

20. Agriculture still remained main source of income for majority of households but the percentage of such households declined from about 90 percent to 63 percent. The percentage of households deriving income from wage labor declined significantly from about 41 percent to 10 percent.

21. Level of Income: The current income level of PAPs has increased by 54% over baseline income at current level and this is 88% higher compared to controlled population. Thus, the project interventions have made major impacts among the PAPs. The current average annual income is INR 3,87,204 compared to INR 2,07,257 of controlled population and INR 2,51,472 of baseline income at current level (Fig. 6).

Fig. 6: Changes in Level of Annual Income in Project Area (Rs/hh)



22. Changes in Income Level at Individual Family Levels: When the income levels are compared at individual family adjusting to current levels, it is observed that 79 of 91 families (87%) have improved incomes when compared with real baseline income levels. Further, analysis indicates that 32% of 91 families have improved their income by more than 100% as high as 425% in one of the family. Another 19% have improved their income between 50-100% and only in case of 13% there is marginal decrease in the income levels. The detail are provided below and individual families income changes are shown in Annexures 3.29.

Increase in income at current levels %	Number	Percentage	Remarks
More than 100%	29	31.86	Significant improvement
Between 51-99%	17	18.68	High Improvement
Between 26-50%	13	14.28	Improved
Upto 25%	20	21.98	Marginal Improvement
Decrease income	12	13.20	Marginal decrease
TOTAL	91*	100.00	

* One family did not report his income.

23. Income from business: The percentage of households running some sort of business declined from 11.72 percent during base period to 9.78 per cent currently. No household had any outstanding loans during current evaluation which amount averaged at Rs. 81 thousand during base period. The number of households having shops remained unchanged but in percentage terms it increased from 6.21 to 9.78 percent. About half the shops were general stores followed by provision store. Most prevalent commercial asset remained to be shops but some of the households had taxies, pickup vans etc. also.

24. The number of taxies declined from 7 to 2 over this period whereas number of pickup vans increased from 1 to 3, one household also having a truck. The average monthly income declined by about 45 percent in comparison to base period due to decline in number of taxies and income from pickup vans increased by 120 percent. There was also a significant increase in income from general store and auto repair shops.

3.5. Changes in Housing Conditions

25. All the sampled households had houses during the current survey but during the base period only 95 percent households owned the houses. There is significant improvement in the type of houses as the percentage of households having pucca houses was about 98 percent during current period in comparison to only about 35 percent households having pucca houses during base period. All the

Fig. 7: Changes in Level of Residential Building in Project Area (% of hh)

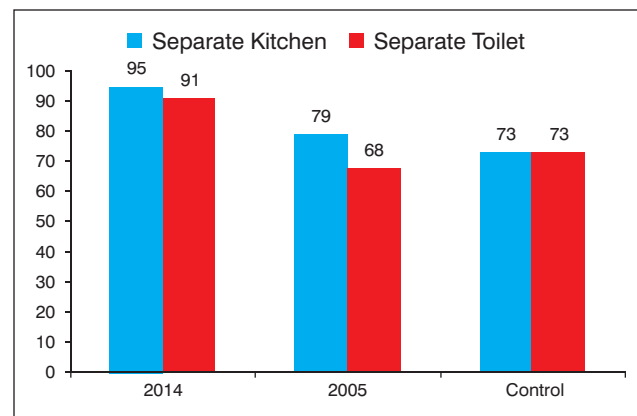
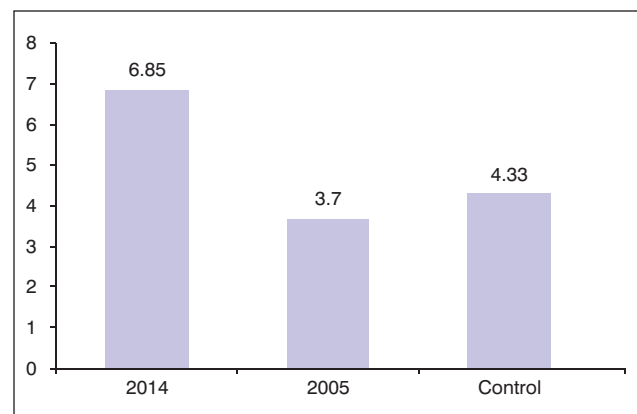


Fig. 8: Changes in average number of residential rooms in Project Area (No./hh)



sampled households now had separate kitchen and toilet, during base period only about 79 and 68 percent households had these amenities (Fig. 7). About 80 percent of the households now had separate animal shed whereas about 71 percent households had separate animal sheds during the year 2005.



New constructed house



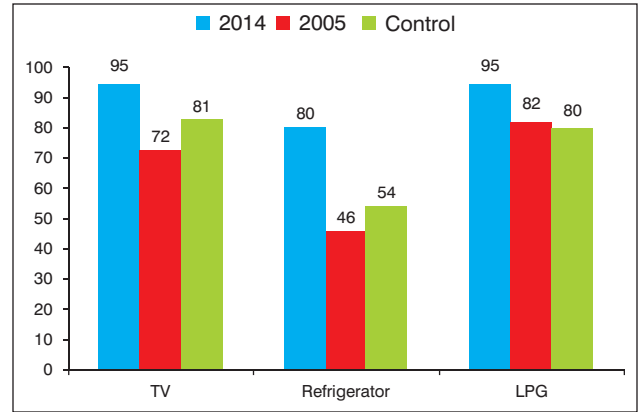
Old house acquired

The average number of residential rooms per household has increased during the period under study (Fig. 8). The average size of the houses is 985 sq.ft. (70% higher as compared with baseline and 175% higher to control households) compared to 578 sq.ft. during baseline and only 358 sq.ft. for the controlled population.

3.6 Ownership of Assets

26. The number of households having television increased from about 72 percent during base period to almost 95 percent during current evaluation compared to 81 for controlled population. Similarly, the percentage of households owning refrigerators increased from about 46 to 80 percent and that owning LPG connections from about 81 to 95 percent. The analysis has been further extended to include the total number of modern durables

Fig. 9: Changes in ownership of modern durables in Project Area (% of hh)

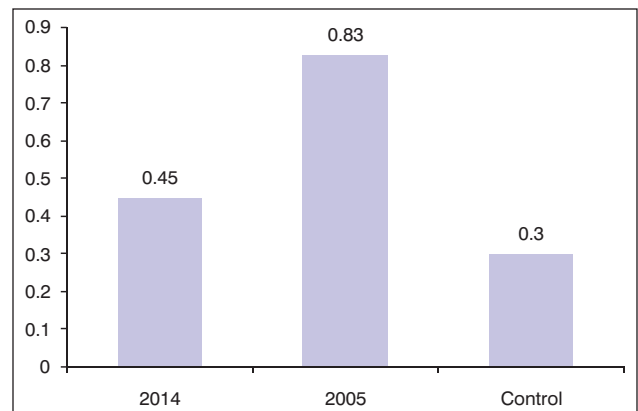


with the sampled households. It is indicated that the number of televisions were slightly more than one in each household, Fig. 9. When compared with controlled population. The PAPs are better off in respect to all types of assets owned by them.

3.7 Changes Land Ownership and Cropping Pattern

27. Land ownership: Per household land with sampled households during current survey average at 0.45 hectare which declined from 0.83 hectare during the year 2005 but still better than control households (Fig. 10). The per household land holding with control sample was still smaller at 0.30 hectare. This indicates that the average land holding declined by about 46 percent over the year

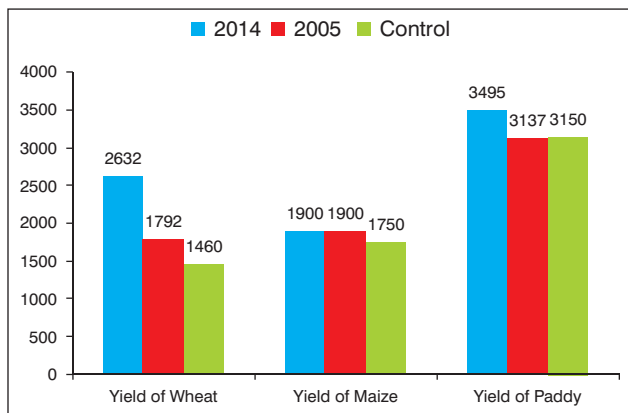
Fig. 10: Changes in Size of Land Holding in Project Area (ha/hh)



2005. This decline was about 48 percent in case of agriculture land and 43 per cent in case of horticultural land.

28. Cropping Pattern: There has been a change in number of households cultivating different crops. The percentage of households cultivating maize decline from about 29 percent during the year 2005 to 15 percent during current survey. Similar decline was observed in case of wheat also the respective figures being about 72 and 64 percent. The percentage of households cultivating paddy remained almost constant at about 64 percent. There was significant declined in percentage of households cultivating different vegetables. It is also indicated that larger number of households have opted cultivation of apples and pears instead of almonds.

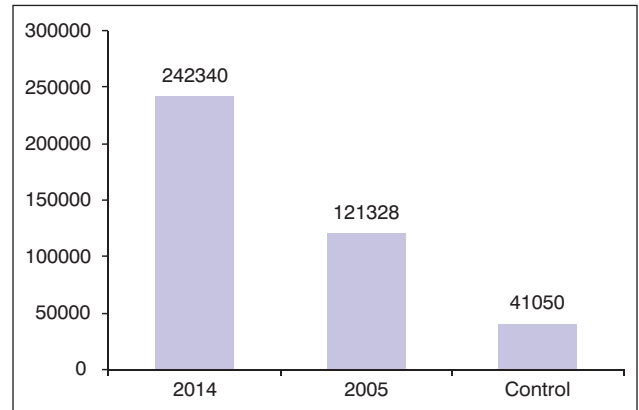
Fig. 11: Changes in Productivity of Major Crops in Project Area (kg/ha)



29. The total cropped area, per household, was 0.63 hectare a decline of about 47 per cent in comparison to base year. There was significant decline in area under crops like maize, paddy, wheat and barley. The area under pulses and vegetables formed a negligible proportion in aggregate cropping pattern during current survey. The analysis reveals that the yield of wheat and paddy on PAFs has increased while it was stagnant in case of maize. The level of yield of major crops is presented in Fig. 11.

30. Crop Production Pattern: The value of crop output has increased from 1.21 lakh per hectare in base year to 2.42 lakh per hectare in current period, Fig. 12.

Fig. 12: Changes in Value Productivity of Land in Project Area (Rs / ha)

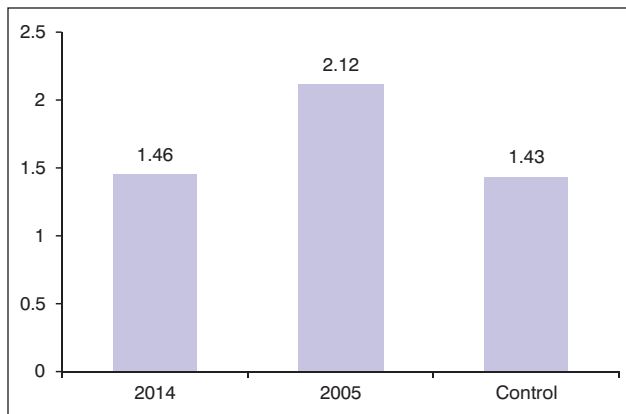


3.8. Animal Husbandry

31. There is appreciable decline in number of households keeping draught animals for agricultural purposes. During the base period about 28 per cent households had draught animals which declined to about 4 per cent. There was also a decline in number in households keeping milch animals, from about 74 percent to 68 percent currently. There was a marginal increase in number of households keeping sheep and goats.

32. There was 78 percent decline in number of draught animals per household whereas this decline was about 19 percent in case of milch animals. In total there was a decline of about 39 percent in livestock holding of the sampled households. The main reason for this decline is the shift in focus from agriculture and animal husbandry to business and service as the main source of income generation. It was found that about half of the households having draught animals owned cross breeds of these animals whereas about 32 per cent of the owning households had cross breed milch animals. The average numbers of livestock are shown in Fig. 13.

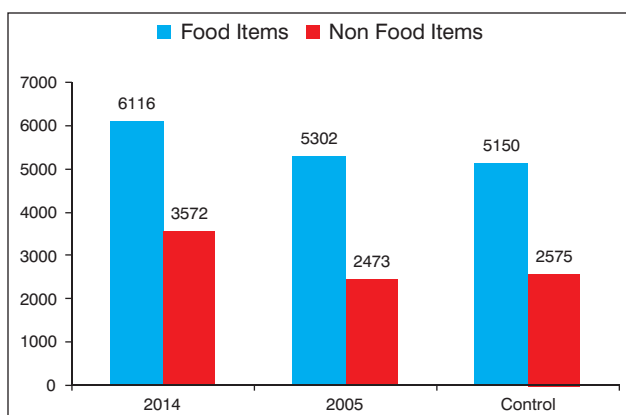
Fig. 13: Changes in Livestock Holding in Project Area (No. / hh)



3.9 Household Expenditure and Consumption Pattern

33. The quantity of rice, wheat and pulses consumed have increased whereas that of maize, vegetables, fruits, milk and sugar have declined in comparison to base period. But the expenditure on these items has increased indicating that each household's expenditure has increased by about 55 percent over the base period. The consumption expenditure on non-food items was higher by about 137 per cent over the base period indicating that the total monthly consumption expenditure has more than doubled in comparison to base period. The increase in consumption expenditure on non-food items was the result of 55 per cent increase in income in real terms. The average monthly consumption expenditure is shown in Fig. 14.

Fig. 14: Changes in Consumption Expenditure in Project Area (Rs. / hh)



3.10 Impact on Overall Living Standards

34. The overall living standards of PAPs in term of key socio-economic indicators has improved considerably when compared with baseline and controlled, as summarized in Table 3.1. The average income is increased by 54% compared to baseline and 87% to controlled population. In terms of individual income, 87% families reported higher income at current prices in comparison to baseline period. Among the remaining 13% families, the changes in asset ownership was examined, where in 11 out of 12 families showed improvement in term of ownership of assets. Thus, 99% have improved their living standards when compared with real incomes or asset ownership (Annexure 3.30). This situation is also reflected from the perceptions expressed by the people when asked about the changes in their overall living standards compared to before project implementation, where 74% have mentioned their living standards are improved and another 24% mentioned that their living standards are more or less same as before (Annexure 3.31). In terms of employment, the proportion of employees in business and service increased from baseline, but the proportion of those in service is lower as compared to the controlled population. The average size of house is also increased by 70% over baseline and 175% bigger than controlled population. The basic facilities such as kitchen, bath and use of LPG are also improved compared to baseline situation and controlled population. The ownership of assets shows that ownership of four-wheeler increased from 12% to 42% and there is also increase in terms of proportion of those owning TV and refrigerator over baseline and controlled population. The average consumption on food and non food items also increased by 15% and 44% for food and non- food item at the current price levels and is higher than controlled population. Thus, it is concluded that the compensation and other assistance received from the project has considerable impact in terms of improving the overall living standards. The details are presented in Table 3.1 and additional data on socio-economic data is presented in Annexures.

Table 3.1: Changes in Key Socio Economic Key indicators

No	Indicator	Baseline (2005) N=143	Current (2014) N=92	Control (2014) N= 80
1	Literacy (%)	83.00	88.00	77.00
2	Proportion of Wage labour (%)	4.32	4.65	20.22
3	Proportion of those in business (%)	5.60	8.96	6.01
4	Proportion of those in service (%)	15.52	19.35	26.32
5	Average annual Income at current levels (INR)	2,51,472	3,87,204	2,07,257
6	% of families earning more income than base line at current level (%)	NA	87.00	NA
7	Average house size (sq. ft.)	578	985	358
8	% of household living in Pucca houses	35.00	98.00	69.00
9	% of families having separate Kitchens	79.00	100.00	73.00
10	% of families having separate toilet	68.00	100.00	62.00
11	% families having TV	72.00	100.00	81.00
12	% families owning Refrigerator	46.00	100.00	54.00
13	% families using LPG	82.00	95.00	80.00
14	% families owning four wheeler	12.03	42.00	12.50
15	Average Land holding (ha)	0.83	0.45	0.30
16	Average number of livestock	2.37	1.46	1.43
17	Consumption of food item in Rs/year (at current price level)	5,302	6,116	5,150
18	Consumption of non-food items in Rs/year (at current price level)	2,473	3,572	2,575

Status of R&R Interventions

35. The present chapter deals with various interventions like compensation and cash grants paid to the project affected people.

4.1 Compensation to Landless and Homeless Families

36. At the time of land acquisition, the compensation offered was as per the Land Acquisition Act, based on prevailing land rates in 2005, classified by type and ranged between Rs. 30,000 to 60,000 per bigha, approximately 10 times lower than the rates in the adjoining villages. Thus, these rates were not accepted by the land owners. In order to overcome this dissatisfaction, a District Level Committee was constituted in December 2005 with the Deputy Commissioner as chairman and senior representatives of key government departments including the public works department (PWD), forests, agriculture, and horticulture. This committee finally fixed compensation rates varying between Rs. 5,80,000 to 6,00,000 per bigha which is much higher than the original rate.

37. These enhanced rates became basis for acquisition of additional private land acquired during the project implementation and made this subsequent land acquisition easier and faster. The valuation of structures was undertaken through a third party, an approved valuer of the State Government, who used the item rate method, namely the Himachal Pradesh PWD schedule of rates and the prevailing market premium on these rates.

4.2 Resettlement Assistance

38. The people who were rendered landless were paid rehabilitation grants based on the land lost and the total amount paid on this account was Rs. 130 lakh. In addition, 51 vulnerable families were paid additional cash support. In addition, vehicles were hired from 59 families who have received monthly income from this activity. In addition, local people also received petty contracts and employment under the contractors. The Key land acquisition and resettlement activities implemented under this project are summarized below.

Table 4.1: Implementation Progress of Land Acquisition and Resettlement Activities

Sl. No.	Activities	Target	Progress	Remarks
1	Private land acquisition (ha)	29.86	29.86 (100%)	(includes 0.76 ha of land purchased through direct negotiations)
2	Payment of Compensation to Land owners (Nos.)	167	167 (100%)	(Rs. 2550 lakh paid). Includes 6 land owners who have been paid through direct purchase
3	Disbursement of Rehabilitation Grant to landless families (Nos.)	57	57 (100%)	(Rs. 130 lakh paid)
3	Allotment of house plots to displaced families (Nos.)	19	18 (95%)	Includes 4 families who were offered cash in lieu of plot. One PAF has filed case in the court
4	Financial assistance to vulnerable families	51	51 (100%)	
6	Hiring of taxis from local people (in vehicle months)	600	3871 (645%)	
7	Petty contracts awarded to local people by SJVNL	50	337.70 (675%)	In addition, Rs. 10691 lakh worth works have been awarded by the contractors.
8	Sponsorship to Technical Education (Nos.)	155	195 (125%)	Out of 195 students, 174 (89.2%) have completed the courses.

Note: The figures in parentheses indicate percentages

4.3 Blast Damage Compensation

39. The study conducted by Central Institute of Mining & Fuel Research, Dhanbad found that the vibrations caused by the blast were of safe level for the structures located in the vicinity of the project. The drilling and blasting patterns were of correct design based on latest developments in explosive and initiation technology reflecting a high degree of safety consciousness with minimum impact on environment. The study also concluded that in majority of the cases the cracking/damage to houses was mainly due to ground/foundation settlement. The villagers attributed the damage to blasting mainly due to perceptible levels of vibrations and sound which caused fear psychosis among project affected population. According the report such insignificant level of vibrations could not cause damage to the structure and they concluded that the blasting practices followed by RHEP was safe and could not cause structural damage as alleged by the villagers. Despite this, RHEP decided to settle the issue amicably by releasing the blast damage compensation of Rs.507.30 lacs was assessed and released to 5283 families in district Kullu and Shimla. In district Kullu a compensation of Rs.469.50 lacs was released to 4673 families and in district Shimla, a sum of Rs.37.80 lacs was released as compensation to 610 families.

4.4 Crop Damage Compensation

40. RHEP has been cautious in minimizing the dust pollution as a result of project activities. It incurred an expenditure of Rs.212 lacs for water sprinkling to arrest the dust pollution. But the farmers of the area thought that the dust pollution was adversely affecting their farm productivity. In order to resolve the issue, Ch. Sarvan Kumar Krishi Vishva Vidyalaya, Palampur, Himachal Pradesh was requested to conduct a study highlighting the impact of project activity on local farm economy. The study was conducted during the year 2008 concluded that dust pollution was not responsible for decline in the farm productivity but was the result of poor farm management practices adopted by the farmers. These findings were not acceptable to farmers who

raised the issue in LADA meeting and the chairman of the meeting constituted a committee to assess the possibility of monetary assistance. RHEP, in order to settle the issue and maintaining good relations with farming community, decided to pay crop damage compensation to farmers. During the year 2008-09 a compensation of Rs. 299.80 lacs was assessed and released to 4022 beneficiaries whose crop was damaged due to project activities. In district Kullu the compensation paid was Rs.153.20 lacs paid to 3571 beneficiaries whereas in district Shimla 451 beneficiaries received a compensation of Rs.146.60 lacs. During the next year i.e. the year 2009-10, the total compensation assessed and released for crop damage was Rs.403.60 lacs paid to 3751 beneficiaries of district Kullu.

4.5 Assistance to Non-title Holders

41. There was only one encroacher who was paid a rehabilitation grant of Rs.34000 including two times shifting allowance and 12 months rental allowance @ of Rs.2000 per month. The rehabilitation grant was also paid to two tenants who received Rs.22000 including three months rental allowance @ Rs.2000 and shifting allowance.

4.6 Support to Local Schools

42. In order to protect the environment, first grant of Rs.2.65 lacs was released for plantation work in and around the schools during December 2007. This was to not only have positive impact on environment but would inculcate this habit among the younger



Support to Local School

population. After this, second grant of Rs. 46 lacs was released to 49 schools for purchasing infrastructure and equipment's etc.

4.7 Promotion of Fairs and Festivals

43. Facilitating the local fair and festivals is an effective way of earning the goodwill of locals. RHEP, therefore, decided to provide grants for various fairs and festivals. The amount of grant kept on varying from year to year and during 2012-13, Rs.2.50 lacs were released under this programme. So far, Rs. 24.23 lakhs have been granted under the programme.

4.8 Promotion of Sports

44. Under sports promotion a total sum of Rs. 4.8 lakhs have been spent on sport kits, construction of boxing ring and organizing various tournaments.



Promotion of Sports to Local School

4.9. Support to Advance Skill Development

45. Technical Education Schemes: This scheme is an important instrument for capacity building of the local youth. Technically qualified youth were an asset not only for RHEP but also for the economy as a whole. It was envisaged that the provision of technical trainings will have positive impact on worsening unemployment scenario. This culminated in 30 students belonging to project affected families completing technical education in the trades like electrician, motor mechanic etc. They were provided a total assistance of Rs.1004730. In addition to this, one student who dropped out mid-course was provided a grant of Rs.21300. There was no student continuing with the course at the time of survey. This benefit was

also extended to 165 youth of the project affected area with a total assistance of Rs 50, 60,698 of project affected area families.

46. Merit Scholarships: The main idea behind this scheme was to provide motivation to students for signing up for the technical education and to curtail the dropout rate from such courses. The provision of merit scholarship was also anticipated to provide financial support to meritorious students with poor financial background. The benefit under this scheme were enjoyed by 9 wards of project affected families who received a total amount of Rs 3,70,500/- under the scheme and 79 wards of residents of project affected area who received a total grant of Rs 10,57,200.



Distribution of Certificate under Merit Scholarship

4.10 Women Empowerment

47. Mainstreaming of women is an important aspect in community development activities for ensuring their participation in socioeconomic upliftment of project affected population. RHEP has focused on this aspect and tried to include as many women in the training and other programmes.

48. The analysis indicates that about 16 per cent of the persons sponsored for technical education courses were women and of the persons who completed these courses about 14 percent were women. The position of women in respect of number of persons given apprentice training though was not very good as they were only about 14 percent of the total persons receiving such training, it is a significant beginning. Women were able to

corner 29 per cent of the scholarships. No registered women contractors were available and hence no work could be awarded to them under petty contracts indicating a need of concerted efforts in enabling women to venture in this field. The contractors were not very fair in hiring the women work force as only about 9 percent of their total work force was of women. The main reason forwarded in defense was that the nature of work (working in tunnels and works requiring heavy physical efforts) discouraged the women to take up these assignments. This is also reflected in the number of days of employment under contractors; of the total work days, about 14 per cent were contributed by women. It is apparent from the analysis that women could not avail the benefits of various schemes of RHEP to desired level; present initiative is a welcome intervention in women empowerment. The detailed trade wise analysis indicates that women have made a desired beginning in availing the benefits. The women were sponsored for two trades viz COPA and cutting & sewing. Thus, 31 women were sponsored under technical education of which 25 completed their trainings and 11 were also successful in getting employment. This, of course, is a healthy beginning.

4.11 Distribution of Pressure Cookers

49. RHEP felt concerned about the women drudgery and therefore, decided to provide pressure cookers to all 139 project affected families free of cost. It was anticipated that this programme would reduce the dependence on forests and all the environmental benefits



Distribution of Pressure Cooker to PAF

would accrue automatically. All the families were also issued identity cards for facilitating the availing of benefits being provided by RHEP, from time to time.

4.12 Employment Opportunities to Local People

50. One PAF has been given permanent employment in RHEP, SJVN as Pharmacist. In addition to that, employment was generated for 95 persons belonging to Himachal Pradesh through HIMPESCO. This included 4 each supervisors and armed guards, 65 security guards, 10 data entry operators, 1 junior officer, 6 cooks and 5 helpers. In addition to this RHEP created jobs for 444 persons belonging to project affected families and area. These jobs were of supervisors and work men.

4.13 Farmer Training Camps

51. A number of farmer training camps have been conducted by AERC Shimla in order to provide latest technical knowledge relating to production and marketing of agricultural commodities. This was accomplished by inviting various experts who made the farmers aware of the latest trends and techniques. These camps were attended by both males and females of project affected families and areas, women participation in these camps was significantly higher than that of men. During all these camps some farm equipment like pruning scissors etc. were provided as an incentive. These training camps have proved to be quite effective and in fact the beneficiaries demanded that more such camps be organized more frequently and should cover other related



Farmers Training Camp at Bayal

topics as well. The technical knowledge provided in these camps helped farmers to increase crop yields.

4.14 Health Improvement Initiatives

52. Mobile Health Van (MHV) service was inaugurated on 26th January 2005 and has been providing valuable health service ever since. The MHV visits 8 project affected panchayats for 4 days each week. In total, 101380 patients were treated through mobile health van and dispensary at Bayal. Out of these 44376 patients were treated through mobile health van and rest 57004 through dispensary at Bayal. The number of referred cases for higher treatment was 246 from mobile health van and 822 from dispensary. RHEP also conducted 46 health camps which benefited 6240 persons. Further, in order to check the dust pollution, an expenditure of Rs.212 lacs was made on sprinkling water to check dust pollution more effectively to protect health of persons.



Medical Checkup



Mobile Health Van

4.15 Impact on Women

53. RHEP has undertaken various activities to women in the areas of education, training, employment, health care, etc. Some of them are discussed below.

54. Sponsorship for Technical Education and Apprenticeship: SJVN has sponsored 31 females (16%) in computer operating and programming assistant, sewing and cutting trades, resulting in jobs for fourteen females. About 30% of 89 people who received scholarships were females. Similarly, 14% of 57 who received apprentice training were females and 9% of 444 local people employed by the contractors were females. In addition, the project has also organized skill upgrading training programs exclusively for women in 2014 – This includes a 3 month computer training, 3 month cutting and tailoring and 2 month beautician program which have benefitted more than 50 women.

55. Employment with RHEP: Two out of four professional staff (50%) working on community development and resettlement and rehabilitation aspects are females and the head of the public information center (PIC) is also a female. In addition, the project provided a regular employment to a female pharmacist at Bayal dispensary under the resettlement and rehabilitation scheme.

56. Public Information Centre: The Public Information Centre (PIC) operationalized at Bayal since 2005 to provide information to villagers on resettlement and rehabilitation, community development, employment



Public Information Centre at Bayal

opportunities and grievance redressal. This centre is also a source of all project related documents and villagers can easily access documents like resettlement action plan, social impact assessment, environmental impact assessment, and environmental management plan, etc.

57. Benefits received by PAPs from the Project: When asked about the direct benefits received from the project, the responses from sample households is summarized below and more details are provided in Annex 5.6.

4.16 Conclusion

58. The above discussion reveal that the project has undertaken several initiatives to assist the project affected people during the transition period and also provide opportunity for employment and skill upgrading and support the children of the local people through support in sponsoring them to technical education and scholarship. All this support has all-round impact on the living conditions of project affected people as well as local people.

No	Type of Benefit	No. of families benefited	Proportion of women beneficiaries
1	Merit Scholarship	5	40%
2	Technical Education	15	20%
3	Employment related (under contactors or Apprenticeship)	32	33%
4	Rental income	3	–
5	Small Contract	3	–
6	Vehicle hire	1	–

Impact of Community Development Activities

59. Various developmental activities aimed at socioeconomic development of the project affected area and population, have been carried out by RHEP. The focus of these activities is the infrastructural development and have been initiated depending upon the relevance, demand and requirements. These have been presented in following text.

5.1 Status of Community Development Works

60. At the time of preparation of RAP, a community development plan was also

prepared. As part of this plan, 2212 community development works were taken up by RHEP which have been completed (Annexure 5.2). These works relate to construction of pucca paths, kuhls, street lighting, playground and foot-bridge etc. In order to execute these works a total expenditure of Rs.130.20 lakh has been made. At the request of District administration additional five works related to construction of pucca paths, kuhls, street lighting, playground and foot-bridge etc. were also taken up (Annexure 5.1).

Details of Community Works

(Amount in Rs. lakh)

No	Nature of Work	By RHEP		By District Administration	
		Number	Amount	Number	Amount
1	Access Roads	6	31.89	43	134.03
2	Irrigation Channels	3	16.63	3	13.42
3	Street Lighting	3	7.38	–	–
4	Play grounds	5	36.8	11	42.50
5	Foot Bridges	1	2.3	3	89.71
6	Class Rooms	1	4.17	1	12.00
7	Toilet seats	2191	23.71	–	–
8	Retaining wall	–	–	5	10.39
9	Drinking water	–	–	2	7.00
10	Renovation of temples	–	–	14	58.30
11	Burial Ground	–	–	1	4.00
12	Drainage	–	–	1	1.00
13	Renovation of Community Hall	–	–	1	1.00
14	Sport activities	2	7.32	–	–
15	Construction of toilets	–	–	1	2.62
	TOTAL	2212	130.20	86	375.97

61. During 2008, the State Government has adopted a Local Area Development Agency (LADA) as part of its state Hydro policy. As a result of this, the community developed works

were transfer to state Government for implementation since 2009. It has been reported that the work execution became slower after these works were transferred to

LADA. As many as 86 works with a cost of Rs. 375.97lakh were taken up till now. The details are provided in Annexure 5.3 and 5.4 and are summarized above.

5.2 Impact of Community Development Works

62. The basic objective of undertaking the community development works is to provide various amenities/facilities to the project affected population, which is bound to have positive social and economic benefits. The present analysis has been carried out in order to evaluate this impact and to document the problems reported by the end users and suggestions made by them for further streamlining these efforts and to increase their efficacy. As the community development works are of different types they have been evaluated separately and presented below.

63. Health Impact: The main work under this activity was introduction of a mobile health van and construction of hospital aimed at providing health facilities almost at the doorstep of project affected population with perceived benefits of easy consultations and free medicines etc. The social impact of this activity, as reported by the respondents was in the form of better health, low illness periods and generating a sense of overall wellbeing. On the economic side of it, it was reported that the work efficiency of workers has improved. No problem in this regard was reported.

64. Drinking Water: Improvement in existing and provision of new pipe lines and storage tanks were the main activities aimed at improving the existing water supply for improving the water availability. The social impact of this activity has been some improvement in living standards and on economic side benefits like time saving, reduction in incidence of water borne diseases and most importantly, reduction in drudgery faced by women have been reported.

65. Sanitation: The distribution of toilet seats and other materials were the activity components aimed at improving the sanitary conditions and to inculcate the habit of cleanliness with the perceived benefits of clean surroundings and there by bringing about improvement in the health conditions. As a result of this activity there has been some improvement in the habit of cleanliness and there has also been some improvement in the sanitary conditions. This has also been able to save the time and to some extent reduce the incidence of diseases.

66. Street Lighting: Street lighting has been provided in village Bayal with a purpose of ensuring easy and safe movement during night hours and to have some protection against crime. This has also made possible to have longer working hour.

67. Connectivity: In order to ensure easy and safe movement of persons and goods, foot paths and foot bridges have been constructed. This has resulted in efficient transportation of goods and farm produce lowering the transportation cost. Though, no problems were reported.

68. Community Center: Community centers were constructed to facilitate the public meetings and provide platform for community interactions. This could also be used for public functions and family celebrations. This has not only improved the status of village but has facilitated the social interactions leading to formulation of strategies for taking care of development issues and providing useful hints about latest farm production technologies.

69. Mahila and Yuvak Mandal Buildings: The purpose of constructing these building was overall development of women and youth of the area. It was perceived that this institution will make possible the introduction of various income generation activities and they will be able to have constructive use of their free time.

This has been able to develop as meeting point where exchange of ideas and information has been possible and the trainings and demonstrations are also facilitated. But for all these, lack of funds was reported to be a bottleneck.

70. Irrigation: Irrigation is an important input for improving the crop productivity and hence the activity of construction and repair of kuhls was undertaken to reduce irrigation water losses. This has not only been able to shift the cropping pattern towards high pay off cash crops but ensured the crop productivity also. This has led to some improvement in living standards of beneficiary farmers. It was suggested that new water sources should be tapped to improve the irrigation water supply to existing areas and to make it possible to include other un-irrigated areas.

71. Temples: Respecting the religious sentiments of villagers, construction/repair/improvement of temples was



undertaken. This activity resulted in better aesthetics and long life of temples. This greatly satisfied the religious sentiments, people wanted more temples to be covered under this scheme.

72. Playgrounds: This activity included construction, improvements and/or fencing. This was aimed at promotion of sports in the area and villagers were greatly satisfied with this activity which would result in healthy and efficient workers, better equipped schools and hence better performance in tournaments. People had no problems with creation of this infrastructure but wanted simultaneous provision of sport kits and other equipment.



73. The above discussion clearly reveals that various works undertaken by the project has contributed to sustainable development around the project neighborhood.

Consultations and Community Perceptions

6.1 Outcome of Consultations

74. The public consultations designed to capture the macro view of project affected population regarding the development issues and impact of interventions made were carried out in four villages (Bayal, Koyal, Averi and Duttnagar), representing about three percent of the total population. The persons present included ordinary farmers, members of Yuvak and Mahila Mandals, panchayat members etc. During consultations, the persons were exposed to a variety of issues which were openly debated. Key issues discussed and the community perceptions have been summarized below.

75. Adequacy of Scholarships: About 64 per cent of the persons present were satisfied with adequacy of scholarships. About half of the rest wanted the scholarship to be made available to larger number of students and 40 per cent wanted the amount of the scholarship to be enhanced.

76. Adequacy of Medical Facilities: About 62 per cent respondents were satisfied with the medical facilities being provided in the form of mobile health van and more importantly the facility of dispensaries and hospital.

77. Appropriate School Conditions: This is one of the aspects where large degree of satisfaction was apparent. More than 90 per cent made their satisfaction about school conditions very clear. They felt that this is probably one of the best in whole of rural Himachal Pradesh. Despite this almost everybody present wanted that playgrounds with appropriate facilities should be developed, not only for the schools, but all the villages.

78. Assistance to Mahila and Yuvak Mandals: About 65 per cent persons felt a need for

increased financial assistance to Mahila Mandal and about 60 per cent to Yuvak Mandals. The key officials of these institutions should be made aware about the methodologies for taking care of local issues and problems and ensuring the percolation of knowledge to masses. The Yuvak Mandals were important for social and cultural development of the local communities.

79. Effectiveness of Development Works by RHEP: About 70 per cent persons were satisfied with the effectiveness of development works of RHEP. About 60 per cent persons felt that the project activities have helped in increasing the public awareness and to make outlook of villagers positive about the development initiatives.

80. Capacity Building: This is one of the most important aspects of sustainable development. It helps to build the capacity of the local population to carry on the development works, on their own, in future. It is also instrumental in positively assimilating the impact of development interventions. A large majority of about 76 per cent felt the improvement in capacity of local population as a result of initiatives on the part of RHEP. According to about 40 per cent persons it was due to awareness camps organized by RHEP and about 36 per cent attributed it to introduction of income generation activities. About half of the respondents attributed it to the educational/awareness tours. Organizing sport meets and further strengthening of village institutions was a way to further improve the capacity building, according to about 45 per cent respondents.

6.2 Perceptions of Project Impacts

81. The existence of project itself and various activities undertaken by it for the development

of PAP and others also, have made significant impacts which can be categorized as social, environmental and political etc impacts. The views expressed by the persons present formed the public perceptions in this regard, detailed below.

82. Social Impacts: The exposure of PAP to the influx of diverse group of persons in the form of project officers, officials and workers etc has impacted them in a significant manner by exposing them to wide variety of cultures, attitudes, habits and ways of life etc. Due to these factors, in the view of about 55 per cent persons the public awareness of villagers has greatly increased. As a result now they have more positive outlook towards the developmental initiatives, about half of the persons feeling this. More than 80 per cent now feel the importance of formal education for ensuring the better life for their children. Not only this, the increased awareness has been instrumental in complete change in the outlook for agriculture for about 30 per cent persons. They have now commercial considerations in agriculture reorienting their agricultural operations and objectives from subsistence levels. Apart from these positive impacts, on the flip side, about 30 per cent persons opined that the increased exposure has brought in awareness about fashions which was not good for the society. The food habits are now on the change with increasing likings for junk food (25 per cent) and increase in the crime rates (15

per cent). The use of narcotics and other psychotropic substances is on the rise, in the view of about 40 per cent persons, was detrimental for the well-being of the society. The main reason quoted for this scenario was the influx of different types of population during construction activities of the project.

83. Political Impacts: Increased social awareness and exposure of locals with people of diverse political likings and affiliations along with the escalation in political activism in the area, has impacted the local population with more and more people being drawn towards political groups providing them a platform for redressal of their problems and demands. About 20 per cent of the persons felt that the political affiliations of locals have now increased. This has resulted in increased number of agitations; about 80 per cent of the persons present, thought this.

84. The above discussion reveal that the level of satisfaction with various service provided by the project to the local people. A large proportion of people have expressed their satisfaction with various services in the areas of health and education and large number of them (70%) have expressed satisfaction with various development work undertaken by the project and said that the project activities have contributed to their awareness and thinking positive about the development.

Conclusions

85. Based on the review it is concluded that all land acquisition and resettlement and rehabilitation activities planned under this project are fully completed and there are no outstanding activities now. As regards, community development works, due to change in the implementation arrangements, the original amount has been increased from 17.50 crores to 30.71 crores (1.5% of the project costs) and the district administration has taken up the implementation of the works. These works will continue for some time and the main action pending is the integrated drinking water scheme for all the affected villages. The outcome of feedback from household survey and consultations on the Implementation of RAP and community development works is summarized below.

86. The data collected from the sample PAFs clearly shows that the overall living standard of the families has improved due to RHEP project implementation. Following changes are noteworthy.

- a) There is improvement in level of education and literacy rate among PAFs. The literacy level among males has increased from 91 per cent to 92.14 per cent whereas in case of females it has increased from 76 to 83 per cent from base period, the technical educational schemes implemented by RHEP have attracted PAFs and number of technical educated persons increased in current year. Merit scholarship was provided to nine persons belonging to PAF and 79 of PAA.
- b) There has been increase in full-time employment in the villages due to RHEP activities. Encouraged by RHEP, the contractors working with it also employ local workers as much as possible. Permanent employment was provided to one member of project affected family and in addition to that employment has been provided to 425 persons through contractors of RHEP.
- c) There is significant increase in the proportion of workers in the regular employment, with public and private sector. About 19 per cent persons were working as private and government servants, an increase of about 25 per cent over 2005 and 26 per cent higher in comparison to control group.
- d) Diversification of income and employment avenues through various technical education, training, income generation schemes, towards business and other self-employment activities, is taking place.
- e) There have been positive impacts on income and employment pattern of project affected families. During the base line period, main occupation was agriculture with 59.80 per cent workers reporting it, which figure increased to 66.31 per cent during the current survey, an increase of about 11 per cent. The increase in number of persons reporting agriculture as main occupation is the fact that more stress is now given on fruit and vegetable cultivation which are labor intensive ventures.
- f) The current average income of PAFs is Rs. 3,87,204 which is 54% more than beeline income at current level and 87% higher than of controlled population. As regards in income changes among individual families as many as 79 families (87%) have reported increased income compared to baseline income at current level.
- g) There is improvement in the residential facilities of the affected families as compared to their own earlier situation and as compared to the condition of non-affected families in the project area. The number of pucca houses increased by 180 percent over the base period and the percentage of houses having separate kitchen and toilet increased by about 27 and 47 per cent respectively over base period and 89 and 61 per cent respectively in comparison to control sample.
- h) There has been improvement in living standards of PAFs and number of households having modern durables such as TV, refrigerator, LPG connection by about 17, 50 and 19 per cent in comparison to control sample households having these durables.
- i) There has been improvement in consumption pattern (towards more nutrition, protein, fruits & vegetables) of the project affected families. The consumption expenditure of food items is 15.35 per cent over base year and there is simultaneous increase of about 44 per cent in the consumption of non-food items.

- j) The land holding has declined but the yield of major crops on PAFs farms has increases and value productivity of land was significantly (100 %) higher in current year as compared to base year.
- k) Compensation rates given to the PAFs were adequate as expressed by them. PAFs have received full compensation from RHEP. During final evaluation 18 percent of households had invested in land purchase, 62 per cent households making investments in the form of fixed deposits in banks and Mutual funds.
- l) The RHEP has taken measures to strengthen the existing infrastructure facilities, including health facilities, education, irrigation, drinking water, sanitation, street lights and roads which are providing immense benefits to the PAFs in the project area. RHEP has undertaken and completed seven different works of distribution of toilet seats and essential materials to the residents of Project affected panchayats. There were 79 works completed by LADA and 47 road/pucca path related works.

87. People's Perceptions: The project affected population has been exposed to variety of people due to influx of workers, significantly impacting their social, cultural and economic life. The people have become greatly aware of the development scenario and now have positive outlook towards development interventions like R&R activities. The people now understand the importance of education for securing the future of their wards. More and more people now have commercial considerations in agricultural production which in future will help them in providing secure and sustainable livelihoods. Political awareness has significantly increased and political forum are increasingly taken as a platform of grievances redressal. The public opinion was quite favorable in respect of facilities like provision of merit scholarships, improvement in conditions of schools, assistance to Yuvak and Mahila Mandals etc. The training and awareness camps have been an effective tool for capacity building of PAP and also to make them aware about new opportunities in income generation or to improve upon the existing livelihood strategies.

88. Impact of R&R and Community Development Works: The implementation of majority of R&R components have largely

progressed as per laid down time schedule. However, some of the development works got delayed after the transfer of works to LADC particularly the integrated drinking water scheme. The activities like provision of medical facilities, merit scholarship, hiring of vehicles from PAF and provision of awarding petty contracts to PAF have played a significant role in promoting the socio economic well-being of PAF. Such facilities have been appreciated by the people. The developmental activities like foot bridges, village paths, provision of drinking water etc. have made PAFs life better. The support services like farmers' training camps have been appreciated and demanded for income generation activities. The dissent to decisions and policies of R&R, often are not genuine and are due to political influence and raised aspirations of PAF. In the light of above it is indicated that R&R and LADC have been able to fulfill their objectives to a large extent. It is also noted that some of the LADA activities are still pending especially the integrated drinking water scheme which will have significant impact in the living standards once it is completed. Despite this, a few suggestions have emerged for making the LADC more effective. It was suggested that the frequency of LADC meeting should be increased so that all the agenda items are discussed in depth and there should be review of actions taken and progress achieved. Many people wanted that there should be a fixed time limit for execution of LADC decisions. This will help in avoiding cost overruns and achieving the PAPs satisfaction. It was also suggested that LADC should have greater focus on income generation activities including introduction of new activities and sharpening the skills for ongoing activities.

89. Post Commissioning Support: During the post commissioning stage, the project affected families will receive 100 units of electricity per month for 10 years and the long term residents in the affected villages will receive annuity payment out of revenue generated out of sale of 1% free power provided to the state Government by project entity during life of the project. The RHEP is finalizing the modalities for extending the electricity supply and the state Government in the process of finalizing the list of eligible people for annuity payments. Thus, there is a sustainable efforts from the project entity and State Government to support the project affected and local people beyond the project implementation.

ANNEXURES

Annex-3.1: Demographic Profile

Particulars	Number			Percentage		
	2014	2005	Control	2014	2005	Control
Total population	467	660	396	100.00	100.00	100.00
Male	232	324	206	50.96	49.09	52.02
Female	235	336	190	49.04	50.91	47.98
Family size	4.21	4.55	4.5	–	–	–
Sex ratio	1013	1037	922	–	–	–
Marital statues	272	363	237	100.00	100.00	100.00
Married male	136	177	117	50.00	48.76	49.36
Married female	136	186	120	50.00	51.23	50.64

Annex-3.2: Educational Profile

Particulars	Number			Percentage		
	2014	2005	Control	2014	2005	Control
Illiterate	52	110	82	11.81	16.90	22.53
Primary	71	125	69	16.14	19.20	18.95
Middle	62	114	58	14.09	17.51	15.93
Matriculation	75	127	80	17.04	19.51	21.98
Senior secondary	72	73	45	16.36	11.21	12.36
Graduate	59	66	20	13.40	10.14	5.49
Post Graduate	26	24	6	5.90	3.69	1.65
Tech Diploma	23	12	4	5.23	1.84	1.10
Total	440	651	364	100.00	100.00	100.00

Annex-3.3: Literacy Level

(Percentage)

Particulars	Periods		
	2014	2005	Control
Male	92.14	91	84.97
Female	82.94	76	69.00
Total	88.19	83	77.47

Annex-3.4: Ownership of Immovable Assets

Particulars	Number			Percentage		
	2014	2005	Control	2014	2005	Control
Only Land	0	20	0	0	13.79	0
Only House	20	4	11	21.74	2.76	13.75
Only Shop	0	1	0	0	0.69	0
Land & house	61	115	59	67.30	79.31	73.75
Shop, Land, house	11	5	10	11.96	3.45	12.50
Total Household	92	145	80	100.00	100.00	100.00

Annex-3.5: Workers & Non-workers

Particulars	Number			Percentage		
	2014	2005	Control	2014	2005	Control
Total population	467	660	396	100.00	100.00	100.00
Male	238	324	206	50.96	49.09	52.02
Female	229	336	190	49.04	50.91	47.98
Workers	279	393	183	59.53	59.55	46.21
Male	154	189	117	32.98	28.63	29.54
Female	125	204	66	26.55	30.91	16.67
Non-workers	188	258	213	40.25	39.09	53.78
Male	78	130	89	17.98	19.70	22.47
Female	110	128	124	22.48	19.39	31.31
Dependency ratio	0.67	0.66	1.16	–	–	–

Annex- 3.6: Occupational Pattern of Workers

Particulars	Number			Percentage		
	2014	2005	Control	2014	2005	Control
Agriculture	185	235	87	66.31	59.80	47.54
Male	70	91	32	45.45	48.15	27.35
Female	115	144	55	92.00	70.59	83.33
Agriculture labour		12	0	0	3.05	0
Male		7	0	0	3.70	0
Female		5	0	0	2.45	0
Non-agri. labour	13	17	37	4.65	4.32	20.22
Male	13	13	29	8.44	6.88	24.78
Female	0	4	8	0	1.96	12.12
Service	54	61	48	19.35	15.52	26.23
Male	44	54	46	28.57	28.57	39.32
Female	10	7	2	8.00	3.43	3.03
Business	25	22	11	8.96	5.60	6.01
Male	25	20	10	16.23	10.58	8.55
Female	0	2	1	0	0.98	1.51
Rural Artisan	2	2	0	0.72	0.51	0
Male	0	2	0	1.30	1.06	0
Female	0	0	0	0	0	0
Main Workers	279	393	183	100.00	100.00	100.00
Male	154	189	117	100.00	100.00	100.00
Female	125	204	66	100.00	100.00	100.00

Annex-3.7: Source of Income

Source	Number of H.H.			Percentage		
	2014	2005	Control	2014	2005	Control
Service	35	54	38	38.04	37.24	47.50
Agriculture	58	130	75	63.04	89.65	93.75
Business	12	17	10	13.04	11.72	12.50
Wage labour	9	60	0	9.78	41.38	0
Other	2	4	44	2.17	2.76	55.00
No. of households	92	145	80	100.00	100.00	100.00

Annex-3.8: Level of Income

Source	Rs/H.H.			Change over	
	2014	2005	Control	2005	Control
Service	149673	45488	93456	229.04	60.15
Agriculture	122136	46420	32301	163.11	278.11
Business	82652	11880	34037	595.72	488.82
Wage labour	8445	14621	21415	(-)422.41	(-) 60.56
Other	24298	2230	26048	989.60	(-)6.72
Total income	387204	120639	207257	220.96	86.82

Annex-3.9: House Ownership Pattern

Particulars	Number of H.H.			Percentage		
	2014	2005	Control	2014	2005	Control
Families owning house	92	138	77	100.00	95.17	96.25
Average size of house Sq.ft	985	578.28	358.13	-	-	-
Household having						
Pucca house	90	51	55	97.83	35.17	68.75
Kutcha house	2	63	22	2.17	43.44	27.5
Semi pucca house	0	24	0	0	16.55	0
Household with separate						
Kitchen	92	114	42	100	78.62	73.00
Toilet	92	99	50	100	68.27	73.00
Animal shed	74	103	45	80.43	71.03	56.25
Average no. of rooms	6.85	3.7	4.33			
No. of H.H.	92	145	80	100.00	100.00	100.00

Annex-3.10: Business Details

Particulars	Number/amount			Percentage		
	2014	2005	Control	2014	2005	Control
No. of Household having business	9	17	10	9.78	11.72	12.5
Average investment	36434	104312	7225	-	-	-
Own source	36434	89135	7225	-	-	-
Loan	0	11765	0	0	29.41	0
Other source	0	2353	0	-	-	-
Total	36434	104312	7225	-	-	-
No. of families having outstanding loan	0	5	0	-	-	-
Average amount of outstanding loan	0	81000	0	-	-	-
Source of loan	0		0	-	-	-
Banks	0	4	0	-	-	-
Relatives	0	1	0	-	-	-
Money lender	0	0	0	-	-	-
Net profit from business	0	103824	0	-	-	-
Total H.H.	92	145	80	-	-	-

Annex-3.11: Particulars of Shops

Particulars	Number/Amount			Percentage		
	2014	2005	Control	2014	2005	Control
No. of Household having Shop	9	9	4	9.78	6.21	5.00
Area of shops (ft ²)	1363	222	980	-	-	-
Av. investment(Rs)	36434	64778	7725	-	-	-
Type of shop						
Tailoring	1	2	0	11.11	22.22	0
Workshop	1	1	0	11.11	11.11	0
Provision store	2	2	2	22.22	22.22	50.00
General store	5	4	2	55.55	44.45	50.00
Electrical	1	0	0	11.11	0	0

Annex-3.12: Number of Households having Commercial Assets

Assets	Number			Percentage		
	2014	2005	Control	2014	2005	Control
Taxi	2	7	2	2.17	4.83	2.5
Pick up van	3	1	2	3.26	0.69	2.5
Truck	1		1	1.08	0	1.25
Photostat	0		1	0	0	1.25
STD booth	0		0	0	0	0
Tea stall	0		1	0	0	1.25
Dhaba	0		0	0	0	0
General store	4	3	2	4.34	2.07	2.50
Guest house	0		0	0	0	0
Vegetable shop	0		0	0	0	0
Commission Agent	1		0	1.08	0	0
Auto repair shop	1	1	0	1.08	0.68	0
Medical Store	1		0	1.08	0	0
Cloth's shop	1		1	1.08	0	1.25
Hardware	1		0	1.08	0	0
Other	0		6	0	0	0
Total H.H.	92	145	80	100.00	100.00	100.00

Annex-3.13: Number of Commercial Assets

Assets	Number			Percentage		
	2014	2005	Control	2014	2005	Control
Taxi	2	7	2	14.29	53.84	13.33
Pick up van	3	1	2	21.43	7.69	13.33
Truck	1	0	1	7.14	0	6.67
Tea stall	0	0	1	0	0	6.67
General store	5	4	2	35.71	30.77	13.33
Auto repair shop	1	1	0	7.14	7.69	0
Medical Store	1	0	0	7.14	0	0
Cloth's shop	1	0	1	7.14	0	6.67
Hardware	1	0	0	7.14	0	0
Other	0	0	6	0	0	40.00
Total assets	14	13	15	100.00	100.00	100.00

Annex-3.14: Average Monthly Income from Commercial Assets

(Rs. Per household)

Assets	Number			Change over	
	2014	2005	Control	2005	Control
Taxi	7826	14333	7525	(-)45.40	4.00
Pick up van	22000	10000	20500	120.00	7.32
Truck	13043	0	11000	0	18.57
Tea stall	0	0	6000	0	0
General store	20043	9833	18000	103.83	11.35
Auto repair shop	9885	5000	0	97.70	0
Medical Store	12185	0	0	0	0
Cloth's shop	10190	0	8895	0	14.56
Hardware	8895	0	0	0	0
Other	0	0	3913	0	0

Annex-3.15: Number of Households having Modern Durables

Durables	Number			Percentage		
	2014	2005	Control	2014	2005	Control
TV	87	105	65	94.56	72.41	81.25
VCD	14	15	7	15.22	10.34	8.75
Refrigerator	74	67	43	80.43	46.21	53.75
M. Cycle	6	7	1	6.52	4.83	1.25
Car	39	17	10	42.39	11.72	12.50
LPG	87	118	64	94.56	81.38	80.00
Bio gas	0	1	0	0	0.69	0
Other(Cell Phone)	90	3	74	97.83	2.07	92.50
Total H.H.	92	145	80	100.00	100.00	100.00

Annex-3.16: Number of Modern Durables

Durables	Number			Percentage		
	2014	2005	Control	2014	2005	Control
TV	91	109	69	15.77	31.41	19.66
VCD	14	15	7	2.43	4.32	1.9933
Refrigerator	92	70	60	100	20.17	75.00
M. Cycle	6	7	1	1.04	2.02	0.28
Car	39	19	10	6.76	5.47	2.85
LPG	87	123	68	15.08	35.45	19.37
Bio gas	0	1	0	0	0.29	0
Other(Cell Phone)	264	3	149	45.75	0.86	42.45
Total	577	347	351	100.00	100.00	100.00

Annex-3.17: Value of Modern Durables

(Rs/HH)

Durables	Rupees per Household			Change over	
	2014	2005	control	2005	Control
TV	7934	7109	2326	11.46	241.10
VCD	437	4368	160	(-)90.00	173.12
Refrigerator	7304	7970	2546	(-)8.36	186.88
M. Cycle	2989	41143	125	(-)92.74	2291.20
Car	144369	291706	18750	(-)50.51	(-)50.51
LPG	2333	2261	1313	3.18	77.68
Bio Gas	0	25000	0	0	0
Other	0	3100	2436	0	0
Total	165366	382657	27656	-56.78	497.39

Annex-3.18: Land Resources

(In hectares)

Type of land	Area per HH			Change over	
	2014	2005	Control	2005	control
Agricultural land					
IR	0.24	0.38	0.03	(-)36.84	700.00
UIR	0.02	0.16	0.14	(-)75.00	(-)71.42
Total	0.26	0.54	0.17	(-)48.00	64.70
Horticultural land					
IR	0.08	0.20	0.07	(-)60.00	14.28
UIR	0.08	0.08	0.01	0	700.00
Total	0.16	0.28	0.03	(-)42.85	433.00
Grass land	0.02	0.00	0.02	0	0
Waste land	0	0	0.07	0	0
Total land	0.45	0.83	0.30	(-)45.78	50.00

Annex-3.19: Number of Households Growing Different Crops

Crops	No. of HH			Percentage		
	2014	2005	Control	2014	2005	Control
Maize	14	42	32	15.12	28.96	40.00
Paddy	59	93	9	63.72	64.41	11.25
Wheat	60	105	35	64.80	72.41	43.75
Barley	2	7	4	2.16	4.82	5.00
Pulses	5	14	13	5.40	9.65	16.25
Cabbage	2	37	3	2.16	25.51	3.75
Peas	0	4	0	0	2.76	0
Tomato	1	21	4	1.08	14.48	5.00
Potato	2	7	1	2.16	4.82	1.25
Apples	23	25	5	24.84	17.24	6.25
Almond	7	35	8	7.56	24.13	10.00
Pears	6	3	0	6.48	2.07	0
Plum	1	0	14	1.08	0	17.50
Others	0	19	0	0	13.10	0
Total HH	92	145	80	100.00	100.00	100.00

Annex-3.20: Cropping Pattern

(In hectares)

Crops	Area per HH			Change over	
	2014	2005	Control	2005	Control
Maize	0.02	0.09	0.08	(-)77.78	(-)75.00
Paddy	0.22	0.36	0.02	(-)38.88	1000.00
Wheat	0.22	0.38	0.10	(-)42.10	120.00
Barley	0.006	0.009	0.006	(-)33.33	0
Pulses	Neg.	0.01	0.02	0	0
Cabbage	Neg.	0.03	0.003	0	0
Peas	Neg.	0.002	0	0	0
Tomato	Neg.	0.01	Neg.	0	0
Potato	Neg.	0.003	Neg.	0	0
Apples	0.12	0.13	0.008	(-)7.69	1400.00
Almond	0.01	0.07	0.01	(-)85.71	0
Pears	0.03	0.004	0	650.00	0
Plum	0	0	0.02	0	0
Other	0	0.11	0	0	0
Total cropped area	0.63	1.18	0.30	(-)46.61	110.00

Annex-3.21: Production Pattern

(Qtls. / HH)

Crops	Quantity per HH			Change over	
	2014	2005	Control	2005	Control
Maize	0.25	1.71	1.40	(-)77.78	(-)82.14
Paddy	7.69	11.22	0.63	(-)31.46	1120.63
Wheat	5.79	6.81	1.45	(-)14.98	299.31
Barley	0.04	0.06	0.04	(-)33.33	0
Pulses	0.15	0.39	0.08	(-)61.54	(-)81.25
Cabbage	0.07	5.36	0.13	(-)98.69	(-)46.15
Peas	0	0.44	0	0	0
Tomato	0.13	1.88	0.05	(-)93.09	160.00
Potato	0.03	0.61	0.03	(-)95.08	0
Apples	24.04	20.3	1.50	18.42	1502.67
Almond	0.30	5.02	0.12	(-)94.02	150.00
Pears	0.92	0.63	0	46.03	0
Plum	0.33	0	1.34	0	(-)075.37
Others	0	32.89	0	0	0

Annex-3.22: Value of Crop Output

(Rs. / H.H.)

Crops	Value per HH			Change over	
	2014	2005	Control	2005	control
Maize	1400	1037	1960	35.00	(-)28.57
Paddy	9228	7089	756	30.17	1120.63
Wheat	8396	4316	2102	94.53	299.43
Barley	60	28	60	114.78	0
Pulses	750	124	400	504.83	87.50
Cabbage	84	2269	156	(-)96.20	(-)46.15
Peas	0	276	0	0	0
Tomato	195	1260	75	(-)84.52	160.00
Potato	36	365	36	(-)90.13	0
Apples	84140	16905	5250	397.72	1502.67
Almond	1500	6321	180	(-)76.27	733.33
Pears	920	63	0	1360.31	0
Plum	330	8255	1340	(-)096.00	(-)75.37
All Crops	109053	48314	12315	125.72	785.53

Annex-3.23: Number of Households having Livestock

Type of Livestock	Number of HH			Percentage		
	2014	2005	Control	2014	2005	Control
Draught Animals	4	40	3	4.32	27.58	3.75
Milch Animals	63	107	43	68.04	73.79	53.75
Young stock	3	70	17	3.24	48.27	21.25
Sheep & goats	1	1	2	1.08	0.68	2.50
Total HH	92	145	80	100.00	100.00	100.00

Annex-3.24: Number of Livestock Owned

Type of Livestock	Number per Household			Change over	
	2014	2005	Control	2005	Control
Draught Animals	0.11	0.50	0.04	(-)78.00	175.00
Milch Animals	0.86	1.06	0.95	(-)18.86	(-)9.47
Young stock	0.24	0.64	0.39	(-)62.50	(-)38.46
Sheep & goats	0.25	0.17	0.05	47.05	400.00
Total	1.46	2.37	1.43	(-)38.39	2.10

Annex-3.25: Value of Livestock Owned

Type of Livestock	Rs./ Farm			Change over	
	2014	2005	Control	2005	Control
Draught Animals	1136	680	318.0	67.05	257.23
Milch Animals	12104	5623	13525	53.54	(-)10.51
Young stock	774	737	1581	5.02	(-)51.04
Sheep & goats	663	207	250	220.29	165.20
Total	14737	7247	15674	103.35	(-)5.98

Annex-3.26: Number of Households Owning Crossbred Livestock

Type of Livestock	Percentage of HH			Percentage		
	2014	2005	Control	2014	2005	Control
Draught Animals	50.00	15.00	66.67	2.16	10.34	2.50
Milch Animals	31.75	61.68	76.74	21.60	42.54	41.25
Young stock	66.67	60.00	76.47	2.16	41.38	16.25
Sheep & goats	0	0	50.00	0	0	0
Total Households	92	145	80	100.00	100.00	100.00

Annex-3.27: Monthly Household Consumption Pattern

(Kg. /HH)

Items	Quantity			Change over	
	2014	2005	Control	2005	Control
Rice	35.0	32.71	32.4	7.00	8.02
Wheat	39.95	31.92	33.5	25.15	19.25
Maize	0.89	14.25	0.7	(-)93.75	27.14
Barley	0	13.44	0	0	0
Pulses	5.93	4.82	4.8	23.03	23.54
Vegetables	14.64	24.28	13.5	(-)39.70	8.44
Fruit	6.65	16.25	4.5	(-)59.08	47.77
Edible oil	3.44	3.09	3.9	11.32	(-)11.79
Milk	15.85	51.88	26.3	(-)69.45	(-)39.73
Sugar	3.98	5.23	3.5	(-)23.90	13.70
Salt	1.68	1.67	1.6	0.59	5.00
Tea	0.55	0.38	0.41	44.74	34.15

Annex-3.28: Monthly Consumption Expenditure

(Rs./Month/HH)

Items	Value/HH			Change over	
	2014	2005	Control	2005	Control
Rice	1565.87	391.7	1190.45	299.76	31.54
Wheat	867.61	295.2	898.83	193.90	(-)3.47
Maize	10.05	89.39	14.84	(-)88.75	(-)32.28
Barley	0	250.0	0	0	0
Pulses	327.72	140.88	331.28	136.62	(-)1.07
Vegetables	509.27	209.24	457.12	143.39	11.41
Mutton	523.47	231.29	364.95	126.32	43.44
Fruit	328.2	193.86	198.03	69.29	65.73
Edible oil	426.14	185.50	300.32	129.72	41.90
Milk	681.41	545.65	807.80	24.88	(-)15.65
Sugar	119.79	104.66	124.98	14.45	(-)4.15
Salt	21.46	18.52	28.60	15.87	(-)24.97
Tea	210.32	65.88	170.63	219.24	23.26
Tobacco	256.35	251.49	128.76	1.93	99.09
Liquor	267.93	259.53	133.41	3.23	100.83
Sub. Total	6115.6	3232.8	5150	89.17	18.76
Clothes	638.76	399.0	513.57	60.09	24.38
Footwear	448.45	209.33	409.04	114.23	9.63
Education	1015.22	478.95	913.27	111.96	11.16
Medicines	332.00	181.21	385.07	83.21	(-)13.78
Marriage etc.	1137.11	239.26	354.05	375.26	221.17
Sub. Total	3571.54	1507.75	2575	136.87	38.70
Total	9687.13	4740.54	7725	104.34	25.40

Annex-3.29: Changes in Income Level of Project affected families in RHEP

Sr. No.	Name of PAPs*	Village	Baseline Income	Baseline Income at Current Level	Income in 2014 Survey	Change in Income (Rs.)	Change in Income (%)
1		Koyal	30350	60679	86500	25821	43
2		Koyal	35548	71071	96000	24929	35
3		Bayal	148200	296296	886900	590604	199
4		Dutt-Nagar	400000	799720	950000	150280	19
5		Koyal	38550	77073	120000	42927	56
6		Dutt-Nagar	140000	279902	1200000	920098	329
7		Randal	255798	511417	630000	118583	23
8		Koyal	44900	89769	205000	115231	128
9		Bayal	26000	51982	112050	60068	116
10		Bayal	204350	408557	849400	440843	108
11		Koyal	254700	509222	530000	20778	4
12		Avery	77700	155346	249050	93704	60
13		Bayal	26340	52662	112000	59338	113
14		Bayal	149800	299495	463000	163505	55
15		Bayal	107196	214317	267330	53013	25
16		Koyal	111000	221922	200000	-21922	-10
17		Bayal	173248	346375	410000	63625	18
18		Koyal	107700	215325	375000	159675	74
19		Bayal	37000	73974	182600	108626	147
20		Duttnagar	260000	519818	1680000	1160182	223
21		Bayal	165470	330824	416000	85176	26
22		Bayal	116000	231919	725000	493081	213
23		Duttnagar	42200	84370	128000	43630	52
24		Koyal	38000	75973	80000	4027	5
25		Bayal	162000	323887	630000	306113	95
26		Bayal	21300	42585	60000	17415	41
27		Bayal	48500	96966	358400	261434	270
28		Avery	36720	73414	131000	57586	78
29		Koyal	42000	83971	350000	266029	317
30		Bayal	48150	96266	98100	1834	2
31		Koyal	163600	327085	250000	-77085	-24
32		Bayal	313860	627500	490000	-137500	-22
33		Bayal	178700	357275	1150000	792725	222
34		Koyal	48500	96966	164000	67034	69
35		Bayal	104000	207927	285000	77073	37
36		Bayal	28400	56780	87000	30220	53
37		Dutt-Nagar	488000	975658	900000	-75658	-8
38		Bayal	21996	43977	60900	16923	38
39		Bayal	31600	63178	92200	29022	46
40		Bayal	77450	154846	135000	-19846	-13
41		Bayal	265200	530214	510000	-20214	-4
42		Avery	62096	124149	141900	17751	14
43		Bayal	52880	105723	172900	67177	64
44		Bayal	26350	52682	49400	-3282	-6

45		Bayal	100000	199930	210000	10070	5
46		Bayal	122000	243915	400000	156085	64
47		Bayal	34500	68976	265000	196024	284
48		Koyal	236000	471835	1650000	1178165	250
49		Koyal	41000	81971	121000	39029	48
50		Koyal	22500	44984	70000	25016	56
51		Koyal	96000	191933	250500	58567	31
52		Bayal	104500	208927	238400	29473	14
53		Bayal	95850	191633	196500	4867	3
54		Duttnagar	160400	320688	300000	-20688	-6
55		Duttnagar	51200	102364	120000	17636	17
56		Bayal	34400	68776	142000	73224	106
57		Koyal	11200	22392	29000	6608	30
58		Bayal	270900	541610	1150000	608390	112
59		Bayal	7600	15195	25000	9805	65
60		Bayal	146500	292897	1075000	782103	267
61		Bayal	31500	62978	85000	22022	35
62		Koyal	135600	271105	340000	68895	25
63		Bayal	33000	65977	92450	26473	40
64		Koyal	83200	166342	320000	153658	92
65		Bayal	65520	130994	297000	166006	127
66		Bayal	82000	163943	175000	11057	7
67		Duttnagar	101500	202929	200000	-2929	-1
68		Bayal	40960	81891	127500	45609	56
69		Bayal	168300	336482	380000	43518	13
70		Dutt-Nagar	693998	1387510	1650000	262490	19
71		Bayal	51000	101964	383450	281486	276
72		Koyal	33000	65977	77000	11023	17
73		Bayal	121548	243011	550800	307789	127
74		Bayal	62000	123957	250000	126043	102
75		Bayal	60910	121777	125600	3823	3
76		Bayal	86000	171940	467000	295060	172
77		Koyal	96800	193532	192500	-1032	-1
78		Bayal	72500	144949	250000	105051	72
79		Koyal	278400	556605	626000	69395	12
80		Bayal	60000	119958	258900	138942	116
81		Bayal	12350	24691	50500	25809	105
82		Bayal	172900	345679	327950	-17729	-5
83		Dutt-Nagar	249999	499823	950000	450177	90
84		Avery	20400	40786	214000	173214	425
85		Bayal	212500	424851	393700	-31151	-7
86		Bayal	228300	456440	945000	488560	107
87		Koyal	38300	76573	154500	77927	102
88		Averi	26500	52981	64500	11519	22
89		Bayal	51000	101964	244000	142036	139
90		Dutt-Nagar	340000	679762	862000	182238	27
91		Bayal	197248	394358	869200	474842	120

***Note:** The names of the individual head of families are excluded to ensure confidentiality.

Annex-3.30: Changes in Asset Ownership among those whose Real Incomes are declined

No.	Sr. No. as in Annex-3.29	Name of PAPs*	Village	Number of Assets Owned at Baseline (2005)	Number of Assets Owned during Impact Evaluation (2014)	Increase in Asset Ownership (in %)
1	16		Koyal	3	7	133.3
2	31		Koyal	4	6	50.0
3	32		Bayal	4	5	25.0
4	37		Dutt-Nagar	3	4	33.3
5	40		Bayal	5	4	-20.0
6	41		Bayal	2	4	100.0
7	44		Bayal	3	4	33.3
8	54		Dutt Nagar	3	6	100.0
9	67		Dutt Nagar	3	7	133.3
10	77		Koyal	1	5	400.0
11	82		Bayal	1	4	300.0
12	85		Bayal	2	7	250.0

***Note:** The names of the individual head of families is excluded to ensure confidentiality.

List of Assets Owned: Television; Refrigerator; Two Wheeler; Four Wheeler; Cooking Gas, Washing Machine; Computer; and 8 cell phone

Annex-3.31: PAPs Perception on Changes in Living Standards

No	Level of Perception	Number	Percentage
1	Significantly improved	35	38.04%
2	Improved	33	35.89%
3	More or less same	22	23.91%
4	Declined	0	0.00%
5	No response	2	2.16%
	Total	92	100.00

Annex-5.1: Details of works completed in affected area under R&R plan of RHEP

S.No.	Activities	Achievement	
		Physical (no. of works / PAFs etc.)	Financial (Expenditure incurred-Rs. in lacs)
1	Construction of Providing of Streetlight in Bayal village, Panchayat Gadej.	1	7
2	Construction / Renovation of masonry channel (Kuhl) at village Bayal at a length of 800-1400 meter.	1	4.9
3	Providing and fencing of CGI Sheets roofing in community hall at Bayal.	1	0.7
4	Construction of Playground of Middle school by providing of dozer Panchayat Gadej.	1	2.07
5	Providing of streetlight in Bayal village near community centre Panchayat Gadej.	1	0.08
6	Construction / Renovation of masonry channel (kuhl) at village Bayal at a length of 0-800 meter, Panchayat Gadej.	1	4.79
7	Repair / construction of intake of kuhl at Bayal Panchayat Gadej	1	6.94
8	C/o pucca path / steps from village Koyal to cremation ground of village Koyal Panchayat Gadej.	1	7.6
9	Construction of pucca path / steps from road Kunni to Kazo near Jullah to village Badari Panchayat Kushwa.	1	5.37
10	C/o pucca path / steps from village Upper Badhari to existing path at village lower Badhari 523.4m long at Panchayat Kushwa.	1	3.38
11	C/o playground and P/F of chain link fencing around Govt. Primary School Bandthana Panchayat Kushwa.	1	5.17
12	Repair of foot bridge to Samej across the river Satluj near Nathpa Jhkari Power House at Jhakri.	1	2.27
13	Pucca Path / Steps from kunni bridge to village Bakhan Panchayat Kharga.	1	3.94
14	C/o playground and providing of chain link fencing around playground at GPS Nal Panchayat Kharga.	1	7.37
15	C/o pucca path / steps from vill. Damahali to vill. Bari Panchayat Bari.	1	6.05
16	Providing & fixing of street light at village Brow Gram Panchayat Poshana.	1	0.3
17	C/o class room & fencing at Govt. Primary School Brow Panchayat Poshana.	1	4.17
18	C/o playground & P/F chain link fencing at Govt. Primary School Chatti Panchayat Tunan.	1	18.02
19	C/o Basket Ball Court, Badminton Court and stores in Sr. Secondary School Duttnagar Panchayat Duttnagar.	1	5.82
20	C/o retaining wall & P/F chain link fencing around the playground of Govt. Primary School Nirsu Panchayat Duttnagar.	1	4.17
21	Providing Cricket Kits to Panchayats falling under Rampur H.E.P	1	1.5
22	Providing of fund for Boddhi Diwali fair at Nirmand.	1	2.15
23	Providing of fund for Rajmata Shanti Devi Memorial volleyball tournament at Nirmand.	1	1.75
24	Providing of funds to SDM Anni for promoting sports activities in schools at Distt level.	1	2
25	Conduction of workshop on RTI Act 2005	104 participants	6
26	Distribution of toilet seats and essential materials to the residents of Project affected panchayat of RHEP	2191 villagers	23.71
27	Construction of village road & Pacca path / steps from vill. to cremation place vill. Averi Panchayat Bahawa	1	5.55
	TOTAL		204.77

Annex-5.2: Detail of Community Development done by RHEP before commencement LADA

Sr. No.	Head	Name of Panchayat	Amount Rs. Lac	Nos. of Works
1	Pucca Path	Gram Panchayat Bhawa (Averi)	5.55 .	01
		Gram Panchayat Gadej (Koyal)	7.60	01
		Gram Panchayat Kushwa (Badari)	8.75	02
		Gram Panchayat Kharga (Bakhan)	3.94	01
		Gram Panchayat Bari (Damehli)	6.0 5	01
		Total	31.89	06
2	Const. of Kuhl	Gram Panchayat Gadej (Bayal)	16.63	03
3	C/o Street lingshts	Gram Panchayat Gadej	7.08	02
		Gram Panchayat Poshna	0.30	01
		Total	7.38	03
4	C/o Play Ground & Fencing , R/Wall & / Wall and boundary Wall	Gram Panchayat Gadej	2.77	02
		Gram Panchayat Kharga	7.37	01
		Gram Panchayat Duttnagar	9.99	02
		Gram Panchayat Tunan	18.02	01
		Total	38.15	07
5	C/o Foot Bridge Jhakri (Repair)	Gram Panchayat Jhakri	2.27	01
6	C/o Class Room	PAA	62.00	01
7	Distribution Toilets sheet to PAF	PAA	23.71	01
8	Support & other Welfare activities	PAA	13.40	05
		Total (A)	142.77	27
9	C/o Steel Bridge	Gram Panchayat Jhakri	150.00	01
		Gram Panchayat Bayal	1162.00	01
10	Providing Boxing Ring	Rampur College	1.50	01
11	C/o Road	Bajeer Bawali to Bayal	200.00	01
12	C/o Hospital	Bayal	493.00	01
		Total (B)	2006.49	05
		G.Total (A+B)	2149.27	05

Annex-5.3: Detail of Expenditure of Works Sanctioned under LADA Scheme in district Kullu

Sr. No	Head	Name of Panchayat	Amount in Rs	No. of works
1	Pucca Path	Gram Panchayat Bari	600000	03
		Gram Panchayat Bahawa	603000	03
		Gram Panchayat Gadej	3812000	09
		Gram Panchayat Kharga	2600000	05
		Gram Panchayat Poshna	2090000	09
		Gram Panchayat Tunan	1260000	03
		Total	11303000	32
2	Const. of Kuhl	Gram Panchayat Gadej	1342000	03
3	Retaining Wall & Boundary Wall	Gram Panchayat Bari	200000	01
		Gram Panchayat Tunan	289000	02
		Gram Panchayat Gadej	500000	01
		Total	989000	04
4	Const of Play Ground and Fencing & Stadium	Gram Panchayat Bari	200000	01
		Gram Panchayat Bahawa	800000	02
		Gram Panchayat Kharga	400000	01
		Gram Panchayat Tunan	200000	01
		Total	1600000	05
5	C/o Road	Gram Panchayat Bahawa	500000	01
6	C/o drinking water line and Tank	Gram Panchayat Bahawa	200000	01
		Gram Panchayat Tunan	500000	02
		Total	700000	03
7	Const. & Repair Building & Temples	Gram Panchayat Bahawa	580000	02
		Gram Panchayat Gadej	900000	02
		Gram Panchayat Kharga	850000	02
		Gram Panchayat Poshna	2600000	05
		Gram Panchayat Tunan	300000	01
		Total	5230000	12
8	C/o Foot Bridge	Gram Panchayat Gadej	475000	01
		Gram Panchayat Kushwa	5996000	01
		Gram Panchayat Tunan	2500000	01
		Total	8971000	03
9	Const. of Toilets	Gram Panchayat Gadej	262000	01
10	Const. of Shamshan Ghat	Gram Panchayat Poshna	400000	01
		Total (A)	31297000	64

Annex 5.4: Detail of Expenditure of Works sanctioned under LADA Scheme in district Shimla

Sr. No	Head	Name of Panchayat	Amount Rs	Nos. of works
1	C/O Rooms	Gram Panchayat Duttanagar	1200000	01
2	C/O Fencing & Play ground	-do-	2650000	06
3	C/O Pucca Path	-do-	900000	08
4	Repair of Nirsu Temple	-do-	600000	02
5	C/O Road	-do-	700000	02
6	C/O Drainage	-do-	100000	01
7	C/O Brest Wall	-do-	.50000	01
8	C/O Community Bhawan	-do-	100000	01
		Total	6300000	22

Annex 5.5: Impact of Community Development Works carried out by RHEP since 2009

Activity	Activity components	Purpose	Perceived benefits	Activity impact	
				Social	Economic
Health	Construction of hospital	Provision of health facilities	Easy consultations, free medicines	Better health, low period of illness, sense of wellbeing	Improved work efficiency
Drinking water	Pipe lines, storage tanks	Improve water supply	Higher availability	Improved standard of living	Time saving, low incidence of water borne diseases, reduction of drudgery for women
Sanitation	Distribution of toilet seats and other materials	To improve the sanitation and inculcate the habit of cleanliness	Clean surroundings, Improved health	Habit of cleanliness and improved sanitation	Time savings, low incidence of diseases
Street lighting	Providing street light at Bayal	Easy and safe movement, protection against crimes	Satisfaction of villagers	Low crime rate, safer villages	Long working hours possible
Connectivity	Foot paths, foot bridges etc	Easy and safe movement of persons and goods	Efficient carriage/ transportation	Easy and safe movement, cleanliness	Time saving, lower transportation cost
Community centre	Construction of buildings	Facilitate public meetings and provide platform for interactions	Public functions, household celebrations will be facilitated	Improved status of village, facilities for social functions	Community interactions for taking care of local developmental issues
Mahila and Yuvak Mandal buildings	Construction of buildings	Overall development of women and youth	Introduction of income generation activities, constructive use of free time	Meeting point facilitating interactions, exchange of ideas and information	Training and demonstrations
Irrigation	Construction and repair of kuhls	To reduce water losses and to augment irrigated area	Improved crop productivity	Higher standard of living	Shift in cropping pattern toward cash crops, higher returns
Temples	Construction, repair and improvements	To respect religious sentiments of villagers	Satisfaction of villagers	Religious satisfaction, improved safety	Better aesthetics, long life
Play grounds	Construction, improvements, fencing	Promotion of sports, safety	Development of sportsman spirit, better performance in tournaments	Satisfaction of villagers, better equipped schools and villages	Healthy and efficient workers

Annex-5.6: Benefits received by Sampled PAF

Benefits	Gender	Category			Total
		Landless	Land	Land & House	
Merit scholarship	Males	0	3	0	3
	Females	1	1	0	2
Technical Education	Males	2	7	3	12
	Females	0	3	0	3
Income Generation scheme	Males	4	16	4	24
	Females	4	3	1	8
House on rent	Males	2	0	1	3
	Females	0	0	0	0
Contractor	Males	0	3	0	3
	Females	0	0	0	0
Vehicle hire	Males	0	1	0	1
	Females	0	0	0	0
Total		13	37	9	79

About the Authors

Dr. Ranveer Singh is Officer Incharge/Head at Agro-Economic Research Centre, Himachal Pradesh University, Shimla. He has worked as Principal Investigator for the projects financed by World Bank, ICIMOD, GTZ, USAID, Ministry of Agriculture, Government of India and government of Himachal Pradesh. His research and consulting interests focus on agriculture and rural development policies, agricultural marketing, natural resources management, project evaluation and studies of resettlement and rehabilitation of displaced people under hydro electric projects. He nominated as member of various state level Committees and presently Member of External Committee of Experts constituted by the SJVNL for Undertaking impact study of Corporate Social Responsibility (CSR) & Sustainable Development (SD) Projects. He is author of two books and 70 research papers published in reputed national and international journals. He has completed about 60 research projects for national and international organizations. He has guided fifteen students of Ph. D and M. Phil in Agricultural Economics.

Dr. C.S. Vaidya is a senior economist working with the Agro Economic Research Centre of Himachal Pradesh University, Shimla for last 32 years and has very good knowledge of diverse agro-climatic and cultural conditions of mountainous areas. He has been instrumental in successful completion of many studies conducted for international agencies like ICIMOD, USAID, GTZ, FAO and World Bank, etc. Dr. Vaidya has conducted numerous studies for Government of Himachal Pradesh and Ministry of Agriculture, GOI on such diverse issues such as livelihood strategies, cost of production, marketing management, project impact evaluation etc. His research focuses on evaluation and monitoring of development interventions and resettlement and rehabilitation policies of project affected population, predominantly hydropower projects. He is an expert in conducting cost of cultivation studies for field and horticultural crops, project evaluation, impact studies and studies on policy analysis and has deep interest in organic farming and has worked on national level studies on this subject. Dr. Vaidya's work in this field has led to publication of a book on environmental and economic aspect of organic farming. Conducting field studies in marginalized communities is one of his strong points. He has number of research reports, research articles published in national and international journals to his credit. He is also guiding Ph.D. and M.Phil. students of department of Economics of Himachal Pradesh University.

AGRO-ECONOMIC RESEARCH CENTRE
HIMACHAL PRADESH UNIVERSITY
SHIMLA-171005 (INDIA)