

FINAL PROGRESS REPORT OF
TECHNICAL SUPPORT FOR THE IMPLEMENTATION
OF
CHHALDIPANAHA-INDREGAUDA RURAL GREEN ROAD
BASTU HSTICHAUR DRINKING WATER SUPPLY &
IRRIGATION SCHEMES IN GULMI DISTRICT
AND ASSESSMENT OF ROADS, IRRIGATION
AND RIVER TRAINING WORKS IN
ARGHAKHANCHI DISTRICT

FOR THE DURATION OF
November 1, 2003 To December 31, 2004

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Sustainable Infrastructure
Development Foundation (SIDEF)

P.O. Box : 1208, Basuki Marga,
Old Baneshwor, Kathmandu, Nepal

☎ : 4472791, 4492 554 Fax : (977-1) 487438

E-mail: sidef@mail.com.np

Web site: sidefnp.com

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Acronyms

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2. Irrigation Schemes

ACCRONYMS

m.	: Meter
amsl	: Above Mean Sea Level
AVC	: Air Valve Chamber
BHDWSS	: Bastu Hastichaur Drinking Water Supply Scheme
BPT	: Break Pressure Tank
ch.	: Chainage
CIRGR	: Chhaldipanaha - Indregauda Rural Green Road
CLBIS	: Chilimtari Lampata Byarpata Irrigation Scheme
cm.	: Centimeter
CSR	: Chorkate - Shantipur Road
Cum.	: Cubic Meter
DC	: Distribution Chamber
DDC	: District Development Committee
DoLIDAR	: Department of Local Infrastructure Development and Agriculture Roads
DSA	: Daily Subsistence Allowance
EGRIP	: Employment Generation Rural Infrastructure Program
EU	: European Union
FC	: Finance Controller
FRE	: Field Resident Engineer
GARDP	: Gulmi Arghakhanchi Rural Development Project
GI	: Galvanized Iron
GKIRS	: Garh Kulo Irrigation Rehabilitation Scheme
GPS	: Global Positioning System
HH	: House Holds
Ha	: Hector
IG	: Income Generation
JTBIBIS	: Jumke Tusare Baspata Bhudi Irrigation Scheme.
Kg.	: Kilograms
Km.	: Kilometers
LDO	: Local Development Officer
LRCC	: Local Road Construction Committee
m ²	: Meter Square
MOU	: Memorandum of Understanding
MT	: Metric Tons
MWUC	: Main Water User Committee
nos.	: Numbers
NRs.	: Nepali Rupees
PC	: Project Coordinator
PCC	: Plain Cement concrete
PD	: Person day
RB	: Running Bill
RVT	: Reservoir Tank
SM	: Social Mobilizer
SMO	: Social Mobilization Officer
UC	: User Committee
VDC	: Village Development Committee
WO	: Wash Out
WUC	: Water User Committee

1. EXECUTIVE SUMMARY

The Employment Generation Rural Infrastructure Program (EGRIP) in Nepal has come from USAID at a time when most part of the country was suffering from widespread violence and most of the developmental efforts are jeopardized due to this reason. Due to food deficiency, the people have to migrate out of their settlements in search of jobs. Worsened security situation has stopped the on-going developmental efforts, which further creates unemployment of the people leading to them in a vicious poverty trap.

To take out the people from such situation, the program aims to create short-term employment opportunity by engaging them in construction of rural infrastructures. Such people based developmental efforts shall reinstall economic activities in the area, thus creating opportunities for long-term employment and thus, taking the people out from vicious poverty trap. Thus, the program aims to strike at the root causes of the prevailing *conflict situation* that is unemployment and poverty.

This is Final Progress Report covering the work progress for the duration of November 2002 to December 2003. Previously three quarterly progress reports have been prepared and submitted for the duration of November 1, 2001 to June 31, 2003.

The implementation of Chhaldipanaha - Indregauda Rural Green Road (CIRGR) was taken as a pilot project under EGRIP in Gulmi District on November 1, 2002. Other rural infrastructures in the field of water supply, irrigation schemes and assessment of roads, irrigation and river training schemes were undertaken from March 2003.

Purpose of Services

USAID, while contemplating to expand the program in several conflict-hit and vulnerable districts of Nepal took a first step towards the introduction of the program in Gulmi as a pilot district. Thus agreement was made with SIDeF for the implementation of following projects:

1 Chhaldipanaha - Indregauda Rural Green Road (CIRGR)

Modification of contract was made on March 2003 to undertake the following projects:

2 Water supply schemes:

- Main Line of Bastu - Hastichaur Water Supply Scheme,
- Distribution Line of Bastu Water Supply Scheme, Bastu VDC.
- Distribution Line of Hastichaur Water Supply Scheme, Hastichaur VDC.

3 Irrigation Schemes:

- Garh Kulo Irrigation Rehabilitation Scheme (GKIRS), Simichaur VDC.
- Chilimtari Lampata Byarpata Irrigation Scheme (CLBIS), Amaraarwathok VDC.
- Jumke Tusare Banspati Bhudi Irrigation Scheme (JTBBIS), Bishukharka VDC.

4 Assessment of rural infrastructure projects in Arghakhanchi District:

- Assessment of Tamghas - Sandhikharka Road
- Assessment of Bangi Irrigation Scheme
- Assessment of Chutrabesi Irrigation Scheme
- Assessment of Mathuebesi Irrigation Scheme
- Assessment of Mathurabesi River Training Scheme

This report describes the activities undertaken by SIDeF for EGRIP in Gulmi District from 1 November 2002 to 31 December 2003.

The construction activities undertaken in this program is labor-intensive. A flexible people oriented appropriate technological and management strategy is adopted. To tackle the unemployment situation, high number of people has been engaged in the construction works. Chhaldipanaha - Indregauda Rural Green Road (CIRGR) was taken as a pilot project by EGRIP in Gulmi district from November, 2002. Other rural infrastructures in the field of rural water supply and irrigation schemes were undertaken from March 2003.

Summary of employment generation

Following is the cumulative employment generated from the construction activities of the projects during the period of November 2002 to December 2003:

S N	Projects	Labor Atten- dance (PD)	Labor person-days valuation as per Norms			Househo lds Involve d
			Skilled (PD)	Unskilled (PD)	Total (PD)	
1	Chhaldipahaha - Indregauda (CIRGR)	82057.5	4,992	193905	198897	576
2	Irrigation Rehabilitation Schemes	7383	1882	18554	20436	260
3	Bastu Hastichur Water Supply Scheme	6066	702.93	13106.32	13809.25	308
	Total	95506.5	7576.93	225565.32	233142.25	1,144

Total cumulative labor employed from the beginning of work (November 2002) to December 2003 is 233142.25 person-days (as per norms) with 95506.50 days of labor attendance from 1,452 households.

SUMMARY OF PHYSICAL PROGRESS AND WORK STATUS

1 Chhaldipanaha - Indregauda Rural Green Road

Following is the work progress and work status of CIRGR:

Phase I (Trail opening)	: All completed (15.76 kms.)
Phase II (Middle widened stage of 3m)	: 6.250 m
Phase III (Final widening without drainage Structure	: 4.00 km
Phase IV (Final widening with drainage structure	: 5.125 km
Section of rocky Area left for excavation	: 0.38 km

2 Basti Hastichaur Drinking Water Supply Scheme:

Following is the work progress is Bastu Hastichaur water supply scheme:

Main Line:

Reservoir /Ferrocement Tank	: 4 Nos
20 m ³ capacity	: 2 nos.
5 m ³ capacity)	: 2 nos.
Wash Out	: 5 Nos.
Distribution Chamber	: 2 Nos.
Air Valve Chamber	: 3 Nos.
Pipe Line	
Total (G.I.+ HDP) Pipe laying:	: 9582 m
G.I. Pipe Laying	: 4353 m
HDP Pipe laying	: 5229 m

Distribution Line of Bastu and Hastichaur :

Break Pressure Chamber	: 8 Nos.
Tap Stand Post	: 34 Nos.
School Tank	: 3 No.
Total HDP Pipe Line laid	: 11,824 m

3 Irrigation rehabilitation schemes

Following is the work progress in irrigation rehabilitation schemes:

GKIRS:

One side lining	: 640.00 m
Both side lining	: 25.00 m
Retaining wall	: 18.00 m
Dry stone soling	: 103.00 m
PCC	: 468.00 m
Dry wall	: 10.00 m
Super passage (2.0 m length each)	: 2 Nos.

Covered canal	: 4.00 m
Gabion boxes	: 9.00 nos.
E / W clearance	: 871.00 m
Existing earthen canal	: 1520.00 m

CLBIS:

One side lining	: 1233.56 m
Both side lining	: 177.35 m
Retaining wall and stepping wall	: 120.80 m
Dry stone soling	: 1128.60 m
PCC	: 39.00 m
PCC wall	: 52.50 m
Covered canal	: 49.5 m
Gabion boxes	: 50.00 nos.
RCC aqueduct	: 5.70 m
HDPE pipe aqueduct	: 30.0 m

JTBBS:

One side lining	: 660.29 m
Both side lining	: 53.88 m
Retaining wall and Gabion wall	: 44.00. m
Dry stone wall	: 37.85 m
PCC	: 650.60 m
Covered canal	: 26.65 m
RCC aqueduct	: 6.65 m

All the physical progress are in line with the estimated targets.

2. CHHALDIPANAHA - INDREGAUDA RURAL GREEN ROAD (CIRGR)

2.1 Introduction

Chhaldipanaha - Indregauda Rural Road (CIRGR) having a length of 15.76 kilometer has been selected as a pilot project. Construction of this road was initiated by GARDP-II (an EU financed project) with the continuous demand from the local people and the DDC. This is an important *district road* in Gulmi district which inter-connects Tamghas - Chhaldi - Purkotdaha - Machhi(Pyuthan)road and Ridi - Rudrabeni - Wamitaxar - Dhorpatan(Baglung)road. Thus, this road would be of a strategic importance for Gulmi as well as Pyuthan and Baglung districts. Direct beneficiaries of the proposed road construction activities are those earning income from the activities and those employed as skilled and unskilled labors (approximately 600 persons). Indirect beneficiaries of the project are the people residing in the service area of the road from 21 VDCs (viz. Hastichaur, Badagaun, Musikot, Paudi-amarai, Darlamchaur, Isma Rajasthal, Dholi, Amarpur, Arjali, Ghamir, Marbhung, Sirseni, Bastu, Wagla, Anpchaur, Kurgha, Wami, Arlangkot, Dibrung, Bishukhark, Harrachaur and Turang). This will not only save considerable travel time for those concerned but also should open-up income generation potentials and commercial opportunities.

Memorandum of Understanding (MOU) was signed between GARDP, DDC Gulmi and SIDeF and construction works of CIRGR was started from December 7, 2002.

2.2 Brief Status of Work

The implementation of CIRGR was initiated from November 1, 2002 and the construction activity in the site was started from December 2002. 37 labor groups were engaged in construction activities from the EGRIP fund. One labor group consists of 16 workers. Out of which 6 were women groups and 31 male groups. Full work force of 37 labor groups were employed up to the mid June, The construction work was stopped on 10th August 2003. Beside these groups of workers, 4 groups (2 male and 2 female groups) were employed by GARDP fund for cement masonry works. The cement masonry work was completed on second week of June 2003.

The construction work was restarted from 15th Nov 2003 employing three groups of workers for the slump clearance and maintenance works which was damaged by monsoon rain. These three groups were mobilized from Chhaldipanaha (ch 0+000) to Nisdi khola (ch 5+125) for slump clearance as well as construction of retaining walls and checkwalls. All the slump clearance works is completed from Chhaldipanaha to Samachaur (ch 3+200). Now, light vehicles like Jeep and Tractors are plying for transporting daily goods of local tractors up to Ratdanda bazaar.

During this period, cross section of remaining works are recorded throughout the road length (Chhaldipanaha ch 0+000 to Dobhan ch 15+670)

Thus field work was continued till 15th of December 2003 under this agreement.

The following are the salient features of the labor employment during this project period (November 2003 - December 2003)

Description	Total
Labor attendance	82057.5 PD
Labor person days valuation as per norms.	
Skilled	4992 PD
Unskilled	193905 PD
Total person days	198,897 PD
Total house hold involved	576 HH

2.3 Physical Progress and status of the road

Physical progress of work and present work status of the road at the end of December 2003 is as follows:

Phase I (Trail opening) : All completed (15.76 kms.)
Phase II (Middle widened stage of 3m) : 6.250 m
Phase III (Final widening without drainage Structure : 4.00 km
Phase IV (Final widening with drainage structure : 5.125 km
Section of rocky Area left for excavation : 0.38 km

All 37-labor groups employed under EGRIP fund were assigned for road widening, construction of dry walls and gabion walls. Two male groups and two female groups employed from GARDP were assigned for cement masonry works like retaining walls and PCC causeways. The masonry works have been completed and the groups employed by GARDP were laid-off since 15th June 2003.

In addition to this, almost all the final widening works including retaining structures have been completed from Chhaldipanaha (Ch 0+000) to Nisdi River (ch 5+125) except at ch. 5+000, where the construction of retaining wall is going on and is expected to be completed after few days works. Beside this some dry stone cross drain like Causeway and dry ditch have to be constructed at few places. Light Vehicles like car, jeep, mini truck and tractors can now ply up to Nisdi River at Ch. 5+125 after removal of slumps, which was deposited due to the landslide occurred at some places.

One male group was assigned to work at Ch 5+000 for the construction of gabion and dry walls and one female group is working at Ch 5+000 for transporting stones for the construction of retaining walls. One male and one female group were assigned to work at Ch 5+330 for the construction of hairpin bend providing retaining structures and

transporting stones respectively. Two female groups were deputed from Ch 0+000 to 6+250 for bioengineering works.

Seven male groups and one female group were assigned from Bhanjyang (ch 6+000) to Bhanglang (ch 10+300). These male groups are mainly engaged for final widening works and construction of dry and gabion retaining walls and female group for transporting stones.

In addition to this, twelve male groups and two female groups are engaged between Bhanglang (ch 10+800) to Indregauda Dobhan (ch 15+250). These labor groups were assigned for final widening works at rocky areas and construction of retaining walls. Three groups were deputed for slump clearance and maintenance works. Most of the slump has been cleared from Chhaldipanaha (0+000) to Samachaur (ch 3+200).

2.4 Work Done Quantities

The measurement of this work was taken on December 12, 2003 and preparation of the 8th running bill was completed in time. The payment of above work was already made on December. The work done quantities is given in Annex - 2.

2.5 Tools and Construction Materials

During this working period (Nov 2002 - March 2003), the construction materials and construction tools procured are as follows:

Construction Materials

Gabion Wire	50 MT
8 gauge	7 MT
10 gauge	42.5 MT
12 gauge	1.312 MT

Construction Tools

Wheelbarrows	25 Nos.
Chisel Kingpin	500
Chisel 12"	100
Chisel 24"	50
Crowbar 25 mm dia	75
Crowbar 32 mm dia	75
Hammer 12 lbs	100
Hammer 10 lbs	100
Hammer 2 lbs	50
Stone Dressing Hammer	75
Pick	175
Shovel	100
Sickle	100
Spade	75
Foot pump	5

25931-m2-gabion mesh was fabricated. Among which 50% of the gabion crates have been used during this period. Tools like chisel, crow bar hammer, shovel etc. were also procured. These tools can be used in

construction of the road in future. Beside these, 25 wheelbarrows were also procured.

2.6 Training/workshop

Following training were organized:

- One day Refresher training to 10 field supervisor on construction of walls was organized on December 27, 2002.
- One day Record keeping training was organized to 18 LRUC members on January 21, 2003.
- Two days Mason training was organized to 33 labors and labor foreman.
- Five days bioengineering training was organized during May 26 to 30, 2003 to 10 field supervisors.
- SMO and FRE participated in two one day Road Maintenance Policy Formulation Workshop in District Headquarters on April 25, 2003 and June 17, 2003.

2.7 Social Mobilization Activities

Social mobilization activity is an integral part of the Green Roads approach of rural road building. Thus social mobilization is one of the important parts in CIRGR also. It is a regular and ongoing process. This includes advisory support to local road committee and other stakeholders and beneficiaries to enhance partnership approach among the stakeholders. Social mobilization activities are also aimed to develop ownership feeling of the project.

Major activities undertaken are formation of Sub-sector User Committee, Orientation to user committee on Green Roads approach, gender and record keeping training, conflict resolution, meeting and regular monitoring.

Periodic Public Audit meetings have been conducted to explore high degree of transparency after each payment at every project site. Regular meeting of users committee found to be instrumental in reaching necessary decisions relevant with project activities. Project book is introduced with appropriate entries in different formats covering every transaction related with construction works.

A experience sharing meeting was organized by WORLD EDUCATION with the participation of its partner organized to initiate saving/credit & IG activities along CIRGR road-corridor at both Kathmandu and Tamghas and were supported with practical strategies in a partner friendly manner. Named as Reshunga Women's Programme, aim to cover Hastichaur VDC in this working season and Badagaon in next working season.

Organization of User Committee meeting, regular field visit for monitoring of work progress, additional support for saving/credit and income generating activities and organization of periodic and final Public Audit meeting were the main activities carried out. A comparative wage receipt chart in terms of gender, caste and ethnic

group has been prepared in order to analyze the representation of men and women and actual wage received during the construction period. Comparatively involvement of women workers is very less. Traditionally women do not involved in wage earning in the area. It is expected that women workers will increase in future.

Regular meeting of road User Committee has been organized to facilitate smooth implementation of construction activities. LRCC meeting was found instrumental in taking necessary decision associated with project activities. Update of project book with entries in appropriate format has been done showing the transaction related to CIRGR works. These project books are being made available to local people on request for exploring transparency of the project activities.

Including final Public Audit meeting, three meetings were organized at working site with the participants of LRCC members, workers and SIDeF. Final Public Audit meeting organized at Ratadanda bazaar participated by Naike, LRCC members and SIDeF team members in which all the details of resource used were explained.

Further, support to saving groups has been provided to manage fund and invest money for income generating activities. Those, who have formed saving groups has been continuing saving (credit) and income generating activities even after the closure of active construction work and are willing to continue it in future too.

An analysis of wages receipt ratio between male and female has been done in respect with ethic group and occupational cost, which is provided in Annex.

2.8 Observation

Gender-wise participation and earning: Findings of the analysis reveals that out of the total 3604 workers there were 3091 male and 513 female, which counts 86% and 14% respectively. Total wage distributed was NRs. 15,843,075 cost of which 92% was received by male and only 8% wage was received by female workers.

Ethnic group wise participation and earning: Analysis shows that a total of 1438 ethic group (Janajati), 1297 occupational caste (Dalit) and 821 (Other elite caste group) worked as labor which constitute 40%, 36% and 24% respectively. As compared to wage receipt ratio ethic group hold 39%, occupational caste hold 35% and other caste received 26%, which indicates remarkable participation of needy people. This analysis indicates that local, poor people are involved in construction activities are getting fair proportion of wage.

An informal field survey indicates that local people use their earned money in paying old due loan and fee of their children in addition to food and utility. Some even confirmed the repayment of loan against purchasing the buffalos.

During final Public Audit meeting, labor groups who have started saving scheme were requesting to provide further support as matching fund from EGRIP.

Balu Ram Aryal of Arje VDC-6 worked for six months as a group leader and earned NRS. 70,000.00 during last year construction period. Each member of his team managed to buy a goat worth Rs. 4000.00 for breeding purpose and few of them has increased their number. Babu Ram also succeed to repay old due loan taken for the purpose of buying a buffalo from Dhaneswor Aryal of Arje-3 with the payment of NRS. 10000.00 including interest @ 24 percent per annum by the month of August 2003.

Prem Rakas of Badagaon VDC ward no. 4 continuously worked for seven months and got able to pay school fee of this two children enrolled at class 9&5 at local school, including school dress, books and fees he expend Rs. 10000.00 which according to him is an investment for the better future of the children.

Amar Bahadur Of the same group has been able to repay 5 years old loan worth Rs. 15000.00 taken for installing a Bio Gas Plant

Khun Bahadur Saru of Hastichaur VDC Ward no.6 engineered a noble social service work by constructing a Public Shed at Adukhola costing Rs. 15000.00 on Aswin 2060. Despite of his own personal hardship he was inspired to construct shed to provide shelter for local people for the religious work.

Shushila G.C a member of Women group from Hastichaur - 7 started to invest her wage entitlements in interest @ 24 percent per annum from the very beginning of the work. To date she has provided the lend of Rs. 9000.00 to Bhim Maya Nepali of the same VDC for one year period. Being unmarried she plans to use saved money as PEWA in future.

Phool Maya Rana of the same VDC purchased a gold ring from Tamghas worth Rs. 9100.00 on August 2003. She also has invested credit to Krishna Rana worth Rs. 5000.00 @ Rs. 24 per annum on September 2003.

Tulsi G. c from Badagaon VDC-6 spend Rs. 7000.00 in her son's education who was a regular student of Prithivi High School, Maidan-Musikot and passed S.L.C exam last year in second division. According to Tulsi G.C, had not there been opportunity for work, her son would be deprived of passing S.L.C exam.

Saraswoti Mahat of the same group has been continuing saving with Resunga Saving group since 2 years. She managed to continue saving even in the Mansoom work break.

Maya Kumal has bought few pigs worth and Purnakala Kumal invested for Goat farming.

Rem Kala B.K succeed to install solar light system in her house at Hastichaur-6 at the initial investment of Rs. 10000.00 out of which Rs. 5000.00 was her own income from road construction work.

Kashi Ram Bhandari of Dohali-9 bought a buffalo worth Rs. 13000.00 on September 2003 and making average monthly income worth Rs. 900.00 from selling milk in the local market.

Arjun Rayamajhi of Badagaon VDC started chicken farming worth Rs. 1000.00 with 18 children since four months.

Ravi Nepali from Hastichaur-7 has established a retail shop at Taltung from March 2003 with the initial invest of Rs. 7000.00. On average he sells goods worth Rs. 300.00 and make profit of 10 percent. His wife looks after the shop.

Thaneswor Aryal of Arje-9 has been able to buy cultivated land (1.5 ropani) worth Rs. 20000.00 out of his total earning from road works.

3. BASTU-HASTICHAUR DRINKING WATER SUPPLY SCHEME (BHDWSS), GULMI

3.1 Introduction

Bastu - Hastichaur drinking water supply scheme is the remaining part of the bigger project Hobalnng - Bangra Dhurkot Water Supply Project undertaken by Gulmi Arghakhanchi Rural Development Project (GARDP). This project was dreamed much early during 1942 when Gunnidhi Panthi, a resident of Dhurkot VDC submitted an application on behalf of villagers to water supply sector office Palpa requesting for the implementation of this project. Project is relatively a large one for the rural water supply. Therefore this project could not materialize for long time until the GARDP, a EU funded rural development project was initiated in the district.

GARDP started the implementation of this project in 1995. Holbang - Bangra Water Supply Project covers the seven VDCs namely Sirseni, Banjhkateri, Wagla, Dhurkot Rajsthal, Jaisithok, Bastu & Hastichaur. GARDP completed the work in five VDCs except Bastu and Hastichaur in 1999. Therefore remaining works of water supply scheme was taken up under the Employment Generation Rural Infrastructure Program (EGRIP) as Bastu - Hastichaur Water Supply Scheme.

This scheme is sub-divided into three parts as;

- Main Line
- Distribution line Bastu and
- Distribution line Hastichaur.

Main line passes through both VDCs Bastu and Hastichaur. Total beneficiaries are 308 households as follows:

Bastu VDC : 177 households and
Hastichaur VDC : 131 households

This scheme covers all 9 wards in Bastu VDC and 2 wards (8 and 9) in Hastichaur VDC

Following major estimated targets were designed under this scheme:

Main Line

Total design pipe length	: 9828 m.
Ferro Cement (FC)/ Reservoir Tank (RVT)	: 4 nos.
20 m ³ capacity	: 2 nos.
5 m ³ capacity)	: 2 nos.
Distribution Chamber (DC)	: 2 nos.
Air Valve Chamber (AV)	: 3 nos.
Wash Out (WO)	: 5 nos.

Distribution Line Bastu

Design pipe length	: 7944 m.
Break Pressure Tank (BPT):	: 5 nos.
Small water tank /school tank	: 1 no.
Tap Stand Posts	: 24 nos.

Distribution Line Hastichaur

Design pipe length	: 4474 m.
Break Pressure Tank (BPT)	: 4 nos.
Small water tank /school tank:	: 2 nos.
Tap Stand Posts	: 10 nos.

There was hardship for the local people as there is no permanent water source available within the scheme areas. Some small sources are available which is not permanent and do not fulfill the community demands.

3.2 Main Line of Bastu-Hastichaur

Total 14 groups of workers were employed for the construction works chainage 13+133 to 20+615. The measurement of work and the payment is made in four running Bills during April -December 2003. Labor turnover and payments are as follows:

Valuation of work in terms of labor person days as per norms:

Skilled	: 184.47 PD
Unskilled	: <u>7339.98 PD</u>
Total	: 7524.45 PD
Labor attendance	: 3555.50 PD

Following are the physical progress in Main Line

Reservoir /Ferrocement Tank	: 4 Nos
20 m ³ capacity	: 2 nos.
5 m ³ capacity)	: 2 nos.
Wash Out	: 5 Nos.
Distribution Chamber	: 2 Nos.
Air Valve Chamber	: 3 Nos.
Pipe Line	
Total (G.I.+ HDP) Pipe laying:	: 9582 m
G.I. Pipe Laying	: 4353 m
HDP Pipe laying	: 5229 m

The expenditure in main line is as follows:

Infrastructure Cost

• Labour Payment	Nrs. 610,257.60
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• Procurement		
HDP pipe	Nrs.	526,347.28
G.I. Pipe	NRs.	1,092,000.00
• Procured by GARDP		
Fittings	NRs.	137,079.00
Fittings	NRs.	31,026.60
Tools	NRs.	31,245.50
• Construction Materials	NRs.	139,702.20
• Transportation & petty expenses	NRs.	81,116.00

Operational Cost

• House Rent	NRs.	12,000.00
• Local Staffs	NRs.	127,490.00
• UC allowance	NRs.	20,000.00
Total	NRs.	2,808,264.18

EGRIP and GARDP expenses		
EGRIP	NRs.	1,052,837.90
GARDP	NRs.	1,755,426.28
Total	NRs.	2,808,264.18

3.3 Distribution Line Bastu

Total 20 groups of workers were employed for the construction works of the distribution line of Bastu. The measurement of work and the payment is made in four running Bills during April -December 2003. Labor turnover and payments are as follows:

Valuation of work in terms of labor person days as per norms:

Skilled	:	121.21 PD
Unskilled	:	<u>3375.70PD</u>
Total	:	3487.91 PD

Labor attendance : 1354 PD

Following structures are constructed in Distribution Line Bastu:

Break Pressure Chamber	:	4 Nos.
Tap Stand Post	:	24 Nos.
School Tank	:	1 No.
Total Pipe Line laid	:	7507 m
G.I. Pipe	:	0 m
HDP Pipe	:	7507 m

The expenditure in distribution line of Bastu as follows :

Infrastructure Cost

Labour Payment	Nrs.	284082.15
Procurement		
HDP pipe	Nrs.	177612.41
Fittings	NRs.	35603.70
Tools	NRs.	23872.20
Construction Materials	NRs.	64821.90
Transportation & petty expenses	NRs.	39100.00

Operational Cost

House Rent	NRs.	7035.00
Local Staffs	NRs.	63495.00
UC allowance	NRs.	10000.00
Total	NRs.	705622.36

In brief expenses as		
EGRIP	NRs.	705622.36
GARDP	NRs.	0.00
Total	NRs.	705622.36

3.4 Distribution Line Hastichaur

Total 14 groups of workers were employed for the construction works of Distribution Line Hastichaur. The measurement of work and the payment is made in four running Bills during April -December 2003. Labor turnover and payments are as follows:

Valuation of work in terms of labor person days as per norms:

Skilled	:	78.18 PD
Unskilled	:	<u>2359.73 PD</u>
Total	:	2437.91 PD

Labor attendance : 1156 PD

Following structures are constructed in Distribution Line Hastichaur:

Break Pressure Chamber	:	4 Nos.
Tap Stand Post	:	10 Nos.
School Tank	:	2 No.
Total Pipeline laid	:	4317 m
G.I. Pipe	:	0 m
HDP Pipe	:	4317 m

The expenditure in distribution line of Hastichaur is as follows :

Infrastructure Cost

Labour Payment	Nrs. 198550.80
Procurement	
HDP pipe	NRs. 149761.51
Fittings	NRs. 20460.00
Tools	NRs. 23872.20
Construction Materials	NRs. 40009.90
Transportation & petty expenses	NRs. 24570.00

Operational Cost

House Rent	NRs. 5400.00
Local Staffs	NRs. 63995.00
UC allowance	<u>NRs. 10000.00</u>

Total NRs. 536619.41

In Breif expenses as

EGRIP	NRs. 536619.41
GARDP	<u>NRs. 0.00</u>
Total	NRs 536619.41

3.5 Social Mobilization Activities in Water Supply

Social Mobilization activities were carried out focussing in social awareness & Societal Support. Support was provided for the UG formation, labor group formation, group mobilization, problem solving, material management of site, data collection and store management etc. Supporting UCs for meetings & record keeping, project book preparation and other works were also carried out.

Observation

Before the implementation of the project, there was hardship related with the drinking water supply issues as follows:

- People had to spend 3-5 hours per day for taking water from scattered and inadequate sources.
- Small spring source used to be polluted as they take bath and wash the cloth and get mixed in small well.
- Sanitation & hygiene condition were poor.
- School students had loose their time, often late arrival in school as they had to spend their time to bring water.
- Particularly the women had very hard time to bring the water, as they had to wake up at 3 am for water & wait on queue for long time to take a pot of water.

After the completion of this project, the users have felt or able to get the following benefits:

- Time spent for bringing water is saved.

- People are using potable water for domestic uses as well as waste and for gardens also.
- Community is now better with good sanitation facility.
- People can use the effluent of tap water for their kitchen garden, goat rearing and others income generating works.

Mr. Krishna Bhandari of Bastu-5, told that they had lost the hope that they will ever take water from that source of Holbang- Bangra. Mr. Tara Sunar Secretary of branch line Bastu, told that all the users are happy that they can use the saved time in incoming generating works.

Hastichaur Users Committee member Mrs Purna Kala Khanal told that, though they were involved to implement this project, they had little hope that they could drink water from the source of that far crossing the valley & dense forest with rocky areas. The Chairman of branch line Hastichaur Mr. Bel Bahadur Kunwar told that they are overwhelmed that this project is completed and water is now available in the communities. He told that they could use the saved time for income generating activities like goat farming and vegetable production. He believes that this can play the vital role for poverty alleviation.

After completion of that project, the users of both schemes (Bastu & Hastichaur) were very happy. The local people celebrated like festival. Every body were very happy and were praying for the blessings of god for the long term sustainability of the project. Some users were performing the Tika and Prasad" in the tap and were distributing to the neighbors. Pots filled the tap area.

The users committee member and users both appreciated the social mobilization works, supporting them for store keeping, record-keeping, minuting, site management, Labor- payment mechanisms etc.

3.6 Issues/problems and solution sought

There were some issues/problems encountered during construction works as follows:

- Water source is very far from target area (35 kilometers). It was aimed that water required for the construction purpose will be used from the operational taps of the completed projects. But, often water supply got interrupted. Required water had to be brought in the vessel from the other sources, which made the construction work difficult.
- It was found difficult to co-ordinate with main users committee, as the main users committee members comprise from the seven different VDCs. Main user committee members could be consulted during monthly meeting only.
- Transportation rate was estimated on the basis of the unit weight. But in practice vehicle owner charges on the basis of the trip of vehicle. Since the road is not in good condition carrying of the load is lower than estimate. Another reason for the inadequate amount is increase in price of the fuel too. In such case,

transportation of the each trip had to be managed with other construction material like cement.

- Collection of pies had to be made from the various stores (Wagla Bastu, Tamghas and Musikot) of the GARDP. These materials were available lately from GARDP. Continued follow up and effort was made to receive the pipe.
- Some rocky areas were encountered along the main pipeline, which was not included in estimated quantity. Instead of excavating the rock and laying the HDP pipe, small excavation in the rock is made and G.I. pipe was laid.

3.7 Operation and maintenance

Holbang - Bangra Water Supply Project is very large in rural area, which covers the wider geographical area. Bastu Hastichaur water supply scheme is part of the project. Therefore a good operational and maintenance system is required. GARDP has already developed and established the operation and maintenance system for this project. However it was felt that a follow up is required to the main committee to operate and maintain the system properly. We felt the need to appoint two numbers of skilled Village Maintenance Worker (VMW) for each of the schemes. Therefore Main User Committee is suggested and they are initiating to appoint the VMWs Regular monitoring works is also required by Users Committee.

Adequate fund is required to employ the necessary maintenance workers and for the sustainability of the scheme. Regular collection of maintenance fund is also necessary from the each beneficiary household. Every members of scheme should think & keep in mind that they are the owner of the scheme. Their duty is to operate the scheme in sustainable manner. Main Users Committee and VDC wise user committees were suggested on these aspects.

4. IRRIGATION REHABILITATION SCHEMES, GULMI

Three irrigation projects were undertaken in the program in Gulmi District. All the projects were initiated by GARDP and dropped in the later stage of the GARDP period. Following are the irrigation projects implemented under this agreement:

- GarhKulo Irrigation Rehabilitation Scheme (GKIRS), Simichaur VDC
- Chilianmtari - Lampata - Byarpata Irrigation Scheme (CLBIS), Amararwathok VDC
- Jamke Tusare Banspata Bhudi Irrigation Scheme (JTBBIS) Bishukharka VDC:

These programs were implemented after the modification is made in the previous agreement on March 2003 and continued till November 2003.

4.1 Garh Kulo Irrigation Rehabilitation Scheme (GKIRS), Simichaur VDC

The irrigation canal of Garhkulo is 40 years old, built into a hillside and has earthen surface all along the length of the canal. This scheme lies in Simichaur VDC, near to the district headquarters of Gulmi and near to the boarder of Arghakhandhi district. Before the rehabilitation of the canal, the farmers were facing the problems of leakage of water due to poor head works, loose soil and gully crossing. The total length of the irrigation canal is 4.320 km. Rehabilitation works is carried out in required section of 2.80 km. This scheme covers 61 household and 350 peoples, which are direct beneficiaries.

Rehabilitation works includes structural works in existing canal for Kholsi crossings, cross-drainages, porous zones for stability PCC soling, PCC lining and stone masonry walls in one side lining and both side linings. A new good head works is constructed with head wall and gabion protection works at Intake side.

During construction work the women also involved for collection of local materials and transportation of cement, sand to the working site.

Cement structure works in Okhare & Andheri Kholsi are built as these are the critical parts of the canal site. Earthen canal improvement works between kilometer 2.0 to kilometer 3.0 areas is also completed.

Labor employed during March 2003 to November 2003 is as follows:

- Valuation of work in terms of labor person days as per norms

Skilled	: 420.00 PD
Unskilled	: 4117.00 PD
- Labor attendance : 1317.00 PD

Following structures are constructed in GKIRS: -

1. One side lining	640.00 m
2. Both side lining	25.00 m
3. Retaining wall	18.00 m
4. Dry stone soling	103.00 m
5. PCC	468.00 m
6. Dry wall	10.00 m
7. Super passage	2 nos. of 2.0 m length/each.
8. Covered canal	4.00 m
9. Gabion boxes	9.00 nos.
10. E / W clearance	871.00 m
11. Existing earthen canal	1520.00 m

Construction cost of the scheme is as follows:

- Construction and labor cost including procurement, transportation of sand, materials & tools : NRs. 650,547.63
- Site management costs (UC cost , store etc.) :Nrs.68200.00
- Total cost for Infrastructure costs and operational costs are : Nrs.718747.63

Maintenance fund is collected from the beneficiaries' households and 50% of collected is provided by the project as the matching as follows:

- Maintenance fund collected by UC :Rs. 55,000.00
- Matching fund 50% of collected fund by Project :Rs. 27,500.00
- Total maintenance fund :Rs. 82,500.00

4.2 Chiliamtari - Lampata - Byarpata Irrigation Scheme (CLBIS),Amararwathok VDC

This Irrigation Scheme is existing canal covering a long command area 7.0-km. This canal is earthen Channel throughout the length. Intake and many of the section were poor and were washed during rain. Therefore rehabilitation works in intake and in many other weaker sections were required for the steady flow of required water flow. The scheme site is located in the boarder of Arghakhanchi district about 28 km in the southeast direction of district headquarters. The scheme site is located in Amarawathok VDC, 7 km from Palpa Tamghas Feeder Road.

The existing canal was very weak and covered with slump in many locations. The intake site is earthen and flood effected. Therefore, the structural works of lined canal gabion protection works and retaining structures are provided for canal construction works. HDPE pipe aqueduct in kholshi crossings and fall structures connecting 2nd and 3rd earthen canals along the tail areas are built.

Direct beneficiaries are 108 households and 650 peoples. The employment of skilled labors for 982 person days and employment for local supervisors with job training for 180 days are indirect beneficiaries. Women were also involved in rehabilitation works for collection of local materials and transportation of cements from store site. The total command area of the project is 34.5 ha.

In the beginning, before construction works started, people were not sure of the wage they could earn. After the discussion Water User's committee and local farmers agreed to start the rehabilitation works. They also agreed to collect maintenance fund for its sustainability. Project had provisioned 50% of the collected maintenance fund as the matching fund.

Time was short to complete the works, as the work could not be continued during monsoon. But after monsoon break the works was resumed works was completed till the month of November 2003.

HDPE pipe aqueducts were also constructed between Ch.4+000 to 6+702, end of the scheme site, Amararwathok VDC. One RCC aqueduct of span 5.70 m at Ch. 0+655 Quadi Kholshi crossing area is constructed.

Problems were faced to re-organize groups for construction works after monsoon break. However, rehabilitation target was met. 985 bags of cement are used. HDPE pipe aqueduct is made, which is economical and appropriate.

Labor employed during March 2003 to November 2003 is as follows:

- Valuation of work in terms of labor person days as per norms

Skilled	:	982.00 PD
Unskilled	:	8872.00 PD
- Labor attendance : 3869.00 PD

Following structures are constructed in CLBIS: -

1. One side lining	1233.56 m
2. Both side lining	177.35 m
3. Retaining wall and stepping wall	120.80 m
4. Dry stone soling	1128.60 m
5. PCC	39.00 m
6. PCC wall	52.50 m
7. Covered canal	49.5 m
8. Gabion boxes	50.00 nos.
9. RCC aqueduct	5.70 m
10. HDPE pipe aqueduct	30.0 m

Cost incurred in the project is as follows:

- Construction and labor cost including procurement, transportation of sand, materials & tools :NRs. 1,327,304.80

- Site management costs (UC cost , store etc.):Nrs.84,859.00
- Total cost for Infrastructure costs and operational costs are : Nrs. 1,412,163.00

Maintenance fund is collected from the beneficiaries' households and 50% of collected is provided by the project as the matching as follows:

- Maintenance fund collected by UC :Rs. 85,000.00
- Matching fund 50% of collected fund by Project :Rs. 42,500.00
- Total maintenance fund :Rs. 127,500.00

4.3 Jamke Tusare Banspata Bhudi Irrigation Scheme (JTBBIS) Bishukharka VDC:

This irrigation scheme is old and traditional earthen canal constructed by farmers some 20 years ago. This canal was needs of rehabilitation at various sections due to seepage problem. The trail end farmers were not benefiting because of insufficient water flow even in the monsoon period. The main objective of the scheme is to rehabilitate the existing canal and extend the canal length so that it could cover more command area for irrigation purpose. The source of canal is Jamke that is also known as Hilekhola

The total length of canal is 3.14 km and canal command area was 32 ha. 25% command area is increased after rehabilitation of the canal. 91 household and 548 peoples are the direct beneficiaries of the scheme.

Rehabilitation scheme was initiated under ADBV/GARDPII joint funding program. Design and estimation work was completed. But in the verge of phasing out of GARDP the scheme was dropped. Thus EGRIP took up the project for the rehabilitation works.

Most of the alignment passes through loose soil, highly seepage prone area thus requiring canal lining. 850-meter length of lining is constructed out of 3.14 kilometers length of canal. One RCC aqueduct of 6.5 m span, one super passage and some cross-drainage structures including retaining gabion structures at slide zones are constructed.

After rehabilitation of canal works with some structural works and cement lining of canal, the agricultural productivity is expected to increase and income of the farmers will increase helping to uplift the living standard thus reducing poverty level.

556 bags of cement are consumed. Construction work was completed on November 2003. Final bills were prepared wage payment was made on November through UC. SIDeF representatives were also present during labor payment at site in Bishukharka.

Labor employed during March 2003 to November 2003 is as follows:

- Valuation of work in terms of labor person days as per norms
 - Skilled : 480.00 PD
 - Unskilled : 5565.00 PD
- Labor attendance : 2197.00 PD

Following structures are constructed in JTBBIS:

One side lining	660.29 m
Both side lining	53.88 m
Retaining wall and Gabion wall	44.00. m
Dry stone wall	37.85 m
PCC	650.60 m
Covered canal	26.65 m
RCC aqueduct	6.65 m

Cost incurred in the project is as follows:

- Construction and labor cost including procurement, transportation of sand, materials & tools :NRs. 884,027.37
- Site management costs (UC cost , store etc.):Nrs.99,152.00
- Total cost for Infrastructure costs and operational costs are : Nrs. 1083179.37.00

Maintenance fund is collected from the beneficiaries' households and 50% of collected is provided by the project as the matching as follows:

- Maintenance fund collected by UC :Rs. 96,000.00
- Matching fund 50% of collected fund by Project :Rs. 48,000.00

4.4 Social Mobilization and Training Activities

Social mobilization aspect has been conceived as an integral part of the project to ensure the smooth working environment and completion of the project. Major activities are formation of user committee, labor group formation, UC orientation record keeping training and regular monitoring.

Labors were trained and oriented by the field technicians. Labors were trained for the skilled works like cement structures. Senior supervisor/sub-overseers were deputed in the site through out the construction period and continuously guide the skilled and unskilled workers. Committee members were supported and guided for the record keeping and management aspects.

Garhkulo Irrigation Scheme, Simichaur VDC, Gulmi

March 2003

- Dialogue with VDC and DDC and the local people of all three schemes.
- Orientation about the program to the beneficiaries of all three schemes.

April 2003

- User Committee formation in all schemes.
- Labor group formation for the construction works. Sub-project agreement with WUCs.

May 2003 to July 2003

- Interaction with the beneficiaries and information obtained from the local people.
- Regular guidance to the UC member on record keeping and store handling.
- Regular technical guidance to the workers and skilled workers for the construction of the structural works.
- Meeting with User Committee on management issues of the project.

July 2003: Break of construction**September 2003**

- Meeting with WUC and group leaders to restart the work
- Resumption of the construction works.

October 2003

- Continuation of work and regular guidance for management to UC and technical supervision to workers and skilled workers
- Public auditing for construction expenditure and site management and its expenses.

November 2003

- Meeting with User Committee to stop the whole construction works by Middle of November 2003 and to make final payment to the workers.
- Meeting with User's committee for formation of maintenance committee, opening new bank account for maintenance committee, public auditing of the whole expenses from 1st to final running bills and registration of maintenance committee at DDC.

Shree Chilamtari-Lampata-Byarpata Irrigation Scheme, Amararwathok VDC, Gulmi

20th Oct. 2003 Public auditing for 3rd running bill payment and petty expenses money.
 21st Oct. 2003 Meeting with WUC and to increased the labor groups 3-4 additional to complete the whole sections up to tail at ch. 6+700.
 2nd Nov. 2003 meeting with User's committee and farmers for reconstruction of flood affected areas at intake.
 12th Nov. 2003 Meeting with UC to stop the whole construction works by 22nd Nov. 2003.
 23rd Nov. 2003 Meeting with UC for maintenance committee, Opening new bank account, Registration of the maintenance committee at DDC and final auditing after final payment.

Shree Jamke-Tusare-Banspata-Bhudi Irrigation Scheme

17th Oct. 2003 Meeting with UC to manage additional skilled groups to complete the RCC aqueduct and structural works up to 10th Nov. 2003.
 6th Nov. 2003 public Auditing for 3rd R.B. and petty cash expenses up to Nov.
 23rd Nov. 2003 Meeting with UC for maintenance committee, opening the new bank account, Registration of the maintenance committee at DDC, public auditing of whole expenses from 1st to final payment.

4.5 Problems Encountered and Solutions Sought

There was some technical, management problems in each of the irrigation rehabilitation schemes during the constriction period as follows:

GKIRS, Simichaur VDC: In the estimate, quantities of some items were missing in some stretches - breaking of boulders at the river, dismantling of structures and construction of dry walls.

CLBIS, Amararwathok VDC: Additional items like transportation of cement and aggregate from road head to the site, transportation by tractors, dismantling of structural works, medium rock cutting, construction of dry walls and pipe aqueducts were also done which were not included in the quantity estimates:

JTBBS, Bishukharka VDC: Problems were encountered in the aspects of transportation of sand and cement, lower estimated rate of transportation, stone breaking and transportation, maintain the stock book (i.e. store book) etc.

Solution sought

In case of transportation of sand the pottering distance was quite far (near about 7.5 km) from the working site of the canal. Due to the low rate and far distance, the labors were not interested for pottering. So to solve these problems and to complete the scheme within time, sand was transported by mules. In the beginning of the work, mules could not

transport sufficient quantity of sand at working site Bishukharka. After the monsoon break the number of mules were increased to solve the problem of sand. In the beginning of the project, the chorkante-Santipur road was under construction so the transportation of cement from Chorkante (i.e. where the supplier can supply) to Santipur was very difficult. So for convenience, construction materials were stored at Kwangdi to supply up to working site.

Due to the low rate of estimated transportation amount the transportation of all the construction materials are very difficult. This problem was solved by UC by bearing some transportation cost by their own fund.

The breaking and transportation of stone at aqueduct area was also difficult because of the greater lead distances. Encouraging the labors group by UC's members and site staff also solved this problem.

Since the payment is done on the basis of the work done quantity, labors anxious about the about they could earn. They were familiar with daily wages basis of work. In the beginning local peoples are not convinced and did not agreed to work by measurement basis for labors payment. The labors always asked for their wages. This problem was solved by preparation of first running bill. After first labor payment, labors understand the measurement basis work was also good.

Continuous guidance was provided to the storekeeper in the aspect of record keeping.

4.6 Observations

Before rehabilitation

Before rehabilitation of irrigation schemes many problems faced by user group/farmers. Farmers were not sure to irrigate their land during winter season due to less discharge of water and lot of leakage along the irrigation canal.

They were deprived to cultivate the several seasonal crops due to the weak canal and porous in many places specially the rivulet crossings along the existing canal. They are lagging behind to use full supply of waters in the command areas. Due to very weak intake structures, flood damages the structures and affect canal at head zones.

With more potential command areas for cultivation they were deprived of irrigating the less area, mostly at intake areas. Farmers were suffering to check the leakage areas and porous zones along the canal. Due to low flow in the canal, so many command areas were barren.

After Project

After completion of the schemes in 3 VDCs, the user/farmers are benefited to cultivates and for improvement of barren lands:

Many protection works and improvements works are carried out in existing canal. Intake areas are protected with Gabion walls, canal lining and permanent type structures to improve the discharge of water. Weak sections and leakage zones are repaired and protected by structural works.

Farmers are now able to irrigate their land during winter season also. More barren lands are improved for cultivation due to permanent structures source due to rehabilitation in weak zones. Command areas are exceeded more than two times in some schemes.

Local peoples are also benefited with foot trail crossings at canal area. Most of the Kholsi (rivulets) crossings are covered with slabs and both side lining walls. Local peoples of poor status have earned the money by rehabilitation works including the transporting of sand and cement from road heads.

Length of the canal is also improved and covered more command area for irrigation. In case of jamke - tusare - Banspate - Bhudi Irrigation scheme, Bishukhark VDC farmers were not able to rehabilitate due to special structures required and to procurement the construction materials. The local peoples of Bishukhark are surprised to see the RCC aqueduct in such remote areas. Command area is increased and local people are considering to establish the micro hydro plant for electricity generation and operation of mill as they have permanent type of canal.

In case of Chilamtari - Lampata - Byarpata Irrigation rehabilitation scheme, Amarawathok at tail command areas are increasing for proposed irrigate lands.

5. ASSESSMENT OF ROADS, IRRIGATION AND RIVER TRAINING PROJECTS IN ARGHAKHANCHI DISTRICT

5.1 Introduction

Some of the projects were identified along the Arghkhanchi - Tamghas Road. These projects were local demands received in DDC and demand endorsed by District Assembly of Arghakhanchi District. Assessment work of these projects was included in the modification of the agreement. Assessment work includes the survey, design and estimate of following projects in Arghakhanchi District:

- 1 Tamghas - Sandhikahrka Raod (44 kilometer)
- 2 Three Irrigation Schemes
 - Bangi Irrigation Scheme
 - Chutrabesi Irrigation Scheme (comprising 2 sub-schemes)
 - Mathurabesi Irrigation Scheme (comprising 7 sub-schemes)
- 3 Mathurabesi River Training Scheme (Comprising 9 sub-scheme)

The main activities for the achievement of above-mentioned works in different months are as follows:

5.2 Assessment Works

Team visited Gulmi and Arghakhanchi districts to carryout the field survey work of Sandhikharka - Tamghas Road, irrigation rehabilitation works and river trainig works along the road. After the coordination with both the DDCs and the stakeholders of the proposed projects survey wroks were carried out for all the three schemes. S

After the completion of the field survey works, design works of al;l the propsed projects were done . Detailed cost estimate of Arghakhanchi -Tamghas Road, Bansi Irrigation rehabilitation work, Chutrabesi Irrigation scheme, Mathurabesi Irrigation schemes and river training work of Mathurabesi River are prepared. Detailed design of Sandhikharka - Tamghas Road is prepared using design software of the Green Roads.

Detailed project reports are prepared in three volumes as follows:

Tamghas - Sandhikahrka Raod (44 kilometer)

- Volume I: Main Report (Description of project, quantity and cost estimate)
- Volume II: Drawings of profile, plan and cross sections of the road alignment

Irrigation and River Training Projects

- Volume I: Main Report (Description of project, quantity and cost estimate including the drawings)

5.3 Brief findings of the assessment works

Following are the brief summary about the assessed projects of roads, irrigation and river training:

1 Sandhikharka-Tamghas District Road

Location

Region : Western
 Zone : Lumbini
 District : Arghakhanchi and Gulmi
 Nearest road head : District headquarters (Sandhikharka and Tamghas)
 Latitude : From 27° 58' at Sandhikharka to 28° 03' 23.9' at Tamghas
 Longitude : From 83° 07' 48.1" at Sandhikharka to 83° 14' 55.2" at Tamghas
 Geographical Feature
 Terrain : Mountainous
 Climate : Sub-tropical ,mild temperature, cool temperature
 Geology : Common soil, boulder mixed soil, soft rock and rare hard
 Highest point : Neta (1801 meter)
 Lowest point : Sandhikharka bazaar (948 meter)
 Classification of road :
 Type of access : District road (fair weather type)
 Surface : clay bound macadam
 Length of road : 43.753 Km
 Starting point : Sandhikharka bazaar
 End point : Deurali, Tamghas
 Alignment surveyed (Influence area):
 • Sandhikharka VDC : Myal Pokhari, Patuwathuma, Pauwa
 • Wangla VDC : Toni Pokhari, Nange Thanti, Majh Hatiya, Rani Pokhara, Myal Neta, Ambot
 • Kerunga VDC : Balkot, Pati, Rithaka Rukh, Hatiya, Amarai, Barbot, Chyuri Neta
 • Chhatraganj VDC : Cherjunda, Khaireni, Ranichhap, Chhatraganj, Pati, Bakakhar
 • Arghatosh VDC : Majhkot, Hatiya, Mani, Pokhara
 • Bhagawati VDC : Tarubhatera, Khaskot , Deurali, Baleri, Kaphal Kharka, Bardada, Neta gaun
 • Tamghas VDC ,Gulmi : Neta gaun, Kamerepani, Bhujel Kharka, Deurali
 Geometrical Features of the roads :
 • Right of way : 20 m (10 m on either side of road center line)
 • Formation width : 4.5 m (6.5 m bypass zone)
 • Carriage way width : 3.5 m
 • Shoulder width : 0.5 m on either side of carriage way
 Side drain : Provided for gradient above 7% or at paddy field and settlement area.
 Type of drain : Earthen ,dry stone
 Design speed : 20 to 30 kmph
 Maximum gradient : 12%
 Average gradient : 7%
 Extra widening : 1.5 m towards river

Minimum radius of horizontal curve : 9 m
 Camber : 5% outwards slope
 Super elevation : 5%
 Bypass : 6.5 m width and 20 m length

Structures

Cross drainage structure

a) Dry stone causeway : 25 Nos.
 b) Dry stone ditch : 132 Nos.
 c) Hume pipe culvert : 15 Nos.

Retaining structure

a) Gabion wall : 12485 Cum
 b) Dry stone wall : 31705.82 Cum
 c) Cement masonry wall : 1139.10

Earth work quantity

a) Cutting : 207362.653 Cum
 b) Filling : 81722.823 Cum

Project Cost :

a) Total cost : NRs 111,739,864.47
 b) Cost per Km : NRs 2,553,878.92

2 Irrigation Rehabilitation schemes and River Training Works

S. N.	Indicators	Chutrabesi Irrigation	Mathurabesi Irrigation	Bangi Irrigation	Total TO BE CORRECTED
	Technical Features :				
1	Length of canal / River training works	2.712 km	7.322 km	1.6 km	15.741 km
2.	Length of Rehabilitation works of canal and river training works	2.119 km	1.605 km	1.51 km	9.341 km
3.	Command area to be irrigated or projected	600 Ropanies	1437 Ropanies	410 Ropanies	3252 Ropanies
	Social Data :				
4	Number of Household benefited	120	287	82	650
5	Number of beneficiaries	600	1437	410	3252
	Estimated Cost :				
6	Total cost (NRs)	2519452.41	2197250.15	1994766.0	12451804.4
7	Cost per Ropanies	4199.09	1529.05	3	6
8	(NRs)	1404412.96	1277829.21	4865.28	17724.28
9	Material Cost (NRs)	1115039.45	919420.94	1159243.1	6996542.36
10	Labor Cost (NRs)	44.06	41.84	3	5455262.10
	% of labor cost of total cost			835522.90 41.88	
	Employment Generation :				
11	Unskilled Labors (MD)	12012	9979	9098	61351
12	Skilled Labors (MD)	1540	1211	1077	5472

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3 Mathurabesi River Training Project

HIDE TABLE

S.N.	Indicators	
	Technical Features :	
1	Length of canal / River training works	4.107 km
2.	Length of Rehabilitation works of canal and river training works	4.107 km
3.	Command area to be irrigated or projected	805 Ropanies
	Social Data :	
4	Number of Household benefited	161
5	Number of beneficiaries	805
	Estimated Cost :	
6	Total cost ()	NRs 5740335.87
7	Cost per Ropanies (NRs)	NRs 7130.85
8	Material Cost (NRs)	NRs 3155057.06
9	Labor Cost (NRs)	NRs 2585278.81
10	% of labor cost of total cost	45.04
	Employment Generation :	
11	Unskilled Labors	30261 PD
12	Skilled Labors	1644 PD

6. FINANCIAL STATUS

6.1 Budget

Co-operative agreement # 367-A-00-03-00004-00 is entered between USAID Mission to Nepal and Sustainable Infrastructure Development Foundation (SIDeF) for the implementation of Chhaldipanaha-Indregauda Rural Green Road Project in Gulmi District.

Budget under this Co-operative agreement # 367-A-00-03-00004-00 was NRs. 19,083,439.

First modification to agreement was made on March 3rd, 2003 to incorporate Water Supply and Irrigation Schemes in Gulmi

District and Survey, Design and estimates of roads, irrigation and River Training Scheme in Arghakhanchi District. This First amendment increases the budget by NRs. 14,162,491 making total budget under this Co-operative agreement # 367-A-00-03-00004-00 NRs. 33,245,930.

Second amendment to the agreement is made on May 1st, 2003 to increase the labor cost, to enable the work in Chhaldipanaha-Indregauda Rural Green Road Project to continue up to July / August 2003.

Second Amendment increases the budget by NRs. 6,778,333 making total budget under this co-operative agreement # 367-A-00-03-00004-00 NRs. 40,024,263.

6.2 Budget Expenditure

Budget expenditure for the project under agreement No 367-A-00-03-00004-00 till the project period December 31, 2003 is as follows.

S. N.	Budget Heading	Budget Allocated (NRs)	Actual Expenses (NRs)	Balance/Surplus (NRs)
A. Chhaldipanaha Indregauda Rural Green Road Project, in Gulmi District				
1.	Road Construction Cost	22,217,972	21,033,951	1,184,021
2.	Training & Assessment Work	60,000	23,060	36,940
3.	Supervision and Management work	3,583,800	3,580,471	3,329
	Total A	25,861,772	24,650,625	1,211,148
B. Water Supply & Irrigation Schemes in Gulmi District and Survey...				
1.	Construction Cost of Water Supply and Irrigation Scheme	8,427,216	5,755,235	2,671,981
2.	Supervision and Management work	5,335,275	4,533,195	802,080
3.	Recipient Contracted Audit	400,000	171,500	228,500
	Total	14,162,491	10,459,931	3,702,561
	Grand Total	40,024,263	35,072,586	4,926,850

6.3 Liquidation Report

Liquidation Report for the expenditure up to December 2003 is submitted to the USAID, The Mission to Nepal.

Final Liquidation Report of the Agreement shall be submitted after the final audit of the agreement by the auditor.

6.4 Financial & Internal Control System

To strengthen the Finance and internal control system of the SIDeF, USAID Mission to Nepal has assigned Chartered Accountant firm M/S T.R. Upadhaya & Co. to set up a financial and Internal control System and a viable manual accounting system for SIDeF.

The Consultant was assigned to develop the following key written policies,

- a) Finance / Accounting
- b) Human Resources
- c) Travel
- d) Procurement and
- e) Internal Control

After Detail field study, discussion, evaluation of requirement and several discussions on Draft the consultant has submitted two Volumes of policies covering all area mentioned.

1. Financial Management Policies, and
2. Personnel policies and Procedure.

The consultant had provided training to Directors and officials of SIDeF

Meeting of Directors of SIDeF held on June 15, 2003 had adopted these Policies with effect from June 15, 2003 and decided to implement in SIDeF these policies effective from that date.

6.5 Audit

For the audit of the USAID resources managed by SIDeF, Technical and financial proposal for the appointment of the auditor is called from the 5 audit firms approved by the USAID.

From the evaluation of the financial and technical proposal M/S Joshi & Bhandari, Chartered Accountant, Koshi Compound, Dillibazar is selected for the audit of the USAID resources managed by SIDef.

After getting concurrence from USAID Mission to Nepal, M/S Joshi & Bhandari was appointed auditor to audit USAID resources managed by the SIDeF.

The audit will cover whole agreement period i.e. November 1, 2003 to December 31, 2003, with

1st Review - Covering period November 1, 2002 to June 30, 2003

2nd Review - Covering period July 1, 2003 to September 30, 2003

Financial Audit - Covering period November 1, 2002 to December 31, 2003

1st and 2nd Review of the Agreement is already finished and the report is already submitted to the USAID Mission to Nepal.

Final audit of the USAID Resources managed by the SIDeF will be conducted and the audit report will be submitted within the period prescribed.

7. SUPERVISION AND MANAGEMENT TEAM

Professionals according to the proposal were employed and involved to carryout the projects. Inputs of the professional vary according to the requirement. Inputs of the entire professional and the staffs are within the agreed limit.

Following is the list of the professionals and the staffs involved for the implementation of the project:

1. LIST OF PROFESSIONAL AND SUPPORT STAFF

A. Head Office Professional Team

S.N	Name and Address	Designation
1.	Mr. Hare Ram Shrestha	Project Coordinator
2.	Mr. G. N. Mallik	Backstopping Expert
3.	Dr. Madhav Gautam	Monitoring Expert
4.	Mr. Shanker Raj Ghimire	Senior Engineer
5.	Mr. Gopal K. Shrestha	Finance Controller

B. Field Team: Chhaldipaneh Indregauda Rural Green Road

S.N	Name and Address	Designation
1.	Mr. Nava Raj Rana	Field Resident Engineer
2.	Mr. Hidaya Pradhan	Social Mobilization Officer
3.	Mr. Ganesh Itany	Sr. Overseer
4.	Mr. Abhimanyu Humagain	Sr. Overseer
5.	Mr. Narayan Subedi	Overseer
6.	Mr. Krishna Neupane	Accountant
7.	Mr. Babu Ram Bhattarai	Motivator
8.	Mr. Subash Tiwari	Sub Overseer
9.	Mr. Deepak Paudel	Sub Overseer
10.	Mr. Keshab Rayamijhi	Storekeeper
11.	Mr. Shyam K. Darlami	Peon, Indregauda
12.	Mr. Uttam Darlami	Peon, Ratadanda

C. Field Team of three irrigation schemes

S.N	Name and Address	Designation
1.	Mr. Ramesh Lal Shrestha	Irrigation Engineer
2.	Mr. Ramesh Paudel	Overseer
3.	Mr. Binod Shrestha	Social Mobilizer
4.	Mr. Bibhas K. Mishra	Sub-Overseer
5.	Mr. Hem Raj Upadhaya	Sub-Overseer
6.	Mr. Raj K. Shresha	Sen. Supervisor
7.	Mr. Ram Prasad Giri	Sen. Supervisor

D. Field Team: Water Supply Schemes

S.N	Name and Address	Designation
1.	Mr. Dhan Raj Shah	Water Supply Engineer
2.	Mr. Govind P. Bhatta	Overseer
3.	Mr. Ashok K. Gupta	Overseer
4.	Mr. Gopal Sen Oli	Social Mobilizer
5.	Mr. Gagan Thapa	Sen. Plumber

E. Assessment Team for Tamghas - Sandhikharka Road Irrigation Schemes and River Training Scheme in Arghakhanchi District:

S.N	Name and Address	Designation
1.	Mr. Ram Bindu Shrestha	Engineer
2.	Mr. Barun K. Karna	Asst. Engineer
3.	Mr. Bina Mandal	Overseer
4.	Mr. Narayan Pokhrel	Sub-Overseer

2. LIST OF SUPPORT STAFF (Locally employed)**A. CIRGR**

S.N	Name and Address	Designation
1.	Deepak Kharel	Supervisor
2.	Narayan Parajuli	, ,
3.	Prem Bahadur Sunuwar	, ,
4.	Suraj Singh Thakuri	, ,
5.	Dadhi Ram Bhattarai	, ,
6.	Yukta Singh Thakuri	, ,
7.	Juddha B.K.	, ,
8.	Sobhakar Marasini	, ,
9.	Rachana Shrestha	Supervisor
10.	Uttam Darlami	Chaukidar (Ratadanda)
11.	Ram Bahadur Surtunge	Mechanics
12.	Dhana B.K.	Blacksmith
13.	Sher Bahadur B.K.	, ,
14.	Chandra Bahadur B.K.	, ,
15.	Hom Bahadur B.K.	, ,
16.	Dron Bdr. Nepali	Nurseryman
17.	Shyam Bahadur Sartunge	Chaukidar

B. Water Supply

S.N	Name and Address	Designation
1.	Gopal Sen Oli	Social Mobilizer
2.	Gagan Thapa	Sen. Plumber
3.	Bimal Bhandari	Storekeeper
4.	Dhruwa Kumar Kshetri	, ,
5.	Sumanta Bhandari	Plumber

6.	Indra Bdr. B.K.	, ,
7.	Bhupal Pd. Bhandari	Helper
8.	Tek Bahadur K.C.	, ,
9.	Ram Chandra Bhandari	Chaukidar
10.	Ram Singh Rana	, ,

C. Irrigation

S.N	Name and Address	Designation
1.	Mrs. Chandra B. Shris	Storekeeper
2.	Mr. Baburam Pandey	, ,
3.	Mr. Arjun Kandel	, ,

D. Survey Assignment

S.N	Name and Address	Designation
1.	Hari Dutta Pandey	Sub-overseer
2.	Narayan Pokhrel	, ,
3.	Bishnu B.K.	Helper
4.	Basanta Mukhiya	, ,
5.	Janak Shrestha	, ,
6.	Prakash Phusal	, ,
7.	Bhoj Bdr. Muldhiya	, ,
8.	Krishna Shrestha	, ,

8. IMPLEMENTATION ARRANGEMENTS

Participatory implementation arrangement was adopted for implementation of all the projects - roads, water supply and irrigations schemes. Green Roads Concept is adopted for the implementation of road project.

Following are the major features of the implementation approach for the execution of the project:

8.1 Organizational Framework

The project was implemented in close coordination with USAID-Nepal and GARDP. There was two tiers of professionals from SIDeF; one at central office including project coordinator and experts and the others deputed in the district (headquarters and field).

SIDeF Head office team led by the Project Coordinator coordinated with the USAID-Nepal; guided and controlled the district teams and kept the liaison with GARDP-Kathmandu office. District team kept liaison with the GARDP team and the Users Committee and managed the field staff.

8.2 Role of Different Actors

- USAID-Nepal mission provided the required funds and made periodic monitoring of the project implementation.
- SIDeF-Central Office coordinated with USAID and GARDP, guided and controlled the district team, received the cash advance from USAID and applied financial controls, submitted the statement of expenses and periodic work progress reports to USAID, made periodic site visits, did the follow-up and monitoring of works and arranged major procurements.
- GARDP signed an MOU with DDC and SIDeF on implementation of the project; provided assistance required for project implementation; made available of existing tools, construction materials and office documents; made available of one overseer in the site; provided intermittent services of the project engineer for monitoring of works; born the costs of personnel provided by it including their salary, DSA and field allowance till month of July 2003. GARDP was phased over on August 2003.
- SIDeF-Field Team supervised the construction works, assisted the UC in works management, facilitated labor payments through the user committee and controlled petty expenditure, coordinated with the GARDP district office and the UC, kept all the records of expenses and submitted it to SIDeF H.O.

- The UC selected the workers, monitored the construction works, handled the petty cash, resolved the local level conflicts, mobilized the people for the construction work and paid the wage to the labors.

8.3 Cash-flow Mechanism

USAID-Nepal provided SIDeF an advance based on the monthly expenditure. SIDeF operated a separate bank account in Kathmandu and at Tamghas, Gulmi to handle the USAID fund. SIDeF Head office transferred the funds to its district office as per requirement and received the statement of expenses. SIDeF submitted the statement of expenses to USAID-Nepal monthly basis. Periodic audit is performed through the USAID registered auditor.

8.4 Labor Payment Process/Public Audit

Measurement of the completed works is taken first week of month by the field supervision staff. Measurement bill for each working group is prepared separately and based on the work bill, entitlement for each individual worker is prepared by the field staff. Valuated amount is released to UC account. The UC assisted by SIDeF field staff, made payment to each individual labor as mentioned in the payment sheet. The payment sheet is returned to the SIDeF district office. The accountant, after checking the payment sheet and if the total amount of payment receipts equals to the advance amount, then the advance to the UC is cleared.

After each labor payment, public project audit and work review was organized in the field facilitated by the Social Mobilization Officer to check whether the payments were transparent or not and to collect people's suggestions on work implementation.

8.5 Procurement of Materials and Tools

SIDeF field team prepared the list of major procurement, which is checked and forwarded to SIDeF H.O. by the engineer. The SIDeF H.O. made major procurement of items like gabion wire, tools and pipes with quotation from recognized suppliers. The engineer prepared the specifications of the materials and tools with request for acquisition. The Project Coordinator after checking the request issued the procurement order. Payment to the supplier is made only after the delivery is made to the specified places in the field and a letter is issued by the FRE mentioning that materials have been delivered in specified quantity and quality.

Major procurements to be made are the gabion wire, HDP pipes, wheelbarrows, construction tools and cement. Other minor procurements of petty items like rope, doko, local tools etc was done through the petty cash given to the UC.

8.6 Handling of Petty Cash

A petty-cash (up to Rs. 50,000.00 at a time) was provided to the UC for procurement of petty items and transportation of site materials.

The UC made the expenses as required on the suggestion of the site technicians and kept the record of expenses. The expenses bills was checked and verified by the site technician and produced in the committee meeting. After the written request of the UC with minutes of committee meeting and submission of original bills, the advance to the UC was cleared and a new advance was released.

9. MAINTENANCE SYSTEM

9.1 Chhaldipanaha - Indregauda Rural Green Road

A separate workshop was conducted to develop the maintenance of the roads of Gulmi District including Chhaldipanaha - Indregauda Road. SIDeF facilitated to organize the workshop. After the completion of the construction work of CIRGR maintenance system will be adopted according to the system developed by the district level workshop.

Following are the main features of the maintenance system envisaged:

- A District Road Coordination Committee will function as the district level to regulate the maintenance of roads.
- A separate maintenance committee will be formed for each of the district level road.
- A separate maintenance fund shall be created for the each of the district level roads.
- As per the maintenance guidelines set by DoLIDAR Rs. 15000 per kilometer per year of maintenance cost is required.
- Required maintenance fund shall be generated as follow:
 - 20% maintenance fund from DDC.
 - 30% fund from the VDCs covering the road corridor.
 - 30% from the toll tax collected from the operation of vehicles.
 - 20% maintenance fund by mobilizing the local participation.
- The road maintenance committee will operate maintenance fund.
- Unless the road surface is made gravel, road will be operated as fair weather road. Operation of vehicle will be restricted during three months of monsoon period in such roads.
- DDC shall provide the technical support for the district level road.

9.2 Drinking Water Supply Schemes

Maintenance system envisaged in GARDP projects is followed for the maintenance of the water supply schemes. Maintenance fund has been collected from the users at the rate of Rs. 3,000 per tap. The project has also provisioned to provide a matching fund for maintenance after the completion of the project. The main water user committee (MWUC), which was already in place, had already received the matching fund from the GARDP. Maintenance system already established by GARDP is continued

9.3 Irrigation Schemes

WUC collected the maintenance fund from the user for its sustainability. In irrigation schemes also maintenance system was adopted according to the system envisaged by GARDP. Maintenance fund

from the user is collected at the rate of Rs. 150 per ropani. Project also provided the maintenance fund half of the amount collected from user.

SIDeF supervision team made the follow-up to establish the maintenance system. Maintenance fund collected by the user and 50% amount of the generated fund provided by the project as part of the matching fund is mentioned in the description of respective irrigation schemes.

