# MEASUREMENT OF SOCIO-ECONOMIC IMPACT OF SUSTAINABLE LIVELIHOODS OF BARANI AREAS PROJECT (SLBAP)

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**ABSTRACT:** The authors evaluated a complex donor funded project titled "Sustainable Livelihood in Barani Areas Project (SLBAP)" to measure its socio-economic impact. Project was initiated in 2005 with a costs of Rs. 3516 million (US$ 58.6) with the help of Asian Development Bank (ADB) with an objective to alleviate poverty in Barani areas of Punjab. Project was complex in nature with a large number of participants & beneficiaries, implemented in 10 Barani districts, with a variety of components including medium scale intervention (MSI), small scale intervention (SSI), Skill development, Microfinance and literacy along with beneficiary share & participation. Project was implemented by Project Management Unit (PMU), Agency for Barani Area Development (ABAD) along with participation of ten different government agencies in its execution. For impact assessment, a very comprehensive methodology was designed to thoroughly evaluate its socio economic change on beneficiaries and general public of the area. Results and recommendations are drawn accordingly and shared in the last section of this paper which may be used for policy planning and decision making in the Province.

**Key words:** Barani Areas, Punjab (Pakistan), Poverty Alleviation in Punjab, DGM&E, P&D Department, Impact Evaluation, SLBAP.

## INTRODUCTION

In Punjab, 36.3 % of the rural population lives below the poverty line. In rural areas agriculture is the main source of livelihood and employment. High level of poverty in rural areas is closely linked with low growth of the agriculture sector over the past decade. Growth in agricultural gross domestic product has been below 5% for most of the 1990s and due to a prolonged and serious drought, contracted in 2001 and 2002 (PC-I). As might be un-irrigated, or Barani areas suffered much more severely as a result of the drought than the canal-irrigated areas. Poor yields or complete crop failures forced many farmers into debt and to abandon their lands during this period. Barani areas mean dry land areas which are not served by canal irrigation. Without canal irrigation, agricultural production is precarious and poverty is pervasive. Punjab Barani Tract is spread over 13 district of Punjab. Its total population is 19.57 million as per censuses of 1998. Water and wind erosion severely affects this area. Wind erosion is a severe problem in the southern parts whereas water erosion affects Northern Punjab. Estimates reveal a loss of 12,000 acres to 30,000 acres per year (Official website of P&D, Punjab). Barani areas are both low productivity and high risk areas as far as agriculture is concerned. The details of districts in Punjab Barani Tract are shown in the following figure 1.

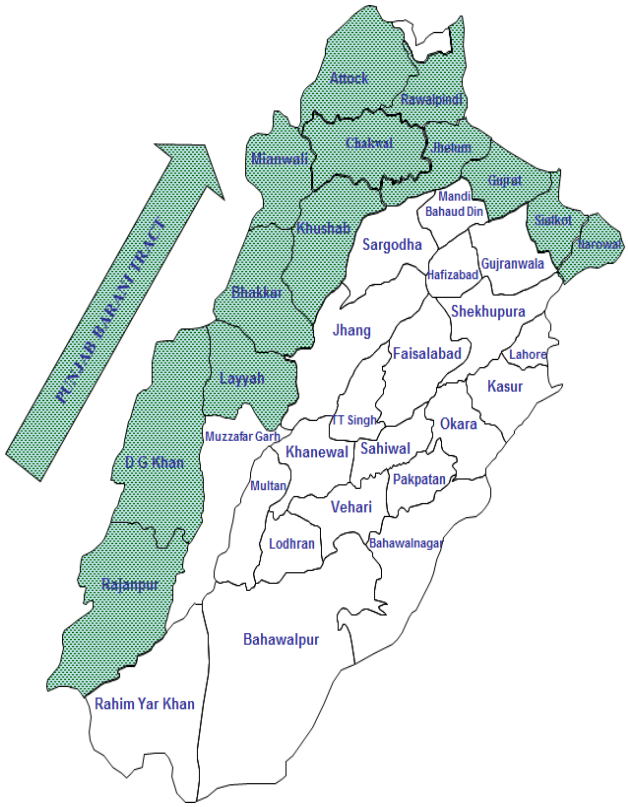


**Figure 1: Punjab Barani Tract**

Sustainable Livelihood in Barani Areas Project (SLBAP) was initiated in 2005 to address these issues in Punjab with the help of Asian Development Bank (ADB). Project was sponsored by Agency for Barani Areas Development (ABAD), Planning and Development (P&D) Department, Government of the Punjab (GoPb). It was executed through Project Management Unit (PMU) worked under ABAD with the assistance of District Governments, Forest Department, Agriculture, Livestock and Dairy Development, Social Welfare Department, Communication & Works, Literacy & Non Formal Basic Education, Local Government & Community Development, Community Citizen Boards (CCBs), Nongovernmental Organizations (NGOs), Community Based Organizations (CBOs), Community Organizations (COs), Women Community Organizations (WCOs).Total cost of project was Rs.3516 (US$ 58.6) million with the following breakup. Item wise breakup is shown in figure 2;

- Donor (ADB) Share Rs.2460 (US$ 41) million
- Government of Punjab Share Rs.516 (US$ 8.6) million
- Beneficiary Share Rs.540 (US$ 9) million

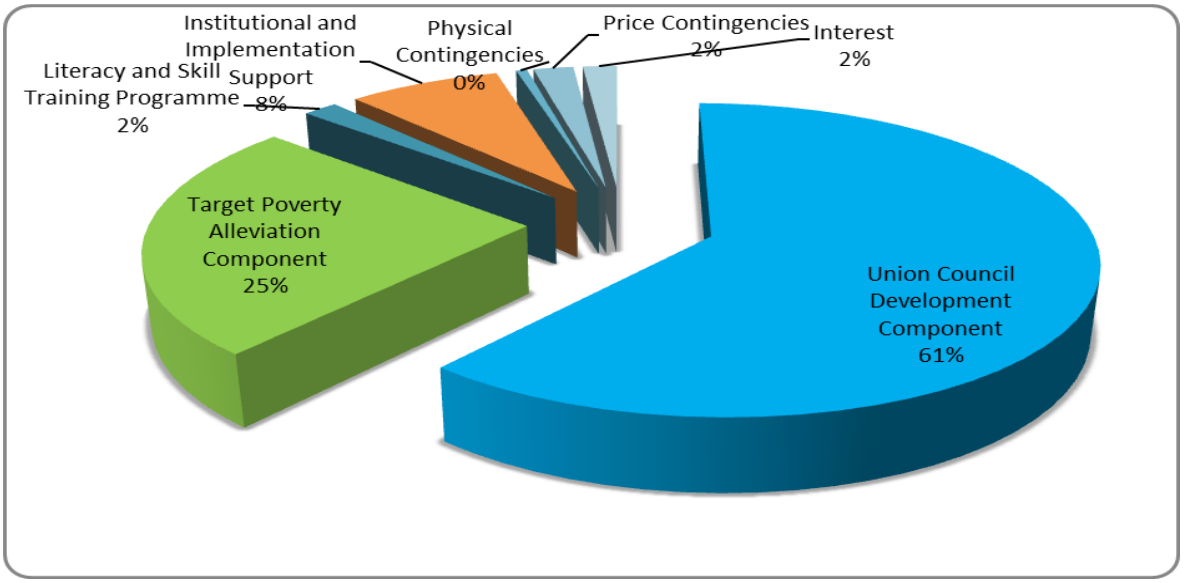


**Figure 2: Project Cost Breakup**

The overall goal/objective of the project was poverty reduction in the rain fed areas of the Punjab through improved livelihoods opportunities, training, literacy improvement and improved governance. As the Project is designed with a process approach, the project provided support to beneficiaries according to the prioritized felt need and demand driven interventions. Objectives includes; to improve socioeconomic status of poor population through better natural resources management through improved productive, physical, and social infrastructure identified by the elected Union Councils (UCs) and the members of civil society. Project has wide range of indicators but in this paper indicators referring to socio-economic conditions have been considered.

There are different types of project evaluations. Impact evaluation is concerned with the meaning of employing counterfactual analysis - that is, measuring the socio-economic change taken place due to intervention. The techniques for analyzing the counterfactual are most often brought to bear on focus on final welfare outcomes (Khandker et. Al., 2010). Variants of impact evaluation include randomized evaluations, propensity score matching, double-difference methods, use of instrumental variables, and regression discontinuity and pipeline approaches. Each of these methods involves a different set of assumptions in accounting for potential selection bias in participation that might affect construction of program treatment effects (white, 2006).

## MATERIAL AND METHOD

The SLBAP is an umbrella type project comprising multi-dimensional rural development interventions including Medium Scale Interventions (MSI's), Small Scale Intervention (SSI's), Off Farm Training (OFIG) and Literacy Through Skill Training (LTST) and Micro Finance (MF). In addition, the project area was well spread out i.e. 10 districts from Barani Areas. Therefore, a comprehensive methodology for impact evaluation was developed to envelope all socio-economic conditions of beneficiaries of the project. Union Councils (UCs') were taken as unit of analysis as. There were total 206 union councils in project area out of

which 12 UCs (5% of total 206 UC's ) were selected at random for study and analysis. One tehsil from each district was randomly selected. The randomly selected tehsils are shown in bold in table 1 along with selected UCs through systematic random sampling.

**Table 1: Random Selection of Tehsils and UCs**

| Sr. | District | Name Of Tehsil | Number Of UCs | Selected UCs |
|---|---|---|---|---|
| **1.** | Rawalpindi | **Kotli Sattian** | **9** | Waghal |
| **2.** | Jhelum | **Jhelum including Dina** | **18** | Boken |
| **3.** | Chakwal | **Choa Saidan Shah** | **7** | Basharat |
| **4.** | Gujrat | **Sarai Alamgir** | **7** | Karyala |
| | | Kharian | 28 | - |
| **5.** | Sialkot | **Pasrur** | **23** | Prail & Jassoran |
| **6.** | Narowal | **Narowal** | **29** | Manak & Mehlowala |
| **7.** | Khushab | **Khushab** | **19** | Phadhrar |
| | | Noorpur | 10 | - |
| **8.** | Mianwali | Mianwali | 12 | - |
| | | **Isakhel** | **13** | TollaBangi Khel |
| | | Piplan | - | - |
| **9.** | Bhakkar | Bhakkar | 9 | - |
| | | Darya Khan | 1 | - |
| | | Kalurkot | 2 | - |
| | | **Mankera** | **6** | Pattibalnda |
| **10.** | Layyah | **Layyah** | **6** | Bait Wasawa |
| | | Choubara | 5 | - |
| | | Karor | 2 | - |

To have representation of every selected Tehsil, Systematic Random Sampling (SRS) method was applied separately for each Tehsil. Union council of a tehsil was selected using random number generator. In those districts density of intervention was high, two union councils were selected. 1st union council was selected as mentioned before, however, for selection of 2nd union council interval was taken by dividing the total number of union councils in the Tehsil by 2 e.g. in case of Norawal; Manak and Mehlowala.

**Impact Evaluation Methodology:** A comprehensive impact evaluation methodology was established for gauging the impact of the project. Three different approaches were used for the purpose of impact evaluation viz. "Pre-post (PP)", "Simple Difference (SD)" and "Difference in Difference (DnD)" approach. For evaluating the project impact whilst two groups i.e. "Treatment Group (TG)" and "Control Group (CG)" were used. TG refers to the direct beneficiaries of the project whereas CG were those which were not directly or indirectly linked with project activities or impact. Reason for selecting same Union Council for Treatment and Control group was to make the exercise cost and time effective. The Pre-post approach measures impact of the project before and after project in the indicators of TG only. Simple Difference approach calculates difference between treatment and control group in post project scenario. On the other hand, DnD approach, the most comprehensive approach, takes differences between treatment and control group at both pre and post project.

**Selection of Socio-Economic Indicators:** Indicators are critical in gauging project performance as they provide evidence of change/ progress due to project. As the project was initiated to improve the sustainable livelihood of Barani areas of Punjab, therefore, several indicators in accordance with project's objective were selected shown below in Table 2.

**Questionnaire Design:** Questionnaires are often the best way of gathering information and views. During development of questionnaire, socio-economic indicators of the project were kept in mind. A characteristic of the local population was taken into account for getting maximum information in easy and understandable question. Mostly the people living in these areas were in lowest strata and illiterate having low living standards. Keeping these aspects in mind the precise and easy and understandable questionnaire was developed.

**Pilot Field Survey & Finalization of Questionnaire:** In order to evolve real output of the research, a pilot visit to District Narowal was conducted on 9$^{th}$ March, 2012. During the visit MSIs and SSIs were physically examined and input from the beneficiaries of Micro Finance, OFIG and LTST was taken through interview. Based on the recommendations of pilot field visit list of impact

indicators were narrowed down to only the most critical indicators to make study more specific.

**Data Collection as per Survey design:** Survey design and Data collection is very important in M&E process. Barani Area was divided into three components as mentioned as A, B and C in figure 3. Keeping in view the scope of work, project limitation, resource availability, data was collected through designed questionnaire as per designed survey methodology. In this regard, three teams were formed to collect data in parallel from three different locations (A, B & C) as shown in figure 3. A summary of the selected schemes and beneficiaries with respect to each union council is mentioned in the table below in table 3.

**Table 2: Project Impact Indicators**

| Sr. | Indicator | Description |
|---|---|---|
| **(A) Food / Nutritional Value** | | |
| 1 | Meat in Take | No. of days meat is taken in meals per week by respondents |
| **(B) Education** | | |
| 2 | School Education | No. of School going Children (above 5 years) in family of respondent |
| **(C) Transport Ownership** | | |
| 3 | Car | No. of respondent owning car |
| 4 | Tractor | No. of respondent owning Tractor |
| 5 | Motor Cycle | No. of respondent owning Motor Cycle |
| 6 | Cycle | No. of respondent owning Cycle |
| 7 | Animal Cart | No. of respondent owning Animal Cart |
| **(D) Drinking Water** | | |
| 8 | Mineral Water | No. of respondent using mineral water for drinking |
| 9 | Filtered Water | No. of respondent using filtered water for drinking |
| 10 | Boiled Water | No. of respondent using boiled water for drinking |
| 11 | Hand Pump Water | No. of respondent using hand pump water for drinking |
| 12 | Well and Rain Water | No. of respondent using well and rain water for drinking |
| 13 | Other sources | No. of respondent using water from other sources |
| **(E) Toilet Type** | | |
| 14 | WC Toilet | No. of respondent using WC toilet |
| 15 | Indian Toilet | No. of respondent using Indian toilet |
| 16 | Traditional Toilet | No. of respondent using traditional toilet |
| 17 | Open Toilet | No. of respondent using open space for toilet purpose |
| **(F) Household Possessions** | | |
| 18 | Air Conditioner | No. of respondent possessing AC |
| 19 | Fridge | No. of respondent possessing Fridge |
| 20 | Geyser | No. of respondent possessing Geyser |
| 21 | Washing Machine | No. of respondent possessing Washing Machine |
| 22 | Television (TV) | No. of respondent possessing TV |
| 23 | Computer | No. of respondent possessing Computer |
| 24 | Iron | No. of respondent possessing Iron |
| 25 | Mobile | No. of respondent possessing Mobile |
| **(G) House Ownership** | | |
| 26 | Self Owned | No. of respondent owning house personally |
| 27 | Family Owned | No. of respondent having family owned |
| 28 | Rented | No. of respondent having rented house |
| **(H) Type of House Owned** | | |
| 29 | Pakka House | No. of respondent living in pakka house |
| 30 | Mix House (Composite House) | No. of respondent living in mix house (composite house) |
| 31 | Kacha House | No. of respondent living in kaccha house |
| **(I) Literacy Through Skill Training (LTST), Off Farm Income Generation (OFIG)** | | |
| 32 | Reading Skills | Beneficiary's ability to read a sentence |
| 33 | Writing Skills | Beneficiary's ability to write a sentence |
| 34 | Skill level after Training | Beneficiaries' input on level of skill attained |
| 35 | Employment Status | Current Employment status of the beneficiaries |

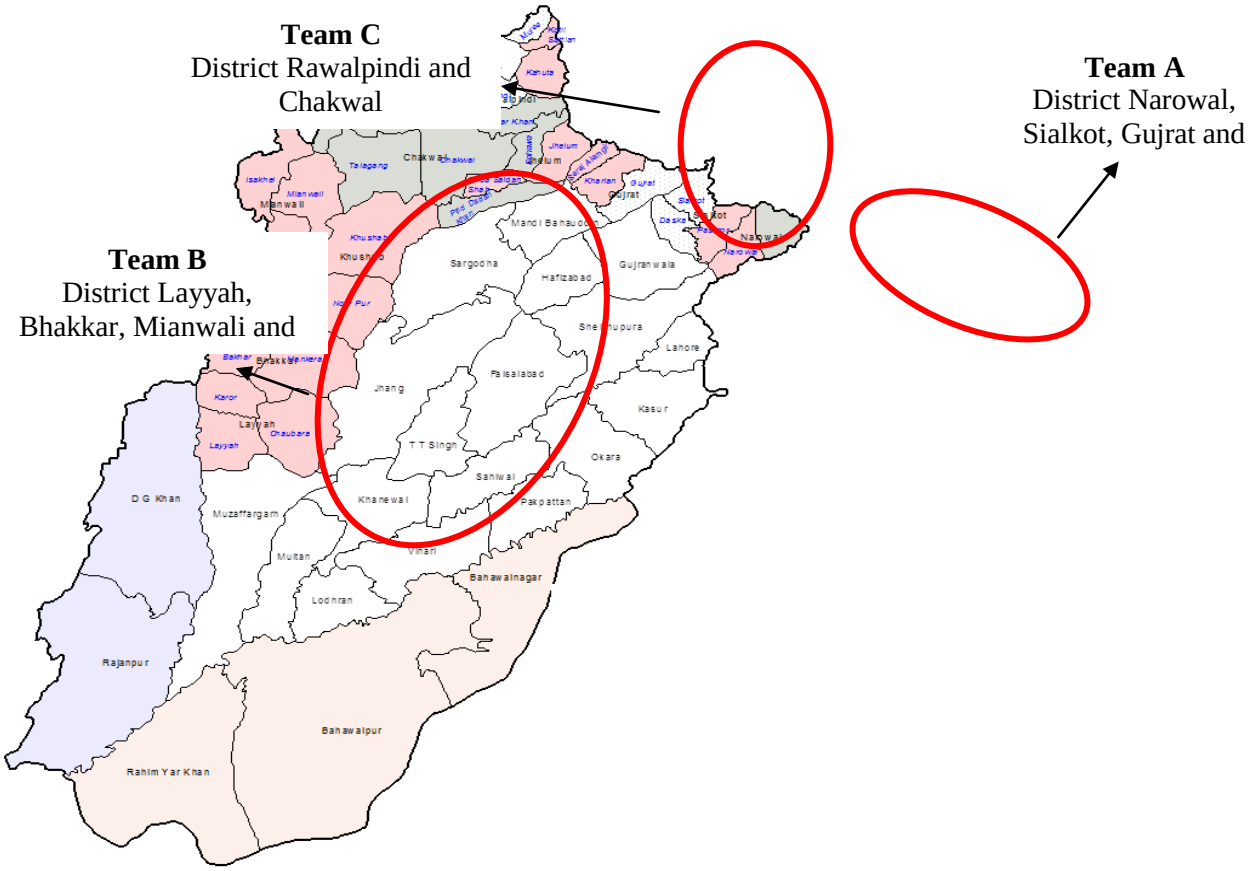


**Figure 3: Site Visit Plan**

**Table 3: Summary of the selected schemes and beneficiaries with respect to each UC**

| Sr. | Name of UCs | No. of Selected Schemes | | No. of Selected Beneficiaries | | |
|---|---|---|---|---|---|---|
| | | MSIs | SSIs | OFIG | LTST | Micro Finance |
| 1. | Basharat | 2 | 11 | 0 | 20 | 30 |
| 2. | Biat Wasawa | 3 | 3 | 40 | 40 | 20 |
| 3. | Boken | 3 | 7 | 10 | 40 | 20 |
| 4. | Jassoran | 3 | 6 | 10 | 40 | 20 |
| 5. | Prail | 3 | 2 | 30 | 0 | 20 |
| 6. | Karayala | 3 | 7 | 10 | 40 | 30 |
| 7. | Mahlowal | 3 | 4 | 0 | 0 | 30 |
| 8. | Manak | 4 | 4 | 30 | 20 | 20 |
| 9. | Patti Balanda | 4 | 7 | 20 | 20 | 20 |
| 10. | Phadrar | 4 | 8 | 10 | 30 | 30 |
| 11. | Tolla Bangi Khail | 1 | 10 | 0 | 30 | 30 |
| 12. | Waghal | 3 | 6 | 40 | 30 | 30 |
| | **TOTAL** | **36** | **75** | **200** | **300** | **300** |

## RESULTS AND DISCUSSION

Findings and conclusions are based on data analysis resulted from field visits and interviews of the project beneficiaries. It is important to note that the inferences mentioned below are on the basis of visits to all 10 project districts, inspection of 36 MSIs and 75 SSIs, and interviews of 800 Micro Finance, OFIG and LTST beneficiaries.

- **Meat in take:** Number of days of meat intake was selected as indicator to gauge the improvement in lifestyle, nutrition value and food habits of project beneficiaries. By average, TG's number of days of meat

intake has been increased from 0.97 to 1.19 days/week. Similarly, in CG's number of days of meat intake has been increased from 1.13 to 1.25 days/ week in their daily food. By using "Simple Difference" approach this indicator has shown a negative impact of 0.063. "Difference in Difference" approach gives -0.098 impact, which shows a negative trend in usage of meat by in TG and CG.

- **Education:** In TG, by average, 1.71 children were going to school before intervention, which was increased to 2.16. A positive impact of 0.45 was recorded through Pre-Post method. Similarly, a positive impact of 0.56 was also recorded through "Simple Difference". However, a negative impact was observed by using "Difference in Difference" method of impact evaluation.

- **Transport Ownership:** In TG the vehicles (i.e. bikes, tractors, and animal driven carts) ownership was increased from 25.6, 5.8, 1.3 to 30.1, 7.7, and 1.9 respectively before and after the intervention. Whereas, the percentage of cars usage remained constant (4.5%) before and after the intervention. While in CG, the vehicles (i.e. bikes, tractors, and animal driven carts) ownership was increased from 16.7, 3.3, 1.7 to 30.1, 5, 3.3 respectively before and after the intervention.

- **Drinking Water:** In TG, the percentage of respondents using filtered and boiled water was increased from 0.6%, 6.4% to 5.1% and 8.4% respectively before and after the invention. Percentage of respondents using hand pump, well and rain water and other sources was decreased from 91.3%, 3.2%, 7.1% to 66.7%, 1.9% and 6.4% respectively, which shows a positive trend. While In CG the percentage of respondents using filtered water, boiled water and other sources are increased from 0%, 0%, 5% to 5%, 1.7%, and 6.7% respectively. The percentage of respondents using hand pump was decreased from 91.8% to 71.7% of respondent. Whereas Well and rain water consumption remained the same.

- **Toilet Type:** Use of a specific toilet type represents a particular socio-economic condition of the respondents. In TG, the percentage of respondents using WC, Indian and Traditional toilets was increased from 10.3%, 23.7%, 19.2% to 11.5%, 24.4%, 20.5% respectively before and after the intervention. Whereas the usage of open toilet is decreased from 29.5% to 28.2%, which shows a positive impact to have access to basic sanitary facilities. While in CG, the usage of WC toilet remained the same as 6.7% before and after the intervention. Whereas usage of Indian toilet was increased from 15% to 21%. The usage of traditional and open toilet is decreased from 26.7%, 48.3% to 25% and 41% respectively, which shows a slight improvement in sanitary conditions of TG and CG.

- **House Hold Possession:** Possession of a specific house hold appliance represents a particular socio-economic condition of the respondents. During the survey, it was observed that in TG, 9.1%, 17.3%, 4.5%, 35.1%, 23.1%, 9.6%, 67.3%, 60.3% percent of all respondents were using Air Conditioners (ACs), Fridge, Geyser, Washing Machine, Television (TV), Computer, Iron and Mobile phone respectively before this intervention. The usage of aforementioned items in TG was increased upto 14.2%, 19.9%, 4.9%, 51.2%, 26.9%, 10.3%, 71.8%, 67.9% respectively after the intervention. While in CG, the percentage of all respondents using Fridge, washing machine, TV, Computer, Iron and Mobile was increased from 10%, 15%, 28.3%, 1.7%, 46.7%, 35% to 13.13, 25, 35, 3.3, 58.3, and 66.7 respectively. Whereas the usage of AC and Geyser was recorded to be the same as 0 and 1.7 respectively before and after the intervention.

- **House Ownership:** In TG, the percentage of respondents owning independent house was increased from 73.7% to 74.4%. Whereas, trend of rented house was declined from 3.2% to 2.6%, and family owned house remained the same as 14.7% before and after the intervention. This shows a positive impact of the intervention. In CG, percentage of respondent owned house was increased from 81% to 83.3%, family owned house was decreased from 10% to 8.3%, whereas trend of rented house remained the same as 1.7% before and after the intervention.

- **Type of House Owned:** In TG, respondents owning pacca house and mix house (composite house) were increased from 36.5% to 37.8 and 29.5% to 31.4% respectively before and after the intervention. Whereas, the ownership of katcha house was decreased from 19.9% to 17.9%. While in CG, ownership in pacca house was increased from 23.3% to 36.7% before and after the intervention. The ownership of katcha house was decreased from 26.7% to 13.3% before and after the intervention.

- **Literacy Through Skill Training (LTST), Off Farm Income Generation (OFIG):** As an acid test of LTST, the beneficiaries were asked to read and write a sentence. The 32% and 38% of sample beneficiaries were able to write correctly read and write a sentence in Urdu respectively. In addition, 32% and 18% of the beneficiaries were partially correct in reading and writing a sentence. On the other hand, 29% and 39% of the beneficiaries were unable to read or write after going through LTST.
- As per analysis of input from sampled beneficiaries, employment rate increased from 1.6% to 3.8%, self-employment rate increased from 20.9% to 29% and unemployment rate fell from 77.5% to 67%

respectively before and after the intervention. This shows some positive trend.

- Other results i.e. level of skill learned, earning capabilities and suitability of timings and duration of training, were not much different from the results of OFIG.
- In the component of microfinance, no positive impact was noted among 68% of respondents. It might be due to reason that amount of microfinance was too low to create any impact in socio-economic conditions of the targeted beneficiaries of Barani areas. Moreover, institutions were not charging interest rate on loan but different other direct and hidden amounts were being charged from loanees such as processing fee, late payment fine etc due to which there was hardly any benefit of microfinance component.

**A. Comparison of results through three different methods.**

- ***Pre-post approach,*** on the whole, has shown a weak and minute positive impact on the defined indicators. For example, it shows an increase or betterment in weekly meat intake, no. of school going children, a zero or negative impact in ownership of personal vehicle i.e. tractor, motorcycle and cycle. However, a positive impact in ownership of animal cart was noted, which is not a good sign for socio-economic change in the lives of beneficiaries. Negative impact has been seen on the indicators of using filtered, boiled and hand pump water for drinking purposes. Positive impact has been noted in ownership of household possessions fridge, geyser, washing machine, television, computer, iron and mobile, house ownership (personal owned), house type (pacca) and toilet type (WC and Indian. It has also shown a decrease in ownership of personal vehicle (cycle), use of drinking water type (hand pump & well), house ownership (rented), house type (mix & katcha) and toilet type (traditional).

- ***Simple Difference approach,*** on the whole, has shown overall a medium positive impact. For example, it shows a negative impact of intervention in school going children and meat in take (day/week). It shows a positive impact of intervention in ownership of personal vehicle (car, tractor, motorcycle, cycle) but negative impact in ownership of animal cart, use of boiled and hand pump water for drinking. It gives a positive impact in household possessions (air conditioner, fridge, geyser, washing machine, computer, iron and mobile) but negative impact in ownership of TV. It also shows a negative impact in house ownership (personal owned) but a positive impact in improving sanitation conditions i.e. use of WC and Indian toilet instead of traditional and open toilets. By and large this method shows a weak to medium impact in the identified indicators with certain level of improvement in standard and quality of life.

- ***Difference in Difference approach***, a more reliable method of gauging project impact as it takes into account both positive and negative changes occurred in control group and treatment group over the project gestation period. By using Difference in Difference approach, an improving trend was noted in all above indicators in both control and treatment group with exception in decline in usage of water from hand pump/ well and rain water, ownership of kacha house and use of traditional type toilet.

**RECOMMENDATIONS**

1. Project has attained promising results. It was noticed that project was designed in a way to involve beneficiaries in project selection, implementation, funding (beneficiary share) and operations. This approach creates sense of ownership in beneficiaries and produce better results. Therefore, public projects should be designed, implemented and operated with the participation of local stakeholders to have better economic return of the projects.
2. Project indicators should be established right at the beginning of the project and should be made part of project document (PC-I or PC-II)
3. To correctly gauge the real impact of the project, proper baseline study on set indicators should be conducted before the start of intervention.
4. Proper monitoring of project activities is required to measure any deviation from project intended design and timely resolve the issues.
5. Impact study was conducted just after one year of its completion. To gauge the true impact of the intervention, impact study with broad range indicator should be conducted at least after five years of project completion.
6. Other programme was also being executed by other sponsoring agencies with different objective and activities. However, these interventions hinder to find the true impact of a separate project. Therefore, there may be certain possibility of bias and overlapping in certain areas during completion of impact evaluation studies.
7. Microfinance component of intervention is not recommended in future public sector development projects, due to its low or negative impact.

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