

## Electricity Transmission Project



## ENVIRONMENTAL AND SOCIAL IMPACTS & MITIGATION MEASURES



Millenium Challenge Account Nepal  
(MCA-Nepal)

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Will there be any positive social, economic and environmental impact from the Electricity Transmission Project (ETP)?

Yes, the project will contribute to some positive social, economic and environmental benefits as follows:

### Social Benefits:

- **Skill development:** Locally employed people will gain hands-on experiences and skills during the construction of the Transmission Lines (TL) and Substations (S/S). Project-affected people will have an opportunity to acquire various skills as part of the Livelihood Restoration Program, an integral component of the Resettlement Action Plan to ensure improved means of livelihood for physically displaced people. Electricity-related skill-based training will also be provided under the MCA Partnership Program (MPP).

- **Shared project benefits:** The MCA Partnership Program, an important component of the project will share benefits for increased access, reliability, and productive use of electricity within project-affected municipalities.

### Economic Benefits:

- **Increased local-level employment opportunities:** The project will generate full-time job opportunities during the construction phase. New permanent jobs will be created in the operational phase of the project as well.
- **Increased local business opportunities:** The construction of the TL and S/S will require large amounts of construction materials and various services, such as food, lodging, cleaning, etc., for people working on sites. All of these requirements will create a good opportunity for local businesses.
- **Increased economic investment:** Improved reliability and availability of electricity supply will attract increased foreign and domestic investment in Nepal, which will foster economic development. Improved transmission infrastructure which also supports cross-border electricity trading will also increase investments in the hydropower sector.

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How will the project impact land stability and how will it be mitigated?

Project construction activities like forest clearing and tower foundation excavation, particularly in areas with steep slopes and especially during the monsoon season, can increase the risk of erosion, slope failure and landslides.

To ensure land stability and avoid erosion, the project has identified tower footings that avoid natural drainage channels, extremely steep slopes and landslide-prone areas. Apart from that, the tower foundation and framework have been designed to withstand the probable ground acceleration in the event of an earthquake.

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What will be the impact on air quality during project construction activities and how will it be mitigated?

During the project construction activities, some amount of dust, nitrogen oxide, carbon monoxide, particulate matter and sulfur dioxide will be released into the air. However, the potential impact on air quality will be low in magnitude, site-specific and short-term.

- **Increased national revenue:** The export of Nepal's hydroelectricity to the region, especially to India will increase the national revenue.

### Environmental Benefits:

- **Reforestation:** In compliance with the policy of the Government of Nepal (GoN) related to compensatory reforestation, the project will compensate for the forest cleared during the construction phase of the ETP.
- **Green energy:** The extended high voltage TL will strengthen and expand the distribution network of electricity throughout the country. Improved access to electricity will reduce the use of fossil fuel and encourage consumers to switch from firewood/LPG to electricity for cooking and other purposes. Increased use of electricity will contribute to decreasing greenhouse gas emissions.



To avoid or minimize the impact, the project will incorporate the following measures:

- Where possible, manual labor will replace the use of machines for the construction of TL.
- Most of the equipment used during the construction will be powered via connection to the local electricity distribution system. Hence, there will be negligible fuel combustion emissions.

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**Will the project cause any adverse impact on protected areas and recognized areas for biodiversity in Nepal?**

The proposed TL alignment has avoided internationally recognized areas for biodiversity, with the primary exceptions being the Chure Conservation Area (CCA) and the Nawalparasi Forest Important Bird Area (IBA). The project crosses approximately 33 km of the CCA, which is an unavoidable area as the CCA extends across the entire stretch of Nepal. The project will also cross approximately six km of Nawalparasi Forest IBA, as the New Butwal Substation is within the IBA.

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**What measures will the project undertake to reduce adverse impacts on the biological environment?**

The project will reduce adverse biological impacts by:

- Reducing the need for forest clearance in the Right of Way using tall towers to a possible extent;
- Prohibiting any tree clearing for all tower laydown areas, worker camps, and storage areas.
- Ensuring that strung conductors are further apart than the maximum wingspan of at-risk bird species in order to avoid electrocution risks.

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**How will the project avoid impact on bird species?**

The impact on birds is primarily contingent upon injury or death by electrocution and collision with towers or TL. The highest risk is for large birds, such as vultures, eagles, storks, and cranes. The impact will be mitigated with the design of the towers. Visibility enhancement objects, such as marker balls, bird deterrents, bird flight diverters, ultra-violet emitters and/or suspended devices will be installed on the earth wire to increase line visibility to birds and ensure that the distance between conductors is greater than the maximum wingspan of the largest bird found in the alignment area.

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**Will there be any threat to endangered species due to the project?**

Some conservation significant species listed on the International Union for Conservation of Nature (IUCN) and/ or Nepal's list of endangered species may be present along the TL route, including the Elongated Tortoise, Asiatic Black Bear, Sloth Bear and Chinese Pangolin, etc. The essential forest clearance may cause habitat fragmentation and habitat loss but will not threaten the species.

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**Is it true that Electric and Magnetic Fields (EMF) from the TL will have negative impacts on human health?**

Electric and Magnetic Fields (EMF) are invisible lines of force emitted by and surrounding any electrical device (e.g. power lines and electrical equipment). Magnetic fields result from the flow of electric current and increase in strength as the current increases.

Although there is public and scientific concern over the potential health effects associated with exposure to EMF, research has not documented any adverse health impacts from exposure to typical EMF levels from transmission lines. The effects of EMF on public health have been studied for over 30 years all over the world. These research findings, reviewed by several panels of experts around the world, including the World Health Organization (WHO), have indicated that exposure to EMF does not cause disease or other health effects. The experts have also recommended taking simple measures to reduce exposure.

MCA-Nepal has evaluated and found that the EMF from TL will be less than half of the WHO-recommended exposure standard at the edge of the Right of Way (RoW). This means it will be safe to live immediately adjacent to the RoW and to work or farm along the RoW.

MCA-Nepal will obtain a RoW that extends 23 m from the centerline on both sides complying with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines. Use of land for residences, schools, health clinics, and other cultural significance will be avoided.



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**What measures will be taken to avoid Corona Effects?**

When electric current passes through gases present in the air surrounding the high voltage TL, the conductors may glow and produce a hissing noise. This is called Corona Discharge or Corona Effect. The Corona Effects lead to additional energy loss in the TL.

As elevations over 2000 m have a higher potential for Corona Effect, the elevation for TL has been adjusted to 1,918 m.

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**How will the project contribute to reduce the drivers of climate change?**

The project will contribute to reduce the drivers of climate change in the following ways:

- The transmission lines to be built will increase the availability and reliability of electricity in Nepal with renewable hydropower generation, decreasing the dependency on fossil fuel and coal-fired power plants.
- The cross-border transmission line will facilitate regional power trade, decreasing the emission of greenhouse gases in the region.
- The overall program will contribute to reducing greenhouse gas emissions by promoting clean energy.

**For more information:**

**Millennium Challenge Account Nepal (MCA-Nepal)**  
Lal Durbar Convention Centre,  
Yak and Yeti Complex,  
Durbar Marg, Kathmandu, Nepal  
Tel. No.: +977 01 4540951  
info@mcanp.org | www.mcanp.org

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