

Environmental Assessment of the Chameliya Hydroelectric Project, Darchula during Construction Phase



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**Submitted by
Laxmi Raj Joshi
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Acronyms and Abbreviations

%	Percentage
+ve	Positive
°C	Degree Centigrade
'	Minutes
°	degree
µg/m ³	microgram per meter cube
amsl	Above Mean Sea Level
APHA	American Public Health Association
BOD	Biological Oxygen Demand
BGLB	Brilliant Green Lactose Broth
CBS	Central Bureau of Statistics
CDES	Central Department of Environmental Science
CITES	Convention on International Trade in Endangered Species of Wild Fauna and flora
CHEP	Chameliya Hydroelectric Project
dB	A-weighted frequency spectrum in dB
DHM	Department of Hydrology and Meteorology
DO	Dissolved Oxygen
d/s	Down Stream
EDTA	Ethylene Diamine Tetra Acetic Acid
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPR	Environment Protection Regulation
EPA	Environment Protection Act
GDP	Gross Domestic Production
GoN	Government of Nepal
GWh	Giga watt hour
ha	Hectare
HHs	Households
ICIMOD	International Centre for Integrated Mountain Development
IEE	Initial Environmental Examination
IUCN	The World Conservation Union
km	kilo meter
kV	Kilo volt
L _{eq}	Equivalent Continuous Sound pressure level
L ₅	Sound pressure level, which is equivalent or exceeded for 5% of the time over a measurement period
L ₁₀	Sound pressure level, which is equivalent or exceeded for 10% of the time over a measurement period
L ₅₀	Sound pressure level, which is equivalent or exceeded for 50% of the time over a measurement period
L ₉₀	Sound pressure level, which is equivalent or exceeded for 90% of the time over measurement period
L ₉₅	Sound pressure level, equivalent or exceeded for 95% of the time over measurement period
L _{max}	Maximum Sound Pressure Level

L _{min}	Minimum Sound Pressure Level
L _d	Avg day noise level
m	meter
m ³ /s	Cubic Meter per Second
mg/l	milligram per liter
MB	McConkey Broth
ml	milli liter
MW	Mega Watt
NAAQS	National Ambient Air Quality Standard
NEA	Nepal Electricity Authority
NGO	Non Government Organization
Spp.	Species
PAFs	Project Affected Families
PVC	Poly Vinyl Chloride
PM ₁₀	Particulate Matter with an equivalent aerodynamic diameter less than 10 micron
TDS	Total Dissolved Solid
TSP	Total Suspended Particulate
TU	Tribhuvan University
TUCL	Tribhuvan University Central Library
u/s	Up Stream
VDC	Village Development Committee
WHO	World Health Organization
WECS	Water and Energy Commission Secretariat

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Laxmi Raj Joshi
joshi.laxmier@gmail.com

ABSTRACT

Environmental Assessment is the method to quantify the project induced impact on the environment. Monitoring is also essential aspect of environmental management in River valley project. Chameliya hydroelectric project (30MW) is six hours daily peaking run of river generating system, located in the Darchula district of Far Western Region of Nepal. The entire project structure lie along the Chameliya River bank, a distance of 4067m from weir to powerhouse. The broad objective of the study entitled “*Environmental Assessment of Chameliya Hydroelectric Project, Darchula during Construction Phase*” is to assess various environmental impacts vis-à-vis status of mitigation measures adopted by the project during construction period as recommended by EIA report. The research design involved both field work and laboratory investigations to generate analytical data for the accomplishment of objectives since 2009.

Flood frequency analysis has been conducted with 20 years of data using Gumbel’s distribution function. The design flood of $710\text{m}^3/\text{s}$ has been worked out to be 50 years. All the physico-chemical parameters of Chameliya river water have been found within the limit to support the aquatic ecosystem of river. The study has revealed that there is small increment in pH, alkalinity and BOD_5 but significant increment in some parameters such as Total coli form, conductivity, magnesium, sodium, and total dissolved solid with base line value. The values of TSP and PM_{10} around the Audits and head works have been found to be higher than the NAAQS guideline values for 24 hours mean. Like wise, the increments in the TSP and PM_{10} have been observed to be ten folds and four folds higher than the baseline values respectively.

The study has depicted that the average day time noise levels at the monitoring station except at the headwork were within the acceptable range set by W.H.O. Impact of Chameliya hydroelectric project on fishermen’s livelihood considering bio-physical and socioeconomic aspect has been assessed revealing a reduction in the over all abundance of fish fauna than the number stated in the EIA project report Project felled 3075 plants of 46 species which were higher than EIA report of CHEP. Impact on wild life was also investigated and the magnitude of impact is low, and site specific. The field study revealed

that the mitigation measures except compensation for land, house, plant, fodder and physical structure, were partially complied and in premature stage but implementations of these were seen not satisfactory in accordance of EMP.

Keywords: *Environmental assessment, Chameliya hydroelectric project, flood frequency, mitigation measure, baseline value*

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