

Environmental and Social Management Framework (ESMF) Addendum

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Department of Roads
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Foreword

The Departmental guideline Environmental and Social Management Frame Work (ESMF) document was prepared for addressing environmental and social issues associated with new road construction and upgrading and approved on 2064/3/12 (26 June 2007) .

Before the implementation of Bridge Improvement and Maintenance Program, World Bank team has carried out environmental and social system analysis and found that this guide should be updated to cover all the bridge related environmental and social issues.

The GESU in close contact with World Bank prepared the addendum to the ESMF and is approved on 2069/12/5 (2013/3/18) and DOR has made decision on 2069/12/27 (2013/4/19) to circulate the addendum to all the stakeholders for effective implementation along with the main ESMF document.

The bullet no. 6 & 7 of Nepali version in the entitlement matrix table 7.2 of ESMF (Nepali Version) is also approved as addendum.

GESU/ DoR

Preamble

Environmental and Social Management Framework (ESMF) is a guideline prepared to address Environmental and Social issues associated with new road construction and upgrading. It is an essential guide to be implemented by all DoR entities and was approved by the Ministry level on 26 June 2007. It was prepared as a part of the Sector Wide Road Project (SWRP) & Priority Investment Plan (PIP) under funding from WB/IDA/RMDP. The existing ESMF is inadequate to address bridge related safeguard measures.

The Department of Roads (DoR) with assistance of the World Bank conducted an Environmental and Social System Analysis (ESSA) in order to make existing ESMF compatible for bridges and strengthen the existing structure and function of the Geo-environment and Social Unit (GESU) within the DoR. The ESSA has made three major recommendations.

1. Update the DOR ESMF to include DOR Bridge program
2. Strengthen Environment & Social impact management within DOR
3. Strengthen GESU in terms of human and financial resources

The DoR has already committed to address other two strengthening issues. The GESU has proposed addendum in existing ESMF, considering to address safeguard measures for bridges. Along with addendum, following expressions are also to be considered:

- 1) The word “road” is to be read as “road and bridges”
- 2) The word “environmental” is to be read as “environmental and social”
- 3) The word “construction” is to be read as “construction and maintenance”
- 4) The word “EA” is to be read as “EA and SA”

Amendments /Update to ESMF relevant to the construction and maintenance of bridges

| S.N | Page No. | Clause No./ Heading | Location | | to be read after correction/revision |
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| | | | Line No. | After word/frase | |
| 1 | 1 | 1.1.1 background | 5 | Add new sentence at the end of first paragraph | "As of now the Government has already declared about 11,635 km of Strategic Road Network having about 1,709 different types of bridges. " * |
| 2 | 3. | 1.3 Rationale.... | 1 | Replace the first paragraph | Road and <u>bridges</u> construction and maintenance activities bear the risks for potential environmental impacts likely to occur in the physical, biological, social, cultural and sometimes archeological spheres. Landslides, slope failures, soil erosion, loss of national parks, forest and agricultural lands and interference with water courses, <u>aquatic biodiversity</u> , <u>river regime change</u> , <u>extraction of sand/gravel</u> , <u>irrigation facilities</u> , <u>run off and sedimentation</u> , <u>occupational health and safety</u> , <u>land acquisition</u> , <u>damages on cultural properties</u> , <u>effects on the unique life of ethnic monitoring communities</u> are among the major impacts resulting from road and <u>bridge construction</u> that need thorough addressing in <u>planning</u> , <u>design</u> and construction, incorporating proven mitigation measures that will bring adwers effects down to acceptable levels. |
| | | | bullet 5, line 2 | to be | followed and |
| 3 | 7 | Table1.1 1) Road agency DoR | | Add after "25 divisional Road offices" | ADB <u>Directorate's office</u> , BIMP and other bridge projects, ACQMP and other road projects, Postal road project, Fast track road project |

*addition as per SSRN 2011/2012

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| 4 | | | 13 | EMAP | and resettlement action plan (RAP) or vulnerable community development |
| 5 | 16 | Table 2.3 | 27 line | Rs | Replace " Rs.10 million to 100 million" by " Rs. 50 mllion to250 million" |
| | | | | Rs. | Replace Rs. 100 million to " Rs. 250 million (except not listed in the schedule 2 EPR)" |
| 6 | 18 | Step 5 a (2) | 1 | works | Replace "Public Works Department " by "Public works Directive" |
| 7 | 36 | Last para last Sentence | last para last sentence | | Replace the last sentence of last para " The following table shall serve as guidance to the Field Teams to consider practical and easily verifiable parameters to be typically monitored under the prevailing conditions in <u>Western and Central Nepal</u> " by " The following table shall serve as guidance to the Field Teams to consider practical and easily verifiable parameters to be typically monitored under the prevailing conditions throughout Nepal" |
| 8 | 44 | 2.2.2 First para first sentence | first para first sentence | into | Replace the first sentence of first para " Praxis and legal provision in Nepal require that an Environmental Auditing should be carried out two years after the project comes into <u>in</u> operation " by " Praxis and legal provision in Nepal require that an Environmental Auditing should be carried out two years after the project comes into operation" |

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| 9 | 48 | table 5.1 Project indentification | point 3 | resettlement | Replace the point 3 " Identify alternatives to minimize resettlement " by " Identify alternatives to minimize resettlement <u>and other adverse impacts assessing perceptoon and views of indigenou communities regarding the project</u> " |
| 10 | 54 | 3.3.13 | Heading | Road | Replace the heading " International Legal Provisions with likely relevance for Road Projects " by " International Legal Provisions with likely relevance for <u>Road and Bridge</u> Projects " |
| 11 | 71 | 4.1 | 1st para 1st line | | Replace the sentence "Based on the consultation and field surveys,it appears thatimprovement of existing roads" by"Based on the consultations and field surveys conducted, it appears that the SRN sub projects proposed under yhe current program including bridge program will not have any major environmental and social impacts, as most(with the exception of the 88 km Nagma-Gamgadhi Road, accessing Mugu District) involve only the upgrading or improvement of existing roads and bridges." |

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| 12 | 82 | 4.3.1 impacts on the physical environment and land | | paragraph 9 | p. Change in River Regime: Construction of road bridges may lead to modification of flood plain and river bed and affect landscape and aquatic ecology. This will cause changes in the river regime (morphology, longitudinal profile and hydrological character) basically due to guide bunds, flood protection works, construction of piers etc. Effect of this is depended on the size and location of a bridge as well as nature of the river. The extraction of sand and gravel from the river during bridge construction is another reason for such changes The extraction of sand and gravel could continue even after completion of the bridge construction. |
| | 90 | 4.3.2 Impacts on biological resourses | 2 | where | bridge |
| | | | 5 | d. Damage of aquatic Habitats | Add after last paragraph "Sand and gravel extraction from river, initiated during construction, could be a main cause for loss of habitats including spawning grounds, and feeding grounds of aquatic life (fish/aquatic insects/phytoplankton/zooplanktons). The changes in river morphology, longitudinal profile and depth and velocity of water flow may also lead to adverse impacts on the aquatic life. The pollution or degradation of water quality due to construction wastes and sounds/vibration produced in river water during construction may also affect the fishes and aquatic life. The construction workers may also involve in fishing". |

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| | | | Line No. | After word/frase | |
| 13 | | 6.2.1 | 1 | During design phase | The first paragraph will be read as "The mitigation measures adopted during design or pre-construction phase, will aim to address and mitigate expected environmental and social impacts of the proposed road & bridge investments." |
| | | a. route or site selection | Heading | route | Replace "Route Selection' by "Route or Site Selection' |
| | | | 1 | alignment | and site for bridge |
| 14 | 116 | 6.2.2 (ii) 1 Impact Mitigation Relating to the Physical Environment | | Subhead 'n' Avoiding hazards caused by the use of Bituman | After sub head 6.2.2 (ii) 1 (n) add "O. Addressing effects on aquatic life* P.addressing river regime issue (morphology, profile and scope* |

*to cover bridge projects, attached separately.

*1 Word "road" is to be read as "road and bridges"

2Word "environmental" is to be read as "environmental and social"

3Word "construction" is to be read as "construction and maintenance"

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| 14 | 116 | | | subhead 'n' Avoiding hazards caused by the use of Bitumen | <p>O. addressing effects on aquatic life Impacts during construction period The construction of Roads and Bridges will likely to have impacts on local fish resources. The impacts are loss of habitat, reduced water flow, changes in water quality, and possible increases in river sedimentation are the impacts likely to appear/occur on aquatic life. The possible increase in sediment during dry period may affect spawning areas, survival of fertilized egg and fish. The fry and fingerlings are supposed to be highly affected by choking of the gill.</p> <p>Fish Exploitation/Increase Fishing Activity. Fishing activity in the project area may increase throughout the duration of the project construction due to the influx of people. The labour force and their dependents may involve in fishing activities. Use of dynamites, herbicides and electric rod will have an adverse impact on the local fish population. Use of dynamite, poison and electric rod will not only kills the fry and fingerlings including adults abut also distract the habitat. Loss of Micro Organism.</p> | |

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| | | | | | <p>Dewatering below the weirs will have serious impacts on micro flora and aquatic invertebrate. Loss of phyto-planktons, zooplanktons and aquatic insects will be lost in this section. The reduced flow would result in the lower flow velocities increased water temperature and shifts in zooplankton, aquatic vegetation and riparian vegetation. There could be a shortage of fish food for present fish.</p> <p>Fish Entrainment.</p> <p>Some fish species may get entrained in the construction structures especially during the dry season when all the river water river will get diverted during construction period. The loss of fish due to entrainment is:</p> <p>site specific. The magnitude of entrainment is expected to be low.</p> <p>Loss of Livelihood of Fisherman.</p> <p>The water diversion of river will affect the fisheries resources in the project area and influence the livelihood and income of families living around the project area. The local fisherman will be highly affected by the reduced flow.</p> | |

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| | | | | | <ul style="list-style-type: none"> • Preventive Measures <ul style="list-style-type: none"> i. avoid unnecessary blasting, cutting, excavation. ii. construct adequate drainage network iii. Avoid vulnerable slopes for cutting. iv. minimize vegetation clearance v. compaction on the dumped material and vi. plantation of tree and bioengineering work be under taken. • Mitigation Measures. <ul style="list-style-type: none"> i. Aquatic habitat should be maintained healthy. ii. Debris should be disposed in a safer place leaving little impact in aquatic habitat. iii. Spoil Material should be disposed along the bank of the river. It is advised that project should prepare a detail muck disposal plan throughout construction period. The suitable alternative is the acquisition of land for work force and other units nearby project site. | |

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| | | | Line No. | After word frase | | |
| | | | | | <p>iv. No disturbances in fish movement during June to October below and above project area.</p> <p>v. Strictly prohibition of fishing activities..</p> <p>vi. Gabion and geotechnical structures to prevent any silt entrance to the river.</p> <p>vii. Riparian release the 10-20% of the flow is proposed to maintain the major aquatic life such as the micro flora, invertebrates and minor resident fish species downstream.</p> <p>viii. Water quality protection measures will have to be applied during construction phase. The construction contractor will require developing a waste management plan which details the use, storage and disposal of toxic, solid and sanitary waste and materials. No direct spillage of petrochemical or toxic materials should be allowed in to the aquatic ecosystem. Latrines established at the construction camp will be located in areas isolated from surface and ground water.</p> <p>ix. Habitat Management Program for the loss of spawning and rearing grounds and productivity of fish foods and to minimize the fish losses should be under taken.</p> | |

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| | | | Line No. | After word frase | | |
| | | | | | <ul style="list-style-type: none"> • Compensatory Measures i. Training and awareness program is suggested to compensate the impact on local fisherman and increase the living status of the fishermen ii. Consider aquaculture development programs to compensate for losses in catch fisheries, P. addressing river regime issue (morphology , profle and scope) i. The removal of river boulders, temporary diversion of the river for construction of weir, water pollution and possible increase in fishing activities are considered adverse impact of the project during construction phase. The boulders occupy large pool area acting as fish shelter where as pebbles and gravels deposited in the river provide potential spawning habitat. The excess removal of boulders from a particular place will affect the fish habitat, and cause upstream migration and provide easy place for exploitation of fishes. | |

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| | | | | | <p>ii. The impacts on biotic environment are expected to be mostly negative during the construction of Roads and Bridges. Various project activities are likely to cause the loss of marginal riverine vegetation and local fish resources a result of loss of habitat. The construction phase impacts are associated with sedimentation and water quality changes due to disposal of effluents.</p> <p>iii. Increase in E coli, nitrogen and phosphorus nutrients because of sanitary wastes disposal in the river system.</p> <p>iv. Increase in turbidity and solid content of river water.</p> <p>v. Diversion of water will have pronounced effect on downstream water quality parameters.</p> <p>• Preventive Measures</p> <p>i. to minimize the negative impacts, prior study of available data, detail study of site specific baseline data, study of impact zonation, water quality measures such as dissilove Oxygen, pH, water temperature, Aquatic plants, Invertebrate and food links should be accomplished.</p> | |

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| | | | | | <p>ii. study on site specific available local resident, midrange and long distance migrating fish species should be completed to prepare action plan.</p> <p>• Mitigation Measures.</p> <p>i. Control soil run-off into the river., provide drainage facilities, and compact fill sites.</p> <p>ii. Provide sufficient number of latrines and community toilets with septic tank/soak pits.</p> <p>iii. Do not built toilets too close to drinking water source, on the riverbanks and over watercourses.</p> <p>iv. Divert the stream away from the quarry sites.</p> <p>v. Limit extraction to the approved amount.</p> <p>vi. Ensure release of as much water as possible.</p> <p>vii. Quarring of boulder and sand from the river should be prohibited for construction uses. This will distrube the whole river morphology, profile and landscape.</p> | |

| नोक्सानीको किसिम | हक अधिकारको आधार | मुआब्जा/क्षतिपूर्ति नीतिको विवरण | कार्यान्वयनका पूर्व शर्त/प्रक्रियाहरू |
|---|--|--|---|
| १. कृषि, आवासीय, व्यापारिक, चरन र वन क्षेत्रको जग्गा | | | |
| १.१ कुनै पनि किसिमको स्वामित्वमा भएको निजी जग्गाको नोक्सानी । | <ul style="list-style-type: none"> ◆ दतावाल ◆ अतिक्रमणकर्ता/सार्वजनिक जग्गा जबरजस्ती कब्जा गर्ने व्यक्ति | <ol style="list-style-type: none"> १) सट्टा भर्ना गर्ने पूर्ण मूल्यमा मुआब्जा दिनु वा २) छरछिमेकमा त्यति नै क्षेत्रफल र त्यतिनै उत्पादन हुने र जग्गाधनीलाई चित्त बुझ्ने जग्गा उसको नाममा दता गरी दिनु । ३) यदि वरपर जग्गा उपलब्ध छैन भने मुआब्जाको रूपमा पूरा सट्टाभर्नाको मूल्य प्रचलित बजारभाउ वा सरकारी दरमध्ये जुन बढी छ त्यही दिनु । ४) जोखिमयुक्त (Vulnerable) समूहहरूका हकमा जग्गाका लागि जग्गानै दिन प्राथमिकता दिनुपर्छ । ५) अतिक्रमणकर्ता/जबरजस्ती कब्जा गरी बस्ने प्रभावित व्यक्तिहरूले निर्धारित मितिभन्दा तीन वर्ष पहिले देखि जग्गा कमाइ आएको भए त्यस्ता व्यक्तिलाई ऐलानी वा सरकारी जग्गा उपलब्ध भए जग्गा नै दिनुपर्छ । निर्धारित मितिभन्दा पछाडी भोग चलन गर्दै आएको भए त्यस्तालाई नोक्सानीको कुनै मुआब्जा दिइदैन । ६) ओगटिएको जग्गा (जग्गा, अन्य सम्पत्ति रोजगारी) को क्षतिपूर्ति दिइदा पहिले कै अवस्था सरह वा पहिले कै जीविकोपार्जन कायम हुने गरी पुनर्वास सहायता दिनुपर्छ । ७) खेतियोग्य जग्गाको हकमा प्रभावित व्यक्तिलाई एक वर्षको उब्जनी मूल्य बराबरको उब्जनी अबरोध सहयोग उपलब्ध गराउनु पर्ने । | <ul style="list-style-type: none"> ● असर पर्ने हरेक गा.वि.स. मा रहेका ऐलानी जग्गाको सूची आवश्यक छ । ● प्रभावित र जग्गावालाहरू र नोक्सान भएका जग्गाको क्षेत्रफलको विवरण आवश्यक छ । ● अधिग्रहण गर्नुभन्दा ३५ दिन अगावै खाली गर्न सूचना दिइने छ । ● यदि गम्भीर रूपले प्रभावित जग्गाधनीले महत्वपूर्ण नगद रकम मुआब्जा पाई भुक्तानी पाएको १ वर्ष भित्र त्यसै किसिमको जग्गा खरिद गर्छ भने जग्गामा लाग्ने सबै रजिष्ट्रेसन दस्तुर, करहरू र महशुल आयोजनाबाट नै व्यहोरिने छ । ● नगदमा दिइने मुआब्जा अवस्था हेरी नगद वा चेकको रूपमा जग्गावालाको इच्छा अनुसार दिइने छ । ● मुआब्जा रकम न्याय संगत होस् भनेर मुआब्जा दिनका लागि मुआब्जाका दरहरू निर्धारण गर्ने काम १ वर्षभन्दा अगाडी गरिनु हुदैन । |