



Government of Nepal
Ministry of Physical Planning and Works
DEPARTMENT OF ROADS

Planning and Design Branch
GEO- ENVIRONMENT AND SOCIAL UNIT

ROAD SECTOR DEVELOPMENT PROJECT (AF)
(IDA Credit Number- 4832-NP, IDA Grant Number- H629-NP)

**FINAL REPORT FOR EXTERNAL MONITORING OF ENVIRONMENTAL SAFEGAURD
IMPLEMENTATION IN RSDP AF PROJECTS**

(SM, CJ & KMJ Roads)

June, 2013

ACKNOWLEDGEMENT

The present report is the combination of field and table works. Throughout the field many people have contributed to this work and deserve appreciation. I would like to offer my sincere gratitude to PICs of SM road, CJ Road and KMJ road, *Shiva Nepal*, *Deepak KC* and *Shir Bahadur Ghimire*, respectively for their kind hospitality and coordination in the field. Likewise, I would like to express my sincere gratefulness to REs of SM road, CJ Road and KMJ road respectively for the information and great coordination throughout the field.

I am indebted to Unit Chief of GESU SDE *Purna Siddhi Lal Shrestha*, of RSSDP, AF project of PIU, Mr. Ajaya K. Mul for his wonderful suggestion, like wise I would like to thank Er. Radhika Prajapati/Shrestha Environmental Safeguard expert Mrs. *Meera Joshi* and Social Safeguard Expert Mrs. *Rama Shrestha* for the suggestions and information they provided.

Thank you

DEV MANI POKHAREL

(Environmental Expert)

Acronyms

BoQ	Bill of Quantity
CJ	Chinchu-Jajarkot
DoR	Department of Road
ESMF	Environment and Social management Framework
GD	Gokuleswor- Darchula
GESU	Geo Environment and Social Unit
GoN	Government of Nepal
IDA	International Development Association
ISPRC	Institutional Strengthening and Policy Reform Component
KC	Kalagad- Chainpur
KMJ	Khidijyula- Manma- Jumla
RDC	Road Development Component
RSDP AF	Road Sector Development Project Additional Financing
SM	Sitalpati- Musikot

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1. BACKGROUND

The Government of Nepal (GoN) has received US\$75.00 million from the International Development Association (IDA) as credit and grant (Project ID P095977, Credit: Grant Number: H339-NP) towards the cost of Road Sector Development Project Additional Financing (RSDP AF). The additional financing will continue to support the two components of the project- a) Road development component (RDC) and b) Institutional Strengthening and Policy Reform Component (ISPRC).

RSDP aims to improve 389 Km of dry seasons roads to all weather roads in ten hilly districts, support periodic maintenance of prioritized 450 Km of strategic road network, emergency maintenance of flood damaged road projects, support road safety works for the strategic roads under RDC and provide support for institutional strengthening and policy reform including capacity building of DoR under ISPRC.

The major objectives of the project has to pave the roads, reducing travel time, and improving access to economic centers, environment and social services for the resident of beneficiary of Far Western districts- (Baitadi, Bajhang, Darchula, Surkhet, Dailekh, Kalikot, Jumla, Jajarkot, Salyan and Rukum) of Nepal.

S.N	Name of Roads	Km
1.	Gokuleshwor- Thaktholi- Darchula (GD)	72
2.	Kalangagad Bridge – Chainpur (KC)	46
3.	Khidkijyula- Manma-Jumla (KMJ)	106
4.	Chinchu-Devisthal- Jajarkot (CJ)	80
5.	Sitalpati-Musikot- Rukum (SM)	85
Total		389

Among these five roads, monitoring was conducted in KMJ, CJ and SM roads in the second phase, as per the terms and condition of the agreement. This report contains the environmental evaluation of these three roads. The road wise environmental issues and proposed mitigation measures are given in the following sections of this report.

Contract Date: 30 Sept. 2012, Sitalpati- Mushikot

Contract Package No	Chainage (Km)	Contractor's 'Name
RSDPAF-W-UP-ICB/SM-4A	52+650.00-75+500.00	M/s Swachhanda-Santoshi JV
RSDPAF-W-UP-ICB/SM-4B	75+500.00-98+000.00	M/s Rasuwa-Himdung-Thokar
RSDPAF-W-UP-ICB/SM-4C	98+000.00-117+500.00	M/s Diwa-Bajraguru JV
RSDPAF-W-UP-ICB/SM-4D	117+500-138.00+120.00	M/s PS-Rautha-Yakthunghang JV

Chinchu-Jajarkot Road

Contract package No	Chainage (km)	Contractor's Name
RSDPAF-W-UP-ICB/CJ- 5A	KM 26+000.00-46 +000.00	M/S Ashis-Korkha G JV
RSDPAF-W-UP-ICB/CJ- 5B	KM 46+000.00-70 +000.00	M/S Ashis-Korkha G JV
RSDPAF-W-UP-ICB/CJ- 5C	KM 70+600.00-86+600..00	M/S YP- Gauri Parbati JV
RSDPAF-W-UP-ICB/CJ- 5D	KM 86+600.00-106 +000.00	M/SHimdug Thokar-Bhirab JV

Khidkijula-Manama- Jumla (KMJ)

Contract package No	Chainage (km)	Contractor's Name
RSDPAF-W-UP-ICB/KJ- 6A	KM126+000.00-440-141+000.	M/S Tundi-Nagarjun JV
RSDPAF-W-UP-ICB/KJ- 6B	KM 141+000.00-154 +660.00	M/S Tamang-PS-Golden Good JV
RSDPAF-W-UP-ICB/KJ- 6C	KM 154+660.00-168+660..00	M/S - Bajaraguru-Diwa JV
RSDPAF-W-UP-ICB/KJ- 6D	KM 168+660.00-180 +660.00	M/S Rasuwa-Himdung-Thokar JV
RSDPAF-W-UP-ICB/KJ- 7A	KM180 +660.00-192+660	M/S Tundi-Chandra & Basanata JV
RSDPAF-W-UP-ICB/KJ- 7B	KM192 +660.00-206+660	M/S MK-ANK JV
RSDPAF-W-UP-ICB/KJ- 7C	KM206 +660.00-220+660	M/S Lama Builders Kanachanjunga JV
RSDPAF-W-UP-ICB/KJ- 7D	KM220 +660.00-236+640	M/S Lumbini Bulide-Rajendra JV

2. WORK PROGRESS:

The construction works has been carried out in all the sections of these roads, but the work progress these sections are not same. The work progress for different packages of the roads is as follows:

Sitalpati-Musikot-Rukum (SM)		Chinchu-Devisthal-Jajarkot (CJ)		Khidkijyula- Manma-Jumla (KMJ)	
Contract ID Nos.	% Of Progress	Contract ID Nos.	% Of Progress	Contract ID Nos.	% Of Progress
SM-4A	8 %	CJ-5A	75 %	KMJ-6A	16.5 %
SM-4B	16 %	CJ-5B	45 %	KMJ-6B	16 %
SM-4C	11 %	CJ-5C	25 %	KMJ-6C	18 %
SM-4D	19 %	CJ-5D	30 %	KMJ-6D	20 %
-	-	-	-	KMJ-7A	15.5%
-	-	-	-	KMJ-7B	12.6%
-	-	-	-	KMJ-7C	8.5%
-	-	-	-	KMJ-7D	16.1%

(Source: Field visit, 2013)

3. ENVIRONMENTAL REVIEW

i. *Sitalpati-Musikot-Rukum (SM) Road*

4A (52+650 – 75+500)			
Location (Chainage.km/ Place)	Issues	Observation	Required corrective measures (if required)
54+600	Spoil disposal site	Spoil disposed on barren land in between Sarada river and the road, there is irrigation canal along the road, (photo: SM1)	Any blockage formed due to this activity should be cleared. The deposited spoil should be compacted after its use. Embankment should be constructed along the Sarada river in this section.
56+420	Stock pile of sand & aggregate/ storage of fuel	Fuel was stored inside the PVC tank on a truck/ Sand and aggregates were stocked piled around the contractor's camp.	It is recommended to cover sand stocks with impermeable sheets, especially during the windy and rainy season. Alternatively such stocks could be kept wet by water sprinkle during windy season.
59+200	Proposed disposal site	This site is between private agricultural land and Sarada River. There is also an irrigation canal in between road and the agricultural land. Activity can damage the fertility land. (photo:SM2)	Not very suitable site for this purpose as fertile arable land.
60+000-60+100	Proposed disposal site	Barren government land in between Sarada River and Road.	The deposited spoil should be compacted after its use.
60+900	Rock Quarry on hill side	Quarrying activity ongoing. Activity should be limited to stable slope. Over extraction could lead to progressive collapse of the rock.	Structures like breast wall construction should be constructed. Road safety sign needed
62+300 (near Dhor Chaur Bridge)	Damage on agricultural land	Agricultural land on hill side has collapsed due to road construction. (photo:SM3)	Breast wall construction should be constructed immediately to protect farmland towards hillside. Road safety sign needed
66+580	Deposited material	Loose material along hill side	Breast wall and bioengineering work
66+900	Interruption due to flowing water	Water flowing along the road for about 10 m.	Culvert need to be constructed .

67+300	Back cutting	Ongoing	Breast wall and bioengineering work.
68+200	Crusher Yard/Material Storage	The storage of aggregate and sand were confined within the yard, no haphazard storage seen.	Stored materials like sand should be covered, especially during the windy and rainy season. Alternatively such stocks could be kept wet by water sprinkle during windy season.
4B (75+500 – 98+000)			
Location (Chainage, km/ Place)	Issues	Observation	Required corrective measures (if required)
78+100	Crusher plant/ fuel storage	The storage of aggregate and sand were confined within the yard, no haphazard storage seen. Fuel was stored underground, within a metal tank. It is close to the agriculture land. (Photo:SM4)	Stored materials like sand should be covered especially during the windy and rainy season. Alternatively such stocks could be kept wet by water sprinkle during windy season.
79+680	Spoil disposal	Spoil tipped along the valley side of the road	Retaining /Toe wall, Bio-engineering work
82+150	Storage	Aggregate Storage	Drainage should be managed properly
4C (98+000 – 117+500)			
Location (Chainage, km/ Place)	Issues	Observation	Required corrective measures (if required)
110+240	Unstable slope	Unstable slope with loose materials on hill side	Breast wall , Bioengineering work
107+400	Quarry site	Quarrying on hillside is ongoing. There is forest on hill and many trees were fallen from the top of the hill due to this activity. (photo: SM5)	Not appropriate site for quarrying activity. It is better to look for other alternative sites for quarry. The damaged part of the forest should be reinstated and proper retaining structures should be constructed. Road safety sign needed
107+500	Crusher Plant/fuel + aggregate/sand storage	It was situated near to the quarry site at the base of hill. Fuel was stored in the underground metal tank.	Stored materials like sand should be covered especially during the windy and rainy season. Alternatively such stocks could be kept wet by water sprinkle during windy season.
115+400	Unstable slope	Unstable slope with loose materials on hill side	Gabion wall + bioengineering needed.

4D (117+500 – 138+120)			
Location (Chainage, km/ Place)	Issues	Observation	Required corrective measures (if required)
117+600	Tipping Site	Spoil tipped along the valley side of the road	Retaining wall construction and Bio-engineering work
118+760	Quarry	Ongoing quarry for sub-base	After its use, the quarry site must be protected with breast wall and bioengineering work.
121+850	Quarry	Ongoing quarry for stone	After its use, the quarry site must be protected with retaining structure
123+850	Tipping Site	Spoil tipped along the valley side of the road	Retaining wall and Bioengineering work
125+100	Crusher Yard/Storage	The crusher plant is in operation near to Lahu river. The storage of aggregate and sand were confined within the yard. Numbers of hume pipes were kept in an impoundment for curing, near to the site.	No action needed.
125+400 (Solabang)	Stone embankment	Stone embankments were constructed on both sides of Lahu river to protect adjacent farm lands, as this section of the Lahu river has been used for stone quarry. (photo:SM6)	It's a good practice. No further action needed.
125+400	Quarry	Ongoing quarry for boulder	After its use, the quarry site must be protected with breast wall and Bio-engineering work.
125+500	Fuel Storage	Fuel was stored within the underground metal tank.	No action needed.

ii. Chinchu-Devisthal- Jajarkot (CJ) Road

5A (26+00 - 46+400)			
Location (Chainage,km/ Place)	Issues	Observation	Required corrective measures (if required)
28+900	Quarry	Quarry used for sand extraction	Retaining structure and Bioengineering work
29+900	Major Landslide	Unstable slope with sandy materials along hillside. Trees and vegetation on the upper part of the slope. (photo:CJ1)	Retaining structure and Bioengineering work
36+600	Fuel Station/Storage/ Crusher plant	Used up storage facility. some equipments are left there.	The facility should be cleaned up promptly, after dismantling.
38+700	Major Landslide	Loose materials and rock fragments were lying on the hill side of the road	Retaining structure , and Bioengineering work
40+200	Major Landslide	Landslide materials deposited on hillside slope.	Retaining structure , and Bioengineering work
5B (46+400 – 70+600)			
Location (Chainage, km/ Place)	Issues	Observation	Required corrective measures (if required)
51+300 (Goji river)	Spoil disposal	Heaps of spoil were deposited on the bank of Goji river. (photo:CJ3)	Those deposits must be compacted and gabion wall should be constructed toward the river.
58+200-58+260	Major Landslide	Existing landslide area on hill side, breast wall being constructed.	Bioengineering work needed.
59+700	Crusher plant	The crusher plant is in operation Aggregate is deposited.	Stored materials like sand should be covered especially during the windy and rainy season. Alternatively such stocks could be kept wet by water sprinkle during windy season.
66+600 (Srijana Bazaar)	Spoil management	The spoil generated during the road construction near to Srijana bazaar was being dumped and compacted in front of shops and houses. (photo:	No action needed as the spoil is being used to fill the depressions along the Srijana Bazaar. This is also the demand of

		CJ2)	the local people.
55+550	Safety issue	Large over hanging rock along the road was observed at this location.	Further geotechnical investigation.
5C (70+600 – 88+600)			
Location (Chainage, km/ Place)	Issues	Observation	Required corrective measures (if required)
71+100-71+300	Potential landslide area	Boulder mixed soil on the hill side.	Gabion wall and Bioengineering work
78+600-78+800	Spoil disposal site	Spoil tipped along the valley side of the road	Retaining structure , and Bioengineering work
78+800	Potential landslide area	Boulder mixed soil on the hill side.	Gabion wall and Bioengineering work
79+700	Crusher Plant/ aggregate, sand storage	The storage of aggregate and sand were confined within the yard, no haphazard storage seen.	It is recommended to cover sand stocks with impermeable materials, especially during the windy and rainy season. Alternatively such stocks could be made wet by water sprinkle during windy season.
81+200	Fuel storage/contractor camp	Fuel stored in underground metal tank. (photoCJ4)	No action needed.
86+320	Spoil disposal site	Spoil tipped along the valley side of the road	Retaining structure , and Bioengineering work
5D (88+600 – 106+610)			
Location (Chainage, km/ Place)	Issues	Observation	Required corrective measures (if required)
97+730	Crusher Plant/ Stock Pile	Crusher plant and stock pile on the bank of Bheri River	It is recommended to cover sand stocks with impermeable materials, especially during the windy and rainy season. Alternatively such stocks could be made wet by water sprinkle during windy season
98+770	Fuel Storage	Fuel stored inside an underground metal tank.	No action needed.
101+200	landslide	Unstable area, landslide materials deposited on hillside slope.	Retaining structure and Bioengineering work

102+200	landslide	Unstable area, landslide materials deposited on hillside slope.	Retaining structure and Bioengineering work
103+250	Slope failure	Debris fallen from high above crossing the existing road at three different points. (photo:CJ5)	Proper drainage management + gabion wall + bioengineering
103+400	Drainage outlet	Flush outlet constructed to minimize impact due to culvert discharge.(Photo:CJ6)	No action needed, It's a good practice.
105+135	Culvert outlet	The culvert discharge likely fall on the agricultural land.	Better to construct flush outlet to minimize the impact on agricultural land.
106+235	Deposited materials	Deposited materials on hill side. Blockage of road during monsoon was reported.	Gabion wall & bioengineering

iii. Khidkiyula-Manma-Jumla (KMJ)

The road upgrading works are in preparatory phase in most of the sections of this road.

6A (126+440- 141+000)			
Location (Chainage.km/ Place)	Issues	Observation	Required corrective measures (if required)
127+600	Tipping Site	Spoil tipped along the valley side of the road	Gabion wall and Bioengineering work
128+000	Tipping Site	Spoil tipped along the valley side of the road	Gabion wall and Bioengineering work
132+000	quarry	Ongoing quarry	Gabion wall and Bioengineering work
130+800	Sand stockpile for 6A, 6B, 6C	The storage of sand was confined within the yard, no haphazard storage seen.	It is recommended to cover sand stocks with impermeable materials, especially during the windy and rainy season. Alternatively such stocks could be made wet by water sprinkle during windy season.
132+180	Crusher plant/ aggregate storage	The storage of aggregate and sand were confined within the yard, no haphazard storage seen.(photo:KMJ1)	No action needed.
138+00-138+50 (Gitegada)	Safety	Existing narrow track, rock fragments likely to fall above the market area during back cutting of rocks.(KMJ2)	Consultation with Project, affected people and local authority.

6B (141+000 – 154+660)			
Location (Chainage.km/ Place)	Issues	Observation	Required corrective measures (if required)
148+350	Proposed tipping site	valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
148+930	Proposed tipping site	valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
150+850	Proposed tipping site	valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
154+600	Proposed tipping site	valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
160+000	Proposed quarry site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its use
160+060	Proposed quarry site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its use
160+480	Proposed quarry site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its use
160+540	Proposed quarry site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its use
161+400	Crusher plant	Crusher plant was being installed (Photo: KMJ3)	No action needed.
161+500	Proposed quarry	Hill side of the road	Over extraction of materials should be

	site		avoided and the site must be re in stated after its use
162+040	Proposed quarry site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its
6C (154+660 – 168+660)			
Location (Chainage. km/ Place)	Issues	Observation	Required corrective measures (if required)
157+50	Proposed tipping Site	valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
157+80	Proposed tipping Site	valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
157+090-157+110	Proposed tipping Site	valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
161+400	Proposed quarry Site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its use
161+420	Proposed quarry Site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its use.
161+440-161+500	Proposed quarry Site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated after its use.
163+800	Crusher plant	It is in operation.	After the completion of the work, civil structure should be removed. The site should be cleared
163+820	Proposed quarry	Hill side of the road	Over extraction of materials should be

	Site		avoided and the site must be re in stated its use.
163+850	Proposed quarry Site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated.
163+900	Land slide	Debris and stone are falling on road due to this the road construction has been disturbed. There are water sources.	Breast wall and Bioengineering work. Water source should be managed.
6D (168+660 – 180+660)			
Location (Chainage/ Place)	Issues	Observation	Required corrective measures (if required)
168 +400- 168 +450	Proposed disposal site	Valley side	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
171 + 850	Crusher plant	Valley side, It is in operation	Civil structure should be dismantled and Site should be cleaned up after its use.

One of the big issues is a number of loops are existing in 6A and 6B road section due to this the cutting of earth work is maximum. But the filling of work is less than cutting.

Major problem: imbalance between cut and fill quantity.

Total materials to be cut: 180000 cu m

Total materials to be filled: 10000 cu m

Surplus quantity: 170000 cu m

(Source: RE (6), Puskar Regmi)

7A (180+660 – 192+660)			
Location (Chainage. km/ Place)	Issues	Observation	Required corrective measures (if required)
186+100,	Quarry site	Rocky area and stable. Cutting of rocks has just been started.	The site should be protected by retaining wall.
184+700 (Tila khola)	Crusher plant	It is Just installed. The site is situated at near the Tila khols.	Civil structure should be removed after completion of the work.
184+650, 190+050	Proposed tipping Site	Valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
7B (192+660 – 206+660)			
Location (Chainage.km/ Place)	Issues	Observation	Required corrective measures (if required)
194+015 - 194+050	Proposed Tipping area	Valley side, Gentle slope	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
196+550 – 196+580	Proposed Tipping area	Valley side, Gentle slope	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
198+440 – 198+480	Proposed Tipping area	Valley side, Gentle slope	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
199 + 100	Crusher plant	Valley side. It is in operation.	After the completion of the work, civil structure should be removed. The site should be cleared
204 +390 – 204 +420	Proposed Tipping area	Valley side, Gentle slope	Retaining structures should be constructed and the those tipped

			materials should be stabilized with the help of bioengineering
205+260-205+490	Proposed Quarry site	Hillside of the road	Over extraction of materials should be avoided and the site must be re in stated.
7C (206+660 – 220+660)			
Location (Chainage. km/ Place)	Issues	Observation	Required corrective measures (if required)
215+900 - 215+990	Quarry site	It is in operation, hill side of the road	Over extraction of materials should be avoided and the site must be re in stated.
214 +840- 2014 +915	Crusher Plant	Installed on the valley side of the road.	After the completion of the work, civil structure should be removed. The site should be cleared
214 +840 215 +100	Proposed tipping site	Valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
7D (220+660 – 236+640)			
Location (Chainage. km/ Place)	Issues	Observation	Required corrective measures (if required)
221 + 120 – 221 + 160	Quarry site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated.
223+800 – 220 + 860	Proposed Tipping Site	Valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
224+ 290 – 226 +320	Proposed tipping Site	Valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
227+780	Crusher Plant	In operation, storage of aggregate was confined within the yard, no haphazard storage seen. (Photo: KMJ5)	Stored materials like sand should be covered as this place is renowned for its characteristic wind . Alternatively such

			stocks could be kept wet by water sprinkle during windy season.
227+800 – 800 – 227+810	Proposed tipping Site	Valley side of the road	Retaining structures should be constructed and the those tipped materials should be stabilized with the help of bioengineering
228 +250 – 228 + 350,	Quarry site	Hill side of the road	Over extraction of materials should be avoided and the site must be re in stated.

Action Required.

- Stockpile excavated topsoil separately with other unfertile spoil, so that such fertile soil can be used later.
- Inappropriate drainage outlet is identified as the triggering factor for the instability of the road in hilly area, so due care should be given while selecting drainage outlet.
- Selection of fertile agricultural land for spoil disposal purpose should be avoided and flat barren land should be used for it to the extent possible.
- The reuse of excavated spoil and rock material generated on site should be maximized.
- Endemic plant species should be given priority to the extent possible for bioengineering purpose.
- It is better to calculate Carbon emission in projects like, RSDP as all the required data can be obtained easily for it. So that carbon emission due to road construction (per kilometer) can be estimated in hilly roads, and required compensating measures can be proposed.
- Occupational safety equipment such as helmet, gloves and mask etc should be provided in adequate quantity and used by workers and site staffs.
- The incentives should be managed for GESU staff. (Abroad training and some facilities)
- Awareness program for drivers is necessary. (Road safety measures, safety and sign etc.)
- Road safety sign should be erected maximum along the road and identified risk zone along the alignment.

Good Practice in the project:

- People are requesting/helping the fixed the spoil disposal/Tipping site
- Project has been constructing the access road for the local people
- Hume Pipes has been distributed for irrigation canal according to the people need.
- R.C.C drain cover has been constructed at market in Magmo, Kudari, Rarali (KMJ), and Salleri Bazar area(CJ).
- Civil structure has been constructed to protect agriculture land and compound wall at the school area (CJ).

4. REVIEW OF INSTITUTIONAL ARRANGEMENT

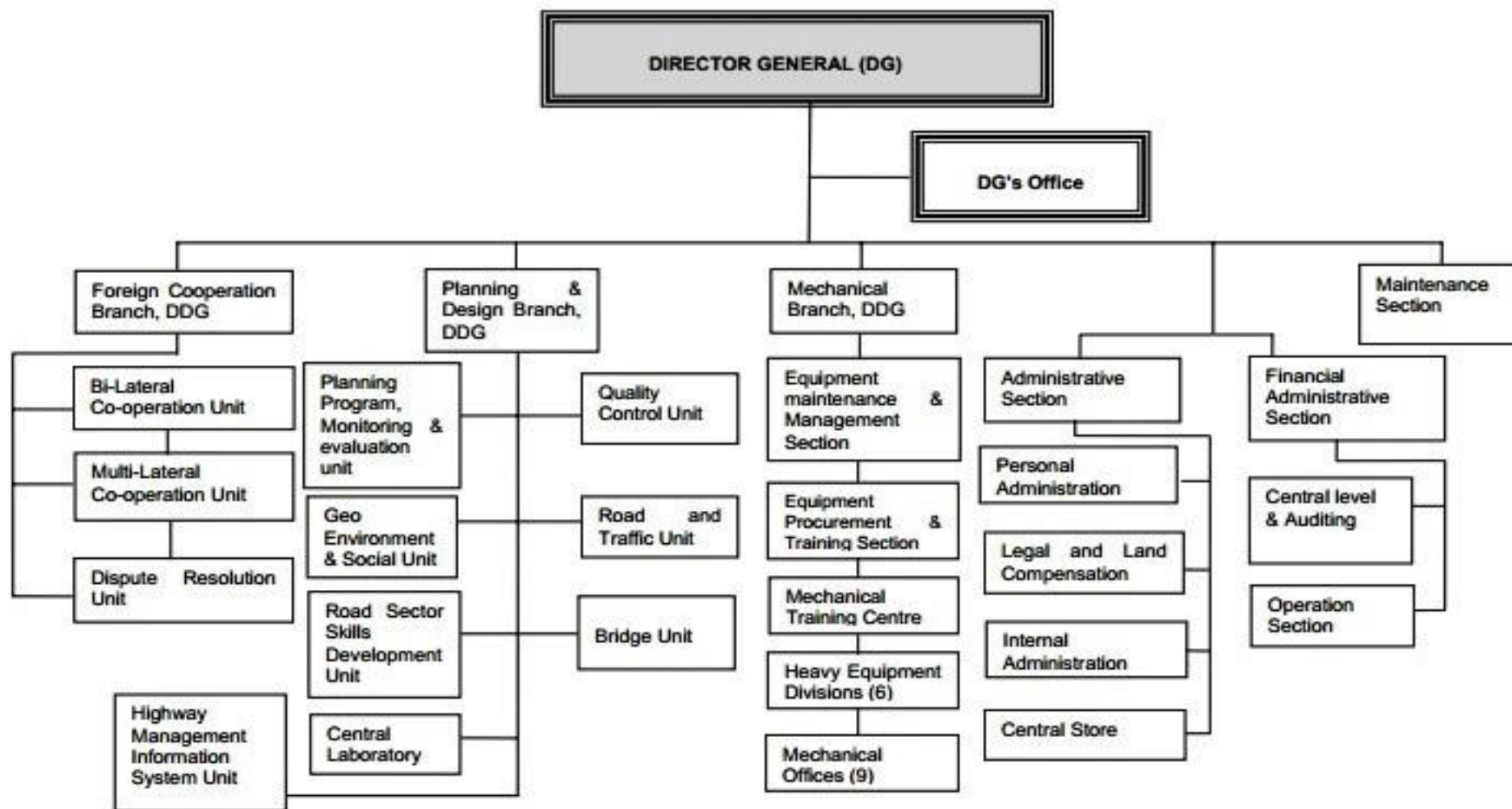
I. Evolution of GESU:

Geo Environment and Social Unit was at first established in 1988 as the “Environmental Management Coordination Unit” of the DoR to support Arun Access Road for the proposed Arun III Hydropower project and then reformed as permanent cell under Planning and Design Branch with the name Geo Environment Unit (GEU) in the year 1994. Initially the (1994-1999) unit was supported by Overseas Development Agency (Britain) and World bank for Road maintenance and Rehabilitation projects. The support was mainly focused on capacity building and strengthening in bio engineering area and environmental sector. Later in the year 2003, the section was the unit was extended as Geo Environment and Social Unit (GESU).

II .Constraints of GESU

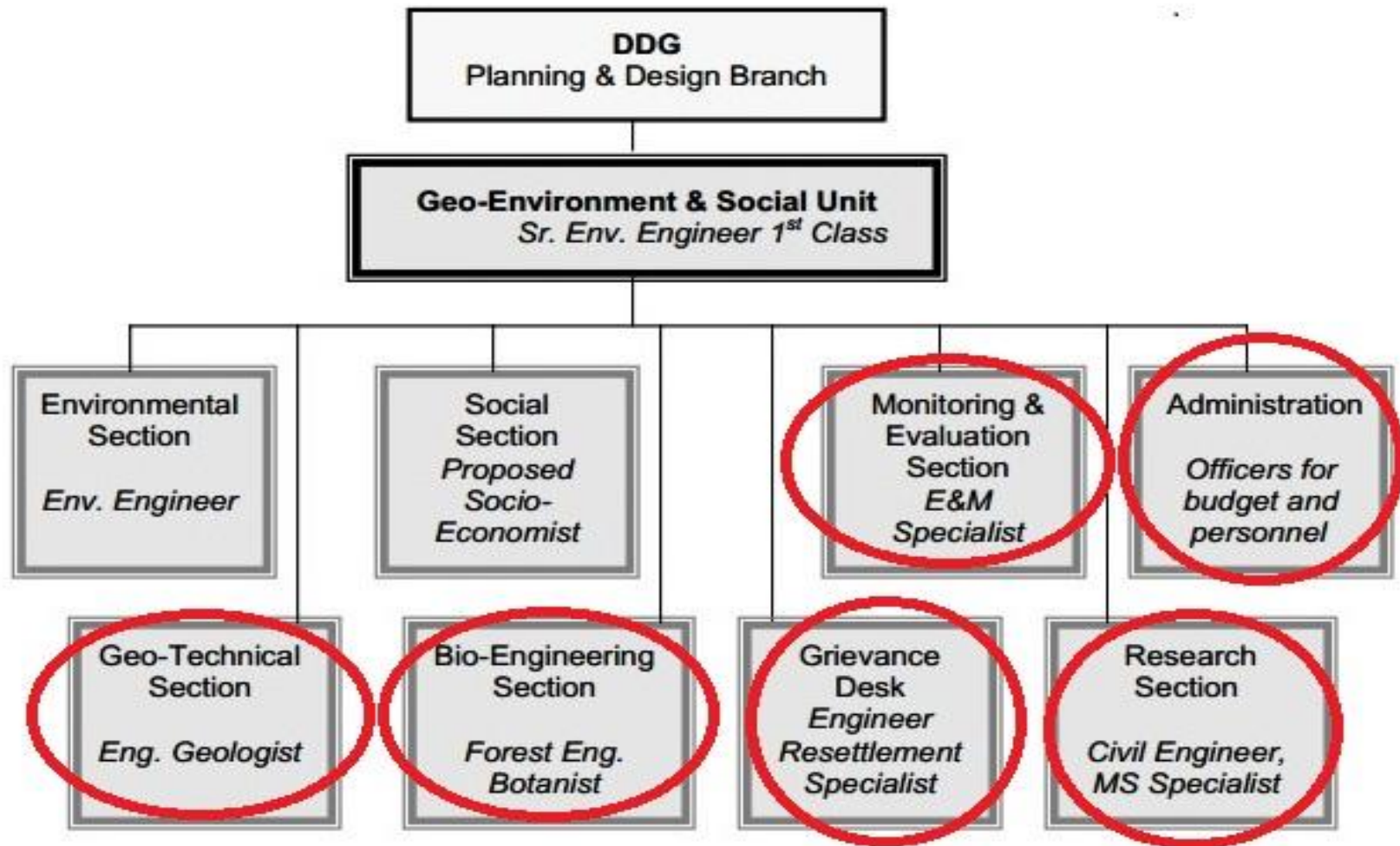
- The present situation of GESU has improved significantly, yet it lacks some of the major expertise essential for its upgradation, such as experts with biological and geological knowledge. Due to this, there always remains chance of overlooking of these issues.
- Till now no progress has been made on the restructuring of GESU proposed on 2007. The important section like monitoring and evaluation is overlooked, till now. Actually, this section is crucial in measuring the effectiveness of the of the currently practiced environment protection measures.
- This Section has only one vehicle, which is also 15 years old. There is urgent need of other four wheel drive vehicles, as the experts need to visit the most difficult and remote roads of Nepal frequently and it was known that the field visit could not be held on time, often.
- It was known that the budget allocated for this section is inadequate, which is the underlying cause for proper staffing of this section, as no money is available to pay for those people.
- A large number of engineers have received the internal and external training in environmental aspects however the unit has not retained any of them. Inadequate of a number of staff to review the environmental appraisal of the ever increasing road construction work. (IEE/EIA reports). Government has given low priority to the environment sectors.
- Compared to the project employees, GESU staffs do not get any intensive so nobody is interested to retain in this Unit. The work load is higher than other unit but it has not seen and can't quantify of the work.

III.Organizational Chart of the Department of Roads and the embedding of the GESU



Source: ESMF,2007

IV. Proposed Re-structuring of the GEU into a Geo-Environment and Social Unit



Source:ESMF,2007

However number of experts has been proposed for the restructuring of GESU, among them only two positions have been fulfilled. The circled six positions are vacant yet.

V. Actions required to upgrade the capacity of GESU:

- The proposed expertise should be appointed as soon as possible.
- Adequate budget should be allocated for this section.
- Additional vehicles should be provided so that monitoring can be done at proper time.
- Training on environmental issues should be given to the site engineers.
- Separate environment cost should be allocated for environmental management in BoQ, rather than include it within other headings.
- Mechanism of effective monitoring and evaluation and penalty for the contract/law violators should be developed.

Organizational Structure of RSDP and Consultant:

The detail of the organizational structure of the RSDP and Consultant is given in annex III. However there is provision of Environmental Expert in the organization and also found working in the field but it is not mentioned in the organizational chart (annex III).

Annex I
Photograph



SM1: Spoil disposed on barren land in between Sarada River and the road, there is irrigation canal along the road.



SM2: Proposed spoil disposal site (private agricultural land in between Sarada River and the Road).



SM3: Agricultural land on hill side has been collapsed due to road construction.



SM4: Sand and aggregate storage





CJ3: Heaps of spoil deposited on the bank of Goji river



CJ4: Fuel stored in underground metal tank



CJ5: Debris fallen from high above crossing the existing road at three different points



CJ6: Flush outlet constructed to minimize impact due to culvert



Annex II

List of Persons Consulted

Name list of contact persons:

S.N	NAME	POSITION	ROAD/Office
1	Purna Siddhi Lal Shrestha	Unit Chief	GESU/DoR
2	Ajay Kumar Mul	PC	RSDP/DoR
3	Bed kantha Yogal	PIC	KC/Bhaghang
4	Sanjay Shrestha	PIC/ DRO Chief	GD/ Baitadi
5	Shiva Nepal	PIC	SM/Rukum
6	Deepak K C	PIC	CJ/Jajarkot
7	Sir Bd. Ghimire	PIC	KMJ/Jumla
8	Meera Joshi	IND.N Environmental Development Consultant	GESU/DoR
9	Rama Kumari Shrestha	IND.N Social Development Consultant	GESU/DoR
10	Raj Bahadur Khadaka	RE	KC
11	Keshab Raj Acharya	RE	GD
12	Kamal Kumar Shakya	RE	SM
13	Biredra Kumar Singh	RE	CJ
14	Puskar Regmi	RE	KMJ
15	Tara Puri	RE	KMJ
16	Dipendra Upreti	QCE	KC
17	khum Bd. Khadka	Engineer	SM
18	Haraka Sing Dhami	Social Mobilizar	KC
19	Suvash Ghimire	Social Mobilizar	SM
20	Rohit Acharya	ARE	GD 1B
21	Gayandra Ghimire	ARE	GD 1 A
22	Pradip kumar Panta	QCE	GD2A/B
23	Ashim Ghimire	ARE	GD2A
24	Khancha Bhai Shrestha	CM	KC 3B
25	Sunil Dhungana	DCM	KC 3C
26	Amit Shrestha	CM	GD2A
27	Suman Gautam	ARE	SM4A
28	Subrana Chand	Social mobilizer	GD
29	Kamal Raj Bhandari	ARE	SM4B
30	Surya Bd. Rana	IOW	SM4B
31	Madhav Baral	QC	SM4A/B
32	Gopal Thapa	Engineer	SM4D
33	Surya Dhakal	ARE	5D
34	Laxmi	CM	5A/B
35	Rabinra kumar Thakur	ARE	5B
36	Nabaraj Sharma	Engineer	CJ
37	Pujan Giri	Engineer	KMJ
38	Bhudhar Mani Joshi	ARE	KMJ/6C
39	Mahesh Subedi	Engineer	Bajraguru/diwa
40	Santosh Shrestha	CM	Tamang PS Golden
41	Sunil Paudyal	ARE	KMJ/6B
42	Gayendra Ghimire	ARE	KMJ/6A

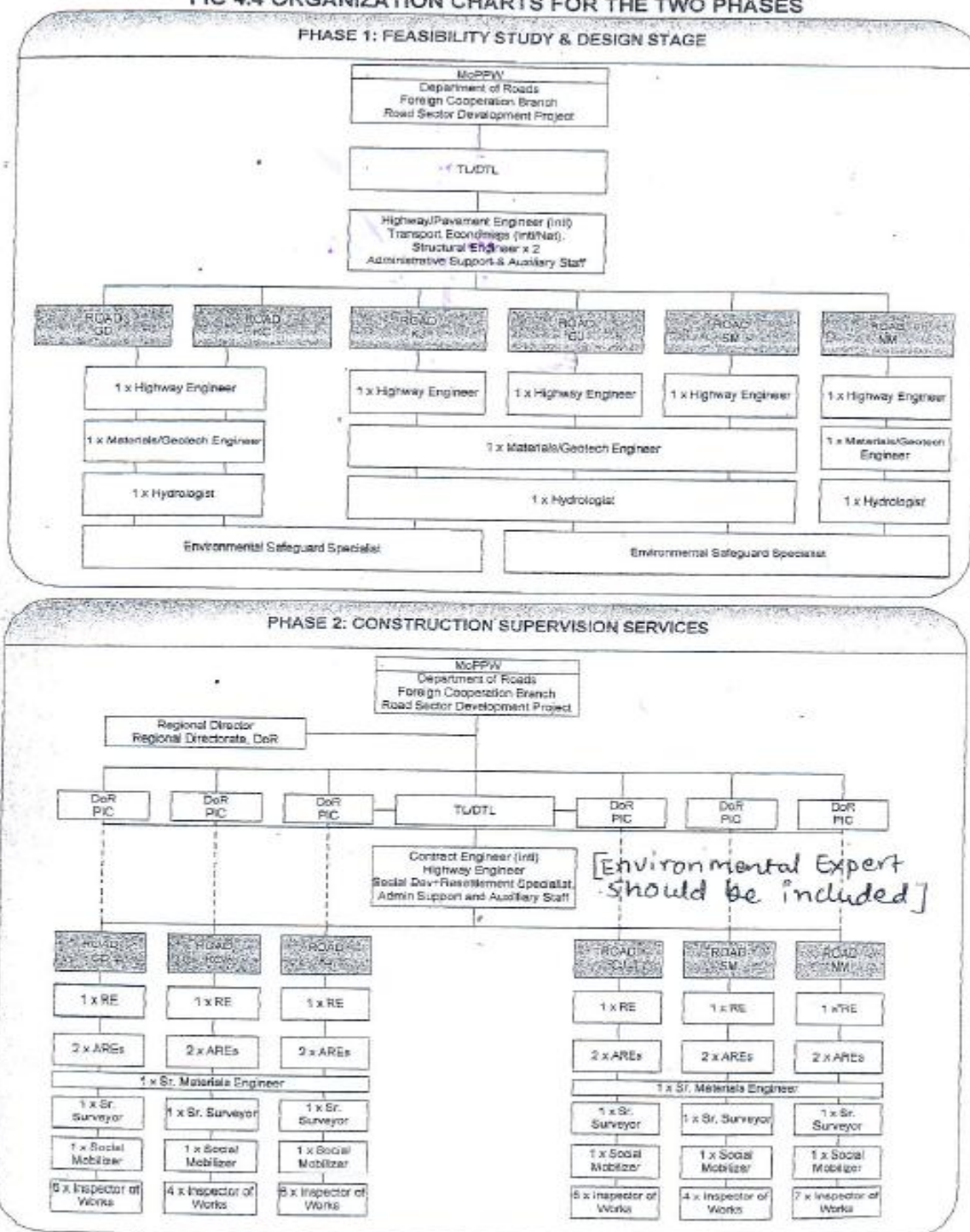
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Annex III

Organizational Structure of RSDP & Consultant

FIG 4.4 ORGANIZATION CHARTS FOR THE TWO PHASES



Ministry of Physical Planning & Works
Government of Nepal
Department of Roads
Foreign Co-operation Branch
Road Sector Development Project

Road Sector Development Project: IDA Grant No. H339-NEP

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