Luxembourg, 26th June 2015

# Environmental and Social Data Sheet

## Overview

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| Project Name: | Nepal Grid Development Programme |
| Project Number: | 2012-0407 |
| Country: | Nepal |
| Project Description: | The project comprises the construction of transmission infrastructure required to evacuate electricity from newly-constructed hydropower plants in the Trishuli River basin into the national grid, as well as a rural electrification component to supply power to communities in the vicinity of the project areas. The project also includes an upgrade of the national Load Dispatch Centre (LDC). |

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| EIA required: | yes |
| Project included in Carbon Footprint Exercise[1]: | no |

## Summary of Environmental and Social Assessment, including key issues and overall conclusion and recommendation

The main environmental impacts associated with the transmission component of the project will be related to permanent and temporary land acquisition for construction of the substations, the tower foundations and for the 30 m Right of Way (RoW) respectively. Routing to avoid settlements and to minimise the land take, where feasible, will be the primary mitigation measure for the project. No existing residences are expected to be relocated. The second category of moderate impacts includes alteration of surface drainage patterns, change in land use practice, localised noise and air pollution. Compensation for permanently acquired and temporarily used lands will be provided in accordance with international standards. The temporarily used land will be returned to the respective land owners as in the previous condition. The Trishuli River acts as the western border of the Langtang National Park; however, all project associated facilities will be located to the west of the river, outside of the National Park and no significant negative impact on this protected area is expected. The other components of the project, i.e. upgrade of the national Load Dispatch Centre and the Neighbourhood Electrification Component, are not expected to have any significant negative environmental or social impacts.

Overall, the environmental and social effects of the project are considered to be moderate and can be addressed adequately through the different mitigation plans and respective conditions to be included in the works and supply contracts. The remaining negative impacts after the implementation of appropriate compensation and mitigation measures are expected to be lower than the economic, environmental (e.g. climate-friendly energy supply) and social (e.g. neighbourhood electrification component) benefits. The main challenge will be in implementing and monitoring the mitigation measures and in ensuring appropriate consultations and compensation arrangements with the various stakeholders. The financiers will ensure that the promoter has access to the necessary support and expertise from the implementation consultant, who will support the implementation and monitoring of the environmental and social management plan.

[1] Only projects that meet the scope of the Pilot Exercise, as defined in the EIB draft Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: above 100,000 tons CO2e/year absolute (gross) or 20,000 tons CO2e/year relative (net) – both increases and savings.

**Signature conditions**

- Confirmation from the competent national authority of the approval of the Initial Environmental Examinations for: a) the 132/220 kV Chilime Sub-station Hub and Chilime-Trishuli 220 kV Transmission Line; and b) the Trishuli 3 B Hub Substation.

**Disbursement conditions**

- Presentation of the environmental and social impact assessment, the land acquisition and compensation plan, the stakeholder engagement plan (including the application of free, prior and informed consent for impacts affecting indigenous peoples) and the environmental and social management plan, in form and substance satisfactory to and approved by the Lenders.

**Undertakings**

- NEA shall implement the approved land acquisition management plan, stakeholder engagement plan and environmental and social management plan and report on the implementation status of these plans on a quarterly basis.
- NEA shall inform the Bank of any relevant changes regarding the design of project measures and especially related to the routing of the transmission line. All significant changes will be subject to approval by the Bank, and by KfW as the lead financier.

## Environmental and Social Assessment

### Environmental Assessment

The technical characteristics of the transmission line would classify the project under Annex I of Directive 2011/92/EU if located within the EU and an Environmental Impact assessment (EIA) would therefore be required. In Nepal, the Environment Protection Act (EPA), 1997 (B.S. 2053) and the Environment Protection Rules (EPR), 1997 (B.S. 2053) are the major legislative texts defining the requirements for environmental impact assessments and public engagement for any development proposal. According to national procedures, the project only requires Initial Environmental Examination (IEE) procedures, and not a full scope Environmental and Social Impact Assessment (ESIA). The promoter has prepared 2 IEEs: one for the Chilime substation and 26.5 km long Chilime-Trishuli transmission line; and a separate IEE for the Trishuli 3B Hub substation. These indicate that the environmental and social impacts are moderate, within acceptable limits and can generally be mitigated. The other components of the project, i.e. upgrade of the national Load Dispatch Centre and the neighbourhood electrification component, are not expected to have any significant negative environmental or social impacts.

Following completion of the IEE procedures, an international consultant was appointed to undertake an independent “Gap Analysis” of the IEE documents, based on the International Finance Corporation (IFC) Performance Standards 2012 and World Bank Group/IFC Environment, Health and Safety Guidelines for Electric Power Transmission and Distribution. The Gap Analysis Report identified the requirement for specific additional assessments and studies, in particular related to biodiversity, vulnerable groups and cumulative impact assessment. An IEE Addendum has subsequently been prepared to address the gaps and to align the project with IFC/World Bank and EIB Standards.

In addition to the two IEEs and the IEE Addendum, the following documents are under preparation:

- a Non-Technical Summary (NTS) covering the both of the IEEs and the IEE Addendum;
- a Stakeholder Engagement Plan (SEP);
- an Environmental and Social Management Plan (ESMP); and
- a Land Acquisition and Compensation Plan (LACP).

The final versions of the ESIA documentation, including the ESMP, will be duly taken into account in finalisation of the project design and project implementation.

The main environmental impacts and associated mitigating measures are as follows:

Water

The construction phase of this project presents more risks to the water environment than the operation phase. These include soil disturbances from foundation work, accidental spills, oil leakage or waste generated from work camps, all of which can lead to the contamination of surface water bodies (including impacts to freshwater ecosystems and fish) or pollution of groundwater.

The risk of impacts will be reduced through the adoption of a range of controls, which are set out in the ESMP. The contractor will be required to provide onsite facilities to control and treat wastes generated within the work camps. The substations will be designed to prevent oil leakages from transformers. During the detailed design stage, secondary containment will be proposed to trap any oil leakage.

No significant impact on the watershed and natural drainage downstream of the project is expected during the construction and operation phases.

Waste

The improper disposal of solid waste like cement bags and other left -over construction materials, kitchen waste and waste generated by the work camps can cause adverse impacts to the environment.

Most of the excavated soil of tower pad (>90%) will be used for back filling and compaction. Garbage and solid wastes generated in the Project area will be either buried in designed landfill areas or converted into compost. A sufficient amount of toilets will be installed in all construction camps. Waste oils and chemicals will be collected and stored in suitable storage tanks and disposed of by certified company.

No significant impact is predicted to arise from waste disposal during construction or operation.

Biodiversity

For biodiversity, the main significant impacts during construction relate to direct loss of Natural Habitat along the RoW and at the tower locations totalling 40.9 ha (for the current footprint, prior to mitigation). Indirect loss of Natural habitat will also occur during construction, although the exact extent likely to be affected is difficult to predict. With the implementation of mitigation such as the use of hand tools, spacing towers ridge to ridge and minimising forest clearance, the total area of Natural habitat to be lost will be significantly reduced. In addition, compensation planting will be implemented to achieve an overall ‘no net loss’ to biodiversity for the loss of all Natural Habitat. Following the above mitigation the residual impacts for forest loss and degradation during construction are considered to be of minor significance.

Direct loss of flora and fauna will also occur during construction, although mitigation measures including provision of conservation awareness training and employment of a dedicated Project Environment Officer will be implemented reducing the residual impacts to a level that is considered not significant.

During operation, impacts on habitats and species (other than those for birds and bats from collision with transmission lines) will largely be indirect, from improved access to forest which could then cause further exploitation of these resources. Mitigation, including provision of awareness training and management of the compensation planting area, will be implemented reducing the residual impacts to a level considered to be of minor significance for habitats and not significant for species.

Direct loss of bats and birds as a result of collisions with transmission lines are generally an important factor to be considered, particularly for all bat species and bird species that are susceptible to transmission line collisions (such as raptors, geese, cranes, storks and some waders). Mitigation measures in the form of incorporating nest boxes into tower designs for raptors and the use of deflectors along the earth wire will significantly reduce impacts and for low risk species, the residual impacts will be not significant. However, for species which are of high sensitivity (Protected / IUCN Red Listed species) residual impacts will remain of moderate significance.

The Trishuli River acts as the western border of the Langtang National Park; however, all project associated facilities will be located to the west of the river, outside of the National Park and no significant negative impact on this protected area is expected.

Landscape
The impact of the substations, transmission line and towers on the landscape value can only be mitigated to a limited extent. The stringing of the 220 kV transmission line with 42.5 m high towers on average will cause visual change to the existing landscape and scenery. Possible mitigation measures comprise planting of trees and bushes around the substations.

Ambient air & noise
Impacts due to air emissions from the construction sites will only be short term at each tower location. The overall vehicular movement and frequency is low and will not differ much from the prevailing conditions. The emission of noise and vibrations are inevitable during construction. Most tower locations are chosen such that they are far from the settlements in the area. Only a few settlements close to the towers and access roads will therefore be impacted by noise pollution. The substations will emit a humming sound. The transmission line also emits some noise, especially during wet weather conditions, due to the so-called corona effect. As the transmission line will not cross residential areas this is not deemed to be significant. Furthermore, the corona effect can be reduced through design and this should be applied in the detailed design.

Air and noise pollution during construction will be temporary. In sensitive areas (e.g. near settlements) working hours will be limited to daytime work. Water spraying will be done to control dust pollution.

The impacts are expected to be insignificant.

Electromagnetic fields
Transmission lines create electric and magnetic fields (EMFs). EMFs are strongest beneath the lines and diminish rapidly with distance. Scientific research on the effects of EMFs on public health has neither demonstrated the existence of a significant risk, nor has it proven the complete absence of risk.

During the detailed design phase, measures will be considered to reduce the EMF effect and it will be insured that international best practice thresholds are met. The impacts are expected to be insignificant.

Cumulative impacts
The Upper Trishuli River Basin is currently subject to the planning of several Run-of-River HPPs. They are either in planning phase, under construction or in operation. All HPP projects are subjection to Environmental Impact Assessments (EIA) according to national legislation. Those EIAs and the projects are subject to approval by the Ministry of Environment. Chilime and Trishuli Substations will serve as a connection for several HPPs in the Upper Trishuli Valley to the national grid and especially Kathmandu area. Trishuli Substation will connect Trishuli 3A, Upper Trishuli-1, Trishuli 3B, Ankhu Khola, Upper Mailiung, Upper Mailung A, and Samundratar. To evacuate the energy, several new TLs will be required.

Cumulative impacts may arise due to construction activities of the Project, of other HPPs and of transmission lines in the area. Altogether, a significant amount of agricultural and forestry land was and will be converted due to the planned projects in the Upper Trishuli Valley. Visual impacts will be reduced to the hilly nature of the terrain. In order to minimize the potential impacts, best practice approaches should be applied to all projects in the area. It should be insured that potentially affected land owners are not affected by more than one project. This will be addressed in the project design and monitored following stakeholder consultations and the assessment of such cumulative impacts.

## Social Assessment, where applicable

82.6 % of the population in the 6 project-affected village district committees (VDCs) belong to Indigenous Peoples (IPs), in this case Tamang, Gurung and Newar, and 3.2% to Dalit ("untouchables") groups (Kami, Damai and Sarki). Besides IPs and Dalit groups, the following vulnerable groups have been identified within the project context: women, disabled, the elderly, displaced persons and landless farmers. Vulnerable groups will receive particular

attention when it comes to stakeholder engagement. Furthermore, the process of Free, Prior and Informed Consent (FPIC) will be applied in case IPs are significantly affected by the Project.

The project will result in some permanent and temporary land take, which will occur during construction along the transmission line and the work camps. The land take will primarily have an impact on livelihoods of affected households while the project design has been adjusted to avoid any physical resettlement. 28 households will be affected though the permanent land take for Trishuli Substation. Of the 5.3 ha land required for the construction of the substation, 3.7 ha is privately owned cultivated land. The rest is flood plain (government land).

In addition, the Project will affect 32 households at Chilime Substation and along the transmission line. The temporary land take amounts to approx. 78.6 ha for the right of way (excluding angle towers) and 0.5 ha for the 2 temporary work camps. The land under the right of way will be prohibited for the construction of houses, sheds and plantation of big trees etc.; however, there will be no restriction on agricultural activities after the construction work is finished and all required land will be reinstated after usage to the conditions prior to the construction activities.

The loss due to permanent land take, any agricultural production losses, the loss of buildings, and the temporary land use will be compensated based on international involuntary acquisition standards. A Land Acquisition and Compensation Plan (LACP) is currently being prepared to this end by the Promoter.

Any potential risks related to public health and safety arising from accidents involving construction equipment, operational traffic, structural failures, release of hazardous materials, exposure to diseases and the activities of workers will be addressed through the ESMP measures. Also, a Health, Sanitation and Safety Programme will be conducted to alert local communities to construction-related safety issues and to educate them about health and sanitation issues.

The construction of the project will require a considerable workforce. The Project will comply with all relevant national employment and labour laws and international standards including International Labour Organisation (ILO) conventions. The Project will offer employment opportunities during the construction phase (approx. 150 jobs, both skilled and unskilled labour). Several training programs will be implemented to benefit local communities, such as an Improved Agricultural Farming Program, a Skill Development Program, an Education Support Program and a Health and Sanitation. NEA is planning to provide some of the local communities with electricity, which will improve livelihood.

## Public Consultation and Stakeholder Engagement, where required

According to the Nepali legislation, community engagement is undertaken once during the baseline survey/ field observation for the IEE and again after the preparation of the draft IEE, when the executive summary of the draft IEE is made available in the Nepali language. To complement these community consultations during the preparation of the IEEs, a Stakeholder Engagement Plan (SEP) has been prepared for the project. The overall aim of the SEP is to ensure that a timely, consistent, comprehensive, coordinated and culturally appropriate approach is applied for stakeholder consultation and Project disclosure – with specific attention paid to the vulnerable groups.

NEA will establish an Environmental Management and Grievances Redress Unit under the Project organizational setup. For example The Promoter will be required to ensure that a grievance mechanism is implemented and easily available to all affected people and that they are sufficiently informed about the mechanism.

## Other Environmental and Social Aspects

Implications of the earthquake of 25th April 2015 and subsequent events

The full consequences of the earthquake that struck Nepal on 25th April 2015 and subsequent events are not yet clear; however, the epicentre was located close to the Upper Trishuli Valley and extensive damage has been reported to public and private infrastructure in the vicinity of the project. The stakeholder engagement plan and the environmental and social management plan will be reviewed by the Bank to ensure that appropriate consideration has been given to

the post-disaster conditions in the area. The project includes a Neighbourhood Electrification Component in the Trishuli Valley, the scope of which will be determined during project implementation and which may be adapted to help meet the needs of the local population following the disaster.

Environmental capacity of the promoter

NEA has an Environment and Social Studies Department (ESSD) which implements activities related to the environmental and social aspects of projects being planned, designed, constructed and operated by NEA. With its technical expertise, the ESSD conducts the necessary studies (such as Environmental Impact Assessment (EIA), Initial Environmental Examination (IEE) or Resettlement Action Plan (RAP)) and is engaged in environmental monitoring, implementation of mitigation measures and community support programmes for hydroelectric, transmission line and distribution line projects.

Due to the high number of projects and the limited capacity of the ESSD department - especially with respect to the requirements of financing institutions - a high level of support in this area is required to ensure adequate implementation of the requirements in the area of environmental and social standards. The appropriate measures will be reflected in the ESMP for the project.