Meeting of the Board
18 – 21 August 2020
Virtual meeting
Provisional agenda item 11

GCF/B.26/02/Add.03

28 July 2020

Consideration of funding proposals - Addendum III

Funding proposal package for FP131

Summary

This addendum contains the following seven parts:

a) A funding proposal titled "Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal";
b) No-objection letter issued by the national designated authority(ies) or focal point(s);
c) Environmental and social report(s) disclosure;
d) Secretariat's assessment;
e) Independent Technical Advisory Panel's assessment;
f) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
g) Gender documentation.

Table of Contents

Funding Proposal

Project/Programme title:	**Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal**
Country(ies):	**Nepal**
Accredited Entity:	**International Union for Conservation of Nature (IUCN)**
Date of first submission:	**2018/06/22**
Date of second submission	**2019/05/31**
Date of third submission	**2019/11/12**
Date of fourth submission	**2019/11/28**
Date of fifth submission	**2019/12/12**
Date of sixth submission	**2020/01/13**
Date of seventh submission	**2020/03/30**
Date of eighth submission	**2020/05/04**
Date of ninth submission	**2020/05/20**
Version number	**[V.9]**

GREEN CLIMATE FUND

Contents

Note to Accredited Entities on the use of the funding proposal template

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the GCF Information Disclosure Policy, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

FP - IUCN - Nepal - 31 May 2019

A. PROJECT/PROGRAMME SUMMARY

A.1. Project or programme	Project	**A.2. Public or private sector**	Public
A.3. Request for Proposals (RFP)	If the funding proposal is being submitted in response to a specific GCF Request for Proposals, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+. Not applicable		
A.4. Result area(s)	Check the applicable GCF result area(s) that the overall proposed project/programme targets. For each checked result area(s), indicate the estimated percentage of GCF budget devoted to it. The total of the percentages when summed should be 100%.		
	Mitigation: Reduced emissions from:		GCF contribution:
	☐ Energy access and power generation:		Enter number%
	☐ Low-emission transport:		Enter number%
	☐ Buildings, cities, industries and appliances:		Enter number%
	☒ Forestry and land use:		5%
	Adaptation: Increased resilience of:		
	☒ Most vulnerable people, communities and regions:		45%
	☒ Health and well-being, and food and water security:		20%
	☐ Infrastructure and built environment:		Enter number
	☒ Ecosystem and ecosystem services:		30%
A.5. Expected mitigation impact	200, 974 (7 years), 847, 250 (20 years) t CO_2 eq	**A.6. Expected adaptation impact**	Beneficiaries = 198,016 households [833,647 people (541,870 women and 291,776 men)] benefiting directly; and 250,000 households [1,052,500 people (631,500 women and 421,000 men)] indirectly benefiting from the project intervention. 16.88% of total population in the area
A.7. Total financing (GCF + co-finance)	USD 32.715 million	**A.9. Project size**	Small (Upto USD 50 million)
A.8. Total GCF funding requested	USD 27.4 million		
A.10. Financial instrument(s) requested for the GCF funding	Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.		
	☒ Grant USD 27,404,139	☐ Equity	Enter number
	☐ Loan Enter number	☐ Results-based payment	Enter number
	☐ Guarantee Enter number		

A.11. Implementation period	7 Years (2020-2026)	**A.12. Total lifespan**	20 years
A.13. Expected date of AE internal approval	This is the date that the Accredited Entity obtained/will obtain its own approval to implement the project/ programme, if available. 1/1/2020	**A.14. ESS category**	B
A.15. Has this FP been submitted as a CN before?	Yes ☒ No ☐	**A.16. Has Readiness or PPF support been used to prepare this FP?**	Yes ☒ No ☐
A.17. Is this FP included in the entity work programme?	Yes ☒ No ☐	**A.18. Is this FP included in the country programme?**	Yes ☒ No ☐
A.19. Complementarity and coherence	Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1. Yes ☒ No ☐		
A.20. Executing Entity information	Government of Nepal - Ministry of Forests and Environment		

A.21. Executive summary (max. 750 words, approximately 1.5 pages)

1. This funding proposal aims to mainstream and operationalise a sustainable river-basin approach for watershed management to achieve resilience of climate vulnerable communities and ecosystems in the Gandaki River Basin. This will be achieved through the planning and implementation of climate change adaptation measures across impacted ecosystems and communities both upstream and downstream across the landscape. The traditional district and municipality (political/administrative boundary) based approach applied over the past 50 years in Nepal is being changed through this project by bringing in climate-resilient development and management at a more holistic river basin-wide level that cuts across political/administrative boundaries. On completion in 2026, the Gandaki River Basin will be used as a model to showcase how climate-resilient development in large river basins can occur throughout Nepal.

Climate rationale

2. Nepal's climate varies widely across seasons and geographical regions. Meteorological data from weather stations show clear increases in mean and maximum temperatures and the climate is predicted to change significantly in the future. Mean annual temperatures are projected to increase between 1.3-3.8°C by the 2060s and 1.8-5.8°C by the 2090s. Hot nights are projected to increase by 77% by the 2060s and 93% by the 2090s based upon the reference period 1970-99.
3. Most rain (80%) is received during the monsoon and consequently, the winter months are dry. The average annual rainfall is 1,600mm, ranging from 300 to 3,345 mm across the country. Rainfall data show negative trends (decreasing) in average rainfall over the last 20 years. By using the PRECIS model, Panthi et al (2014)[1] made downscaled climate projections within the Gandaki River Basin (GRB) using the baseline period-of 1970-90. The results indicated monsoon precipitation could increase by 2% by 2030, 20% by 2060 and 45% by 2090: Annual precipitation in lowland areas will increase by 10% whereas the annual precipitation in highlands is predicted to decrease by 9% by 2060. A similar pattern is displayed by monsoon precipitation, but the case of the non-monsoon period is different showing a decrease of precipitation throughout the Gandaki basin. Projected results show a potential increase of 10% rainfall in lowland areas, exacerbating flooding and landslide conditions; while precipitation in the highlands is predicted to decrease by 9%, exacerbating droughts. Evapotranspiration rates in the highlands is also expected to rise by 14% up to 2060.
4. Water resources for ecosystems like forests, grasslands and wetlands and agriculture during the winter to summer period is becoming scarcer and this is likely to be exacerbated with climate change. This was verified by the stakeholders and community members during the Feasibility Study (FS). These projections underscore the risk of occurrence and magnitude of extreme events such as winter droughts, flash floods and landslides during the

[1] Jeeban Panthi, Piyush Dahal, Y Krakauer. 2014. Adaptation for Climate Change by Livestock Smallholders in Gandaki River Basin. Precipitation Trends and Implications for Agricultural Adaptation Needs in Gandaki River Basin, Nepal

monsoon period. This significantly impacts already vulnerable communities, incurring high recovery costs, straining limited financial resources and placing fragile development gains at risk.

5. As indicated in the Table 14 on page 41 of the FS, derived from the MOFE Report, the total precipitation on an average annual scale is projected to slightly increase (less than 4%) across all the GRB districts but there is the potential for an increase in the intensity of precipitation as indicated by increase in extreme wet days ranging from 21-34% (ΔP99 (%)). Corresponding to this therefore will be a decrease in consecutive wet days (CWD) in the hills & Siwalik regions and an increase in consecutive dry days (CDD). The changing rainfall patterns will affect water availability and impact agriculture and other sectors due to increased precipitation and the related river discharge and smaller water sources that are expected to increase in discharge. The more significant precipitation changes are seen during the 2036 to 2065 period, and this is expected to increase landslides and flooding in Tables 9, 12 and 13 in the FS are for Nepal as a whole, however they are representative of the GRB which is reflected in Table 14 of the FS providing analysis of GRB representative districts.

6. During the monsoon period 80% of the annual total rainfall occurs, so an increase in rainfall for 9.4% (RCP 4.5 - 2036 to 2065) and 13.6% (RCP 8,5 – 2036 to 2065) is significant, and will likely to lead to an increase in flooding and landslides up to 2065. The change in precipitation is shown in all regions for the period of 2036 to 2065. The results indicate a drop in precipitation for the winter (near term – RCP 4.5) and pre-monsoon season (RCP 4.5) and also in pre-monsoon for the near term (RCP 8.5). This may indicate the dry season is getting longer, indicating that the rainfall season is getting shorter. This is also consistent with the decreasing trend of snow cover observed due to higher temperatures during the winter season. Because of the reduced precipitation and extended dry season, it is likely that watershed recharge capacity will be less compared to historical levels for the pre-monsoon season. This has direct consequences on the production of crops, particularly rice, which need pre-cropping water for land preparation, preparation of seedlings and transplanting. The number of wet days across all the regions is shown to be dropping but the number of extreme wet and very wet days are increasing leaning to an overall annual rainfall increase. The number of rainy days are less but the number of extreme and very wet days have increased in all districts.

7. A new study by Kirschbaum, D. et al. in the High Mountain Areas has applied a near-global landslide model called the Landslide Hazard Assessment for Situational Awareness (LHASA) with satellite and GCM precipitation estimates to better characterize potential landslide activity across the region including Nepal. Results from the studies GCM Ensemble suggest that intense precipitation will increase in frequency which will affect landslide activity in the concerned region. There are a few locations such as area west of Pokhara which show minor decreases in landslides while the region in the China-Nepal border in the transition zone between the Himalayan Mountains and Tibetan Plateau including the three Mountains districts of the GRB shows the greatest increase in potential landslide activity (up 30-70%). In addition, the largest changes to landslide activity in the future scenario of 2061-2100 are expected during the summer months characterized by heavy monsoon rainfall. The most significant risk posed is triggering glacial lakes outburst floods (GLOFs) which could inundate communities and infrastructure situated in the lower reaches of the GRB.

8. Moreover, the impact of climate change on the water balance and hydrological regime of the snow dominated Kaligandaki Basin, which is an important sub-basin of the GRB, was modelled in 2002[2]. The results are indicative for the GRB as a whole, with the Kaligandaki River expected to significantly increase annual flow in the future. Increase in discharge is projected to be maximum during the pre-monsoon under RCP 4.5 and the monsoon under RCP 8.5. There would be a maximum increase during the 2090s, of 41% under RCP 4.5, and over 50% under RCP 8.5. Such a significant increase was also reported by Immerzeel et al.[3] and Bhattarai and Regmi[4] in a study of the Langtang basin, another sub-basin of the GRB. The increase in discharge is mostly due to increases in precipitation and temperature (causing snowmelt. Immerzeel et al. also reported that higher temperatures are likely to increase evapotranspiration and increase snow and ice melt.

9. Modelling results, using a 10km X 10km grid show these will lead to significant changes in the basin's water balance and hydrological regime. In particular, 50% increase in water discharge is expected at the outlet of the basin with snowmelt contribution largely affected by climate. Consequently, water availability in the basin is not likely to decrease during the 21st Century. The study demonstrates that the important water balance components

[2] IDS-Nepal, PAC and GCAP (2014). Economic Impact Assessment of Climate Change in Key Sectors in Nepal. IDS-Nepal, Kathmandu, Nepal.
[3] Immerzeel, W.W., Droogers, P., De Jong, S.M., Bierkens, M.F.P., 2009. Large-scale monitoring of snow cover and runoff simulation in Himalayan river basins using remote sensing. Remote Sens. Environ. 113 (1), 40–49.
[4] Bhattarai, B.C., Regmi, D., 2016. Impact of climate change on water resources in view of contribution of runoff components in stream flow: a case study from Langtang Basin, Nepal. J. Hydrol. Meteorol. 9 (1), 74–84.

of snowmelt, evapotranspiration, and water yield at higher elevations in the upper and middle sub-basins of the Kaligandaki Basin will be most affected by the increasing temperatures and precipitation. IUCN also estimated evapotranspiration for future years ranging from 2020-2080 for each of three physiographic regions of the GRB, with the results clearly showing an average decadal increase of 8-10% evapotranspiration in the Mountains, Hills and Terai calculated on a mm/day basis.

Proposed interventions

10. Apparent, and projected climate change problems have created several adaptation needs. In the GRB, the crucial adaptation needs are related more to reduced water availability for irrigation and drinking, landslides and soil erosion in the upstream; flood, inundation and sedimentation in the downstream; harmful forest fires and forest degradation; and spread and impact of invasive species in forest and agricultural lands. Communities are facing various barriers to address their adaptation needs. The project has identified lack of information and knowledge on climate change, poor regulatory framework and institutional structures aggravated by their poor implementation, weak social license, low capacity and capability, and lack of access to finance and markets as the major barriers to autonomous climate change adaptation. In order to address these needs, it was found that the existing system of planning and implementing adaptation measures on a political boundary basis needs to be shifted to an ecosystem boundary approach to appropriately link the up-stream and down-stream communities.
11. Given the identified climate change adaptation needs and barriers, it was concluded that this project should adopt an ecosystem-centred and community-based approach as an effective way to reduce the vulnerability to climate change. The project identified eight intervention areas. Interventions are designed to: 1) improve climate resilient agroforestry and livelihood, 2) improve water availability and water use efficiency; 3) incorporate natural ecosystem restoration based actions for reducing impacts of landslides and floods, 4) enhance technical capacity of GRB communities in maintaining and supporting climate resilient ecosystems, 5) enhance community-based mechanism for planning, restoration, monitoring, and maintenance of ecosystems, 6) incorporate ecosystem-based climate change adaptation approaches into government policies and plans, and 7) establish knowledge management system for climate resilient River Basin Management.

Climate impacts/benefits

12. The project will significantly improve the resilience of communities and ecosystems in the GRB. There will be 198,016 households (833,647 people (65% female)) directly benefiting from the project and 250,000 households (1,052,500 people (60% female)) indirectly benefiting from the project implementation. The major benefits in implementing the project will be a 90% reduction in the persons killed and missing, houses damaged and property lost due to climate change impacts (floods and landslides); restoration of 101,000 ha of forest and grassland ecosystem and 83 wetland ecosystems through improved management; improved ecosystem management of 90,000 ha of forest, 6,000 ha of grassland and 150 freshwater sites; landslide and flood protection of 2,500 ha forest land, 750 ha wetlands, 500 ha grasslands; and 320 conservation ponds; invasive species management in 1000 ha of community forest land and 100 ha of community grassland; and construction of 70 km long rural road plantations, 8 km long green belt along the river bank, enrichment planting at 700 sites, and 320 water conservation ponds. In addition, there will be 38,512 ha paddy and 66,749 ha wheat lands under climate resilient practices, and there will be 500 hectares of abandoned agricultural land under agroforestry (see Annex 2a Section 4.1 on rate of abandoned agricultural land). On the climate governance front, climate change measures will be included in at least 150 plans/policies/strategies and regulations; there will be 300,000 men, women including Dalits and disadvantaged group people aware of the climate threats and related appropriate responses, 50,000 households participating in climate governance, and 66,600 Community Forest User Group (CFUG) members (women 65%) participating in ecosystem management.

B. PROJECT/PROGRAMME INFORMATION

B.1. Climate rationale and context (max. 1000 words, approximately 2 pages)

Climate rationale

Climate change predictions in Nepal

13. The climate of Nepal varies from cool summers (7˚C) and severe winters (under sub-zero) in the north (Himalaya) to tropical summers (exceeding 37˚C) and mild winters (7-23˚C) in the south (Terai). Nepal has five seasons: spring, summer, monsoon, autumn and winter. The Himalayas act as a barrier to the cold winds blowing from Central Asia in winter, and forms the northern boundary of the monsoon wind patterns. Eighty per cent of all the rain in Nepal falls during the monsoon (June-September). The average annual rainfall is 1,600 mm ranging from 300 mm in Mustang to 3,345 mm in Pokhara (Kaski). The winter months are dry and all regions receive less than 50 mm per month.

14. In a recent study report published by the Ministry of Forests and Environment (2019)[5], it has predicted that both precipitation and temperature are likely to increase in the medium (2016-45) and the long-term (2046 -65).

15. Several climate change predictions are already developed for South Asia. **Error! Reference source not found.**Table 1 shows the predicted seasonal changes for the South Asia region calculated relative to the average temperature and precipitation in the period 1961- 1990. With the predicted changes in temperature and precipitation, the Intergovernmental Panel on Climate Change (IPCC) has reported that the South Asia region has the highest proportion of 'highly vulnerable' sectors of all the Asia sub-regions.

Table 1: South Asia seasonal temperature and precipitation projections (relative to 1961-90 average)[6]

Future emissions	2010-2039				2040-2069				2070-2099			
	Temperature change °C		Precipitation change %		Temperature change °C		Precipitation change %		Temperature change °C		Precipitation change %	
	High emission	Low emission	High emission	Low emission	High emission	Low emission	High emission	Low emission	High emission	Low emission	High emission	Low emission
Dec-Feb	1.17	1.07	-3	4	3.16	1.97	0	05.22	5.44	2.93	-16	-6
Mar-May	1.18	1.11	7	8	2.97	1.81	26	24	5.22	2.71	31	20
Jun-Aug	0.54	0.55	5	7	1.71	0.88	136	11	3.14	1.56	26	15
Sep-Nov	0.78	0.83	1	3	2.41	1.49	8	6	4.19	2.17	26	10

16. MOFE (2019)[7] has recently conducted detailed analysis of climate change scenarios for Nepal for the medium-term period (2016–2045) and the long-term period (2036-2065) with respect to the reference period 1981–2010. It has chosen RCP 4.5 and 8.5 as representations of extreme future scenarios based on different socioeconomic and developmental trajectories. The MOFE (2019) report has presented detailed projections for changes in precipitation and temperature at RCP 4.5 and 8.5 for a period from 2016-2045 and 2036-2065.

17. The report has shown that the precipitation is likely to increase in the range of 2.1 to 7.9 % for RCP 4.5 and 6.4 to 12.1% for RCP 8.5 with respect to the reference period of 1981-2010. Similarly, the temperature may increase in the range of 0.92 to 1.3 ºC for RCP 4.5 and 1.07 to 1.82 ºC for RCP 8.5 with respect to the reference period by the middle of the century. For the end of the century scenarios, both precipitation and temperature are likely to increase by 23% and 3.58 ºC respectively (Table 2).

Table 2: Multi-model ensemble means of change in precipitation and temperature in the medium-term and the long-term periods for the whole of Nepal

Time Period	RCP 4.5			RCP 8.5		
	2016-2045	2036-2065	2071-2100	2016-2045	2036-2065	2071-2100
Change in precipitation (%)	2.1	7.9	10.7	6.4	12.1	23.0
Change in temperature (°C)	0.92	1.3	1.72	1.07	1.82	3.58

18. Regarding physiographic regions, the changes in precipitation are higher in the high mountains than other regions for most of the period. The high mountains also seem to be warming at a higher rate than the rest of the regions of Nepal except Terai and Siwalik in RCP 8.5 (Table 3).

[5] MoFE, 2019. Climate change scenarios for Nepal for National Adaptation Plan (NAP). Ministry of Forests and Environment, Kathmandu

[6] https://practicalaction.org/docs/advocacy/Adaptation_to_climate_change_Nepal.pdf

[7] MoFE, 2019. ibid

Table 3: Multi-model ensemble mean of change in precipitation and temperature in the medium-term and the long-term period for different regions of Nepal

Time Period	RCP 4.5			RCP 8.5		
	2016-2045	2036-2065	2071-2100	2016-2045	2036-2065	2071-2100
Change in precipitation (%)						
High Mountain	2.6	9.5	12.6	8.0	14.4	25.1
Middle Mountain	1.7	7.6	10.3	6.3	12.4	21.7
Hill	2.1	7.2	9.9	5.8	11.2	22.6
Siwalik	1.6	7.4	9.9	5.8	11.1	21.9
Terai	2.1	7.3	10.2	5.4	10.6	22.7
Change in temperature (°C)						
High Mountain	0.95	1.36	1.79	1.09	1.86	3.61
Middle Mountain	0.89	1.27	1.66	1.04	1.76	3.44
Hill	0.9	1.26	1.69	1.06	1.8	3.56
Siwalik	0.94	1.29	1.72	1.1	1.87	3.66
Terai	0.93	1.29	1.73	1.11	1.87	3.69

19. Regarding the change in precipitation and temperature for different seasons, the pre-monsoon precipitation is expected to decrease for both RCP 4.5 and RCP 8.5. The winter precipitation is projected to decrease for RCP 4.5 but increase for RCP 8.5. Monsoon precipitation is projected to increase for both RCPs in the medium term and almost all seasons indicate an increase in precipitation, except the pre-monsoon for RCP 8.5 in the long-term period (Table 4).

Table 4: Multi-model ensemble mean of change in precipitation and temperature in the medium-term and the long-term periods for different seasons

Time period	RCP 4.5			RCP 8.5		
	2016-2045	2036-2065	2071-2100	2016-2045	2036-2065	2071-2100
Change in precipitation (%)						
Winter	-5.8	13.6	24.4	7.2	5.0	20.9
Pre-monsoon	-5.0	-7.4	-7.8	-4.0	4.2	-3.1
Monsoon	2.7	9.4	12.4	7.8	13.6	27.1
Post-monsoon	18.6	20.3	16.5	6.0	19.0	22.9
Change in temperature (°C)						
Winter	1.0	1.5	2.1	1.2	2.0	4.0
Pre-monsoon	0.7	1.0	1.2	1.0	1.6	3.4
Monsoon	0.8	1.1	1.4	0.8	1.5	3.0
Post-monsoon	1.3	1.8	2.5	1.4	2.4	4.5

20. In general, the climate in all of Nepal will be significantly warmer and wetter in the future, except for a decrease in precipitation during the pre-monsoon season. Indices of climate extremes related to temperature and precipitation suggest that more extreme events are likely in the future. This is expected to affect different development sectors, such as water, disaster management, energy, biodiversity, agriculture, health, urban planning and livelihoods. The specific findings of the study are presented in Annex 2a: Feasibility Study Section 2.7.2.2. It is anticipated that average annual precipitation is likely to increase in both the medium-term and long-term periods. Average annual precipitation is likely to increase by 2–6% in the medium-term period and by 8–12% in the long-term period. the average annual mean temperature is likely to increase by 0.9–1.1 degrees Celsius (°C) in the medium-term period and 1.3–1.8 °C in the long-term period.
21. Likewise, intense precipitation events are likely to increase in frequency, with extremely wet days (P99) expected to increase at a higher rate than very wet days (P95). The number of rainy days is likely to decrease in the future. This, in combination with the increase in precipitation intensity, is likely to create more water-related hazards in the future.
22. Both warm days and warm nights are likely to increase in the future. The number of warm days will rise sharply, from 36 days to 60 days a year in the medium-term, and up to 68 days a year in the long-term period, under the RCP4.5 scenarios. This is in concurrence with increasing temperature trends in the future.
23. The predicted results for the GRB districts are presented in Tables 14-26 of Annex 2a: Feasibility Study. Projected change in climate in near future (2016-2045) with respect to baseline (1980-2010) for RCP4.5 scenarios in the Gandaki River Basin is presented in Table 5.

Table 5: Projected change in climate in GRB districts

Region	Rep. District	ΔP (%)	ΔT (°C)	Δ Rainy days (%)	ΔCDD (%)	ΔCWD (%)	ΔP99 (%)
High Mountain	Manang	3.0	0.88	-1.82	4.56	1.66	32.09
	Mustang	3.7	0.94	-2.26	2.62	1.11	31.60
Mid-Mountain	Myagdi	3.5	0.87	-1.73	5.51	1.47	29.66
	Baglung	3.3	0.92	-1.44	6.93	0.83	29.56
Hill	Nuwakot	3.0	0.88	-1.38	9.32	-1.69	34.31
	Dhading	2.5	0.88	-1.55	8.25	-2.54	29.16
	Tanahu	2.5	0.91	-1.94	9.92	-0.88	27.45
	Syangja	2.3	0.93	-1.86	9.36	-0.66	29.16
Siwalik/Terai	Chitwan	0.4	0.87	-2.25	9.43	-11.34	21.76
	Nawalparasi	1.6	0.90	-2.25	9.43	-10.61	21.36

Source: MoFE, 2019. *Climate change scenarios for Nepal for National Adaptation Plan (NAP)*. Ministry of Forests and Environment, Kathmandu

24. Total precipitation on an average annual scale is slightly increasing (less than 4%) across the GRB districts, however, intensity of precipitation is increasing as indicated by increase in extreme wet days by 21-34%, whereas decreasing in cumulative wet days (CWD) in hills & Siwalik where relatively more people live and do agricultural and other activities than in Mountains, and increasing in cumulative dry days (CDD), with a reduction in the number of rainy days.
25. Though no comprehensive climate change study has been conducted yet for the entire GRB, there are several project based sporadic studies conducted in the GRB. There are also specific downscaled water models available for Narayani, Kaligandaki, Setibeni Sub-basins, watersheds in Gandaki Province - Marshyangdi, Madi, and Budhigandaki. The studies at different sub-basins have used different types of models, calibrated for different time scales, and have not projected future climate scenarios for the entire basin. As an Output of this project, a water model will be established for the entire GRB by reconciling various studies conducted in different sub-basins within GRB. This will be critical in order to prepare the River Basin Management Framework for the GRB. See Annex 2b for the detailed procedure.
26. Most studies have shown that climate patterns in the GRB have already changed and is predicted to change significantly in the future. The World Bank, information from the Department of Hydrology and Meteorology (DHM)[8] and downscaled climate models within Kaligandaki basin[9] all provide a similar summary of climate change data[10], as follows:

Temperature:

- Mean annual temperatures are projected to increase between 1.3-3.8°C by the 2060s and 1.8-5.8°C by the 2090s, with this warming expected to occur more rapidly during the dry months (December-May)
- Both average mean and max temperatures are projected to increase.
- Hot nights are projected to increase by 77% by the 2060s and 93% by the 2090s with reference period (1970-99)[11]

Precipitation:

- Monsoon precipitation increase by 2% by 2030, 20% by 2060 and 45% by 2090.[12]
- Precipitation in the lowlands increase by 10%, exacerbating flooding and landslide conditions.
- Precipitation in highlands decrease by 9%[13], exacerbating droughts.

Evapotranspiration:

- Expected to increase approximately by 7% in the near future (2016-2045) under RCP 4.5.
- Expected to be more pronounced at the upper and middle basins at higher elevations than the lower basins at lower elevations. Higher evaporation might lead to decline in the natural grassland coverage and the grass yield in the upper part of the Kaligandaki basin.

[8] DHM, 2017. Observed Climate Trend Analysis of Nepal (1971-2014). Department of Hydrology and Meteorology, Kathmandu
[9] Climate Change Impact Assessment on the Hydrological Regime of the Kaligamdaki Basin, Nepal, Bajachraya et. al (2017)
[10] World Bank. (2017). *Climate change country profile for Nepal*. Retrieved 2017, from http://sdwebx.worldbank.org/ climateportalb/doc/ GFDRRCountryProfiles/wb_gfdrr_climate_change_country_profile_for_NPL.pdf

[11] https://www.wri.org/our-work/project/world-resources-report/climate-change-nepal-impacts-and-adaptive-strategies
[12] Karki, Ramchandra, Shabeh ul Hasson, Udo Schickhoff, Thomas Scholten, and Jürgen Böhne, 2017. Rising Precipitation Extremes across Nepal. Climate 2017, 5, 4; doi:10.3390/cli5010004
[13] Adaptation for Climate Change by Livestock Smallholders in Gandaki River Basin, Panthi et. al, 2014.

- Evapotranspiration (ET) is projected to increase in future at all the stations and for all the seasons, albeit with varying degrees. The percentage increase in ET is highest for winter (DJF) season for all the stations.
- Crop-specific evapotranspiration decreases from Terai to Hill and then to Mountain regions for almost all the crops. Pre-monsoon ETcrop is quite high and available moisture will not be adequate to fulfil those evapotranspirative demands. Similarly, projected future ETcrop are higher than historical ones, for all the crops. The strong seasonality as well as projected increase in future ET indicates the need to invest on measures for moisture storage to deal with potential loss in agriculture in the study area from climate change impacts.
- For detail on evapotranspiration, please see Section 2.7.4 of Annex 2a (Feasibility study)

27. Winters are projected to be drier and the summer and monsoon wetter. The upward trend of projected precipitation increase for monsoon rainfall is significantly more pronounced when compared to winter and annual rainfall trends, indicating that the majority of the increased precipitation will occur during the monsoon season, leading to more frequent summer floods and winter droughts. Negative trends in rainfall and effective rainfall are prevalent during winter, spring and summer at mid to high altitudes, which are important sources of the main rivers and streams. These trends are critical in terms of water resource availability in the future and suggest that the observed drying of water resources is linked to recent changes in climate. Water availability for natural ecosystem and for agriculture during the winter to summer period is becoming scarcer. This was verified with stakeholders and community members in the GRB during the feasibility study. The major observed climate changes include increased temperature during both summer and winter; increased precipitation but a decrease in the number of rainy days; increased consecutive wet days during rainy season and increased consecutive dry days during summer; including changes in the timing and duration of the monsoon.

Climate change problems and adaptation needs to be addressed

28. The above projections underscore the risk of occurrence and magnitude of extreme events such as winter droughts, flash floods and landslides. Increases in monsoon rainfall will lead to the saturation of soils which increases the possibility of floods, landslides and erosion of soils. This significantly impacts already vulnerable communities, incurring high recovery costs, straining limited financial resources and placing fragile development gains at risk. These major observed impacts are verified by the participants of various consultations (see Annex 7b for summary of consultation) who noted increased frequency of landslides and increased volume of soil erosion; increased frequency, duration and intensity of floods; increased frequency, duration and intensity of droughts resulting in drying out of water sources and wetlands; increased heat stress affecting human and livestock health; prolific growth of invasive alien species affecting biodiversity; changing cropping pattern and decreased agricultural production; and appearance of new insects (mosquitoes) and vectors (citrus psylla) in higher altitudes, etc. As 4.5 million people in rural areas of GRB are still heavily dependent upon forests and ecosystem services for their livelihoods and wellbeing[14], these experiences are projected to be exacerbated with climate change more in the GRB than in other basins. Increased temperatures during summer has increased the incidence of heat waves, and the decreased temperature during winter has increased the incidence of cold waves. Due to extreme hot and cold days, the number of people dying is also increasing[15].

Baseline information

29. **For community resilience outcome**: The current agricultural and livestock management systems are highly vulnerable to climate change through the effects of drought, floods and landslides. The majority of households are smallholders and their livelihoods are based on subsistence agriculture. Households grow limited varieties of traditional crops with an increasing risk of crop failure. Agricultural production grew at only 2.9 per cent per annum. The economy of Nepal has remained at a very low level in the last ten years, with an average annual growth rate of 3.8 per cent. The overall per capita income has been low (USD 446), and high poverty index (31).
30. **For ecosystem resilience outcome:** Currently, the majority of forest management plans do not incorporate climate change components (except for Manaslu). The area of forest has been increasing in the Mid Hills through the Community Forestry Program, but forest management is generally lacking and there is an absence of focus on climate adaptation. Almost 72.4 per cent of households solely depend on forests to fulfill their household energy needs. Despite rangeland being an important ecosystem for the livelihoods of most-poor and marginalised people, rangeland management remains ignored. Wetland dependent households are directly paying the price of changes in wetlands (such as reduced sizes, sedimentation through debris flow during flood) and the consequent loss of

[14] Judy Oglethorpe, Sunil Regmi , Ryan Bartlett , Bhawani S. Dongol , Eric Wikramanayake and Sarah Freeman. The value of a river basin approach in climate adaptation International Conference on Climate Change Innovation and Resilience for Sustainable Livelihoods, Kathmandu, Nepal, 12-14 January 2015

[15] Niraj Prakash Joshi, Keshav Lall Maharjan, and Luni Piya. 2012. Understanding the Relationship between Climate Change and Poverty in Nepal. Journal of International Development and Cooperation, Vol.18:4, 2012, pp. 21-35

ecosystem services such as water availability, recharging of water springs, and habitat for wildlife. A better managed forest with adaptation included is expected to enhance the flow of ecosystem services.

31. **For climate governance outcome**: There is inadequate coordination of climate change issues and lack of awareness of climate risk and adaptation at the local level. The local level planning process starts with the community level discussion in the Ward Citizen Forum, which is the lowest level unit of the Municipality in the new governance system in Nepal. The understanding of climate change issues is very low at this level and climate change adaptation measures are hardly discussed. Community-based institutions are driving actual implementation of actions in the field. Strengthening local institutions, sensitising them and mobilising them for climate resilient development is not given due importance.

Context

32. Nepal is highly vulnerable to climate change and its impacts. In 2017, Nepal was ranked 4th in the world for risks associated with climate change [16]. The pressures generated by climate change have adverse impacts on people, natural ecosystems and agricultural land, and the ecosystem services they provide[17],[18]. Climate change, in combination with other pressures, including fire, overharvesting, invasive species, overgrazing, and pollution, threatens the GRB's biodiversity, and agricultural productivity, and increases risks to the livelihoods, health and wellbeing of the millions of people living in the basin.
33. Change in precipitation will be the primary source of vulnerability to climate change in the GRB. Change in precipitation rate and timing could change the variability and availability of water resources. Too much or too little water will have serious implications for biodiversity and forestry, agriculture. Increase in average annual rainfall by 0.7 mm/decades in the lower elevation areas and decreasing snowfall and precipitation during the winter in upper elevation directly affects winter cropping patterns. Too little rainfall will reduce rice and maize cultivation, which is the main source of food for much of the country's population. Inadequate rainfall would disproportionally affect already vulnerable populations, including women, the poor, and other disadvantaged groups. Too much rainfall can also destroy crops and increase topsoil erosion due to landslides. Floods have already devastated populations living in lowland areas, particularly along river banks, and future floods are expected in new areas not prone to flooding. In addition to precipitation impacts, increasing temperatures could increase the rate of glacial melt from the Himalayan glaciers, affecting water supply. Changes in glacial melt patterns can also impact downstream villages and areas by breaching river banks and other structures. This will also have implications on the timing of water availability for residents of the GRB
34. The lower overall per capita income (USD 446), high poverty index (31), low human development index (0.482) for all ethnic groups in the basin exacerbates climate change related vulnerabilities and forces them to out migrate to search for better employment prospects elsewhere. Furthermore, due to migration of mostly male members, the rural labour force is becoming predominantly female which has further increased the burden on women. This out migration of the male-labour force and declining agricultural productivity of rainfed agriculture in rural areas[19], has led to nd being abandoned. Women have the primary responsibility of maintaining households and also labour in agriculture leading to women and their dependents (children and elderly people) living in rural areas deriving their income from agriculture, leading to increase in their vulnerabilities.
35. The project plan is to intervene in the agricultural improvements to retain the work force in the basin. Besides, it will also support developing Integrated Development Plan in the village municipalities level and the Basin level incorporating climate change issues with adaptive measures based on the outcome of this project. Success of this project will be translated into the plan and can be then replicated across the country.
36. **Target region/area:** This project is designed for improving climate resilience of vulnerable communities and ecosystems in the Gandaki River Basin. The GRB has 19 districts falling in three provinces (11 districts in Province 4; 5 in Province 3; and 3 in Province 5) (see Annex 16 (Maps) for details on the geographical location).
37. Koshi, Gandaki, Karnali and Mahakali are the four major and larger snow fed rivers in Nepal. As they are snow fed rivers, changes in climate have impacted these rivers and their basins. The Gandaki River Basin was selected for this proposal on 24 May 2017, following collaboration with other parties involved in projects across the four rivers; USAID supported PANI project is working on the Karnali and Mahakali Rivers, FAO is developing proposal on the Koshi river basin.
38. Care has been taken in the design of the project to ensure no overlap between FP 118 FAO Nepal and the GRB project in Province 3, a province common to both. As per FAO's Churia project, their project will cover the basins

[16] Global Climate Change Risk 2019. Germanwatch. www.germanwatch.org/en/cri
[17] Government of Nepal (2011). Climate Change Policy. Kathmandu
[18] Joshi, P., Rawat, A., S. Narula, S., and Sinha, V. 2012. Assessing impact of climate change on forest cover type shifts in Western Himalayan Eco-region. Journal of Forestry Research. Volume 23, Issue 1, pp 75–80
[19] In the rainfed agriculture areas, which is 45% in Nepal, the productivity is negatively affected by the climate change impacts. Farmers who mainly rely on rainfed agriculture thus find difficulty to continue agriculture and have started doing only one crop and/or left their land and migrated outside for better paid employment. However, in irrigated agriculture, farmers are able to grow two to three crops due to which the cropping intensity is increasing.

east of Bagmati river: Kokaha; Gideri Khola; Patnali Khola; Thakur Khola; Sun Koshi; Chadaha Khola; Kamala-North; Tawa-North; TawaSouth; Kankai Nadi; Ratuwa Nadi; Adherei Khola, Baruwa Khola, Duar Khola; Lakhandehi Khola; KamalaSouth; Biring Khola; Balan Khola; Charnath; Bataha Khola; Budhi Khola; Lohandra Nadi; Kamala, Belsot, Jogiya; Ratu Nadi; Mechi Khola; Bakraha Khola; Bihul Nadi; and Khado Khola. On the other hand, The GRB project area consists of Kaligandaki, Setigandaki, Madi, Marsyangdi, Daraudi, Budhi Gandaki, and Trishuli sub-basins. These are along Narayani and west.

39. The two projects will complement in many ways and benefit from each other. In both projects, the Project Steering Committee (PSC) is chaired by the Secretary of MOFE and is composed of Joint Secretary level representatives from related ministries and civil society organisations. The PSC will coordinate for both the projects in order to avoid duplication if any and develop synergies for overall climate actions in the country. PSC will also facilitate learning exchanges between the two projects. For playing complementary role in the projects, FAO will be invited to the Gandaki project PSC meeting and IUCN will be invited to the Churia Project PSC meeting.
40. MOFE will establish a Technical Team for oversight and coordination so that the two projects will be complementary in terms of piloting climate resilient technologies and their extensions.
41. **Topography**: The GRB extends from the tropical lowland Terai (200 m above sea level (m a.s.l)) to the high mountains and beyond to the cold and dry Trans-Himalayan region (above 4,000 m a.s.l), with peaks exceeding 8,000 m. The basin in Nepal includes four of the country's five physiographic zones - High Himal, High Mountains, Middle Mountains and Churia (including the inner Terai) (see Annex 16). Of the total area of 46,300 km^2, 72 per cent of the GRB is in Nepal (which is 22.65 per cent of Nepal's total area), the remaining area is in India and China[20]. The portion in China is 10% and falls in the Himalayan region where human intervention is minimal.
42. There are three physiographic regions with specific features in the GRB (Table 6). The majority of GRB districts (14 districts) fall under the Hill group. The land use pattern in these physiographic regions also indicate that majority of the land in the hill region (Table 7). In terms of land use, forests cover 37.5% followed by agriculture with coverage of 21.6%, and snow line areas cover 21.1% of the overall area of the GRB.

Table 6: Feature of physiographic zones of GRB

Physiographic Zone	Altitude	Climate	Average Annual Precipitation (mm)	Mean annual Temperature (^{0}C)	Districts of GRB
Mountain (High Himal and high mountains)	2,000 masl	Arctic/alpine / sub-alpine	150-200	<3-10	Rasuwa, Manang and Mustang
Hills (Midhills)	700 to 2,000 masl	Cool/warm	275-2,300	10-20	Nuwakot, Dhading, Makawanpur, Gorkha, Lamjung, Kaski, Syangja, Tanahu, Magdi, Baglung, Parbat, Gulmi, Arghakhanchi, and Palpa
Terai/Siwalik	Terai (60-300) Siwalik (300 to 700 masl)	Tropical / sub-tropical	1,100-3,000	20-30	Chitwan and Nawalparasi

Source: Water Resources of Nepal in the Context of Climate Change 2011. Water and Energy Commission Secretariat Singha Durbar, Kathmandu, Nepal 2011

Table 7: Land use pattern in GRB

Region		Forest	Shrub	Agri culture	Water	Barren	Snow	Others	Total	Percent by physiographic region
Mountain	Area (ha)	75,977	59,558	10,007	704	117,052	419,587	55,164	738,049	20.71
	Percent	10.29	8.07	1.36	0.10	15.86	56.85	7.47	100	
Hill	Area (ha)	1,040,110	382,744	577,590	8,651	110,767	261,779	0	2,381,641	66.82
	Percent	43.67	16.07	24.25	0.36	4.65	10.99	0.00	100	
Siwalik/ Terai	Area (ha)	222,381	21,440	181,952	5,725	12,956	25	0	444,479	12.47
	Percent	50.03	4.82	40.94	1.29	2.91	0.01	0.00	100	
Total	Area (ha)	1,338,468	463,742	769,549	15,080	240,775	681,391	55,164	3,564,169	100

[20] Dandekhya, S., England, M., Ghate, R., Goodrich, C. G., Nepal, S., Prakash, A., Shrestha, A., Singh, S., Shrestha, M.S., Udas, P. B. (2017) The Gandaki Basin – Maintaining livelihoods in the face of landslides, floods, and drought. Working Paper 9. Kathmandu: HI-AWARE

	Percent by land use	37.55	13.01	21.59	0.42	6.76	19.12	1.55	100	

43. **Demographics**: The population census of 2011 estimated a total population of 5,131,932 (1,172,558 households) in the GRB[21] which is 19.4 per cent of the total population of Nepal. The GRB is home to 2,427,654 indigenous peoples belonging to more than 40 ethnic groups, the majority of which are considered indigenous nationalities. Indigenous peoples are referred to as Janajati and 59 Janajati groups have been officially recognised by the government in a list published in 2002. Magar and Gurung, Newar, Tamang and Tharu are the major ethnic groups in GRB. Ethnic groups have lower literacy levels (66.93 per cent) compared to the national average of 69.73 per cent. Life expectancy of ethnic groups is 69.86 years compared to the national average of 71 years[22].
44. **Economy**: Agriculture is the mainstay of the Nepalese economy. It contributes almost one-third of total GDP and provides employment to 74% of the economically active population. Agriculture exports provide important revenues for the country. However, insufficient production of key crops (such as rice and maize) to meet domestic demand explains the high import rates of staple crops in the country. The slow growth of the agriculture sector in recent years has been associated with farming practices highly dependent on weather conditions, insufficient irrigation facilities, unavailable agricultural inputs (particularly seed and fertilizers), and an increasing trend of land fallowing and abandonment23. Agriculture is dominated by small-scale farms of less than two hectares (ha)24. This occupies roughly 76% of the country's cultivated land25. Likewise, the agriculture sector is the mainstay of livelihoods for people in the GRB, around 74 percent of the population, mostly marginal farmers, still depend on agriculture for their subsistence, and one third of the Gross Domestic Product (GDP) comes from this sector.

45. A brief description of agriculture in different regions is provided below[26].

Mountain region: The farming system in the region is mainly potato, maize and millet based. The predominant agricultural activities in this zone are transhumant livestock production (e.g., hilly cattle, goats, sheep, etc.), rain-fed crop cultivation (e.g., potato, barley, and buckwheat), and temperate fruits (e.g., apple and pear). Around 29% of the area is grazing land and crops are mainly rain-fed ('bari' land). The region is also characterized by high population migration rates to lower altitude areas, scarce road infrastructure, and minimal education opportunities.

Mid-hill region: The farming system is mainly maize and wheat based. Crops are grown in upland terraces and irrigated fertile lands in river basins and valleys ('khet' land). Maize, millet, grams, potato, ginger, cardamom, and temperate fruits, particularly citrus, are the main crops grown in bari land, whereas rice and wheat are common in khet lands. Dairy and commercial vegetable production are rapidly growing in places nearby market centers in this zone.

Siwalik and Terai region: The Siwalik and Terai regions are the majority of croplands in the country and a key contributing area to the agricultural GDP of Nepal. The farming system is mainly paddy and wheat based and the highly fertile soils allow for the cultivation of rice (the main crop in the region), wheat, chickpea, lentil, oilseed, mustard, sugarcane and tropical fruits (e.g., mango, litchi) where crop intensification is very common in this region. Farmers in this zone also rely on livestock production - mainly cattle, goats, and buffalo.

46. As a result of changes in the farming and employment patterns due to out-migration, the major sources of livelihoods for people in the GRB are remittances (46%); agriculture, livestock, forests (19%); salaries and pension

[21] CBS. (2011). *Nepal Living standard survey, Statistical report.* Kathmandu: Central Bureau of Statistics/ National Planning Commission Secretariat, Governme of Nepal.
[22] CBS. (2011). *ibid*
[23] NPC, 2018. 14th Plan of Nepal 2017/18-2019/20. National Planning Commission, Singh Durbar, Kathmandu, Nepal
[24] World Development Indicators: Nepal. Washington, D.C.: World Bank (WB). Available at: http://data.worldbank.org/ data-catalog/world-development-indicators
[25] CBS. 2013. National Sample Census of Agriculture Nepal 2011/12. Kathmandu, Nepal : Central Bureau of Statistics, National Planning Commission Secretariat, Government of Nepal
[26] CIAT; World Bank; CCAFS and LI-BIRD 2017. Climate-Smart Agriculture in Nepal. CSA Country Profiles for Asia Series. International Center for Tropical Agriculture (CIAT); The World Bank; CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS); Local Initiatives for Biodiversity Research and Development (LI-BIRD). Washington, D.C. 26 p

(20%); wage labour (7%); tourism (5%); and others (3%)[27],[28]. The overall per capita income in the basin is Nepalese Rupees (NRs) 49,362, which is lower than the national average of NRs 51,879 [29].

47. **Related projects/interventions:** There are more than 15 relevant programmes/projects in operation or just recently completed in the GRB from which many lessons and models can be customised or replicated for this proposed project. In all, there are five major regular sectoral government programmes, namely agricultural extension, livestock extension, soil and watershed conservation, forest management, and national parks and wildlife conservation. On an average, annual budget allocation by the government is about US$ 20 million (see Annex 2a Section 4 Baseline Efforts for detail). The important projects in the GRB include: GEF supported Strengthening Capacities for Implementation of the Nagoya Protocol in Nepal (2016-19); BMUB supported Scaling Up Mountain Ecosystem-based Adaptation; UNDP implemented Supporting Developing Countries to Integrate the Agricultural Sectors into National Adaptation Plans (NAPs); USAID supported Hariyo Ban 2; GEF-LDCF supported Reducing Vulnerability and Increasing Adaptive Capacity to Respond to the Impacts of Climate Change and Variability for Sustainable Livelihood in the Agriculture Sector; and the ADB supported HIMALI High Mountain Agribusiness and Livelihood Improvement.

    From several projects recently completed or under implementation in the GRB, a summary of projects is provided on ecosystems, water resources, climate change initiatives, and improving livelihood are presented in Tables 42-44 of the FS. There are several lessons learned from the past projects that can serve as a source of information, technology and process to ensure past mistakes are not repeated. The major lessons from the past projects are summarized as follows.

    - Healthy forests contribute significantly in preventing landslides and protecting watersheds and thus contribute to reduce climate shocks
    - EbA is an effective nature-based solution to climate change adaptation in mountainous regions to enhance ecosystem services and agricultural production
    - Long-term climate resilience can be built through an integrated water resource and ecosystem-based approach
    - Early warning systems can reduce disaster risk to a great extent
    - Communities can improve their lives and withstand the challenges posed by climate extremes and natural hazards if they are supported with new technologies, modern farming, and greater flood mitigation measures.
    - Climate vulnerability of people can be reduced through investing on biodiversity conservation and anthropogenic activities
    - In order to change the adaptation capacities of the vulnerable households, they should be supported in the transfer of appropriate technologies
    - Increasing vulnerable communities' access to services and opportunities enhances their livelihoods and wellbeing
    - Community resilience is enhanced through the protection and rehabilitation of agricultural land and infrastructure, diversification of crops and development of improved agricultural practices
    - Timely climate & weather information and products are essential for the agricultural sector which empower farmers to make decisions that would help reduce their vulnerability to weather and climate extremes and ultimately promote food security
    - Climate change impacts needs to be reduced to enhance agricultural productivity and retain families and youths in the agriculture sector
    - Microenterprise development for poverty alleviation (MEDPA) model provides a unique opportunity for local governments to reach the hard to reach people impacted by the climate change
    - People's participation from planning to monitoring enhances adoption of nature-based solution such as integration of land, soil and water management with balanced linkage of up- and down-streams in order to stream line fund flow from different agencies in the watershed for climate change adaptation.
    - When communities are empowered to manage their resource base through enhanced adaptation and provided with enterprise options that are linked to biodiversity, income and employment opportunities can be generated to reduce poverty while providing incentives to conserve resources
    - Systematic communication on climate change issues is needed at local level for the facilitation of the implementation of climate change policies including NAPAs and LAPAs
    - Coordination across multiple sectors supported at the highest levels of government is the most effective approach for shaping a program of resilient investments

[27]MOF, 2016: Economic Survey 2016. Ministry of Finance, Government of Nepal

[28] WWF. (2013). Chitwan-Annapurna Landscape: A Rapid Assessment. Kathmandu, Nepal: Hariyoban Programme, WWF Nepal.

[29] NPC, 2014: Nepal Human Development Report 2014. National Planning Commission, Kathmandu, Nepal

48. Though on a fragmented basis, these investments are addressing key issues in ecosystem restoration, biodiversity conservation, livelihood improvement, capacity building, climate change risks and the promotion of river basin management. Many of these project's interventions apply some climate adaptation planning and also i) community-based natural resource management; ii) education and awareness programmes; iii) research and data collection; and iv) the promotion of adaptive livelihoods. Despite considerable achievements out of these investments, significant gaps in penetration of benefits exist. Several of the baseline investments, for example, focus on ecosystem restoration and livelihood improvements yet have not taken climate change impacts into consideration or there are local communities within these projects areas who are not being trained on how to climate-proof their livelihoods and to maximise the benefits of surrounding ecosystems for building climate resilience. Efforts and investments are consequently needed to fully climate-proof existing baseline projects.
49. **Gaps and barriers in the recent/ongoing projects:** From the review of literatures and stakeholder consultation at various levels, five important gaps were identified that need to be bridged by this project. 1) Information and knowledge gaps and barriers, 2) Governance and rule of law gaps and barriers, 3) Social license barriers, 4) Capacity and capability barriers, 5) Market and finance barriers (detail is presented in Section 4 of Annex 2a Feasibility Study).
50. In order to enhance adaptive capacity and reduce vulnerability to climate change by bridging these gaps, there are additional activities that can be done in addition to the government's regular development works planned to be carried-out in the GRB, such as awareness raising of community members, diversifying livelihood options, changing land use practices, conserving watersheds.

B.2. Theory of change (max. 1000 words, approximately 2 pages plus diagram)

Barriers to climate change adaptation

51. The GRB has high vulnerability to climate change including increased frequency and intensity of rain, floods, landslides and droughts. As women, Dalits[30] and poor ethnic groups are dependent on forests, agriculture and water resources for their livelihoods, they are more vulnerable as compared to others. The project focuses on improving the adaptive capacity of such highly vulnerable groups. As presented in Section B.1, there are several adaptation needs to be addressed. Nevertheless, communities are facing various barriers to address their adaptation needs. There are five types of barriers identified in the GRB which impede climate change adaptation, listed below.
52. *Limited technical and financial capacity for communities to adapt existing livelihood practices in agriculture, livestock and fisheries*: Local bodies often have inadequate knowledge about climate change adaptation, have inadequate data and information to inform good decision making, lack/inadequate availability of adaptation technology and related financing, an expensive and cumbersome process of accessing technology, and gaps in the translation of technology into practice (education, skill). This limited capacity also affects the ability of stakeholders in managing ecosystems, including their restoration, to better adapt with climate change. Often, this is due to lack of appropriate financing and risks perceived by investors related to climate variations that do not ensure a relevant enabling environment. For instance, stakeholders are currently lacking access to resilient agro-forestry practices, including drought and flood tolerant varieties, or nature based solutions, which will improve the access to water resources in a climate change context. This is particularly relevant for water resources management techniques as this resource is the mostly affected by climate change with substantial impacts on economic activities such as agriculture, which have a critical role to play on the resilience of livelihoods in the area. One of the key barriers of access to relevant climate resilient technology is the current low level of income, which leads to poor affordability of new technology when available, and out-migration triggering the under-utilisation of land.
53. *Governance and rule of law gaps and barriers*: Implementation of climate-related policy is poorly coordinated between line agencies, political transition over the past 20 years and more recently the move to federalism has created some uncertainty in terms of who has authority and responsibility for climate action. In large parts of the GRB there is a limited local level presence of key institutions, the lack of land tenure security is a barrier to the reutilisation of unused and underutilised agriculture land as an adaptive mechanism, and regulatory framework and institutional structures are often impediments to conducting business and using natural resources. This is exacerbated by lack of coordination at the basin level where assessments and recommendations are not done uniformly. This prevents a coordinated approach to adapt to climate change in the sense that information gathered upstream is uncorrelated with needs and requirements downstream. Enhanced governance is critical to better adapt to climate change. Moving away from a segregated, site specific approach to a fully integrated way of operating at the entire basin level will remove the barrier related to Governance by ensuring that all present stakeholders are coordinated through the design and implementation of management plans, which will consider climate change and its impacts.

[30] Members of the lowest caste group.

54. *Limited inclusive participation in decision-making process*: Women, indigenous peoples, Dalits, ethnic groups, disabled and others often have limited access to decision making. This affects how these communities and groups are included in the management systems at the local and the regional level with a direct negative effect on their livelihoods in case of climate change variations. It is therefore critical to achieve climate resilience at the basin level that these groups are included in the decision-making processes. This will be conditional to them having access to data and information as any other stakeholders.
55. *Lack of climate resilient infrastructure*: Infrastructure is threatened by climate change and its related events. This has a direct negative effect on commercial activities in the region and livelihoods, mainly the ones that are critical to the most vulnerable communities. Floods and landslides are in particular affecting the energy and transport systems, which need to be made more resilient to climate change. The GRB project will remove the risk of climate change to the infrastructure system by promoting nature based solutions which will ultimately protect roads, energy networks, markets and living areas. These solutions will also protect natural resources such as water, preserving access and building resilience to climate threat. In line with the barriers identified above, these solutions will have to be planned and implemented by taking an inclusive approach at the basin level as the involvement of stakeholders is critical to the success of the project and its exit strategy.
56. *Market and finance barriers*: Lack of access to finances and resources for adaptation, lack of access to markets due to a low scale production during adoption of climate change responsive production systems thereby limiting farmers to remain without adopting new crops/varieties and techniques, lack of access to input market to adapt to best recommended technology, and low diversity of livelihood options increase vulnerability to shocks and changes. Lack of financial resources including insufficient funds, lack of credit facilities and loans that are required for planting trees, planting improved varieties of crops (e.g. drought tolerant crop varieties), diversification of livelihoods activities, changing the timing of planting, etc. This is where project intervention is required to ensure that the enabling environment is set in a way that it brings in finance activities that will de-risk farmer's activities (inclusive finance, mobile finance / micro-insurance, etc.).

Development transformation (paradigm shift)

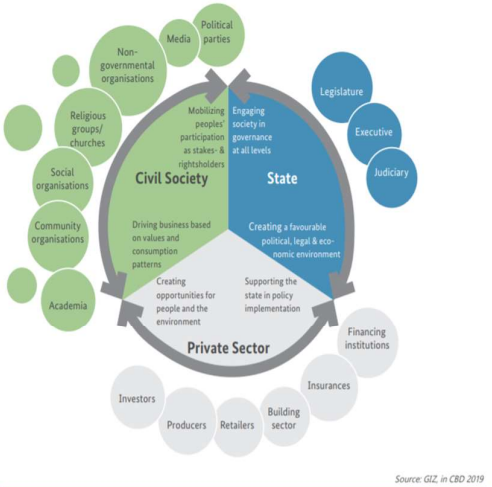
57. The project has designed and adopted the "Mainstreaming and operationalising a river-basin approach sustainably for watershed management to achieve resilience of climate vulnerable communities and ecosystems in the Gandaki River Basin". The Gandaki River Basin is being used as a model to showcase how climate resilient development in large river basins can occur throughout Nepal. The traditional district and municipality (political/administrative boundary) based approach applied over the past 50 years in Nepal is being changed through this project by bringing in climate resilient development and management at a more holistic river basin-wide level that cuts across political/administrative boundaries. The Government of Nepal's commitment to establishing river basin offices throughout the country for major river basins that cut across political/administrative boundaries, and the project's approach to the Gandaki Basin offers a model for scaling-up this approach, in particular how these new river basin offices across the country will operate across provincial boundaries once established.
58. The river basin approach is to enable riparian states and municipalities to coordinate planning and implementation of development in collaboration with the upstream-downstream stakeholders. The project serves as a vehicle for the Government to use to improve the implementation of its commitment to an integrated river basin approach, which was approved by the high level committee to manage all watersheds in Nepal, following its establishment by the Prime Minister. To date, the Committee has only been able to implement this commitment in a fragmented manner, without significant evidence of progress at a river basin scale, let alone nationally.

Transforming governance

59. As has been identified by GIZ, EbA governance needs to go beyond separate governance by sector, to governance across sectors, and with the involvement of civil society and the private sector with clear roles and mandates for action. The figure below is an illustration of EbA governance involving all three key actors with their distinctive roles of action and mandates. The difference between EbA governance to other forms of governance is the need for holistic and systems understanding of the complexity of issues governing the management of a large ecosystem such as a river basin. Key is to have an adaptive governance mechanism to proactively address dynamic changes in the complex socio-ecological systems.

Figure EbA Governance

Figure 1 **EbA governance: Operation of 3 key actors –** the state, civil society and the private sector with distinctive roles and mandates for action.



Source: GIZ, in CBD 2019

60. IUCN, in relation to the paradigm shift objective, clearly recognises the opportunity for realising transformative change in shifting from a piece-meal approach in addressing management and governance of the GRB to a strategic integrated river basin management model for enhancing the adaptive capacity of communities. The project will develop a comprehensive Gandaki River Basin Management framework underpinned by ecosystem-based adaptation that will spell out the governance arrangements, financing arrangements and identify legal gaps that need to be addressed in terms of new legislation.

61. The project will support the Government with the establishment of the Gandaki River Basin Office for developing this strategic framework within which would be nested the project's ecosystem based adaptation initiatives. This would involve preparing sub-watershed level plans with relevant local government authorities and watershed level plans with the relevant provincial governments in the Gandaki River Basin. At each level, the plans will integrate the management of forests, grassland, wetlands and also agricultural and other land use.

62. This will address in correcting the prevailing political/administrative boundary-based designing and implementing approach, where the upstream and downstream parts of the river basins are disconnected and thus are not discussed jointly regarding their climate change problems and adaptation needs while designing and implementing adaptation measures. As a result, the project activities in the upstream are impacting communities in the downstream. Major impacts in the downstream include flooding, inundation, sedimentation, salinization of agricultural lands and worsening water quality.

63. The Gandaki River Basin Management Framework will encompass a larger landscape comprising several political units such as municipalities and states thereby building partnerships among them to better achieve shared water resource management goals and objectives. In river basins, solutions to address climate change threats can only be done by considering its characteristics (water resources availability, uses, practices, etc.) upstream and downstream in a coordinated and inclusive manner. In the new paradigm—river basin approach, a holistic framework will be developed and implemented which requires all the provinces (3, 4 and 5 for GRB) to come together and plan for the GRB. All related districts (19) and municipalities (151) are to come together and plan for sub-basins. As all communities in the landscape are involved, it will ensure the resilience of the entire basin thereby

increasing the resilience of natural ecosystems, which in turn, will enhance the resilience of infrastructure/economic development in the basin.

64. The river basin approach makes the coordination between the states and municipalities easier and effective. Adaptation measures are jointly discussed and implemented in collaboration with upstream and downstream communities by using nature based solutions such as bioengineering and natural infrastructure. This will ensure that ecosystem services providing climate resilience of built infrastructure and livelihoods are enhanced. This is well documented from various experiences that ecosystem-based approaches, including natural infrastructure, can provide an effective complement or even substitute for conventional built (or "grey") infrastructure. For example, watershed restoration can protect sources of drinking water and reduce the need for subsequent treatment for the communities living in the downstream[31]. The aim is to achieve an increased economic return as a result of more investments, as a result of an enabling environment that will de-risk the sector and attract investors in the value chains. The enabling environment that protects farmers (through financing and insurance) will, in turn, lessen the losses due to climate change.

65. The Project Steering Committee will be a strategic advisory body for developing the Gandaki River Basin Management Strategic Framework. It will be chaired by the Secretary, Ministry of Forests and Environment and comprise of members of not just relevant provincial governments but also involve representation of various government Ministries at the federal level and also the Prime Minister's developed employment programme and his Agriculture Modernization programme, which has the Prime Minister's commitment on investment opportunities from private sector for enterprises and associated employment in the country. In addition, the other representatives will include the Department of Hydrology and Meteorology, Federations of Chambers of Commerce and indigenous peoples' representatives. The Project Steering Committee will establish innovative sub-committees for looking at cross-sectoral systems challenges such as addressing the Water-Food-Energy nexus that would involve Ministry of Forests, Ministry of Agriculture, Ministry of Energy, Water Resources and Irrigation, Nepal Planning Commission, etc.
66. There will be collaboration between the provinces in the preparation of integrated watershed management plans for seven watersheds at province level. These watershed management plans will guide the preparation of integrated development plans at municipal level. It will also facilitate to link the upstream and downstream communities for joint planning and implementation of climate change activities. As the joint planning is a joint activity of the municipalities at the sub-watershed level that is directly linked to the watershed level and there will be a good linkage between the watershed management plans of the provinces and the sub-watershed management plans of the municipalities. As the resources for such linked activities are allocated and a monitoring plan is also developed at the time of joint planning, the chances of duplication of resources is avoided, plus this ensures joint monitoring of the activity at the time of implementation.

Theory of change

67. Given the climate change problems, adaptation needs, barriers for adaptation, and the interventions required to overcome the barriers to adaptation, it was concluded through consultation with the national as well as local level stakeholders that the project should adopt the river basin approach and work in three broad thematic areas, namely community resilience, ecosystem resilience and climate governance so that there are clear and distinct improvements in the climate resilience of communities and ecosystems within the GRB.
68. In order to design the required project interventions, it is assumed that the disaster risk reduction remains government's priority at least for the project period and communities are willing to participate and support in project implementation. The municipalities include climate change adaptation in their long-term plan and general public schools and training centres will include climate change issues in their regular training programmes on climate change. It is also assumed local governments will collaborate in involving farmers in resilient farming.
69. The project proposes six activities for community resilience, five activities for ecosystem resilience, and 11 activities for improving climate governance to overcome five major barriers to climate change adaptation in the GRB. These activities will contribute to achieve two outputs for community resilience leading to achieve community resilience outcome (Component 1), two outputs for ecosystem resilience leading to achieve ecosystem resilience (Component 2), and three outputs for governance leading to climate governance (Component 3).
70. The paradigm shift will be two-fold: 1) the changes brought by the project in switching the governance system will ensure the whole basin is climate resilient (including built and natural infrastructure as well as livelihoods) and attracts more investments to lower risks. 2) the approach will pave the way for replication in many other basins in

[31] Climate-resilient Infrastructure. Policy Perspectives. OECD Environment Policy Paper No. 14. OECD Environment Directorate. 2018

Nepal and the region, which are all suffering from the same threats from climate change. The changes will take place as follows:

71. *Fund level impact contributed by the project:* Directly to increased resilience of and enhanced livelihoods of the most vulnerable households; increased resilience of health and well-being, and food and water security; and improved resilience of ecosystems and ecosystem services in the GRB; and indirectly to increased resilience of infrastructure and the built environment.

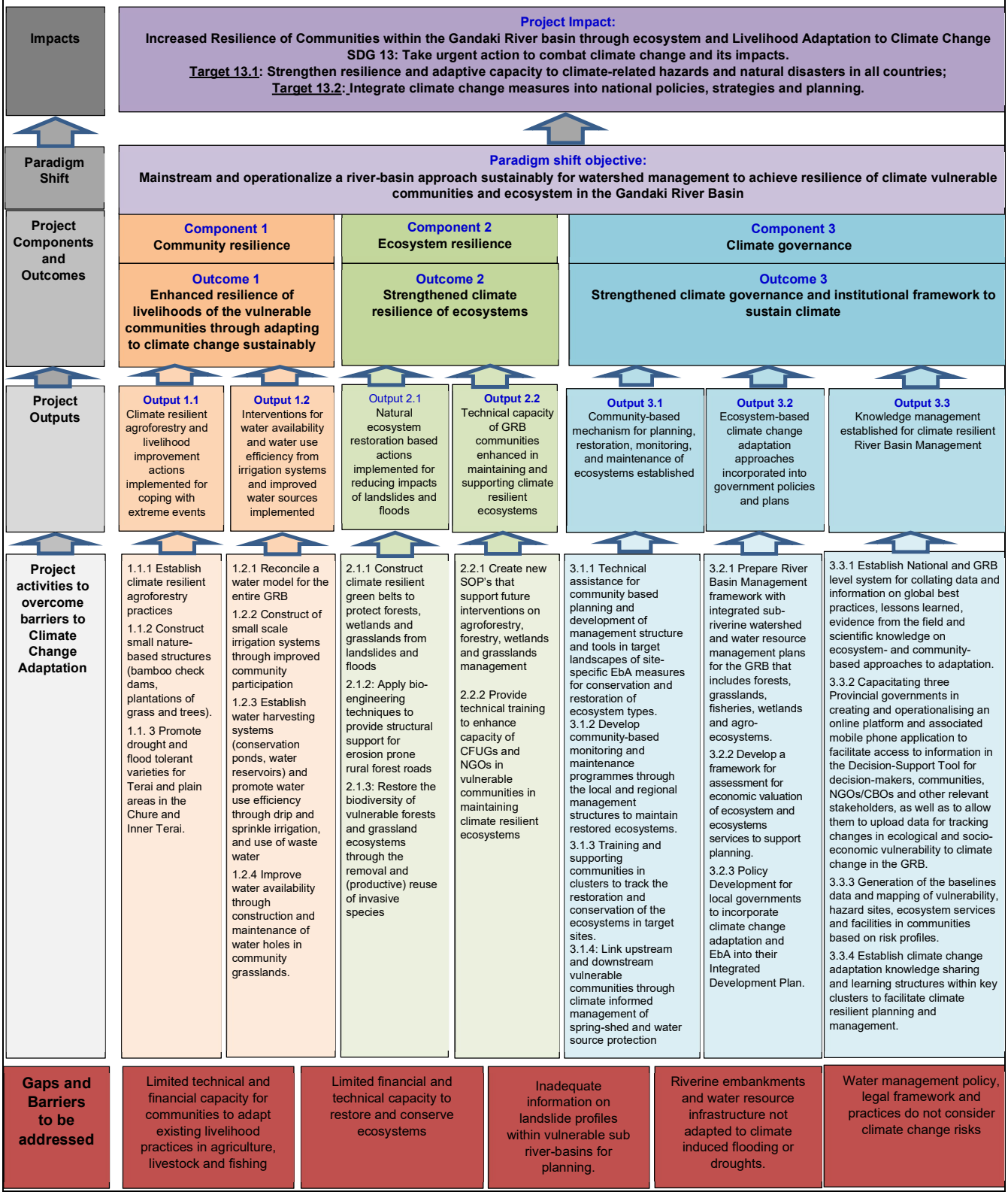
    With these impacts, the project contributes to achieve the Sustainable Development Goal (SDG): SDG 13 - Take urgent action to combat climate change and its impacts (Target 13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries; and Target 13.2 - Integrate climate change measures into national policies, strategies and planning).

72. *Project components leading to outcomes*: There are three components, namely community resilience, ecosystem resilience, and climate governance.

73. Each component has one outcome, and each outcome has two to three outputs as mentioned above under the sub-section "Project Interventions":

This theory of change and the result links is presented in Diagram 1.

Diagram 1: Theory of Change



B.3. Project/programme description (max. 2000 words, approximately 4 pages)

The Project

74. This is a climate change adaptation project designed to improve the climate resilience of vulnerable communities and ecosystems in the Gandaki River Basin, Nepal. The project is designed to shift planning and implementation of climate change adaptation measures from using political boundaries such as district and municipalities as a basis to river basin management, to one where the entire landscape along the basin becomes one unit of planning and implementation of climate change adaptation measures linking all the impacted communities in the upstream and downstream at the landscape level.
75. As Nepal is in political transition and is just experiencing the federal system of governance, the administrative structure of government in Nepal regarding the policy and institutional environment for adaptation to climate change is weak. In addition, limited market mechanisms, structures and capacity mean vulnerable people have limited options to improve their livelihoods, exacerbated by climate change, and making it difficult for ecosystems and agricultural land to provide ecosystem goods and services. Limited knowledge and awareness of the effects and impacts of climate change amongst vulnerable people on their preparedness to respond has made them more vulnerable.

Project components

76. The GRB project is designed with three components:
    Component 1: Community resilience - Building climate resilience of the livelihood of communities in vulnerable areas of the GRB, through improvements in agricultural production, forest based enterprise, and integration of climate resilience. In this component the project aims to implement climate resilient agroforestry and livelihood improvement actions for coping with extreme climate events, and measures for increasing water availability and water use efficiency.

    Component 2: Ecosystem resilience Building climate resilience of the vulnerable ecosystems in the GRB, through improved management of mainly forest ecosystems, rangeland ecosystems, and wetland ecosystems. The component aims to implement conservation and restoration actions, forest landscape restoration and bioengineering actions, and measures to protect vulnerable grasslands.

    Component 3: Climate governance - Strengthening institutional framework and governance of climate change adaptation measures at the national, provincial and local levels with the aim to establish community-based mechanisms for planning, restoration, monitoring, and maintenance of ecosystems, incorporating ecosystem-based climate change adaptation approaches into government policies and plans, and establishing a river basin knowledge management system.

Outcomes and Outputs

77. Each of the project components has an outcome which will be contributed to by two to three project outputs.

Component 1: Community resilience

Outcome 1: Enhanced resilience of livelihood of the vulnerable communities, through adapting to climate change sustainable

78. In order to achieve this outcome, the project will enhance the ability of communities to utilise available resources sustainably, and to respond to, withstand, and recover from the adverse impacts of climate change on their livelihoods. Agriculture is the main source of livelihood for the majority of inhabitants in the GRB and its resilience to climate change must be strengthened.
79. Agriculture and livestock systems are affected by changing precipitation patterns and the subsequent impact on water supplies. Agriculture in the GRB is mostly based on rain-fed systems with only about 35 per cent of agricultural land irrigated[32]. Existing irrigation facilities are not adequate or resilient enough to withstand decreasing water availability due to climate change. The low level of irrigation leads to high risk of crop failure due to drought and late onset of monsoon yet if wrongly done can have negative impacts by depleting already vulnerable water sources.
80. Most households are smallholders and their livelihoods are based on semi-subsistence agriculture. Households grow limited varieties of traditional crops/varieties such as paddy, wheat, barley, maize, etc. with an increasing risk of crop failure. Interviews with farmers during the feasibility study revealed that farming systems have become increasingly vulnerable, with shifts in agricultural production zones, loss of local varieties such as "Marshi, and Jethobudo" of paddy, "mudule" of wheat, etc., and reduction of agricultural productivity leading to increasing food insecurity.

[32] MoAD. (2013). *Statistical Information of Nepalese Agriculture.* Singha Durbar, Kathmandu Nepal: Ministry of Agricultural Development, Agriculture Business Promotion and Statistics Division.

81. Landslides and undercutting by rivers has destroyed productive agricultural land in the mountain and high hill districts. Likewise, flooding and increased sedimentation has reduced the productive capacity of agricultural land in downstream districts. International Fund for Agricultural Development (IFAD)[33] reported that a total of 847,648 ha of agricultural crop land were lost between 1971 and 2007. Cultivation in sloping land leads to a high risk of soil erosion and landslides during the rainy season.
82. Decreased precipitation and snowfall in the trans-Himalayan region has resulted in a decline in the productivity of pastures, which has resulted in increasing pressure on limited pastures and substantial negative socio-economic effects on communities that practice transhumance grazing. As a result, transhumance herders are migrating to urban centres in search of jobs in the areas where they have no skill and experience. Ultimately, their pasturelands are abandoned where invasive plant species are expanding their range and density, and resulting in even less resilient ecosystems.
83. The decreasing productivity and production in the climate extreme years (drought, flood and inundation) have led to outmigration from hill and mountain districts with farmers abandoning their agricultural land. The rate of land abandonment has been as high as 44 per cent in the hills[34].

This outcome will be achieved through the achievement of the following two outputs:

Output 1.1: Climate resilient agroforestry and livelihood improvement actions implemented for coping with extreme events

84. Output 1.1 will include implementation of activities that enhance resiliency of the livelihood of the community. Given the high dependence of people in the GRB on agriculture, livestock and forests, enhancing resilience of these systems is essential for resilient livelihoods. Livelihoods will be made more resilient through promotion of flood tolerant summer crops/varieties and drought tolerant crops/varieties, and use a variety of species that benefit from varying canopy and root structures to make efficient use of available resources and enable farms to be more resilient to crop failure and other risks. Native species, nitrogen fixing species, fire tolerant species, fruit species, fodder species, and species with deep roots will be used as per the conditions.
85. The project has recognised that communities in GRB have been practicing various agroforestry systems using traditional knowledge. Communities are usually more willing to accept interventions if the species selected are socially desirable. Agroforestry has also been proven to be a best bet option to bring back unused and underutilised agricultural land into production in rural areas with acute labor shortage resulting from outmigration as a result of decreasing productivity due to climate change. Agroforestry will create spatial and structural complexity across the landscape to make them more resilient to risks and farming systems more sustainable[35]. It will provide food and agricultural products through mixtures of multipurpose trees and food crops in agricultural land, and trees and pastures in forage and fodder sites.
86. Degraded agricultural lands damaged by landslides and floods also need to be restored for enhancing resilience of livelihoods[36]. The project will use a bioengineering approach that constitutes the use of bamboo check-dams, plantation of grass and trees for the restoration of degraded agricultural lands.

Output 1.2: Interventions for water availability and water use efficiency from irrigation systems and improved water sources implemented

87. This output will sustain water availability and enhance water use efficiency through the reconciliation of a Water Model for the entire Gandaki River Basin The hydrological model for the GRB will analyse water balance, hydrological flows, etc. and further validate the extrapolated data using the Soil and Water Assessment Tool (SWAT model) based expertise from International Water Management Institute (IWMI) and the Nepal Department of Hydrology and Meteorology (DHM) (see Annex 2b for the proposed model that will be used).

- Since agriculture is rain fed, both agricultural productivity and production has decreased due to changes in the precipitation pattern (see Table 9 of the FS). The decreasing post-monsoon precipitation has adversely affected paddy production while the decreasing winter precipitation has affected winter crops such as wheat, barley, potatoes and spring paddy. In its detailed Nepal Hazard Risk Assessment in 2010, the Asian Disaster Preparedness Centre (ADPC) has analysed exposure of wheat, barley, maize and paddy to extreme, severe and moderate droughts. It has shown that in Terai, 96 percent of the wheat crop area is exposed to a 5-10 percent probability of extreme drought. In hill areas, 81.5 percent of the wheat crop area is exposed to a 5-10 percent probability of drought. For extreme drought conditions, 64 percent of the Terai wheat field area is exposed to a 10-

[33] IFAD, 2013. Environmental and Climate Change Assessment: Prepared for IFAD's Country Strategic Opportunities Programme 2013-2018. IFAD

[34] Dahal, G. R., Pandit, B., & Shah, R. (2017). National Assessment of Abandoned/underutilized Agricultural Land in Nepal. FAO Technical Cooperation Programme, TCP/NEP/3602. IUCN Nepal.

[35] ibid

[36] It has been reported that there are 3.2 million hectares of degraded agricultural land that need to be rehabilitated. Agriculture development Strategy 2015. Ministry of Agriculture and Livestock development, Kathmandu.

15 percent probability of drought. Large barley cultivation areas in the mountain zones are the most exposed areas to all three drought conditions. Paddy crop is exposed to drought during the pre and post-monsoon seasons. Maize crops in the hill zones experience the highest drought exposure.

88. As both drought frequency and intensity in recent years were found to have increased, it has created a need for additional investment in giving continuity to water availability. This has indicated that in areas where water availability is decreasing but there is still a possibility of promoting surface irrigation through gravity flow; farmers need to be supported to establish small scale irrigation schemes by diverting stream water in consultation with the community in the downstream. Simple nature-based structures such as bamboo check dams are an important and sustainable output.
89. Irrigation schemes are constructed and operated by the Irrigation Water Users' Group (IWUG). Such groups are formed with due respect to their traditional water resources management system. These committees will facilitate the consultation with upstream and downstream people as well as make decisions in case of conflicts and disagreement.
90. The management of the new ponds and reservoirs will be the responsibility of these water users' groups or committees., The user groups or committees will decide on the contribution during construction and whether to apply usage fees in future to fund ongoing protection and maintenance of the ponds or reservoirs. The group creates a fund called maintenance and repair fund. This fund ensures the sustainability of the schemes. The water user groups are required to mention these clauses in their by-laws while forming the group.
91. Though the total precipitation is reported to have increased, the monsoon season has shortened. As a result, the water scarcity in the post-monsoon and winter has further increased in the recent past. Construction of conservation ponds, water reservoir and collection of rain water during monsoon for supply in the post monsoon and winter has become important. Water harvesting system during monsoon will not only make water available for the post-monsoon period and winter but also recharge underground water sources and enhance microbial activity in the soil that keeps soil fertility maintained. In addition, such conservation ponds will also reduce the velocity of surface run-off waters and soil erosion and makes water available for wildlife.
92. Most of the pasturelands in GRB are already in rain shadow area. Increasing temperature and drought due to climatic condition has made these areas even drier. It has created a need to make conservation ponds in the community pasturelands to ensure the water availability for livestock herders.

Component 2: Ecosystem resilience

Outcome 2: Strengthened climate resilience of ecosystems

93. Natural ecosystems including forests, grasslands and wetlands are vital particularly for land stabilisation, water and nutrient cycling and provisioning of ecosystem goods including fuelwood, forage and fruits. These ecosystems are most important for ethnic, Dalit and disadvantaged households whose livelihoods depend on ecosystem services. An estimated 72.4 per cent of households solely depend on forests to fulfil their household energy requirements[37].
94. Large numbers of forest dependent people are organised into more than 6,000 Community Forest Use Groups (CFUGs) and 2,000 Leasehold Forest User Groups (LFUGs), responsible for managing thousands of hectares of forest. However, within these groups, forest management is generally lacking and there is an absence of focus on climate adaptation. Most forest management plans do not incorporate climate change components. Climate change is having serious effects on rangelands including from increases in pests, drying of water sources, and loss of important forage and NTFPs. Climate projections indicate that subtropical broadleaf forests will become fragmented and disappear from Chitwan, Tanahu and Nawalparasi districts. The subtropical broadleaf forests in Dhading, Gorkha, Palpa and Makawanpur will be considerably reduced over the next 30 years. Drying of lakes, ponds, marshes and swamps are important impact of climate change. Stakeholders confirmed during consultation that changes to the forest vegetation types or composition due to climate change has already affected forest dependent wildlife species.
95. In addition, impact of invasive plant species including Mikania, Lantana, Eupatorium, Ageratum and Eichhornia is already seen posing a threat to biodiversity[38, 39] Outcome 2 is, therefore, designed to address these issues by enhancing the resilience of the ecosystem as a whole.

This outcome will be achieved through the achievement of the following two outputs.

Output 2.1: Natural ecosystem restoration based actions implemented for reducing impacts of landslides and floods

[37] WWF. (2016a). Chitwan-Annapurna Landscape: Climate Vulnerability Assessment and Recommendations for Adaptation Interventions. Kathmandu, Nepal: WWF Nepal, Hariyo Ban Program.

[38] NBSAP. (2014). *National Biodiversity Strategy and action Plan Nepal.* Kathmandu, Min. Forests and Soil Conservation.

[39] Dukes, J. (2011). Responses of Invasive species to changing climate and atmosphere: Purdue University.

96. This output realises that ecosystem restoration is fundamental to enhance the supply of ecosystem goods and services to reduce poverty, increase food security, conserve water sources and biodiversity sustainably. Hence, this output aims to restore the degraded ecosystems and areas damaged by disasters such as floods and landslides, along with protection of ecosystems from further degradation and destruction so that the ecological functionality remains intact. Restoration of many heavily degraded ecosystems can be done by using nature-based solutions (NbS) focusing on protecting key ecosystems, and restoring ecosystems on a massive scale. As forests and other vegetation help stabilize slopes and therefore reduce the risk of landslides, this output aims various plantations. Plantations in steep and erosion prone areas stabilize the soil surface and prevent erosion and landslides. Plantations in corridors provide linkages between forest areas creating opportunities for species movement and genetic interchange. Plantations are required in spring-shed areas to maintain water levels in wetlands and prevent water sources from drying. Plantations along the bunds of lakes and ponds help restore wetlands to maintain water levels and improve water quality.
97. To achieve this output, there will be construction of climate resilient green belts to protect forests, wetlands, grasslands and conservation ponds from landslides and floods There will be 15 check dams constructed at different locations, 3 rivers trained through green belts, 100 diversion channels, 100 landslide treatment forests, plantation in 8 km river and stream banks, enrichment plantation in 2,500 ha forest land, 750 ha wetland, 500 ha grassland, 320 conservation ponds, and engineered check dams combined with NBS in the gullies at 700 sites.
98. Bioengineering measures have been also identified as a good tool to strengthen the integrity of agricultural and forest landscapes. Bioengineering methods can be used for road side slope failure, rills and gully erosion on both private and public land that are known to trigger erosion and cause disturbance to ecosystems. This requires some small civil engineering structures as well to complement bioengineering. The focus will be on rural road construction in the public lands (60 km plantation) and irrigation channel construction (10 km plantation) in private lands.
99. Community will participate and contribute in such construction and plantation in private lands. Through such works, the project expects to obtain in-kind community contribution equivalent of USD 5.3 million (see Section D.6).
100. Invasive plant species such as *Mikania micrantha, Lantana camara, Parthenium, Ageratina adenophora, and Ageratum conzoides, Eichhornia crassipes, etc* have already become a conservation challenge in the GRB and have degraded both forest and agricultural lands. In order to restore biodiversity, these invasive species will be managed by uprooting and reusing in value added production. This also contributes in the restoration of natural biodiversity.
101. Biodiversity will be restored from the impact of invasive species in 50 community forests (1000 ha), and 10 community grasslands (100 ha).
102. On the whole, restoration of degraded natural ecosystems returns habitats to their natural balance and allows biodiversity to reassert itself.

Output 2.2: Technical capacity of GRB communities enhanced in maintaining and supporting climate resilient ecosystems

103. This project has identified that the restored ecosystems need to be maintained for sustained supply of ecosystem goods and services. This includes a lack of skills in dealing with climate change risk and vulnerability assessment methods in the context of watershed management planning processes. Local people are often not aware of technology that reduces vulnerability and increases resilience to climate change. In view of these contexts, the project aims to:
    - build the technical capacity of user groups to advance nature-based solutions on ecosystem restoration, management and climate adaptation linking them with local service providers
    - build technical capacity of stakeholders and support for local institutions for stewardship and sustainability will assist scaling up of successful interventions
    - build technical capacity of stakeholders and support for local institutions for stewardship and sustainability will assist scaling up of successful interventions.
104. As there is limited human and technical capacity with the GRB communities in this regard, the project needs to create new a Standard Operating Procedure (SOP) that supports future interventions on agroforestry, forestry, wetlands and grasslands management; and provides technical training to enhance capacity of CFUGs and NGOs in vulnerable communities in maintaining climate resilient ecosystems.

Component 3: Climate governance

Outcome 3: Strengthened climate governance and institutional framework to sustain climate

105. Implementation of climate change adaptation measures is impeded by uncoordinated policies and institutional arrangements. For effective implementation of adaptation measures, the climate change adaptation measures need to be mainstreamed in the most significant federal and provincial policies and plans to properly guide the

local government. Likewise, climate change adaptation measures need to be included in local policies and plans as well, to create the enabling condition for interventions on the ground. It becomes necessary that key institutions be supported to include climate change adaptation in their relevant policies and plans at a pilot scale. For informed decision making, the climate change patterns, climate risks and vulnerability information and knowledge sharing existing mechanism should be also strengthened. These results will be achieved as Outcome 3 in this project.

This outcome will be achieved through the achievement of the following three outputs.

Output 3.1: Community-based mechanism for planning, restoration, monitoring, and maintenance of ecosystems established

106. This output is to ensure that the project adopts appropriate processes of planning, implementation, monitoring and evaluation to improve the chances of achieving the desired restoration outcomes. Meaningful engagement should be undertaken at the planning stage of a restoration, with all key stakeholders. Ecosystem restoration adopts the principle of observing, recording and monitoring and maintenance of ecosystems. This project has identified need of a technical assistance for community based planning and development of site specific management structure and tools for conservation and restoration of ecosystem, need to develop community-based monitoring and maintenance programmes through the local and regional management structures to maintain restored ecosystems, need to train and support communities in clusters to track the restoration and conservation of the ecosystems in target areas, and a need to link upstream and downstream vulnerable communities through climate informed management of spring-shed and water source protection.

Output 3.2: Ecosystem-based climate change adaptation approaches incorporated into government policies & plans

107. In order to ensure the sustainability of the project results, this project has identified that the ecosystem-based climate change adaptation approaches should be incorporated into government plans and policies. Specifically, the river basin management framework preparation at GRB level, at watershed level and at sub-watershed level is a focus of this output. In order to justify the need to allocate adequate budget for ecosystem management, there is a need to value ecosystem services. There is no plan framework developed in Nepal for such valuation. In the new federal governance system, all local government bodies are required to prepare an Integrated Development Plan. This output aims to contribute to incorporate climate change adaptation and EbA into their Integrated Development Plans.

Output 3.3: Knowledge management established for climate resilient River Basin Management

108. This output has identified that a National and GRB level system for collating data and information on global best practices, lessons learned, evidence from the field and scientific knowledge on ecosystem- and community-based approaches to adaptation, needs to be established. There is also a need to create an online platform and associated mobile phone application to facilitate access to upload data for tracking changes in ecological and socio-economic vulnerability to climate change in the GRB. In order to address these needs, the project aims to establish climate change adaptation knowledge sharing and learning structures within key clusters to facilitate climate resilient planning and management.

Rationale for the selection of interventions

109. The Feasibility Study (Annex 2a) has shown how livelihoods and ecosystems of local communities in the GRB are subjected to a range of climate change and non-climate factors. It has also been shown that many of the non-climate factors will be compounded by climate change impacts. Numerous best practices and lessons learnt have emerged from past and ongoing projects involving ecosystem restoration. However, crucial gaps, barriers and constraints in the approaches followed by such projects are also evident (see Barriers to climate change adaptation in Section B.2). It is increasingly evident that such pitfalls – which frequently require thorough engagement with local communities – need to be addressed (see **Adaptation needs to be addressed** in Section B.1) in order for local communities to adapt to climate change. Therefore, it was concluded that that this project should adopt an ecosystem-centered and community-based approach to adaptation as an effective way to reduce the vulnerability of the most vulnerable GRB communities to climate change. Based on review of literature on climate change patterns and predicted impacts; and stakeholder consultations (see Annex 7b for a summary of stakeholder consultation) at federal, provincial and local levels, a list of interventions was developed. Based on the project outcomes to be achieved and the impact level results to be delivered, the list of interventions was further scrutinised by using specific criteria namely: 1) Immediate need of the communities, 2) Long-term strategic need of the GRB, 3) Application of lessons learnt from past and ongoing projects, 4) Scaling-up and replication potentiality, 5) Possibility of leveraging with other ongoing projects, and 6) Sustainability of the project activities and results.

110. The proposed interventions basically deal with improving the resiliency of agricultural and other natural ecosystems mainly by adapting agroforestry practices and improving the forest, wetland and grassland conditions. Introducing flood and drought tolerant variety of crops, improving the water availability for the agricultural crops by creating small irrigational channels and water harvest techniques in the dry winter season and maintaining soil

moisture through conservation pond will lead to improved water availability and soil condition. Furthermore, small check dams and soil erosion control interventions will reduce the soil loss from the agricultural field. Major portion of outmigration in the GRB at present is basically resulting from better income earning opportunities outside because of low productivity due to less water availability and degradation of soil quality.

111. The project plans to intervene in terms of agricultural improvements to retain the work force in the basin. Besides, it will also support developing Integrated Development Plan in the village municipalities level and the Basin level plan incorporating climate change issues with adaptive measures based on the outcome of this project. Success of this project will be translated into the plan and can be replicate throughout the country.

The following section presents the output-wise activities designed for this project.

Output-wise Activities

112. The output-wise activities are presented in Table 8. These activities in detail are described in Section E.6

Table 8: Output-wise activities

Outputs	Activities	Selection Criteria/conduction methodology
Output 1.1: Climate resilient agroforestry and livelihood improvement actions implemented for coping with extreme events	1.1.1: Establish climate resilient agroforestry practices	• Best bet agroforestry option will be selected on the basis of: - Suitability in the changed climatic condition/particular microclimate - Evidence of local existence and good for soil conservation - Multi-purpose and high market value species - Suitable to bring back the abandoned agricultural land into production fully utilize the underutilized agricultural lands - Low labour requiring - Quickly income generating • There will be at least 5,000 households selected for agroforestry plantation. Households willing to plant agroforestry in at least 2 ropani[40] land will be selected. On the whole, there will be 500 hectares of agroforestry established. • There will be a training manual developed for capacity building of the selected farmers for agroforestry plantation and value chain development. The manual will be approved by the PMU
	1.1.2: Construct small nature-based structures (bamboo check dams, plantations of grass and trees)	• The sites for construction will be the agricultural lands damaged by the landslides in the upstreams and floods in the downstreams. Communities including local governments will be consulted to select the highly and very highly vulnerable locations. Based on their recommendation, there will be 7 bamboo protection dams and 15 dams with plantation of trees and grasses will be constructed • Communities in consultation with the local government will decide the type of construction. • Households will decide upon the type of trees and grasses to be planted on the dams
	1.1.3: Promote drought and flood tolerant varieties (at least one drought tolerant variety (wheat) for hill districts and one flood tolerant (paddy)) variety for Terai and plain areas in the Chure and Inner Terai.	• Flood tolerant paddy varieties will be identified with National Rice Research Programme and drought tolerant varieties of wheat will be identified with national Wheat Research programme of the Nepal Agricultural Research Council. • Site for demonstration will be selected in consultation with the Agriculture Development Ministry of the Provincial Government. • Farmer for demonstration will be selected in consultation with the Agriculture Development Section of the Local government and communities. • Seeds of the tolerant varieties for demonstration will be provided free by the project. • Project will promote private sector Agrovet to supply seed for commercial cultivation on cost basis.

[40] 1 ropani ≈ 500 square meter

		Seed dealing agrovets will be provided TOT on the use and cultivation of tolerant varieties who in turn will provide the required information to the farmers who buy seed from them
Output 1.2: Interventions for water availability and water use efficiency from irrigation systems and improved water sources implemented	1.2.1: Reconcile of the Water Model for Entire Gandaki River Basin	With the technical support from IWMI and the Nepal Department of Hydrology and Meteorology, a separate model will be reconciled for the entire GRB from among the several sub-basin level models. The model will be used to analyse water balance, hydrological flows, etc. and further validate the extrapolated data using the soil and water assessment tool (SWAT model).
	1.2.2: Construct small scale irrigation systems through improved community participation	• Selection of location for small scale irrigation schemes will be done in consultation with the Provincial and local governments. Priority will be given to the areas where water availability is decreasing but there is still a possibility of promoting surface irrigation through gravity flow. • Pocket for the small irrigation will be selected on the basis of number of households that can be potentially covered. There should be at least 100 households with at least 100 ropani land (one ropani per household). • Pocket area for micro scheme will be smaller having potential to include at least 20 households with at least 20 ropani (one ropani per household). • The basis of support to establish the scheme will be Water User's Group (WUG) to ensure operation and maintenance of the schemes. WUG will be formed by the community members of the selected site.
	1.2.3: Establish water harvesting systems (conservation ponds, water reservoirs) and promote water use efficiency through drip and sprinkle irrigation, and the use of waste water	• Selection of location for the establishment of water harvesting systems will be done in consultation with the Provincial and local governments. The focus will be given to enhance water availability in the post monsoon and winter Selection of particular system such as conservation pond or water reservoir will be based on community decision made by the WUGs. • The WUGs will be formed by the community members of the selected site. The WUG members will be capacitated by the project on the operation and maintenance of the conservation ponds and water reservoirs
	1.2.4: Improve water availability through construction and maintenance of water holes in community grasslands	• Selection of location for the construction of waterholes will be done in consultation with the Provincial and local governments. • The focus will be given to community grasslands with potential of promoting livestock farming • Waterholes will be constructed at 30 vulnerable community grasslands. In each site, there will be Waterhole Management Group formed by the community and capacitated by the project for the operation and maintenance of the waterholes. • The WUG members will be capacitated by the project on the operation and maintenance of the conservation ponds and water reservoirs
Output 2.1: Natural ecosystem restoration based actions implemented for reducing impacts of landslides and floods	2.1.1: Construct climate resilient green belts to protect forests, wetlands, grasslands and conservation ponds from landslides and floods	• Selection of location for the construction of check dams (15), run-off diversion channels (100) and slide prone areas (100),and river training (3) will be done in consultation with the Provincial and local governments. • Priority will be given for agricultural lands to protect them from flash floods • In the selected locations, communities will form the user committees and construct the structures and plant grass and trees along the dams with the project support • User Committees will decide on the type of trees and grasses for plantation to establish 8 Km long green belts.

		• Community Forest Users' Groups (CFUGs) will identify the degraded forest areas (2,500 ha), wetlands (750 ha) and conservation ponds (320) for enrichment plantation and reforestation. • CFUGs will decide the type of species for plantation with the support from project experts. • Project expert will support to identify the type of engineering works (check dams) to be combined with nature based solution such as planting grasses and bamboos in gullies (700 sites)
	2.1.2: Apply bio-engineering techniques to provide structural support for 70 km erosion prone rural forest roads.	• Location for the construction of structural support for rural roads will be identified in consultation with the Provincial and local governments. • Communities will form the user committees of the rural roads and decide the plantation sites along the rural roads (70 km). • User committees will decide the type of species for plantation. • Project expert will support to select and design/modify appropriate bioengineering technology for providing structural support
	2.1.3: Restore the biodiversity of vulnerable forests and grassland ecosystems through the removal and (productive) reuse of invasive species	• Community Forest User Groups (CFUGs) will identify the invaded community forests and community grasslands • Project will prepare invasive species management manual and get approved by the PMU for capacity building of the CFUG members • Community forest (50 community forests (1000 ha on an average 20 ha per CF)), and 10 community grasslands (100 ha @ 10 ha per CG) members will be trained on the technique and timing of uprooting invasive species from the community forests. • Members will be trained on reusing process such as composting or biocharring
Output 2.2: Technical capacity of GRB communities enhanced in maintaining and supporting climate resilient ecosystems	2.2.1: Create new SOP's that support future interventions on agroforestry, forestry, wetlands and grasslands management	• Communities will be consulted to confirm with the type of climate resilient interventions on agroforestry, forestry, wetlands and grassland management that needs SOP • SOPs will be created based on community capacity to conduct activities for the management of agroforestry, forestry, wetlands and grasslands. • Training will be provided to capacitate the local government and other stakeholders on the SOPs
	2.2.2: Provide technical training to enhance capacity of CFUGs and NGOs in vulnerable communities in maintaining climate resilient ecosystems	• Specific vulnerable communities involved in maintaining ecosystems will be identified in collaboration with the local government, CFUG district Chapter and District NGO Federation • Technical modality of TOT for maintaining climate resilient ecosystems will be developed and TOT for CFUG and NGO members will be conducted • Awareness raising orientation will be provided to newly elected local government representatives • The model will be mainstreamed in the local government's plans, programmes and policies
Output 3.1: Community-based mechanism for planning, restoration, monitoring, and maintenance of ecosystems established	3.1.1: Technical assistance for community based planning and development of site specific management structure and tools for conservation and restoration of ecosystem	• Technical assistance need and modality of operationalisation will be identified in consultation with the community • The specific type of assistance will be decided by the local government during field implementation of the project. • Developed conservation and restoration structures and tools will be demonstrated in 15 locations. • Location of high-tech nurseries (3) will be decided by the local government
	3.1.2: Develop community-based monitoring and	• Community-based monitoring and maintenance programmes will be developed based on climate parameters and extreme events; rate of drying out of water sources, human health hazards, climate

	maintenance programmes through the local and regional management structures to maintain restored ecosystems	indicator species such as pyrethrum, dengue fly, citrus psylla, distribution shift of flora and fauna, etc. • The developed programmes will be piloted by the community in replication in 15 locations • The monitoring records will be maintained at the local government level
	3.1.3: Training and supporting communities in clusters to track the restoration and conservation of the ecosystems in target sites	• The location for field schools (50) will be identified in collaboration with the local government and community, • Modality of school operation will be developed based on community constraints and interests • The field schools will be facilitated by the personnel trained by the project through TOT (19) • The field school model will be mainstreamed in the local government's plans, programmes and policies
	3.1.4: Link upstream and downstream vulnerable communities through climate informed management of spring-shed and water source protection	• On the basis of local government's priority, 30 sites will be established that need linking of communities in the upstream and downstream • A cooperation modality and MOU between the communities will be developed and a PES mechanism will be introduced • The learning from the model will be mainstreamed into local government's plans and policies
Output 3.2: Ecosystem-based climate change adaptation approaches incorporated into government policies and plans	3.2.1: Prepare River Basin Management framework with integrated sub-riverine watershed and water resource management plans for the GRB that includes forests, grasslands, fisheries, wetlands and agro-ecosystems.	• On the basis of the consensus of the three provincial governments, One GRB Management Plan will be developed • On the basis of the consent of the respective provincial governments, 7 Watershed Management Plans for 7 sub-basins of GRB will be developed • On the basis the consent of the local governments of the respective watersheds, 19 sub-watershed management plans will be developed
	3.2.2: Develop a framework for assessment for economic valuation of ecosystem and ecosystems services to support planning	• An acceptable method of valuing ecosystem services in GRB, that can be understood and used by local, provincial as well as Federal Government in the entire country will be developed from the basic work done by the EbA project. • In consultation with the government and the local communities, a user's manual for ecosystem valuation and accounting will be developed and approval obtained from the PMU for the use • The valuation methodology will be piloted and the valuation framework will be mainstreamed in provincial and local government's plans and policies
	3.2.3: Policy Development for local governments to incorporate climate change adaptation and EbA into their Integrated Development Plan	• The project will support 50 local governments selected by the Provincial Governments to integrate climate change issues in their Integrated Development Plan (IDP). • Other local governments will be supported to replicate the process of integrating climate change issues into their IDPs.
Output 3.3: Knowledge management established for climate resilient River Basin Management	3.3.1: Establish National and GRB level system for collating data and information on global best practices, lessons learnt, evidence from the field and scientific	• A study will be conducted to identify appropriate system for data collation at national and GRB levels on global and regional best practices, lessons learnt and evidence based scientific knowledge based on which there will be one GRB level and three ecological zone level (mountain, hill and Terai) systems established by the project at four centres (at Mustang for Mountain, at Pokhara, Kaski for hill, and at Chitwan for Terai ecozone). The Kaski one will serve at GRB level as well.

	knowledge on ecosystem- and community-based approaches to adaptation.	• The appropriate location for system establishment will be recommended by the coordination meeting of the Provincial Ministries looking after climate change. • The developed system will be piloted and tested in 15 locations identified by the Provincial government. • Establish the system • The establish systems will regularly provide climate data to the Environment Protection and Climate Change Council (EPCCC) and Parliamentary Committees for Agriculture, Cooperatives and natural Resources.
	3.3.2: Capacitating Provincial governments of three provinces in creating and operationalising an online platform and associated mobile phone application to facilitate access to information in the Decision-Support Tool for decision-makers, communities, NGOs/CBOs and other relevant stakeholders, as well as to allow them to upload data for tracking changes in ecological and socio-economic vulnerability to climate change in the GRB.	• On the basis of expert consultation and need of the provincial and local governments, one Apps model will be identified and developed for tracking changes in ecological and socio-economic vulnerability to climate change and using that for decision making and selecting appropriate adaptation measure. • The project will capacitate the PCU of Province 4 for the management of the Apps. The developed Apps will be piloted in 15 sites and tested through regular monitoring. • The tested model will be mainstreamed in provincial government's regular programme.
	3.3.3: Generation of the baselines data and mapping of vulnerability, hazard sites, ecosystem services and facilities in communities based on risk profiles.	• In collaboration with the local governments, the project will generate baseline data and map of vulnerability, hazard sites, ecosystem services and facilities in communities based on risk profiles. • Methodology for maintenance of such data will be developed and local governments will be capacitated to maintain such data • For sustainability, the data generation and maintenance mechanism will be mainstreamed in the local government's plans
	3.3.4: Establish climate change adaptation knowledge sharing and learning structures within key clusters to facilitate climate resilient planning and management	• In collaboration with other knowledge clusters in the GRB, the project will identify the type of knowledge sharing and learning structure (1 federal, 3 provincial and 151 local). .

B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)

Project implementation arrangement

113. GCF projects have two distinct functions: Implementation and execution functions

Project implementation function: As an Accredited Entity (AE), IUCN will assume the implementation function in addition to oversight function. As an AE, IUCN will be overall responsible for the project including project preparation and implementation, financial management and procurement as follows.

- IUCN Headquarters will be responsible for overall financial and technical quality assurance of the project.

- IUCN Asia Regional Office (ARO) will be responsible for the technical supervision of the project, supported by relevant global expertise. IUCN ARO will be responsible for liaising with the NDA/Ministry of Finance and the Ministry of Forests and Environment (MOFE) as an Executing Agency.

114. As an AE, IUCN oversees project implementation in accordance with the project document, project operation manual, Annual work plans and budgets, provides technical guidance to ensure that the appropriate technical quality is applied to all project activities, and provide financial reports to the GCF for all project funds received.

115. In its role as Accredited Entity (AE), IUCN through its Asia Regional Office (ARO) and global headquarters will review the draft disbursement plans and disburse funds based on key deliverables having been met as per the implementation timetable and in line with a disbursement plan, once it has approved this plan, which it will review yearly. Annual supervision missions will be one further tool upon which oversight of project implementation and the budget will be reviewed in greater depth, with the aim of providing guidance to the project management team to ensure delivery of results.

Project execution function: Government of Nepal, Ministry of Forests and Environment will function as an executing entity (EE). A Project Steering Committee (PSC) consisting of the following members will provide the overall direction to the project.

Project Steering Committee (PSC)

116. The MOFE will form a Project Steering Committee (PSC). The composition of PC will be as follows:

Chair - Secretary Ministry of Forests and Environment
Member - Joint Secretary, Planning, Monitoring and Coordination Division, MoFE
Member - Joint Secretary, Climate Change Management Division, MoFE
Member - Joint Secretary, Participatory Forest Division, MoFE
Member - Joint Secretary, Environment and Biodiversity Division, MoFE
Member - Joint Secretary, Forests and Watershed Division, MoFE
Member - Joint Secretary, Ministry of Finance (International Economic Cooperation Coordination Division)/NDA
Member - Joint Secretary, Ministry of Agriculture and Livestock Development (MoALD)
Member - Joint Secretary, Ministry of Federal Affairs and General Administration (MoFAGA)
Member - Joint Secretary, Ministry of Women, Children and Social Welfare (MWCSW)
Member - Director General, Department of National Parks and Wildlife Conservation
Member - Representative, Association of Municipalities
Member - Representative, Association of Village Institutions
Member - Member Secretary of the National Trust for Nature Conservation (NTNC)
Member - Country Representative: IUCN Nepal
Member Secretary - Director General, Department of Forests and Soil Conservation

117. Representative(s) of IUCN GCF Unit at ARO and/ or HQs, and other observers (such as Department of Hydrology and Meteorology, Federation of Nepalese Chambers of Commerce and Industries, Indigenous People's Commission Nepal) can be invited depending upon the agenda and issue to be discussed. In addition, representative can be invited from FP118 FAO Nepal for cross learning of the project and achieving efficiency through the customisation of various models and manuals for the project.

118. The composition of the PSC may change as per the need at the time of start of the project.

119. None of the PSC members will be employed in the project as staff and thus no any budgetary allocation has been made for the PSC members.

120. The PSC responsibilities include, but are not limited to:

- Provide strategic-level project guidance, technical and policy advice
- Review and advise on annual work plans and budgets
- Provide oversight of the Project Management Unit (PMU)
- Consider and approve all annual and semi-annual work plans submitted by the PMU
- Monitor progress
- Provide feedback on annual supervisions visit and mid-term reviews.

121. The PSC will be housed in MOFE and meet at least every six-months and as and when required on an ad-hoc basis.

Project Management Unit (PMU)

122. The project will be executed by the PMU under the guidance of the PSC. The composition of PMU will be as follows:

Chair (National Project Director) - Director General, Department of Forests and Soil Conservation

Member - Deputy Director General, Watershed and Landslide Management Division (WLMD)

Member - Chief of Watershed Management Centre Province 4

Member - Executive Director, NTNC

Member - Programme Coordinator, IUCN Nepal

Member - Project Team Leader

Member Secretary - Chief of Planning and Watershed Management Section, Department of Forests and Soil Conservation

123. Observers can be invited to the PMU meeting depending upon the agenda and issue to be discussed. The PMU can add members to this unit as necessary.

124. Chief of Watershed Management Centre Province 3 and Chief of Watershed Management Centre Province 5 may be invited as per the need. However, this composition may change as per the need at the time of start of the project.

125. The PMU will be supported by a Coordinator (Project Team Leader (PTL)), Administrative and Procurement Officer(s), Procurement Officer(s), Accounts Officer(s), Monitoring, Evaluation and Learning Officer(s), Field Officer(s), Office Assistants, Support Staff, and Drivers. The PTL will support the PMU decision making process in the capacity of PMU member. At the same time, he will be the prime lead of the operational execution of the project.

126. These staff and the coordinators of the Field Execution Office (FEO see below) will be recruited by the PMU for the purpose of this project. They will report to the National Project Director.

127. As stated in 124, the PTL is also a member of PMU. Being responsible for the operational execution of the project, this PTL is a fulltime position of the project and is paid by the project. Except the PTL, no other members of the PMU will be remunerated by the project.

128. The PMU will be hosted by the Department of Forests and Soil Conservation (DOFSC) by renting office space outside of the Department because DoFSC will not have extra space for the project. The PMU will:

- Be responsible for the coordination of all project activities funded by the project and undertaken by the executing entities.
- Be accountable for all fiduciary matters, including financial management, procurement and project disbursements.
- Oversee financial disbursement to province and local government for the implementation of approved project activities (conditional grants)
- Ensure coordinated delivery of the agreed projects outputs and activities. It will coordinate all partners, stakeholders and suppliers involved in project delivery. In addition to field activities, the PMU will coordinate and consolidate monitoring, learning and knowledge products with the support of relevant experts involved in project delivery.
- Prepare annual plans and budget
- Liaise with Provincial and Local governments

Technical Service Providers

129. Provincial/Local governments, IUCN Nepal and NTNC have been selected as collaborating partners for the execution of the project components, and they are accountable for the delivery of the associated outputs. IUCN Nepal will deliver gender action plan, ESMF and project start-up, monitoring, evaluation and closing activities and some activities of M&E (see Annex 4: Sheet on Total by PMU & PO). Likewise, NTNC will deliver through FEOs the activities and some activities of M&E (see Annex 4: Sheet on Total by PMU & PO). Precise details will be agreed during the preparation of project contract document with them.

Provincial Coordination Units (PCU)

130. There will be a PCU in each province (Provinces 3, 4, 5) to provide technical backstopping, participate in joint monitoring, mainstream project learning into provincial/local government policies and programmes, and provide policy guidance to the Field Execution Offices (FEO).

131. The PCU will be hosted by the Provincial Ministry of Industry, Tourism, Forests and Environment (MITFE) and will be chaired by a senior technical official assigned by the MITFE of the concerned province. Composition of the committee will be detailed in the project contract document.

Field Execution Office (FEO)

132. Field activities will be executed through two Field Execution Offices as follows:

- **FEO Kaski** - covering Manang, Mustang, Myagdi, Baglung, Parbat, Part of Kaski, Part of Lamjung, Part of Gorkha, Syangja, Palpa, Arghakhanchi, Gulmi
- **FEO Dhading** - covering Rasuwa, Nuwakot, Dhading, Makawanpur, Part of Gorkha, Part of Lamjung, Tanahu, Part of Kaski, Chitwan, Nawalparasi

133. The FEOs will be set-up at the start of the project. MITFE/Forest/watershed division, IUCN Nepal and NTNC will assign relevant staff to each FEO. Coordinator of the FEO will be assigned as per the provision of project execution guideline/manual that will be prepared by the MOFE at the start of the project and approved by the PMU.

134. Roles and responsibilities of the FEOs include:

- Provide technical inputs to Local Governments and communities to execute the project activities
- Coordinate local and community level activities
- Coordinate with Provincial and Local Governments to execute project activities
- Execute field activities
- Execute Gender and Social Inclusion Action Plan
- Execute the Environmental and Social Management Plans (ESMP) of the respective sub-projects
- Coordinate with PMUs through the PCU to design and implement field activities
- Support PMU in monitoring and performance reviews
- Prepare field execution reports

135. DHM representative will be invited in the project steering committee (PSC) meeting. PSC will is a mechanism that coordinates all related stakeholders for sharing of project learning and taking policy feedback. This coordination mechanism is a continuation process of the government.

136. In addition, the 39th Meeting of the National Development Action Committee (NDAC)[41] chaired by the Prime Minister formed a high level committee for managing all of Nepal's watersheds based on a big-river basin approach. In line with NDAC's decision, the Ministry of Forests and Environment (at the ministerial level) has formed another coordination committee to execute the NDAC agenda under the coordination of a National Planning Commission (NPC) member (forestry and environment sector). In the meantime, the Government of Nepal has also established four major river basin offices in 2019 to manage the Koshi, Gandaki, Karnali, and Mahakali rivers[42]. These are permanent structures of the government in the MOFE for the basin management. The project will use this high level committee for coordination.

137. In order to ensure the project approach works and results are sustainable in the long-run, project has planned to mainstream and operationalize the river basin approach in the GRB with Gandaki River Basin Office recently established (in 2019) by the MOFE, put operational procedure in place, and establish and operationalize a well-managed climate change information and adaptation technology centre.

138. DHM will generate and provide climate related data continually to the project and post project. DHM will also be represented in the Gandaki River Basin high level coordination committee and future committees upscaling river basin management across Nepal. DHM will continue to build capacity of local government on climate responsive production systems. Given the high level membership and federal jurisdiction of the committee and Gandaki river management office, these are seen as good vehicles for sustainability of the project results and upscaling of the practices of the Gandaki Basin to other large river basins in Nepal even after the project.

139. The organogram of project implementation is presented in Figure 2.

[41] Report of the 39th Meeting of the National Development Action Committee (NDAC). See Resolution # 7 which says "For the purpose of coordinating the management of watersheds based of big-river systems, there will be a committee formed under chairmanship of the Minister of the Forests and Environment and including the National Planning Commission Member for Forests as co-chair, and representatives from Federation of Commerce and Industries and secretaries of the Energy, Irrigation, Tourism, Local Development sectors as members". DHM falls under the Ministry of Energy, Water Resources and Irrigation.

[42] https://www.npc.gov.np/en/album/59/39th_national_development_action_committee_ndac_meeting

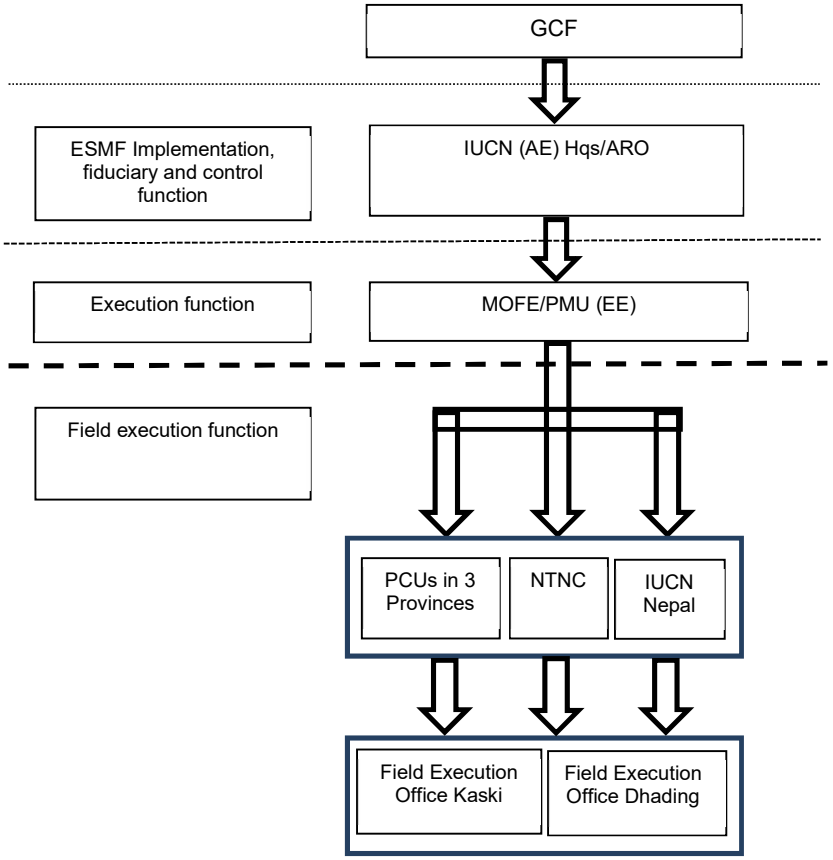


Figure 2: Organogram of the Project

Financial and fiduciary management

140. *Contractual arrangement and fund flow*: An implementing agreement will be signed between the Accredited Entity (IUCN) and MOFE as the Executing Entity for this project for the implementation of this project.
141. Funds will be transferred from GCF to IUCN according to the GCF Accreditation Master Agreement (AMA) and the Funded Activities Agreement (FAA) related to the project.
142. As an Accredited Entity, IUCN Headquarters/Asia Regional Office will sign an agreement with the MoFE as an Executing Entity, with clear provisions to transfer GCF grant funds to the Executing Entity (MoFE/PMU). Funds will be disbursed based on semi-annual work-plans and disbursement plans agreed between IUCN and the MOFE/PMU.
143. *Accounting and financial reporting*: The PMU will be responsible for the accounting and fiduciary management of all funds disbursed to executing entities. The PMU will prepare the project execution guideline/manual in consultation with IUCN and get approved by PSC. It will highlight, among others, financial management, procurement, staff recruitment and auditing.
144. *Technical service for project management*: IUCN Nepal Country Office will provide to the PMU all the required technical services for project management, including staff recruitment, daily administrative operations, accounting management, and physical as well as financial and project progress reporting.
145. The fund flow and financial reporting mechanism is depicted in Figure 3. The black arrows reflect fund flows and green arrows reflect financial reporting.

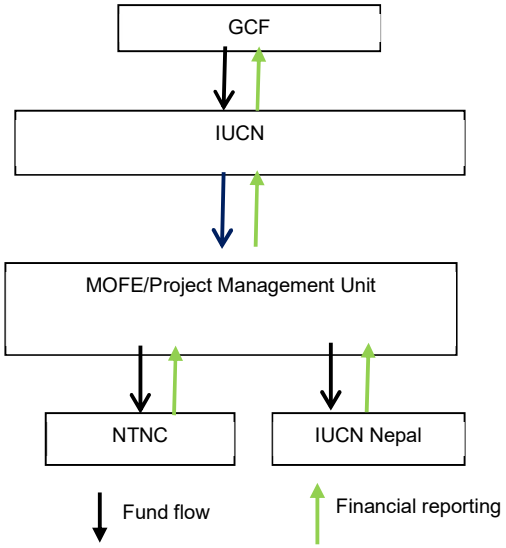


Figure 3: Fund flow mechanism and financial reporting

Capacity Assessment of Executing Entity (MOFE)

146. A consultation meeting was conducted in the MOFE as well as MOF/NDA regarding MOFE's capacity to execute GCF project. MOFE is a focal ministry for all climate related conventions and related funds. There is a separate Technical Committee formed to guide the preparation of GEF/GCF proposals and execute them. The Technical Committee in MOFE is supported by NDA/Ministry of Finance (MOF) through its capacity enhancement project under UNEP and UNDP.

Experience and track record of the AE and EEs

147. As an AE for GEF, IUCN has already implemented several similar projects. For GEF, IUCN has recently gotten GEF funds for Guatemala, Kenya and Sri Lanka.

148. Regarding other relevant experience, IUCN has extensive experience in deploying nature-based solutions to global challenges including climate change. UNDP, UNEP and IUCN, in partnership with the Governments of Nepal/MOFE, Peru and Uganda implemented a flagship Ecosystem based Adaptation (EbA) project from 2013 to 2016. The project helped vulnerable rural mountain communities in the three countries adapt to anticipated impacts of climate change using sustainable management, conservation and restoration of ecosystems, as part of overall local and national adaptation strategies. IUCN in partnership with IIED and UNEP implemented this "Ecosystem-based Adaptation: Strengthening the evidence and informing policy" project in multiple countries to develop clear country-specific policy recommendations and explore opportunities for and obstacles to uptake.

149. IUCN also implemented the "Ecosystems Protecting Infrastructure and Communities (EPIC)" project from 2012 to 2017 to promote the use of ecosystem-based approaches for disaster risk reduction and protect communities and infrastructure from the impacts of disasters and climate change in China, Nepal, Thailand, Burkina Faso, Senegal, and Chile.

150. Currently, IUCN in partnership with The Mountain Institute (TMI) is implementing the "Scaling up mountain EbA" project in the Himalayas (Nepal), Mount Elgon (Uganda) and the Andes (Peru) and supporting the EbA approach being adopted in Bhutan, Kenya and Colombia. These experiences have enabled IUCN to build significant capacity to implement climate change adaptation projects.

151. MOFE is the technical ministry (focal ministry) for climate related conventions and projects supported by GEF, LDCF and GCF. Gandaki Project is the first proposal that MOFE has submitted to GCF from Nepal. Hence, MOFE does not have previous experience of executing projects with GCF support. Nevertheless, MOFE has gained several experiences with GEF and LDCF funded projects. In Nepal, IUCN is implementing a GEF funded medium sized project namely "Strengthening Capacities for Implementation of the Nagoya Protocol in Nepal". This project

will end in November 2019. The mid-term evaluation report has stated that the project is well implemented/executed and is delivering the results significantly as expected. In this ABS project, IUCN Hqs/Asia Regional Office (ARO) is playing implementation role while MOFE is executing the project with technical services being provided by the IUCN Nepal Country Office which was agreed by both GEF Project Agency and EE at the time of contracting. Since MOFE has found it a successful model, MOFE would like to apply this model to this Gandaki project as well.

B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)

Need for GCF funding

152. The economy of Nepal has remained at a very low level in the last ten years, with an average growth rate of 3.8 per cent and a low of 0.77 per cent in 2015/16. Although agriculture is considered the backbone of the economy, it grew at only 2.9 per cent per annum. The per capita GDP was USD 757 with an annual inflation rate of 7 per cent in 2016.

Table 9: Nepal's Economic Growth Rate 2006 to 2016[43]

Fiscal Year	2006/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	2015/16	Average
Agriculture	1.0	5.8	3.0	2.0	4.5	4.6	1.1	4.5	0.8	1.3	2.9
Non Agriculture	4.4	5.9	4.3	5.0	3.6	4.5	5.0	6.4	3.1	0.6	4.3
Industry	3.9	1.7	-0.6	4.0	4.3	3.0	2.7	7.1	1.5	-6.3	2.1
Service	4.5	7.3	6.0	5.8	3.4	5.0	5.7	6.2	3.6	2.7	5.0
Economic Growth	2.75	5.8	3.9	4.26	3.85	4.61	3.76	5.72	2.32	0.77	3.8

153. The economy is characterised by high inequality (0.328)[44], unemployment, weak infrastructure and domestic production, low domestic savings and investment; weak investment environment, low capital expenditure, high trade deficit, brain drain and remittance income dependence[45]. The social sector has also remained at a low level in Nepal. The baseline status (for the year (2014/15) of the 14th Plan (2014/15 to 2017/18) for people below poverty line was 21.6%; literacy rate of 15-24 age group was 88.6%; maternal mortality rate (100,000 live births) was 258; infant mortality rate (per 1,000 live births) was 23; human development index was 0.54[46]. In the overall development status, Nepal is still categorised as a least developed country[47].

154. The financial status of the country has remained weak for the last several years. In 2015/16, the budget deficit per GDP was 3.1 per cent with outstanding debt of NRs. 627.8 billion or 27.9 per cent of GDP, and an outstanding per capita debt of NRs. 22,159[48]. The MOF has reported that the trade deficit rose to about USD 3.8 billion which is 32.4 per cent/GDP (export 4 per cent/GDP to import 26.4 per cent/GDP).

155. Low economic growth rate, persistent energy shortages, labour problems (shortages, unions, politicization), uncertainty of investment climate, widening income disparity, high budget deficit due to low revenue collection and uncontrolled tax leakages, stagnant development with high inflation rate, rising trade deficit due to low level of export product diversification, political instability and frequent general strikes, low employment opportunity and intellectual capacity are major problems of the economy. *These problems are exacerbated by climate change*.

156. Increasing domestic production of goods and services that have competitive and comparative advantage and increasing domestic and foreign investment are daunting tasks. Likewise, reducing dependency on foreign employment by creating employment opportunities at home and reaping demographic dividend by developing human resources as per the national needs and demand are other challenges.

157. For these reasons, without external support the Government of Nepal (GoN) cannot afford the necessary financial resources to adopt the programmes of adaptation to climate change. With external support there is high potential to improve resilience of climate vulnerable communities and ecosystems. Given the financial constraints and challenges to arrange domestic financial resources for climate change adaptation as envisaged by this proposal, it is unlikely that the resources available to the GoN through the national budget for conventional infrastructure-based approaches to climate adaptation will be sufficient. The private sector and local capital markets are

[43] Economic Survey 2015/16 - Ministry of Finance, Government of Nepal
[44] Human Development Report 2016 UNDP
[45] Economic Survey 2015/16 - Ministry of Finance, Government of Nepal.
[46] 14th Plan (2014/15 to 2017/18) - National planning Commission.
[47] List of Least Developed Countries (as of December 2018). UN Committee for development Policies
[48] MOF. 2017. economic survey 2015/16. Ministry of Finance, Government of Nepal.

insufficiently developed to fund climate adaptation works or investments without external support. Accordingly, finding cost-effective nature-based solutions to climate adaptation is a critically important complementary measure to conventional approaches to adaptation[49]. Whilst the GoN is committed to provide co-financing, in view of its low GDP and high trade-deficit, funding support from the GCF is essential for the project to be undertaken.

Market failure is being addressed with GCF funding

158. The most important case of market failure in this type of adaptation project is the provision of public goods[50], such as: construction of small nature-based structures (bamboo check dams, plantations of grass and trees); construction of small scale irrigation systems; establishment of water harvesting systems (conservation ponds, water reservoirs); construction and maintenance of water holes in community grasslands; establishment of green belts along river and stream banks to the effects of increased flooding; and reforestation plantations in degraded forest sites.

159. As adaptation cannot be so easily internalized and thus relies more on government. It requires government to bear the bulk of the costs[51]. As government need to play a key role in providing citizens with security and certain public services such as construction of adaptation infrastructure, we thought a simple market mechanism cannot respond to such need.

160. Another important case of market failure in this project is the intervention in creating access to climate information and adaptation technology and capacity building on adaptation.

161. The third area is the management of invasive species that are reducing farm productivity as well as production thereby negatively affecting on the competitiveness of the farmers.

Financial barriers and for request GCF grant (choosing grant instrument)

162. Nepal is a least developed country that is undergoing political transition with limited budget for climate change adaptation. There are insufficient financial resources within government to implement large-scale adaptation projects. Though there are small-scale adaptation projects implemented successfully sporadically, there are inadequate resources and technical expertise to replicate nature-based adaptation approaches. The GON seeks maximum concessionality for the proposed adaptation actions to benefit the vulnerable communities in the GRB. For these reasons, a grant financing mechanism is thus sought to support the urgent adaptation interventions of this project. In addition, as Nepal is a member of the UNFCCC and a least developed country, it is eligible for GCF grant to cover costs of adaptation activities.

163. In addition, given that Nepal is a LDC, application of the GCF principles in "GCF Handbook: Decisions, Policies and Frameworks as agreed by the Board of the Green Climate Fund from B.01 to B.23 September 2019", pp 35): which states "The financial internal rate of return assesses the cost effectiveness of projects that generate financial reflows. The economic internal rate of return assesses the cost effectiveness of projects that do not generate financial reflows but result in substantial non-financial benefits" is thus key to the project's emphasis on the non-financial benefits the project will generate, although the financial analysis does show financial benefits in the order of a net present value of 17 million at 10% discount rate with project and with USD 0.283 million without project.

GCF grant compared to co-financing

164. *GCF grant*: Out of the total project budget of US$ 32.71 million, the grant request to GCF is US$ 27.4 million and the co-financing is US$ 5.31 million. In addition, The GCF grant will be mainly used to finance field activities, procure equipment and materials to promote nature-based solutions for climate change adaptation. Support will also cover technological interventions including the development of micro, small and medium enterprises for livelihood diversification.

165. *In-kind co-financing*: A major in-kind co-finance (US$ 3.6 m) will come from the National Trust for Nature Conservation (NTNC). NTNC is managing Annapurna and Manaslu Conservation Area within the GRB and implementing their management plan and also assisting government and communities in and around Chitwan and Parsa National Parks. NTNC will continue to operate in the project area after the project is completed. Department of Forests and Conservation (DOSC) will co-finance (US$ 1.14 m). The DOFSC will be mobilising its province/field level offices, officers and staff during the implementation of the project. IUCN Nepal will provide co-financing of USD 0.565 million. Mountain EbA project (which operates in Panchase Protected Forest (Kaski, Syangja, Parbat) was granted a second phase for four years from 2018 to 2021. In the second phase, IUCN Nepal is upscaling EbA in Panchase and The Mountain Institute (TMI) is replicating EbA in Rasuwa. In addition, IUCN has a GEF

[49] Ecosystems Protecting Infrastructure and Communities (EPIC) Technical brief. https://www.iucn.org/sites/dev/files/content/documents/epic_technical_brief_final.pdf

[50] The Economics of Adaptation to Climate Change – The Case of Germany. http://ssrn.com/abstract=1495767

[51] Paul Steele, United Nations Development Programme (UNDP) - Why adaptation is the greatest market failure and what this means for the government? The World Resources Institute. https://www.wri.org/our-work/project/world-resources-report/why-adaptation-greatest-market-failure-and-what-means-state

supported Access and Benefit Sharing project being implemented in one of the proposed GCF project districts (Kaski). The community capacity and infrastructures developed will continue in this project as well.

166. The project has shown co-financing as in-kind only because the contributing partner agencies (National Trust for Nature Conservation; Government of Nepal - Ministry of Forests and Environment; and IUCN Nepal Country office) cannot provide funding to the project account in cash. In fact, the co-finance contributions that are recorded are used to fund part of the project activities, and thus these costs need not be borne by the GCF. These activities are:

- evaluation of ecosystem-based adaptation measures based on their potential to provide evidence of medium to long-term effectiveness,
- establishing environmental, social, and economic baselines for the selected site in Panchase,
- implementation of selected ecosystem-based adaptation measures under the principles of adaptive management, development,
- implementation of a knowledge management strategy that will collate, analyse, and share,
- incorporation of ecosystem-based adaptation into other on-going projects and initiatives, including development of Local Adaptation Plans, policy engagement with the government,
- agroforestry options and establishment of climate resilient agroforestry practices,
- technical input for the construction of small nature-based structures (bamboo check dams, plantations of grass and trees),
- application of bio-engineering techniques to provide structural support for erosion prone rural forest roads,
- restoration of the biodiversity of vulnerable forests and grassland ecosystems through the removal and (productive) reuse of invasive species,
- awareness raising,
- coordination with the provincial and local governments, and
- essential inputs and materials including training, workshops, and conference for the restoration of the biodiversity of vulnerable forests and grassland ecosystems through the removal and (productive) reuse of invasive species.

167. In addition, there is other financing of related investments that complement this project but not included in the co-financing calculations: These are the Government's regular agricultural extension programme, the Government's regular livestock extension programme, the Prime Minister Agriculture Modernisation Programme, the Prime Minister Employment Programme, Micro Enterprise Development Program for Poverty Alleviation (MEDPA), Building Climate Resilience of Watersheds in Mountain Eco-Regions (BCRWME), Sustainable, Just and Productive Water Resources Development in Western Nepal, Programme for Aquatic Natural Resources Improvement (PANI) Project, Hariyo Ban Program Phase II, Climate Change Adaptation in Agriculture, etc. A summary of such projects is presented in the Tables 40-44 in Annex 2a: Feasibility Study.

168. *Leveraging other Public Service Providers:* In addition to the support that will be provided to the project directly from project-related government offices, there are several other government offices that are indirectly related with project activities. These include the Local Agriculture Development Office, the Livestock Development Office, the Enterprise Development Office, the Women Development Office, the Irrigation Office, the Road Development Office, and the Drinking Water Supply Office that have indicated they are willing to provide some management and technical support to the project.

Risk sharing structure between the public and private sectors

169. Though the project has a major grant component with 16% in-kind co-financing, the project interventions will not compete with the private sector investments in future. The level of awareness in the private sector on climate change adaptation is at a rudimentary stage. For these reasons, there is a great need for institutional capacity building in both public and private sectors, which this project aims to address.

170. Nepal does not have well-developed capital markets; it requires support to gain access to capital for the underlying investments required to address climate change[52]. Moreover, the private sector and local capital markets are insufficiently developed to fund climate adaptation works or investments. Whilst, capital markets and transfer

[52] CDKN, 2011. The Green Climate Fund: Options for Mobilizing the Private Sector - A brief for the GCF Transitional Committee. 26 August, 2011. Climate and Development Knowledge Network.

mechanisms can alleviate financial constraints to the implementation of adaptation measures[53], Nepal's capital market is still in its infancy[54].

171. Since climate change adaptation is a new science, private sector is reluctant to invest due to which the risk of adaptation measures will have to be taken by the public sector. The project grants to the government to support climate change adaptation can create conducive environment for the private sector to participate during the project and continue financing through financing mechanisms such as savings and credit cooperatives in which project beneficiaries are the members.

172. Private sector contributions will come through community participation and nature-based tourism entrepreneurs. Community participation in various activities of the project such as reforestation, enrichment planting and agroforestry plantations will contribute an average of at least four days a month in planting and taking care of the planted trees in their own community or private forests. At the market wage rate of NRs 800 per day (USD 8/day) the community participation is estimated to be equivalent of USD 5.3 million over the life of the project and will involve 198,016 project covered households. The project will support several nature-based tourism activities including hiking, and homestay; and small and micro-enterprises. Private sector entrepreneurs who are investing in enterprise development through their own equity or through borrowing will be contributing to project results rather than competing. Hence, the issue of grants to crowd out the private sector finance does not arise.

B.6. Exit strategy and sustainability (max. 500 words, approximately 1 page)

- To ensure that climate vulnerable communities and ecosystems can continue adapting to climate change even without external support, the project has planned an exit strategy in seven broad areas as shown below:

River basin approach mainstreamed and operationalised

- River basins provide a sensible natural geographically-bounded unit to assess and analyse ecological dynamics, and to bring stakeholders together at multiple scales to manage shared resources more effectively, ultimately increasing the resilience of people, infrastructure and ecosystems. Keeping in background these facts, this project will be adopting the approach of "Mainstreaming and operationalising a river-basin approach sustainably for watershed management to achieve resilience of climate vulnerable communities and ecosystem in the Gandaki River Basin" as a paradigm shift in enhancing climate resilience of vulnerable communities and ecosystems. Whilst the government has given strong emphasis to the river basin approach, implementation is fragmented. To address this at the national level the GoN has also formed a high level committee, chaired by the Prime Minister, on managing watersheds based on the river basin approach[55]. Complying with the government decision, the DOFSC has developed an Integrated River Basin Approach paper[56] to implement. By the time the project finishes, the DOFSC will have a well-established working model in the field. The model will be adopted by the newly established Water Management Centres at the provincial level. As the project fits within the government's approach, its learning will be readily mainstreamed into the government's regular programme.

Operational procedures in place

- Operational procedures including delivery mechanisms that engage both government agencies and civil society organisations will be in place. This approach will build federal, provincial, and local capacity and enable the replication and adaptation of approaches developed by the project. In addition, by engaging a range of delivery partners, project stakeholders such as ICIMOD, IWMI, WWF, JAICA, FAO, etc. will benefit from experience and lessons from outside of the project area (e.g. through farmer to farmer exchange).

Well-managed climate change information and adaptation technology knowledge centre established and operational

- The project will develop a communication and knowledge management strategy that aims to ensure the project's findings have maximum uptake to contribute to national, provincial and local policy development. Towards this aim, the strategy will involve interactive process-oriented engagement with three key groups: 1) The project community and immediate network of partners (local government, civil society, and private sector); 2) Policy and practice at local, provincial and national level (who may support the project and scale up lessons); and 3) Wider civil society, particularly, but not only, in Nepal (who may have an interest in the climate change adaptation)

Sustainable project result

[53] Adger, W.N., S. Agrawala, M.M.Q. Mirza, C. Conde, K. O'Brien, J. Pulhin, R. Pulwarty, B. Smit and K. Takahashi, 2007: Assessment of adaptation practices, options, constraints and capacity. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 717-743.

[54] NIB, 2017. Potential hydro investors will attend London meet. Nepal Investment Board, Kathmandu

[55] Minute (no 7) of the 39th Meeting of the National Development Problem Resolution Committee.

[56] Approach paper on Integrated River Basin Management Approach 2018 - DSCWM

- It includes 1) Resilient ecosystem that has started functioning well with improved flows of ecosystem services that result from nature-based adaptation to climate change; 2) Resilient communities with high adaptive capacities; and 3) Households with improved capacity to access climate information and adaptation technology.

Policy mainstreaming of project learnings

- It includes 1) climate change adaptation measures integrated into the governance structure of the newly decentralised structure 2) Improving understanding of climate and access to finance mechanisms at all three tiers of government; 3) support the GoN policy of allocating at least 80 per cent of the total budget from Climate Change Fund directly to programme implementation at the community level[57]. However, this needs to be integrated into the planning and delivery mechanisms. Whilst there are a wide range of climate-relevant policies at national level, implementation of climate adaptation efforts is poorly coordinated between line agencies and with local government authorities. The recent implementation of a new federal political/administrative structure throughout Nepal offers an unprecedented opportunity to address gaps in climate change policy and deficiencies in implementation. Accordingly, the project will help develop new institutional and planning arrangements at the new provincial and local levels, and support the integration of climate adaptation into planning and delivery mechanisms of government, civil society, and the private sector.

Ownership by Provincial and Local Governments for continuation of adaptation measures

- As this project is designed through consultation with government agencies, local communities, NGOs and CBOs, the activities designed address their adaptation needs. The project is centred on participation of local governments and communities to foster ownership and empower local communities in implementing project interventions. This will promote the integration of climate-responsive practices into traditional livelihoods, facilitating adoption of such practices in the long term. Participatory approaches and co-management of the project involving local governments and communities will contribute to long-term sustainability of project interventions.

Financial exit strategy

- The project will work with the River Basin Office to identify the financing arrangement/s to leverage significant investments for financing the priority actions of the Gandaki River Basin Management Framework. The funding will not just benefit MoFE but also other Sectoral Ministries with their own going programmes that can be joined up with the Management Framework.

- Some of the options in terms of the framework of the financing arrangement could include establishing a Trust Fund that includes contributions from traditional and private sector donors, contribution by various stakeholders or member institutions of the RBOs and income raised by the RBO providing various services and a suite of financial instruments.

- The project will also explore various types of financing instruments for leveraging funding for the Trust Fund or equivalent arrangement including:
    - Grant financing from bilateral and private sector donors given Nepal being a LDC and as a result significant recipient of ODA;
    - Concessional loans from infrastructure development and commercial banks for EbA measures that blend hard infrastructure elements with natural infrastructure such as check dams, forest restoration etc.;
    - Debt financing where debt terms and conditions are pegged to the EbA measures results achievement such as establishing natural infrastructure;
    - Green bond financing where credit enhancement is provided by extending credit guarantee to cover a portion of the debt marketed through a green bond related to restoration of a sub-basin such as the Kali-Gandaki for example;
    - Payment for ecosystem services with the indigenous peoples and other hill and mountains peoples provided both financial and non-financial transfer payments for their stewardship functions by downstream water use companies/industries and also municipalities;
    - Tradeable quotas, establishment of quotas for extraction of NTFPs, fish harvest from the Gandaki River and its various tributaries;
    - Relevant taxes and charges for pollution of water bodies, degradation of natural resources, etc including polluting various water bodies and wetlands in the Gandaki River Basin such as Phewa Lake.

[57] Climate Change Policy 2011. Ministry of Population and Environment, Government of Nepal

- The relevance of instruments is determined by the needs and specific context of the EbA measures and in most cases, a mix of different instruments, sources and finance considerations need to be applied to guarantee sustainable financing throughout the entire planning, implementation and long-term operation of EbA measures.

- In addition, the involvement of Prime Minister's Agricultural Modernisation Programme representative on the PSC will enable identification of opportunities for investment in value chains in agriculture, livestock and agroforestry, enterprises relating to tourism to be planned within the context of climate resilient investment opportunities in the Basin, and in the future in the country as a whole.

- In addition, the Federation of Commerce and Industries is also on the Steering Committee with the aim of bringing in perspectives on how commercial risks in the face of climate change can be reduced and what further investment opportunities arise in a more integrated climate resilient development of the Basin. This is a significant departure from the conventional approach of enterprise development being based on the cooperative-based models for small-scale enterprises such as homestay related tourism.

C. FINANCING INFORMATION

C.1. Total financing

173. The total cost of the project is US$ 32.175 million out of which US$ 27.404 (83.77%) is a grant from GCF and US$ 5.310 (23.3%) is a co-financing from [MOFE US$ 1.145 million (3.5%); NTNC US$ 3.6 (11.0%); and IUCN US$ 0.656 million (1.75%)]

(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)	Total amount	Currency
	27.404	million USD ($)

GCF financial instrument		Amount	Tenor	Grace period	Pricing
(i)	Senior loans	Enter amount	Enter years	Enter years	Enter %
(ii)	Subordinated loans	Enter amount	Enter years	Enter years	Enter %
(iii)	Equity	Enter amount			Enter % equity return
(iv)	Guarantees	Enter amount	Enter years		
(v)	Reimbursable grants	Enter amount			
(vi)	Grants	US$ 27.404 Million	years		
(vii)	Result-based payments	Enter amount			

(b) Co-financing information	Total amount	Currency
	5.310	million euro (€)

Name of institution	Financial instrument	Amount	Currency	Tenor & grace	Pricing	Seniority
GON, Ministry of Forests and Environment, Department of Forests and Soil Conservation	In kind	1.145	million USD ($)	Enter years Enter years		Options
National Trust for Nature Conservation (NTNC) Nepal	In kind	3.600	million USD ($)	Enter years Enter years		Options
IUCN Nepal	In kind	0.565	million USD ($)	Enter years Enter years		Options
Click here to enter text.	Options	Enter amount	Options	Enter years	Enter	Options
	In kind	5.310	million USD ($)	Enter years		Options

(c) Total financing (c) = (a)+(b)	Amount	Currency
	32.715	million USD ($)

(d) Other financing arrangements and contributions (max 0.5 page)

Community participation

174. The project will be supported by contributions from the communities, including through their participation in various activities such as reforestation, enrichment planting and agroforestry plantations. The project expects to reach to 198,016 households and that every household will contribute an average of at least four days a month in planting and taking care of the planted trees in their own community or private forests. At the market wage rate of NRs 880 per day (USD 8/day the community participation is estimated to be equivalent of USD 5.3 million over the life of the project.

Leveraging other Public Service Providers

175. In addition to the support that will be provided to the project directly from project-related government offices, there are several other government offices that are indirectly related with project activities. These include the Local Agriculture Development Office, the Livestock Development Office, the Enterprise Development Office, the Women Development Office, the Irrigation Office, the Road Development Office, and the Drinking Water Supply Office that have indicated they are willing to provide some management and technical support to the project.

Private Sector

176. The project will support several nature-based tourism activities including hiking, and homestays, and small and micro-enterprises. Private sector entrepreneurs who are investing in enterprise development through their own equity or through borrowing will be also contributing to project results.

C.2. Financing by component

177. Table 10 presents an estimate of the total cost per component and output as outlined in section B.3. It is disaggregated by source of financing. The detailed budget plan is presented in Annex 4.

178. Out of US$ 27.404 million GCF grant, US$ 12.682 million is for Outcome 1; US$ 10.534 is for Outcome 2; and US$ 2.082 is for Outcome 3.

Table 10: Summary of cost

Component	Output	Total cost million USD ($)	GCF financing		Co-financing		
			Amount million USD ($)	Financial Instrument	Amount million USD ($)	Financial Instrument	Name of Institutions
Component 1: Community resilience (Outcome 1: Enhanced resilience of livelihoods of the vulnerable communities through adapting to climate change sustainably)	Output 1.1: Climate resilient agroforestry and livelihood improvement actions implemented for coping with extreme events	6.341	5.901	Grants	0.440	In kind	IUCN Nepal
	Output 1.2: Interventions for water availability and water use efficiency from irrigation systems and improved water sources implemented	6.781	6.781	Grants	-	-	-
Component 1 total		**13.122**	**12.682**	**Grants**	**0.440**	**In kind**	
Component 2: Ecosystem resilience (Outcome 2: Strengthened climate resilience of ecosystems)	Output 2.1: Natural ecosystem restoration based actions implemented for reducing impacts of landslides and floods	14.749	10.13	Grants	4.619	In kind	Country (MOFE+ NTNC)
	Output 2.2: Technical capacity of GRB communities enhanced in maintaining and	0.404	0.404	Grants	-	-	-

	supporting climate resilient ecosystems						
Component 2 total		**15.153**	**10.534**	**Grants**	**4.619**	**In kind**	
Component 3: Climate governance (Outcome 3: Strengthened climate governance and institutional framework to sustain climate)	Output 3.1: Community-based mechanism for planning, restoration, monitoring, and maintenance of ecosystems established	0.500	0.500	Grants	-	-	-
	Output 3.2: Ecosystem-based climate change adaptation approaches incorporated into government policies and plans	0.395	0.395	Grants	-	-	-
	Output 3.3: Knowledge management established for climate resilient River Basin Management	1.197	1.187	Grants	0.010	In kind	IUCN Nepal
Component 3 total		**2.092**	**2.082**	**Grants**	**0.010**	**In kind**	
Gender, ESMF, M&E	Gender Action Plan	0.164	0.164	Grants	-	-	-
	ESMF Action Plan	0.277	0.277	Grants	-	-	-
	Project start-up, monitoring, evaluation and closing	0.426	0.426	Grants	-	-	-
Gender, ESMF, M&E total		**0.867**	**0.867**	**Grants**	**-**	**-**	**-**
Project Management Component		**1.482**	**1.24**	**Grants**	**0.241**	In kind	Country (MOFE+ NTNC), and IUCN
Total cost (Million USD)		**32.715**	**GCF Grant 27.404**		**Co-financing 5.310**		

C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)

C.3.1 Does GCF financing fund capacity building activities?	Yes ☒ No ☐
C.3.2. Does GCF financing fund technology development/transfer?	Yes ☒ No ☐

If the project/programme is expected to support capacity building and technology development/transfer, please provide a brief description of these activities and quantify the total requested GCF funding amount for these activities, to the extent possible.

179. There are two major technology transfer areas proposed in the project.

Extension of drought and flood tolerant crop varieties

180. To mitigate the impact of flooding and longer inundation of the rice field in Terai and Inner Terai, a flood tolerant rice variety will be introduced and farmers' capacity to adapt to tolerant variety will be enhanced through training and demonstration of a variety in Nawalparasi and Chitwan districts and some plain areas of Makawanpur, Kaski and Lamjung. The area under rice in Nawalparasi and Chitwan in 2014 was 77,025 ha and production was 297,330 mt. Even 50% area being affected by flood and longer-term inundation, adoption of flood tolerant variety of rice

will protect at least 148,665 mt of rice contributing to achieve food security during catastrophic flood and inundation of rice field mainly in Nawalparasi and Chitwan.

181. Likewise, to mitigate the impact of longer term drought, a drought tolerant variety of wheat will be identified, introduced and farmers' capacity enhanced to cultivate in the hills, it will protect at least 50% of wheat area (50% of 133,498 ha) being affected by longer drought and secure production of 177,966 mt (50% of 355,933 mt) in GRB districts.

182. This is well covered in Activity 1.1.3 - Promote drought and flood tolerant varieties (at least one drought tolerant variety (wheat) for hill districts and one flood tolerant (paddy)) variety for Terai and plain areas in the Chure and Inner Terai. The budget allocated for this is US$ 33,227.

Invasive species management by uprooting them and reusing them in composting and bio-charring

183. Invasive plant species, including some alien, have been found in the GRB, with the changed patters of climate. The growth of invasive species, *Mikania micrantha*, *Lantana* and *Parthenium* in the low land terrestrial habitat and water hyacinth in wetlands have already threatened biodiversity and has been a conservation challenge in Chitwan National Park (low land of GRB) and its buffer zone. Similarly, agricultural as well as public lands in mid hills are invaded by *Ageratina adenophora*, and *Ageratum conzoides.* Likewise, the understory of forests was reported as being heavily invaded by *Ageratina adenophora*, and local species such as *Lyonia ovalifolia* (Angeri), Hadeunyeu, Katre kanda, and Bilaune.

184. In order to restore biodiversity, these invasive species will be managed by uprooting and reusing in value added production in community forest lands and community grasslands. Reusing the removed biomass of invasive species in biocharring is already established technology in Nepal. IUCN Nepal already successfully implemented an EU supported bioenergy project where CFUG members produced biochar from the invasive species and sold to bio-briquette and pellet. This technology will be transferred to the CFUG members in this project as well. The This is well explained in Activity 2.1.3 - Restore the biodiversity of vulnerable forests and grassland ecosystems through the removal and (productive) reuse of invasive species. The allocated budget for this is US$ 16,985.

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

This section refers to the performance of the project/programme against the investment criteria as set out in the GCF's Initial Investment Framework.

D.1. Impact potential (max. 500 words, approximately 1 page)

185. The objective of the Green Climate Fund is to limit or reduce greenhouse gas emissions in developing countries and make the vulnerable societies resilient through the adaptation to the unavoidable impacts of climate change[58]. This project will contribute to achieving this fund level objective through the improvement of resilience of the communities and ecosystems in the GRB.

186. The 19 districts in the GRB are inhabited by 1,172,558 households (5,131,932 people). The GRB covers 3,209,000 ha including 140,522 ha of forest, 196,069 ha of grassland, and 61,933 ha of water bodies[59]. The total area of agriculture land is 677,456 ha, with most of the agriculture lands managed by smallholder farmers. Most part (65%) of agriculture lands do not have irrigation facilities and depend on rain-fed irrigation (MOAD, 2013).

- The project will improve the resilience of 198,016 (16.88%) vulnerable households by adopting climate responsive farming practices and ensuring improved market access[60] and capacity to use the services and products of resilient ecosystems and agricultural land.
- There will be improved management of about 285,000 ha of natural ecosystems and 113,000 ha of agricultural land contributing to enhance climate resilience of the services they provide.
- Out of 6,000 Community Forest User Groups (CFUGs) in the GRB, with average area of 94 ha per CFUG, and a combined area of 564,000 ha under community based forest management[61], the project will directly improve management of 600 CFUGs covering approximately 56,400 ha of forest.
- Additionally, forests in protected areas cover approximately 1,193,400 ha which will benefit from direct and indirect management interventions, such as restoration through plantations, removal of invasive species, etc., by the project.

187. The fund also aims to promote the paradigm shift towards climate-resilient adaptation pathways by taking into account the needs of those developing countries particularly vulnerable to the adverse effects of climate change[62]. This will be achieved through the shift in process of planning and implementation of climate change adaptation measures from political boundary to river basin approach. The approach is holistic in the sense that the entire landscape along the basin becomes one unit of planning and implementation of climate change adaptation measures linking all the impacted communities in the upstream and downstream at the landscape level. The most relevant plans and policies at local, provincial and federal levels will include measures for climate adaptation, and institutional capacity to support and implement these plans and policies will be improved. At the end of the project, it will serve as a model for the rest of the river basins of the country and also as a reference nationally for areas facing similar vulnerability.

188. This will also contribute to achieve the adaptation goal of Paris agreement, which aims to focus on enhancing adaptive capacity, increasing resilience, and limiting vulnerability[63]. The Agreement requires that all Parties, as appropriate, to engage in adaptation planning and implementation through national adaptation plans, vulnerability assessments, monitoring and evaluation, and economic diversification[64]. This will be achieved through the development of climate monitoring centre and inclusion of climate issues in the integrated development plans of all newly formed three provincial as well as 151 municipal governments. This project has clearly identified data on climate change and information on adaptation technology as the barrier to adaptation to climate change.

189. Draw on regional or international sources. If detailed data on specific trends, impacts, and vulnerabilities have not yet been collected, then Paris Agreement Parties can draw on regional or international sources to provide general information. In this case, Parties may also want to describe the lack of capacity and resources to collect such information as a gap or barrier to adaptation planning and action[65].

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[58] The Green Climate Fund. https://www.greenclimate.fund/home

[59] MoFSC. (2016). *Forest Sector Strategy 2015.* Kathmandu: Ministry of Forests and Soil Conservation.

[60] Market access is important because the new products from climate resilient enterprises will need to be sold to generate income to contribute to enhanced adaptive capacity.

[61] Data on ecosystems were collected from Ministry of Forests and Environment and its authorities.

[62] Governing Instrument for the Green Climate Fund 2011. https://www.greenclimate.fund/documents/20182/574763/Governing_Instrument.pdf/caa6ce45-cd54-4ab0-9e37-fb637a9c6235

[63] UNFCCC/CP/2015/L.9/Rev.1 2015. Paris Agreement Article 7.

[64] New elements and dimensions of adaptation under the Paris Agreement (Article 7). https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/new-elements-and-dimensions-of-adaptation-under-the-paris-agreement-article-7

[65] Enhancing NDCS by 2020. Achieving the goals of the Paris Agreement. World Resources Institute. Nov 2017

190. GCF result areas for adaptation (resilience) include health, food and water security; livelihoods of people and communities; infrastructure and built environment; ecosystem and ecosystem services[66]. This project will contribute directly to: improved food security through the adoption of climate responsive farming practices; improved water security through increased water availability resulting from improved watershed conservation including water harvesting; improved livelihoods of people through sustainable production, income and market access; improved ecosystems and ecosystem services through enrichment plantation, slope stabilisation, establishment of climate resilient green belts, management of invasive species, etc. The project will indirectly contribute to achieve health, infrastructure and built environment results through improved climate governance.

191. The proposed project intervention; 3,655 ha plantation and 500 ha of agroforestry will have an impact on GHG emissions from Agriculture, forestry and other land use (AFOLU) sector in the project area. The project is expected to increase forest area and improve forest condition because of improved forest management practices. The project will also: support the restoration and sustainable management of degraded forests, wetlands and grassland ecosystems; support tree planting on degraded or non-forested land; and scale up the adoption of climate-resilient agriculture and land management practices. The project will therefore deliver emissions reductions of 200,974t CO_2e in project period which is equivalent to about 847,250 t CO_2 e over 20 year period.

D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

Potential for paradigm shift

192. The project aims to shift the planning and adaptation approach from political boundary approach to river basin approach. Instead of district and municipal based planning, implementation and monitoring of adaptation approach in the existing system, the river basin approach is going to consider the entire basin linking the communities in the upstream with downstream (see Section B.3 for detail). The provincial level governments (three (provinces 3, 4, and 5) in GRB will collaborate at the basin level. The GRB is further divided into seven sub basins for location specific planning where the municipal level governments (five in Province 3; 11 in Province 4, and 3 in Province 5) (see Annex 16: Maps of GRB). Hence, this project offers an unparalleled opportunity to incorporate climate adaptation in decision making in the plans and policies of Nepal's new political/administrative structures. Paradigm shift in the way decisions are made about land use, water, and ecosystems, and their relationship to climate change will have a high potential for improving land use, water availability, ecosystem services in the entire GRB.

Potential for scaling up and replication

193. A new political/administrative structure has recently been introduced comprising 753 local government (previously 3,493), provincial, and federal levels. In the new governance rule, environment protection is included in the concurrent power of all federal, state and local governments (Schedule - 9, Constitution of Nepal 2015). As a result of the changes, local regulations that were formed for a certain location earlier are no longer valid and the newly established local bodies will have to (re)form new regulations. Much of the country's environmental management will be devolved to the provincial and local levels, and the plans, policies, regulations and institutions at this level are yet to be fully established. In order to include river basin approach in the new regulations, a functional model demonstrated through a pilot project is required. Hence, this project has a high potential to shift to a river basin approach. The project will mainstream and operationalize river basin approach for climate adaptation within the plans and policies of the MOFE and related ministries through a policy feedback mechanism to be developed within the project steering committee. This approach will enable the project to have nationwide contribution in climate change adaptation measures.

Potential for sharing knowledge and learning

194. The project includes an output entitled 'knowledge management established for climate resilient river basin management" specifically for sharing climate change, climate risk and vulnerability information between local, provincial and federal governments. The project will develop a communication and knowledge management strategy within the first six months of the project. The strategy will draw on the extensive experience in knowledge management and communication. The communication and knowledge management strategy will aim to maximise the potential for lessons learnt by the project to be used to adapt project management and implementation and ensure that project findings have the greatest possible influence on national, provincial and local climate change policy and practice. Knowledge and communication outputs will be in Nepali and English as appropriate. Wherever possible, relevant outputs will also be produced in local languages. The project will establish a management information system (MIS) in the offices of DOFSC and NTNC. The MIS will provide a repository for a wide range of knowledge products on building the resilience of ecosystems and communities through nature-based solutions, including ecosystem-based approaches. The MIS will provide the foundation for developing knowledge products that are accessible to the public through a website, radio, television, popular media, project publications, workshops and training.

[66] Green Climate Fund Infographics. https://www.greenclimate.fund/how-we-work/tools/infographics

Contribution to the creation of an enabling environment

195. The cumulative effect of the project's outcomes will enhance capacity at community and institutional levels. This includes measures to address differential impacts of climate change that help adaptation activities to be self-sustaining. This is the first step in encouraging all key sectors, including local government, civil society, and the private sector to invest in scaling-up and replication. The project has already brought on board local government through community and stakeholder consultation. Local bodies have given their written opinion that they would like to collaborate. Once the project starts, this will be one conducive environment for the private sector to participate with the public sector. The project will support local government in climate change adaptation in full participation of private sector thereby building confidence amongst the private sector for their engagement in adaptation.

196. The project will encourage farmers to participate in insurance schemes for major enterprises that will be supported by the project. It is anticipated that there will be significant private sector engagement in 'green enterprises'. As presented in Section C.1 (d), this project has envisaged that there will be private sector engagement value of the equivalent of USD 5.3 million. When community members will perceive low risk, this will further contribute in bringing other private sector to engage and invest capital in adaptation activities.

Contribution to regulatory framework and policies

197. The project will support MOFE to prepare integrated sub-riverine watershed and water resource management plans and SOPs as sub-component of GRB that includes forests, grasslands, fisheries, wetlands and agro-ecosystems. It will also support developing a framework for assessment of economic valuation of ecosystem and ecosystems services to support planning; and policy for local governments to incorporate climate change adaptation and EbA into their Integrated Development Plans. In addition to such direct regulatory and policy support; the project will provide a platform for policy feedback amongst the stakeholders through a Project Steering Committee (PSC) led by the Secretary of the MOFE. The PSC will comprise Joint Secretary level members from all the concerned ministries, including Ministry of Agriculture and Livestock Development, Ministry of Federal Affairs and General Administration, Ministry of Land Management and Cooperatives, National Planning Commission, Ministry of Finance, Representatives from Indigenous Peoples' Organisation, Municipality Association, Forest User Groups, etc.

Contribution to overall climate-resilient development pathway

198. In addition to mainstreaming and operationalisation of river basin approach, other transformations will include: complementing conventional adaptation approaches by adding ecosystem based adaptation; rain-fed to irrigation-based farming: subsistence farming towards commercial farming, complementing existing built infrastructure approaches with bioengineering, shifting chemical based agriculture to nature-based pest management, etc.

D.3. Sustainable development (max. 500 words, approximately 1 page)

Environmental co-benefits

199. Increasing the resilience of ecosystems by conserving and sustainably managing them provides natural protection against extreme weather events and reduces disaster risk, as well as producing multiple co-benefits. The project will generate multiple environmental co-benefits including:
    - Increased forest and vegetation cover through new plantations and regeneration of forests, restoration of degraded lands, and improved forest management
    - Improvement and conservation of biodiversity
    - Improved management of wetland and water systems
    - Reductions in soil loss and increased groundwater retention
    - Reduced agricultural expansion into natural areas
    - Climate Change Mitigation through reduction in greenhouse gas emissions and increased carbon sequestration.

Social co-benefits

200. The project will deliver a range of social co-benefits including strengthening local institutions, promoting livelihood options, and building capacity to improve overall socio-economic status in the Basin. By involving women, poor and marginalised communities, different castes and ethnic groups, people will be empowered, and discrimination, including caste-determined social and cultural barriers, can be reduced. Capacity enhancement and shared learning on climate adaptation will strengthen and increase social capital, empower communities, improve social inclusion, and build cooperation within communities.

Economic co-benefits

201. Vulnerability to the impact of climate change is related to the economic status of households, with higher wealth households generally having more options to cope with and adapt to impacts. Accordingly, the project's

interventions will focus on diversifying livelihoods of more vulnerable communities in different sectors including forestry, eco-tourism, agriculture, and natural resource management.

202. The project will support the establishment of small and medium enterprises and eco-tourism ventures and generate employment that will enable communities to become more resilient in the face of climate change. Tourism – especially eco-tourism and farm-based tourism – is a mainstay of the Nepal economy, contributing a significant amount of foreign currency earnings, and ensuring this remains so, and grows, in the face of climate change is important to the future sustainable development of the country. This project will enhance ecotourism through the enhancement of ecosystem services and reduction of natural disasters like landslides and floods.

203. The project will promote enhanced food security that will contribute to reduced vulnerability of local communities and to the reduction of imports of goods from outside. It is estimated that the project will help reduce the government's budget deficit by about USD 4 million through tax revenue generated from additional income generated through project-promoted activities. The estimation is based on the revenue generated from the tax on direct benefits (timber and non-timber forest products, agriculture and agroforestry products, tourism services, enterprises and employment). The calculation is provided in Annex 3b (Financial and economic analysis

Gender-sensitive development impact

204. The project will focus on gender-sensitive implementation of activities and promote gender-sensitive development impacts. There are varying levels of access to resources, knowledge, skills, and finance that shape how women and men adapt to climate impacts. Accordingly, the project will give priority to gender and social inclusion in all relevant activities. There are 35 activities designed and USD 163,319 allocated to implement the Gender and Social Inclusion Action Plan (Annex 8a).

205. This project will contribute to achieve SDG 5 as well. With the increased income and other benefits from the project intervention, communities will be able to access to better education, health and community services. With better education and income status, communities will also have increased participation in community decision making process thereby enhancing good governance practices.

Sustainability

206. At the end of the project, there will be 1) Well functioning resilient ecosystems; 2) Communities with high adaptive capacities; and 3) Improved capacity of households; which will continue after the project. In addition, the project will deliver results including the integration of climate adaptation into planning and delivery mechanisms, capacity building, improved governance, improved flow of ecosystem services, improved climate adaptation, project learning mainstreamed into the government's regular programme, an integrated river basin model mainstreamed and operationalised. These results will lead to sustainability of the project results.

Contribution to Sustainable Development Goal (SDG)

207. The project level impact of this project will be "Increased Resilience of Communities within the Gandaki River basin through Ecosystem and Livelihood Adaptation to Climate Change". This will contribute to achieve Goal 13 of SDG- Take urgent action to combat climate change and its impacts; and its two targets:

- Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries;
- Target 13.2: Integrate climate change measures into national policies, strategies and planning.

D.4. Needs of recipient (max. 500 words, approximately 1 page)

Economic and social development level of the country and the affected population

208. The mainstay of Nepalese economy is agriculture. Agriculture provides one-third to the GDP and provides employment to two-thirds of the labour force. Although agriculture is considered the backbone of the economy, agricultural production grew at only 2.9 per cent per annum. The economy of Nepal has remained at a very low level in the last ten years, with an average annual growth rate of 3.8 per cent and a low of 0.77 per cent annual growth in 2015/16. The economy is characterised by high inequality (0.328)[67], unemployment, weak infrastructure and domestic production, low domestic savings and investment; weak investment environment, low capital expenditure, high trade deficit, brain drain and remittance income dependence[68].

209. The social sector has also remained at a low level in Nepal. Nepal was ranked 149 in the HDI index (0.574)[69] in 2017. The 14th Plan[70] has shown life expectancy of 71 years, 88.6 per sent literacy in the 15-24 age group, and 21.6 per cent of people living below poverty line. Other indicators are: Gender Development Index value of 0.56,

[67] Human Development Report 2016 UNDP
[68] Economic Survey 2015/16 - Ministry of Finance, Government of Nepal.
[69] UNDP. 2017. Update on Human Development Report.
[70] 14th Plan (2014/15 to 2017/18). National Planning Commission Nepal.

maternal mortality rate (100,000 live births) of 258, infant mortality rate (per 1,000 live births) of 23, and gender responsive budget allocation of 22.27% in 2014/15.

210. There are 4,518,729 people living in the 19 GRB districts[71]. The GRB is inhabited by more than 40 ethnic groups including poor, vulnerable and socially excluded ones. The Human Development Index (HDI) for all ethnic groups was 0.482. compared to national average of 0.490 in 2014; ethnic groups have lower adult literacy level (66.93%) compared to national average of 69.73%; and the life expectancy at birth of the ethnic group was 69.86 years compared to national average of 71 years[72].

211. Low economic growth rate, persistent energy shortages, labour problems (shortages, unions, politicisation), uncertainty of investment climate, stagnant development with high inflation rate, rising trade deficit due to low level of export product diversification, political instability and frequent general strikes, low employment opportunity and lack of intellectual capacity, are the major problems of the economy. These problems are exacerbated by climate change.

Absence of alternative sources of financing

212. The financial status of the country has remained weak for the last several years. In 2015/16, the budget deficit per GDP was 3.1 per cent with outstanding debt of NRs. 627.8 billion or 27.9 per cent of GDP, and an outstanding per capita debt of NRs. 22,159[73]. The MOF has reported that the trade deficit rose to about USD3.8 billion which is 32.4 per cent/GDP (export 4 per cent/GDP to import 26.4 per cent/GDP). Increasing domestic production of goods and services that have competitive and comparative advantage and increasing domestic and foreign investment are daunting tasks. Likewise, reducing dependency on foreign employment by creating employment opportunities at home and reaping demographic dividend by developing human resources as per the national needs and demand are other challenges.

Need for strengthening institutions and implementation capacity

213. The Climate Change Policy, 2011 requires public sector development organisations to allocate at least 80 per cent of the total budget from the Climate Change Fund directly to programme implementation at the community level. In addition, the National Planning Commission has directed public organisations to follow the budget code for climate activities. However, the climate change mandate is with the MOFE while the budget for local development is prepared by the Ministry of Federal Affairs and General Administration. For these reasons there are some institutional weaknesses in monitoring including[74]: a) differentiating climate activities from environmental activities, b) confusion due to the broad guidelines and procedure developed for climate code being the same for all ministries, c) confusion about how much of the public budget should be allocated to climate activities, and confusion in trade-off between development and mitigation. The level of awareness in the private sector on climate change adaptation is at a rudimentary stage. For these reasons, there is a great need for institutional capacity building in both public and private sectors, which this project aims to address.

D.5. Country ownership (max. 500 words, approximately 1 page)

Existing national climate strategy

214. Nepal has made progress with climate change issues including assigning a separate ministry to look after environment and climate change affairs, formation of the high level authority, Council for Climate Change (2009) under the Prime Minister's leadership, formulation of the Climate Change Policy (2011), operation of the National Adaptation Programme of Action (NAPA 2010), implementation of Local Adaptation Plans for Action (LAPA 2011), development of a Climate Resilience Planning Framework, formulation of a Strategic Programme on Climate Resilience (SPCR 2009) and operation of pilot programmes, initiation of a pilot programme on Climate Resilience (PPCR 2009) in the agriculture sector, and development and operation of the Clean Development Mechanism. Other important strategies/policies include Environment Protection Act (1997), Disaster Risk Reduction and Management Act (2017), Forest Fire Management Strategy (2010), Forest Sector Strategy (2015), National Low Carbon Economic Development Strategy (2014), REDD+ Strategy (2015), Environmental Friendly Local Governance Framework (2015), Nature Conservation National Strategic Framework (2015), Biomass Energy Strategy (2017), etc. See Section Annex 2a: Feasibility Study for detail. This project will directly contribute in achieving the objectives of these related strategies, policies and regulations.

Existing GCF country programme

215. In Nepal, the International Economic Cooperation Coordination Division (IECCD) of the Ministry of Finance is the National Designated Authority (NDA) to the GCF. Ministry of Forests and Environment is the Focal Ministry for the UNFCCC. So, far there has been no project granted to Nepal by GCF. In 2016, Nepal implemented the GCF

[71] Population Census 2011. Central Bureau of Statistics, Nepal
[72] Human Development Report 2014. National Planning Commission Nepal
[73] MOF. 2017. economic survey 2015/16. Ministry of Finance, Government of Nepal.
[74] Climate Change Budget Code - Application Review 2012 - National Planning Commission Nepal

Readiness Programme with support from the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) of the Federal Republic of Germany in collaboration with UN Environment and UNDP. The first phase of the programme concluded in 2018 and the second phase has been granted to enhance the readiness of the country in climate change mitigation and adaptation. The GCF Readiness Programme provided some support to FAO and IUCN to prepare proposals to submit to GCF. This proposal is one of such proposals partly supported by the Readiness Programme. Other support from the GCF approved in November 2016 was for the preparation of NAP. GCF is also supporting the process of accreditation. The Alternative Energy Promotion Centre (AEPC) of Nepal is already accredited and National Trust for Nature Conservation (NTNC) is under the process of accreditation.

Alignment with existing policies such as NDCs, NAMAs, and NAPs

216. The planned interventions are closely aligned with the GoN's national priorities for enhancing resilience of communities and ecosystems. More specifically, the project is aligned with relevant national policies, laws, including the Constitution, the National Adaptation Programme of Action (NAPA), the National Framework on Local Adaptation Plan for Action (LAPA) 2011, and the Climate Change Policy (2011). Details of the alignment and role of the project in supporting these instruments can be found in the feasibility report (Annex 2a).

217. The planned interventions for adaptation are aligned with NDC, NAPA and NAP as well. In its communication of **NDC** to UNFCCC in 2016, Nepal has outlined, inter alia, Nepal's adaptation needs, in the post 2020 context, will be envisioned by National Adaptation Plan (NAP), currently under preparation through nationally driven consultation process; strengthen the implementation of Environment-Friendly Local Governance (EFLG) Framework in Villages and Municipalities to complement climate change adaptation, promote renewable energy technologies, and water conservation and greenery development; develop and implement adaptation strategies for climate change affected sectors undertaking scientific approaches; assess impact of climate change involving academic institutions; etc.

218. Nepal is working on **NAMA**. Nepal is yet to register to UNFCCC a request for support in the development or implementation of NAMA[75]. Regarding **NAP**, in 2015, Nepal has initiated the process for the formulation but is not yet finalised and made public for review and implementation. Nevertheless, Nepal's adaptation needs for the future, and in the context of post 2020, will be envisioned through the NAPs.

Capacity of Accredited Entities or Executing Entities to deliver

219. **Accredited Entity (AE)** – IUCN - The proposed interventions in this project are focused on nature-based solutions. IUCN has extensive experience in deploying nature-based solutions to global challenges including climate change. In addition to several other projects globally, IUCN has very successfully implemented three projects in Nepal a flagship "Ecosystem based Adaptation in Mountain (MEbA)" project from 2013 to 2016; "Ecosystem-based Adaptation: Strengthening the evidence and informing policy" project from 2015-19; "Ecosystems Protecting Infrastructure and Communities (EPIC)" project from 2012 to 2017. Currently, IUCN in partnership with The Mountain Institute (TMI) is implementing the "Scaling up mountain EbA" project in the Himalayas (Nepal), Mount Elgon (Uganda) and the Andes (Peru) and supporting the EbA approach being adopted in Bhutan, Kenya and Colombia. These experiences have enabled IUCN to build significant capacity to implement climate change adaptation projects. IUCN has also supported the Government of Nepal in preparing its National Conservation Strategy, Wetland Strategy, National Pollution Control Strategy, and capacity development in the areas of climate change adaptation.

220. **Executing Entity-** MOFE is an executing agency. The DOFSC under the MOFE will be the lead in executing project activities with the technical assistance of the consortium. DOFSC is the sole mandated government institution to work on river basin approach. It is an authorised body for planning, implementing and monitoring soil conservation and watershed management programs/activities based on the principles of integrated watershed management. It has multidisciplinary teams at the district and national level to work on participatory approach. DOSFC has gained a long experience on reducing damage to and loss of lives due to extreme climate events such as floods, landslides and droughts. It has already implemented projects supported by UNFCCC, GEF, LDCF, and AF. From the experience of MEbA and EPIC projects; DOFSC has mainstreamed project learning into policy framework and regular government planning and implementation processes.

221. **Role of National Designated Authority**: The NDA ensures that activities supported by the GCF in this project align with the country's strategic national policies and priorities on climate change. NDA engaged IUCN Nepal in various consultation meetings and guided the Proposal Formulation Team on the GCF process and Nepal's requirements. The NDA engaged various national stakeholders to ensure compliance with the scope mandated by GCF and more importantly to create ownership among the actors for the successful implementation of this

[75] Situation Analysis for Nepal on Climate Finance. TAAS-0072: Support for Strengthening Climate Finance Activities in Nepal. March 2017. Nepal Development Research Institute (NDRI), Nepal

project in GRB. The NDA supported the proposal in meeting its quality and country's requirement through Technical Committee led by the Joint Secretary of the International Economic Cooperation Coordination Division/Ministry of Finance (IECCD/MOF). Likewise, the Technical Committee's role will be to monitor the implementation of this project and ensure that the project result delivery is within the scope of the project and is going to contribute to achieve the outcomes and impacts envisaged by the project.

Overall ownership

222. This project proposal is based on a concept presented in an idea paper that was submitted to the NDA to respond to their call for ideas (3rd January 2016). A consortium of IUCN, the DOFSC (the then DSCWM) and NTNC prepared the idea paper. The inclusion of DOFSC (government) and NTNC (semi-government organisation) in the consortium helped ensured that the government owns the project. The ideas paper submitted by the IUCN was accepted by the NDA and IUCN was requested to prepare a concept note, to be followed by a full funding proposal to be submitted to the GCF for consideration.
223. IUCN prepared the concept note and submitted it to the MoFE who reviewed and approved it for submission to the NDA. The comments received from the GCF Secretariat were discussed with both the technical Ministry (MoFE) and the NDA (MOF), and adjustments to the project design were subsequently undertaken by the project design team. The final funding proposal was reviewed and approved by both the MoFE and the NDA.
224. *Ownership by the Local Governments*: The project preparation phase included extensive consultations at national level and within the GRB during both prefeasibility (22-26 September 2017) and full feasibility (10-20 December 2017) studies. The consultations have included workshops, face to face meetings and information sessions, and teams met with many stakeholders (see Annex 7b). There was a written consent given by 40 Local governments where the local level consultations were held.
225. *Ownership by the Technical Ministry of the Government*: In terms of ownership by technical arm of government, this project has been **conceptualised** together with the **Ministry of Forests and Environment** and **NTNC**, which is an autonomous body linked to MoFE. At **each step**, MOFE has been involved in reviewing, providing inputs and The MoFE formed a **five-member Technical Committee** to support the proposal preparation team and to ensure that the proposal was in line with the country's climate change adaptation needs and that it addressed the climate change adaptation issues identified by government policies and strategies. The project design team met the Technical Committee several times and received valuable suggestions. This has improved the opportunity to include government needs and interest in the proposal. The final funding proposal was approved by the technical committee in March 2018. This revised version was submitted to the Joint Secretary of the Planning Division and the Chair of the Technical Committee of MOFE on 22 May 2019 and was approved for submission to the NDA on 22 May 2019 itself. In addition, Joint Secretary of MoFE participated on the conference call with ITAP held in January 2020.
226. *Ownership by the NDA*: From the outset, NDA Nepal has been involved in the design of the project. In addition to selecting the initial idea paper, the NDA organised several meetings and guided the consortium on the proposal preparation process and recommended that UNEP support the Government of Nepal via IUCN with the proposal preparation financing from UNEP's Readiness Fund. The NDA representative participated in the theory of change workshop on 13 September 2017, the inception workshop on 20 September 2017, the field consultation from 13-18 December, working meetings from 12-14 February 2018, a technical consultation workshop on 2 March 2018, and a review workshop held in March 2018.
227.
228. In addition, the NDA organised review meetings on 10 September 2017 and 5 October 2017, 30 November 2017 and 18 January 2018. Guidance from NDA helped shape the proposal. The funding proposal was reviewed by the NDA and its consultants. This revised version was submitted to NDA on 22 May 2019 and was approved by the NDA for submission to GCF on 22 May 2019.

Overall ownership

229. As explained earlier, The Gandaki Basin project serves as the **vehicle** the Government is using to improve the **implementation** of its **commitment** to an **integrated river basin approach**, which was approved by the High Level Committee to manage all watersheds in Nepal, following its establishment by the Prime Minister. To date, the Committee has only been able to implement this commitment in a fragmented manner, without significant evidence of progress at a river basin scale, let alone nationally.

230. This project is also supportive of the **Government's Agriculture Development Strategy 2015–2035** as it will **complement the investments** needed to make the Basin more resilient to climate change, and therefore contribute to making food security more resilient. However, lack of investments in this sector have led Nepal to become a net food importer since 1990.

Engagement with civil society organisations and other relevant stakeholders, including indigenous peoples, women and other vulnerable groups

231. The proposal was prepared in close consultation with representatives of government, non-governmental organisations and bilateral development agencies. The theory of change was discussed with stakeholders on 13 September 2017, and the proposal concept was presented in an inception workshop on 20 September 2017 that included stakeholders from different spheres.

232. At the site level, 1,421 people were consulted during the feasibility study, 54.5 per cent of people consulted were women and 45.6 per cent men. Of the 939 community members consulted, 65 per cent were women and 35 per cent men; including 31 per cent indigenous peoples. Efforts were made to include people from all spheres of life in the community.

233. At the national level individual consultations were conducted with climate change experts, academicians, development activists, politicians, planners, and indigenous peoples. The major findings of the study were verified with the 'climate change elite group'. As a result of the extensive stakeholder consultations, the project activities are strongly aligned with emerging national needs, priorities and policies.

D.6. Efficiency and effectiveness (max. 500 words, approximately 1 page)

Financial adequacy and reasonability to achieve the Project objective

234. It is estimated that the total budget of the proposed project will be USD 32.715 million. Out of this, the GCF contribution sought is USD 27.4 million, and the in-kind contribution by the partners will be about USD 5.31 million (see Annex 4 for detail on budget estimation).

235. In addition, the project will be supported by contributions from the targeted communities through their participation in various activities of the project in general and more specifically in reforestation, enrichment planting and agroforestry plantation. The project expects to obtain in-kind community contribution of the equivalent of USD 5.3 million.

236. There are several government offices including the Enterprise Development Office, the Women Development Office, the Irrigation Office, the Road Development Office, and the Drinking Water Supply office with the Local government. The project will leverage management and technical support for the project from these organisations too.

237. The private sector entrepreneurs who are investing through their own equity or through borrowing from financial institutions will also be beneficiaries of the project. The project will support enterprise development and leverage private sector investment for livelihood improvement in the project area when it is clear that such enterprise development contributes to enhancing adaptive capacity of the community.

238. Those enterprises that are involved in directly supporting adaptation activities such as micro-irrigation management, eco-tourism development, water harvesting structures management, etc., will be considered as enterprises that contribute to enhancing the adaptive capacity of the communities. The provisional criteria for determining which enterprises will be supported are as follows.

- Support sustainable income generation connected to biodiversity conservation
- Ability to deliver community projects, considering institutional, technical and financial capacity to manage projects;
- Assurance of community participation in project design, implementation, monitoring and evaluation;
- Demonstrates sound financial management experience;
- Experience in managing grant funds;
- Well-established accounting and financial reporting systems, auditing requirements.

Cost-effectiveness and efficiency

239. *Cost effectiveness*: The project directly addresses the strategic impact areas of the GCF in adaptation (ecosystem and ecosystem services), livelihoods of people, communities and regions, food and water security. Though it has not been included in the project benefits, this project will have some mitigation co-benefits through the sustainable management of forest, reforestation and enrichment plantation.

240. The cost effectiveness will be achieved through the adoption of nature-based solutions such as EbA, EPIC, and IWMI with concrete feasibility analysis of the alternative options, drawing on use of local capacity of ongoing projects and more coverage of the beneficiaries. The project will cost only USD 18.4 or USD 28.4 per person, in making the community climate resilient. Including resilient natural ecosystems and agroecosystems, the cost per unit hectare is only USD 62.51. As compared to average cost of restoration of more than US$ 1000 per hectare (Feasibility Study, Section 11.5), it shows that the project is cost effective in terms of building resilience as well. See Annex 3a for narrative and 3b for detail analysis in Excel Sheet.

241. *Investment efficiency*: Investment efficiency was analysed by undertaking a thorough financial and economic analyses with and without project (see Annex 3a for the results and 3b for detail analyses in Excel). Based on various similar plantation projects, other similar projects and consultation with the community and government officials of the MOFE, it was concluded that the average life of trees planted in the mid-hills can be considered 20 years. Based on this assumption, the project cost-benefit analysis was carried-out over a 20-year period by taking costs and benefits at nominal values. Based on the opportunity cost of borrowing capital from the commercial banks, a nominal 10 per cent discount rate has been chosen. The financial and economic rate of returns is as follows.

- **Financial internal rate of return with and without project**:

242. *With the GCF financing*, the net present value (NPV) of the project will be USD 17 million. The benefit cost ratio (BCR) will be 1.68 and the project will come to breakeven point in 11 years. The financial internal rate of return (FIRR) will be 22.644 per cent.

243. *Without the GCF financing*, the NPV of the project will be USD 0.283 million. The BCR will be 1.043 and the project will come to breakeven point in around 19 years. The FIRR will be 11.41 per cent.

- **Economic internal rate of return:**

244. *With the GCF financing*, the NPV of the project will be USD 22.027 million. The benefit cost ratio (BCR) will be 1.902. Breakeven point is in around 11 years. The economic internal rate of return (EIRR) is 23.143 per cent.

245. *Though there is a regular programme of the government, the scale is very small. Hence, without the external financing*, such a small scale regular programmes of the government cannot bring any significant changes in the GRB to minimize disaster events. All the costs to manage disasters such as floods, fires, landslides and droughts; cost of land rehabilitation, cost of invasive species management, cost of water resources management; cost of rehabilitating physical infrastructures such as rural roads, irrigation channels, check-dams; will still incur to the society as a whole.

246. With the project, as communities and ecosystems are made resilient, all such disaster management costs will not incur to the society and thus such saved costs will also go as an indirect benefit to the society as whole. In addition to saved cost of disaster management in the short-term, the resilient communities and ecosystem will create enabling environment for the private sector to invest in adaptation in the long-term.

247. *Overall cost effectiveness of the project*: The above estimates indicate that the project is financially as well as economically feasible to invest in climate change adaptation in GRB, Nepal There are three important areas that GCF support will be contributing in this project. The first area is improving the resilience of climate vulnerable communities and ecosystems in the GRB. The second area is providing an economic net present value of USD 17 million during the project life of 20 years. The third area is raising co-financing to the equivalent of USD 5.31 million and community contributions to the equivalent of USD 5.3 million. These changes would not be achieved without GCF support.

248. As mentioned earlier, the Gandaki River Basin project is focused primarily on generating non-financial benefits from the better management of the basin and towards that is the protection, management, and investment in land and water management to reduce climate risks. The project therefore targets grant financing and not debt financing where the latter's emphasis would be on generating reflows that are not possible at the onset in a basin where poverty persists, and where the economy is largely rural and limited. As also mentioned earlier, a clear 'supplementary' benefit of the project design is to use the momentum gained from improving the resilience of the basin to climate change impacts to create a stronger enabling environment for private sector investment.

Consideration and application of best practices

249. The Feasibility Study (Section 5) draws upon best practices and lessons learnt from past and on-going initiatives at international, national and regional levels. Stakeholder consultations with representatives from all levels of government departments from the target locations and also local communities provided insights from past and on-going initiatives. The best practices and lessons learnt from various initiatives are summarised below.

- In order for EbA to be successfully implemented, there is a need to foster integrated, cross-sectoral approaches that may involve establishing new and innovative partnerships and multi-level governance structures
- Clarifying and addressing stakeholders' different values, interests and knowledge levels are key to building a strong foundation for strengthening natural resource governance.
- It is important to identify and collaborate with champions or leaders who can motivate, mobilise and guide their peers.
- There is a need to establish public-private partnerships to sustain the interventions to be piloted by the project.

- Aspects of traditional nature-based practices seem to offer more appropriate and accepted solutions and are likely to be more successful than approaches that are brought from the external environment with no local context.
- Biodiversity and social impacts can be achieved together and also increase the overall success of EbA.
- Increasing market value of ecosystem services contributes to reducing poverty
- Use of local species and materials for restoration of the ecosystems and control of erosions and floods gives better results
- Water availability can be increased through wetland restoration, water source protection, community pond protection, waterhole establishment and water harvesting
- Use of bioengineering gives sustainable results for rural road construction and slope stabilisation
- There is a need to conduct rapid vulnerability assessment before designing adaptation interventions
- Agroforestry, ecotourism and value-chain development should be integral component of climate resilient building
- Leadership of women and socially excluded groups need to be promoted in natural resource management
- Livelihood diversification enhances community resilience.

250. The feasibility of these best practices was verified with the communities and stakeholders at various levels. These practices may need some modification and/or adjustments with respect to specific location and sub-watershed. This will be further verified during annual planning at the time of project implementation.

E. LOGICAL FRAMEWORK

This section refers to the project/programme's logical framework in accordance with the GCF's Performance Measurement Frameworks under the Results Management Framework to which the project/programme contributes as a whole, including in respect of any co-financing.

E.1. Paradigm shift objectives

Please select the appropriated expected result. For cross-cutting proposals, tick both.

☐ Shift to low-emission sustainable development pathways

☒ Increased climate resilient sustainable development

E.2. Core indicator targets

Provide specific numerical values for the GCF core indicators to be achieved by the project/programme. Methodologies for the calculations should be provided. This should be consistent with the information provided in section A.

E.2.1. Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (mitigation only)	Annual	28, 710 t CO_2 eq
	Lifetime	200, 974 (7 years), 847, 250 (20 years) t CO_2 eq
E.2.2. Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)	(a) Total project financing	_____ Choose an item.
	(b) Requested GCF amount	_____ Choose an item.
	(c) Expected lifetime emission reductions	_____ t CO_2eq
	(d) Estimated cost per t CO_2eq (d = a / c)	_____ Choose an item. **/ t CO_2eq**
	(e) Estimated GCF cost per t CO_2eq removed (e = b / c)	_____ Choose an item. **/ t CO_2eq**
E.2.3. Expected volume of finance to be leveraged by the proposed project/programme as a result of the Fund's financing, disaggregated by public and private sources (mitigation only)	(f) Total finance leveraged	_____ Choose an item.
	(g) Public source co-financed	_____ Choose an item.
	(h) Private source finance leveraged	_____ Choose an item.
	(i) Total Leverage ratio (i = f / b)	_____
	(j) Public source co-financing ratio (j = g / b)	_____
	(k) Private source leverage ratio (k = h / b)	_____
E.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)	Direct	Total beneficiary = 198,016 households (16.88% of the total households in the GRB) Total beneficiary population = 833,647 (541,870 women and 291,776 men)
	Indirect	Total beneficiary = 250,000 households (21.32% of the total households in the GRB) Total beneficiary population = 1,052,500 (631,500 women and 421,000 men)
	For a multi-country proposal, indicate the aggregate amount here and provide the data per country in annex 17.	
E.2.5. Number of beneficiaries relative to total population (disaggregated by sex)	Direct	3.14% of the population of Nepal (2.05% female)
	Indirect	3.97% of the population of Nepal (2.38% female)
	For a multi-country proposal, leave blank and provide the data per country in annex 17.	

E.3. Fund-level impacts

251. Table 11 presents the appropriate impact(s) to be reported for the project. The key result areas and corresponding indicators are selected from GCF RMF and PMFs as appropriate.

Table 11: Fund level impacts and performance indicators

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions	A1.1 Change in expected losses of lives and economic assets (US$) due to the impact of extreme climate-related disasters	• Field survey reports • Provincial government statistics • Project reports, • National disaster management reports	Per annum loss and damage due to climate related disaster events in GRB: • 71 persons killed • 24 persons missing • 423 houses damaged • US$ 1,578 million property loss	Per annum loss and damage due to climate related disaster events in GRB reduced to less than: • 35 persons killed • 12 persons missing • 210 houses damaged • US$ 0.75million property loss	Per annum loss and damage due to climate related disaster events in GRB reduced to less than: • 7 persons killed • 3 persons missing • 42 houses damaged US$ 0.115 million property loss	• The project is able to support communities with coping strategies for enhancing their resilience to future climate related disasters • Communities remain engaged with the process of enhancing resilience • Indigenous peoples, Dalits, women and other vulnerable groups are specifically targeted
	A1.2 Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options (including fisheries, agriculture, tourism, etc.)	• Field survey reports • Provincial government statistics • Project reports,	0 women 0 men 0 total	27,820 Women 14,980 Men 42,800 total	128,700 Women 69,300 Men 198,000 total	• Communities are willing to support and participate in project implementation • Diversified, climate resilient livelihood options continue beyond the project period
A2.0 Increased resilience of health and well-being, and food and water security	A2.2 Number of food secure households (in areas/periods at risk of climate change impacts)	• Field survey reports • Provincial government statistics • National food security monitoring reports • Nepal Demographic Health Survey Reports	Food secure households: 114,057 Mildly food insecure households: 35,643 Moderately food insecure households: 36,435 Severely food insecure	Food secure households: 132,016 Mildly food insecure households: 32,000 Moderately food insecure households: 30,000 Severely food insecure households: 4,000	Food secure households: 151,516 Mildly food insecure households: 25,000 Moderately food insecure households: 20,000 Severely food insecure households: 1,500	• Communities are willing to support and participate in project implementation • Micronutrients are addressed as part of the food security interventions

			households: 11,881[76],[77]			
A4.0 Improved resilience of ecosystems and ecosystem services	A4.1 Coverage/scale of ecosystems protected and stregnthened in response to climate variability and change	• Field survey reports • Provincial government statistics • Project reports,	0 ha of forest 0 ha of grassland 0 wetland ecosystems	43,000 ha of climate resilient forest 3,000 ha of climate resilient grassland 40 climate resilient wetland ecosystems	101,000 ha of climate resilient ha of forest 8, 000 ha of climate resilient grassland 83 climate resilient wetland ecosystems	• There is on-going support for the conservation and management of the ecosystems and communities are willing to participate

E.4. Fund-level outcomes

252. Table 12 presents the appropriate outcome(s) to be reported for the project. The key expected outcomes and corresponding indicators are selected from GCF RMF and PMFs as appropriate.

Table 12: Fund level outcomes and performance indicators

Expected Outcomes	**Indicator**	**Means of Verification (MoV)**	**Baseline**	**Target**		**Assumptions**
				Mid-term)	Final	
A5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development	A5.1 Institutional and regulatory systems that improve incentives for climate resilience and their effective implementation	• Field survey reports • Provincial government statistics • Project reports,	National average of 31 percent budget allocated for climate change	In terms of allocating development budget in relationship with climate change[78] 55 in level 1 45 in level 2 30 in level 3 21 in level 4	In terms of allocating development budget in relationship with climate change 10 in level 1 20 in level 2 45 in level 3 76 in level 4	• Municipalities include CC adaptation in their long-term plan

[76] Nepal Demographic and Health Survey 2011 of the Ministry of Health and Population has classified food insecurity into four categories and has used the changes in the percentage of households under each category in the subsequent years to monitor the food insecurity. The four categories are: 1. Food secure: These households do not experience any food insecurity (access) conditions and rarely worry about such conditions; 2. Mildly food insecure: These households worry about not having enough food sometimes or often, and/or are unable to eat preferred foods, and/or eat a more monotonous diet than desired and/or some foods considered undesirable but do so only rarely. They do not cut back on quantity or experience any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating).; 3. Moderately food insecure: These households sacrifice quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or have rarely or sometimes started to cut back on quantity by reducing the size of meals or number of meals. However, they do not experience any of the three most severe conditions.; 4. Severely food insecure: These households have cut back on meal size or number of meals often and/or have experienced any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even if only rarely. In other words, any household that has experienced one of these three conditions even once in the last 12 months is considered severely food insecure.

[77] Nepal Demographic and Health Survey 2016 of the Ministry of Health and Population has presented a current scenario of the above four categories.

[78] The current baseline could be established only at 31% budget being allocated for climate change activities. See for detail. Nepal's Citizens Climate Budget. UNDP 2018. Taking this allocation as a baseline, we have grouped municipalities and targets fixed accordingly. The municipalities are grouped in four groups in allocating development budget in relationship with climate change adaptation as follows: Level1 - Number of municipalities allocating less than 25 percent of their development budget in relationship to climate change adaptation; Level 2 - Number of municipalities allocating 25-50 percent of their development budget in relationship to climate change adaptation; Level 3 - Number of municipalities allocating 50-75 percent of their development budget in relationship to climate change adaptation; Level 4 - Number of municipalities allocating more than 75 percent of their development budget in relationship to climate change adaptation

A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	A7.1 Use by vulnerable households, communities, businesses and public-sector services of Fund-supported tools instruments, strategies and activities to respond to climate change and variability	• Field survey reports • Provincial government statistics • Project reports,	0 (bioengineering tool/technique not used at present)	1,000 ha forest land, 300 ha wetlands, 200 ha grasslands; and 150 conservation ponds made resilient[79] through bioengineering tool/techniques	• 2,500 ha forest land, 750 ha wetlands, 500 ha grasslands; and 320 conservation ponds made resilient[80] through bioengineering tool/techniques	• Targeted households and communities effectively use the Fund-supported tools, instruments, strategies and activities for improved response to climate change and variability
A8.0 Strengthened awareness of climate threats and risk-reduction processes	A8.1 Number of males and females made aware of climate threats and related appropriate responses	Project reports,	Baseline is to be determined during project initiation, Project Year	150,000 people including 52,000 men and 98,000 women, 30 Dalits and 50,000 IPs	300,000 people including 104,000 men, 196,000 women, 60,000 Dalits 100,000 IPs	• General public schools and training centres will include CC issues in their regular training programmes on CC adaptation
M9.0 Improved management of land or forest areas contributing to emissions reductions	M9.1 Hectares of land or forests under improved and effective management that contributes to CO2 emission reductions	• Annual reports • Provincial government statistics • Project reports • Maps/ Remote Sensing	0 (no commercial agroforestry promoted yet)	300 ha of land under agroforestry	500 ha of land under agroforestry	• Agroforestry options will be requiring less labour than traditional crop farming • Local governments will collaborate in involving farmers in resilient farming
			0	45,000 ha of forest, 3,000 ha of grassland and 75 freshwater sites under improved management 600 ha of community forest land and	90,000 ha of forest, 6,000 ha of grassland and 150 freshwater sites under improved management 1000 ha of community	• There is a willingness to undertake a significant change in the way that forests are managed

[79] Made resilient here implies restoration of agricultural lands impacted by landslides and floods and will be measured in terms number of hectares

[80] Made resilient here implies restoration of agricultural lands impacted by landslides and floods and will be measured in terms number of hectares

				60 ha of community grassland	forest land and 100 ha of community grassland	
			To be established during Project Year 1	33,039 tCO_2 e sequestration	200,974 tCO_2 e sequestration	Community as well as local government will be willing to participate in the project targeted plantation activity

E.5. Project/programme performance indicators

253. Table 13 presents the project level outcome and output performance indicators for progress reporting during implementation.

Table 13: Project Performance indicators

Expected Results at the project level	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
Component 1: Community resilience						
	Change in area planted under climate resilient crop varieties	Field survey report Local government reports Annual report	0 (no area under flood tolerant rainy season crop varieties; and drought tolerant winter crop varieties)	19,256 ha of flood prone paddy land (which is 25% of the total paddy land in the GRB) is under the cultivation of flood tolerant paddy variety 33,375 ha of drought prone wheat land (which is 25% of the total wheat land in the GRB) under drought tolerant wheat variety in cultivation	38, 512 ha of flood prone paddy land (which is 50% of the total paddy land in the GRB) is under the cultivation of flood tolerant paddy variety 66, 750 ha of drought prone wheat land (which is 50% of the total wheat land in the GRB) under drought tolerant wheat variety in cultivation	• Regional Agriculture Research Centre Lumle will collaborate in the varietal identification and water use Efficient technology • Agroforesry options will be requiring less labour than traditional crop farming
	Increase in per capita income from upgraded value chain options	Field survey report Local government reports Annual report	The overall per capita income in the basin is NRs 49,362[81].	Overall per capita income increases to NRs 59,234 (20% increase from the baseline)	Overall per capita income increases to NRs 64,170 (30% increase from the baseline)	• Communities will take part in income generating activities
	Increase in agricultural cropping intensity	Project annual progress report	180%[82]	200%	220%	There is willingness of the Irrigation

[81] NPC, 2014: Nepal Human Development Report 2014. National Planning Commission, Kathmandu, Nepal

[82] Rajendra Uprety. 2016. Agricultural intensification in Nepal, with particular reference to systems of rice intensification. PhD Thesis - Wageningen University. 2016

		Local government reports Provincial government reports				Water User Groups to adopt climate resilient agricultural practices
Component 2: Ecosystem resilience						
	Hectares of community forests under improved management	Field survey report Local government reports Annual report	0	500 hectares of area in 25 community forests made resilient [83] from the impact of invasive species	1, 000 hectares of area in 50 community forests made resilient[84] from the impact of invasive species	• Agroforestry options will be requiring less labour than traditional crop farming • Local governments will collaborate in involving farmers in resilient farming
	Change in water infiltration rate	Annual report Local government reports Provincial government reports	Baseline to be established In PY1	2% increase in water infiltration rate .	5% increase in water infiltration rate	Rainfall pattern will not drastically change as a result of climate change impacts
	Improvement in recharge of restored wetlands	Annual report Local government reports Provincial government reports	Baseline to be established In PY1	10% improvement in recharge	20% improvement in recharge	Willingness of user groups to accept nature based solutions
	Improvement in soil fertility resulting from applying nature based solutions	Annual report Local government reports Provincial government reports	Baseline to be established In PY1	10% improvement in soil fertility	20% improvement in soil fertility	Willingness of user groups to accept nature based solutions
Component 3: Climate governance						
	Increase in area of community managed spring-shed and water source protection	Local government reports Provincial government reports	Baseline to be established In PY1	20% increase in area	30% increase in area	• Local community groups have already realised the importance

[83] Being resilient implies area being protected from invasive species, and this will be measured through the community forest inventory

[84] Being resilient implies area being protected from invasive species, and this will be measured through the community forest inventory

		Annual project progress reports Climate budgeting by government bodies Analysis of relevant policies, legislation, and regulations				of their involvement in community based mechanism for planning, restoration and monitoring of ecosystems from climate change adaptation perspective
	No. of integrated sub-riverine watershed and water resource management plans	Project annual progress report Local government reports Provincial government reports	There is no existing baseline since no such sub-riverine watershed and water resource management plans exist	12 plans and SOPs	21 plans and SOPs	Local governments are interested in preparing and implementing integrated sub-riverine watershed and water resource management plans
	Incorporation of ecosystem based approaches in integrated development plans	Project annual progress report Local government reports Provincial government reports	0	25 integrated development plans incorporate ecosystem based approaches	50 integrated development plans incorporate ecosystem based approaches	Local governments are willing to incorporate ecosystem based adaptation approaches in to their integrated development plans

E.6. Activities

254. Table 14 presents the description of activities with their sub-activities and deliverables These deliverables are reflected in the implementation timetable (Annex 5).

Activity	Description	Sub-activities	Deliverables
1.1.1: Establish climate resilient agroforestry practices	The declining productivity of rainfed agriculture due to reduced water availability stemming from climate change, youths from rural areas are migrating abroad abandoning agricultural land affecting negatively to food security. Agroforestry, that requires less labour, has been found as a best bet option to cope with reducing water availability and bring back abandoned agricultural land to production. The project will establish agroforestry (of multipurpose trees such as Lapsi (*Cheropondrias oxilaris*, Bel (*Aegle marmalos*)); bamboos, Ipil-Ipil, Bauhinia, etc in 500 ha in vulnerable area.	• Conduct site level feasibility study and identify appropriate agroforestry option • Develop training manual and provide training to the selected farmers • Demonstration of climate resilient agroforestry • Plantation and maintenance of the agroforestry of selected option (5000 Households in 2 ropani/HH • Develop value chain on the selected agroforestry option and support to establish appropriate agroforestry enterprise	• Agroforestry farm established in 500 hectares • Two climate resilient agroforestry-based value-chain developed
1.1.2: Construct small nature-based structures (bamboo check dams, plantations of grass and trees)	This proposal is built on the learning of the Ecosystem based Adaptation Approach (of BMUB supported Mountain EbA Project and the Eco DRR project (ecosystem protecting infrastructure and communities – EPIC), restoration of agricultural lands damaged by landslides and floods will be done by using bioengineering approach. The approach constitutes the use of bamboo check-dams, plantation of grass and trees. The approach will be focussed in 15 highly and very highly vulnerable locations in GRB,the need of which was identified during consultation. The project aims to develop a finer detail ste specific plan at the time of implementation.	• Identify the exact site in consultation with the community for constructing nature-based structures • Selection and designing/modification of appropriate bioengineering technology • Bond protection dams by bamboo and local materials • Diversion channels • Construction of check-dams and plantation of grass and trees in participation of community	• Nature based structures constructed at 60 sites • Bamboo protection dams constructed at seven sites • Check-dams constructed in 15 locations
1.1.3: Promote drought and flood tolerant varieties (at least one drought tolerant variety (wheat) for hill districts and one flood tolerant (paddy) variety for Terai and plain areas in the Chure and Inner Terai.	To mitigate the impact of flooding and longer inundation of the rice field in Terai and Inner Terai, a flood tolerant rice variety will be identified, introduced and farmers' capacity to adapt to tolerant variety will be enhanced through training and demonstration of a variety in Nawalparasi and Chitwan districts and some plain areas of Makawanpur and Kaski and Lamjung. The area under rice in Nawalparasi and Chitwan in 2014 was 77,025 ha and production was 297,330 mt. Even 50% area being affected by flood and longer-term inundation, adoption of flood tolerant variety of rice will protect at least 148,665 mt of rice contributing to achieve food security during catastrophic flood and	• Identify flood tolerant variety of paddy and drought tolerant variety of wheat in collaboration with Nepal Agriculture Research Council (NARC) • In collaboration with the local government and communities, confirm the intervention area and farmers in flood and drought prone sites • Transfer flood and drought tolerant farming technology through potential farmers' training • Conduction of extension programme to reach-out to all potential farmers	• 148,665 ha under flood tolerant variety of paddy and other summer crop, and 66,749 ha under drought tolerant variety of wheat and other winter crop

	inundation of rice field mainly in Nawalparasi and Chitwan. Likewise, to mitigate the impact of longer term drought, a drought tolerant variety of wheat will be identified, introduced and farmers' capacity enhanced to cultivate in the hills, it will protect at least 50% of wheat area (50% of 133,498ha) being affected by longer drought and secure production of 177,966 mt (50% of 355,933 mt) in GRB districts.	• Operationalise farming of tolerant varieties and link the farmers with markets of rice produced with sustainable standards	
1.2.1: Reconcile Water Model for Entire Gandaki River Basin	From the several sub-basin level models, a separate model will be reconciled for the entire GRB. The hydrological model will be used to analyse water balance, hydrological flows, etc. and further validate the extrapolated data using the soil and water assessment tool (SWAT model) based expertise from IWMI and the Nepal Department of Hydrology and Meteorology (see Annex 2b).	• Reconcile a water model for the entire GRB.	• Water model reconciled
1.2.2: Construct small scale irrigation systems through improved community participation	In areas where water availability is decreasing but there is still a possibility of promoting surface irrigation through gravity flow, farmers will be supported to establish small scale irrigation schemes by diverting stream water in consultation with the community in the downstream. This community owned system will be engineered, implemented and managed by the community themselves. About 300 (100 small, and 200 micro) such schemes will be supported. Each small irrigation will cover at least 100 households and 100 ropani land (one ropani per family). Some micro schemes will be also supported in some small isolated vulnerable pockets. For each micro scheme, there should be at least 20 families involved with at least 20 ropani land (1 ropani = 500 sq.m.). Modelling of outflow and inflows will be done to ensure a water balance although outflows are expected to be minimal	• Identify vulnerable site and irrigation scheme type • Form Irrigation Water Users' Group (IWUG) with group mobilisation by-laws for construction, operation, and maintenance of the scheme to be constructed • Build capacity of Water Users' Group on operation and maintenance of the scheme during and after the project • Carry-out environmental assessment as required by the environmental regulations • Efficient water use technology provided to water user groups • Construct the scheme and handover to the user's group	• 10,000 HHs under small and 4,000 HHs under micro schemes • 100 small and 200 micro schemes in operation
1.2.3: Establish water harvesting systems (conservation ponds, water reservoirs) and promote water use efficiency through drip and sprinkle irrigation, and use of waste water	Though the intensity of monsoon rain has increased, the monsoon season is shortened. As a result, the water scarcity in the post monsoon period and in winter has further increased in the recent past. Construction of conservation ponds, water reservoirs and collection of rainwater during the monsoons for supply in the post monsoon period and winter has already been a proven possibility through small scale researches in Nepal. In this project, this possibility will be scaled-out to various places with such feasibility. Water harvesting system during monsoon will not only make water available for the post monsoon and winter but also	• Select and/or modify the water harvesting and storage technology in participation of community • Form Water Users' Group with group mobilisation by-laws for construction, operation, and maintenance of the scheme to be constructed • Build capacity of Water Users' Group on operation and maintenance of the scheme during and after the project • Carry-out environmental assessment as required by the environmental regulations	• 310 Scheme in operation

	recharge underground water sources and enhance microbial in the soil to keep soil fertility maintained. In addition, such conservation ponds will also reduce the velocity of surface run-off waters and soil erosion. It also makes water available for wildlife. This project will promote such schemes at least in 310 vulnerable locations (benefiting 7,750 hectares) that will be identified by a local level consultant with the support from the local government officials and the potential water users' groups.	• Construct the scheme and handover to the user's group	
1.2.4: Improve water availability through construction and maintenance of water holes in community grasslands	Most of the pasturelands in GRB are in rain shadow area. Increasing temperature and drought due to climatic condition has made these areas further dry. Water management and water hole construction is deemed necessary for livestock farming. Waterholes in the pastureland will be created by channelling water from permanent water sources to ensure the water availability for livestock in their managed grazing area. Construction of such water holes will be supported in 30 vulnerable community grasslands, the site specific finer detail of which will be identified by the local consultant with the support from the local government and communities at the time of implementation..	• Select and/or modify detail site and the water hole technology in participation of community • Form Waterhole Management Group (WMG) with group mobilisation by-laws for construction, operation, and maintenance of the holes to be constructed • Workout with the livestock herders on the number of required and feasible number of waterholes • Construct the waterholes and handover to the user's group	• Waterholes in operation in 30 sites
2.1.1: Construct climate resilient green belts to protect forests, wetlands, grasslands and conservation ponds from landslides and floods	Construct green belts by applying bio-engineered structures and some engineering work (check dams) combined with nature based solution such as planting grasses, bamboos in gullies will be constructed to channel the water flow properly during the monsoon and halt further expansion of gullies. Increasing erratic and heavy rainfall due the climate change (that have been experiencing) in the GRB causing more flash floods which damages nearby agricultural field by depositing gravel and sand. Plantation in 8 km green belts along river and stream banks will help to protect the river bank from erosion hence check the degradation of land quality. Enrichment plantation and reforestation activities will be conducted in such degraded forest sites to reduce water runoff thereby preventing surface erosion protecting 2,500 ha forest land, 750 ha wetlands, 500 ha grasslands; and 320 conservation ponds.	• Identify the exact site in consultation with the community for constructing green belts • Selection and designing/modification of appropriate bioengineering technology (see Annex 2a for detail) for constructing green belt • Construction of check-dams and plantation of grass and trees in participation of community in 15 locations for agricultural lands; • Train river through green belts • Run-off diversion channels through green belts • Landslide treatment forest • Plant in 8 km distance along the river and stream banks	• 15 check dams • Three rivers trained • 100 run-off diversion channels • 100 slide prone location • Plantation in 8 km • Enrichment plantation in 2,500 ha forest land, 750 ha wetlands, 500 ha grasslands; and 320 conservation ponds. • Check dams in 700 gullies

	As most of the project sites are either in high mountains or in mid hills, there are numerous gullies formed by erratic rainfall. Some engineering work (check dams) combined with nature based solution such as planting grasses, bamboos in gullies will be constructed to channel the water flow properly during the monsoon and halt further expansion of gullies in 700 sites.	• Identify specific site in degraded forest in forest land, grassland, wetland, and conservation ponds and conduct enrichment plantation • Identify specific site with the community and construct engineered check-dams combined with NBS in the gullies at 700 sites	
2.1.2: Apply bio-engineering techniques to provide structural support for erosion prone rural forest roads.	In order to prevent road-slides and soil erosion due to intense rain during monsoon, plantations will be done along such slide prone rural roads. This is important to maintain the rural accessibility during and after the extreme monsoon rains. Plantation along 70 km rural road will be carried-out by the project. The other required structures will be designed at finer scale during implementation.	• Identify the exact slide prone rural road and location for construction of structural support in consultation with the community • Selection and designing/modification of appropriate bioengineering technology (see Annex 2a for detail) for providing structural support • Identification of species for plantation and planting along 70 km slide prone rural road	• 70 km plantation • Manual on invasive species management
2.1.3: Restore the biodiversity of vulnerable forests and grassland ecosystems through the removal and (productive) reuse of invasive species	It has been experienced that invasive plant species, including some alien, are coming up in the GRB, with the changed patters of climate. The growth of invasive species, Mikania micrantha, Lantana and Parthenium in the low land terrestrial habitat and water hyacinth in wetlands have already threatened biodiversity and has been a conservation challenge in Chitwan National Park (low land of GRB) and its buffer zone. Similarly, agricultural as well as public lands in mid hills are invaded by Ageratina adenophora, and Ageratum conzoides. Likewise, the understory of forests was reported as being heavily invaded by Ageratina adenophora, and local species such as Lyonia ovalifolia (Angeri), Hadeunyeu, Katre kanda, and Bilaune. In order to restore biodiversity, these invasive species will be managed by uprooting and reusing in value added production in 50 community forests (1000 ha on an average 20 ha per CF), and 10 community grasslands (100 ha @ 10 ha per CG). The private sector adding value to the invasive species removed from the community forests will get regular supply of their raw material for charring and briquette making while community forest members get incentive to control invasive species in their forests.	• Invaded community forests and community grasslands identification, invasive species management manual including calendar of operation will be prepared • Community forest and community grassland members will be trained on the technique and timing of uprooting invasive species from the community forests • Members will be trained on reusing process such as composting or biocharring • Invasive species managed	• Biodiversity restored from the impact of invasive species in 50 community forests (1000 ha), and 10 community grasslands (100 ha)
2.2.1: Create new SOP's that support future interventions on agroforestry, forestry,	A standard operating procedure (SOP) describing a set of step-by-step instructions will be created and compiled by the project to help the communities and	• Identify and confirm with the community the type of climate resilient interventions on agroforestry, forestry, wetlands and	• SOP formulated and about 100 local government

wetlands and grasslands management	the local government to carry out complex routine operations in designing and implementation of activities for the management of agroforestry, forestry, wetlands and grasslands. It aims to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with existing regulations.	grassland management that needs SOP • Create SOPs and comply with the newly designed interventions • Capacitate the local government and other stakeholders on the SOPs	and stakeholders trained
2.2.2: Provide technical training to enhance capacity of CFUGs and NGOs in vulnerable communities in maintaining climate resilient ecosystems	Beneficiary Community Forest User Groups (CFUGs) and NGOs will be trained to capacitate them to operate and maintain climate resilient ecosystems. CFUGs and NGOs will be made able to use an extensive and dynamic menu of EbA options and propose projects that meet their specific requirements for enhancing their forest ecosystem resilient. This practice will promote community buy-in, make effective use of traditional knowledge and contribute to the long-term sustainability of the project interventions. Why not also add in some innovation here that connects continued invasive species control with benefits to communities such as that tried by Conservation International in which conservation agreements are signed with community groups for getting them premiums from private sector companies/offtakers for their agricultural produce in exchange for them taking on resilience measures and maintaining the removal of invasive species, which will keep coming into the project areas even after the project is over otherwise.	• In collaboration with the local government, CFUG district Chapter and District NGO Federation, identify specific vulnerable communities involved in maintaining ecosystems • Develop technical modality of TOT for maintaining climate resilient ecosystems • Conduct TOT for CFUG and NGO members and prepare a critical mass who can make use of traditional knowledge with science based climate resilient ecosystem management • Conduct awareness raising orientation to newly elected local government representatives • Conduct forest fire management trainings • Mainstream the model in the local government's plans, programmes and policies	• TOT model and manual • 22 TOTs (19 district level and 3 province level) conducted • 151 trainings (one in each local government) conducted • 19 district level trainings completed • Models mainstreamed in 50 local government plans and policies
3.1.1: Technical assistance for community based planning and development of site specific management structure and tools for conservation and restoration of ecosystem	This is a technical assistance for the development of planning and management structures and tools for conservation and restoration of ecosystem. These are community-based tools for site-specific EbA measures in the target landscapes. The specific type of assistance will be decided in consultation with the local government during field implementation of the project.	• Identification of technical assistance need and modality of operationalise the technical assistance • Planning and development of site specific management structure and tools for conservation and restoration of ecosystem • Piloting of developed structure and tools • Hi-Tech nurseries supported to be climate resilient	• Conservation and restoration structure and tools • Structure and tools tested in 15 sites • Three nurseries (one in mountain, one in hill and one in Terai) made resilient
3.1.2: Develop community-based monitoring and maintenance programmes through the local and regional management structures to maintain restored ecosystems	For sustainable results, the restored ecosystems need doable monitoring and maintenance programme that is operated by the community. The operation will be supervised by the local and provincial level government structures. For example: monitoring of climate parameters and extreme events; rate of drying out of water sources, human health hazards, monitoring of climate indicator species such as pyrethrum, dengue fly, citrus	• Develop community-based monitoring and maintenance programmes • Piloting of the programmes • Maintenance of the monitoring records at local and regional levels	• Programme tested and replicated in 15 communities • Records in place

	psylla, distribution shift of flora and fauna, etc.		
3.1.3: Training and supporting communities in clusters to track the restoration and conservation of the ecosystems in target areas	The projected future scenarios of climate change have reflected that climatic conditions in Nepal will worsen, with more frequent extreme events occurring and impacting farmers. Nevertheless, as studies have shown, farmers' capacity will be enhanced in the GRB through the operationalisation of farmer field schools ensuring at least one demonstration site and training centre in each of 19 districts. It will increase the level of confidence of farmers in adopting the right measures to mitigate the potential impacts of predicted climate change and thus making the farming community more resilient to the challenges posed by climate change. There will be 50 such field schools run by the project. This model will be mainstreamed in the plans and policies of the local government and replicated by the local government in other municipalities gradually. In addition, communities will be also trained and supported to manage climate refugees and human wildlife conflicts in the target area.	• In collaboration with the local government and community, identify specific site for operating field schools • Develop modality of school operation • Operate the schools by involving local government • Mainstream the field school model in the local government's plans, programmes and policies • Facilitate functional corridors and climate refugee management • Develop modality of climate induced human wildlife conflict management and train CFUG members	• 50 Field schools in operation • Models mainstreamed in at least 50 local government plans • Three corridors • 19 TOTs conducted (one in each district)
3.1.4: Link upstream and downstream vulnerable communities through climate informed management of spring-shed and water source protection	Flooding, inundation and sedimentation during monsoon and too low or no water during winter are problems in the downstream many of which could be reduced through changed or improved land use practices in the upstream. In order to make the upstream aware of such problems and follow joint planning, vulnerable communities in the downstream will be linked to the communities in the upstream through management of spring-shed, land use practices and water source protection in upstream. This support will be provided in 30 vulnerable sites. The specific sites with finer detail will be identified during implementation with the support from the local government and community members.	• On the basis of local government's priority, establish 30 sites that need linking of communities in the upstream and downstream • Develop a cooperation modality and MOU between the communities. • Introduce the PES mechanism • Mainstream the model into local government's plans and policies	• 30 Sites confirmed • 30 MOU developed and agreed • PES mechanism in place in 30 sites
3.2.1: Prepare River Basin Management framework with integrated sub-riverine watershed and water resource management plans for the GRB that includes forests, grasslands, fisheries, wetlands and agro-ecosystems.	In view of the recently changed governance system of the country to federal system, the project has taken an approach of supporting local governments to prepare sub-watershed level plans, provincial governments with watershed level plans and federal governments with river-basin level plans. At each level, the plans will be integrating forest, grassland, wetland and agro-ecosystems.	• Prepare federal level Integrated Gandaki River Basin management plan • Prepare integrated watershed management plan for seven watersheds at province level • Prepare integrated sub-watershed level management plan at municipal level for all 19 districts • Prepare SOPs for all integrated plans	• One GRB Management Plan • 7 Watershed Management Plans • 19 Sub-watershed management Plans

	There will be 27 such plans prepared with the support from this project.	• Mainstream the global, regional and national level best practices and lessons learnt in the management plans to create enabling environment for the implementation of such plans	
3.2.2: Develop a framework for assessment for economic valuation of ecosystem and ecosystems services to support planning	For the sustainability of the project results, provincial and local government will need to allocate budget for the maintenance of the restored ecosystems and continued flow of ecosystem services. In order to persuade the finance people to allocate sufficient budget, there is a need to show the value of ecosystem services in return. Hence, this project will develop an acceptable method of valuing ecosystem services in GRB, that can be understood and used by local, provincial as well as Federal Government in the entire country. The valuation method tried by EbA project will be further reviewed and revised to make it generic for the GRB as ultimately for the country.	• Develop a methodology including a user's manual • Pilot the methodology • Mainstream the framework in provincial and local government government's plans and policies	• One Manual on ecosystem valuation and accounting • Methodology tested at 15 locations • Framework mainstreamed in 151 local governments
3.2.3: Policy Development for local governments to incorporate climate change adaptation and EbA into their Integrated Development Plan	Integrated Development Plan (IDP) is a required document for all local governments, while Local Adaptation Plans for Action (LAPA) is optional and can be prepared as they go along. As the local governments are in the process of preparing IDPs, incorporation of climate change and environmental issues might be overlooked. They will need to have information and capacity to be able to do so, and this is an unforeseen cost to government to incorporate climate change issues in IDPs. The project aims to support 50 local governments and generate information and create local government capacity to do so such that it will be replicated by the Provincial Governments of the GRB and then gradually by other local bodies too of other provinces.	• Develop policy for integrating climate change adaptation and EbA into their Integrated Development Plan • Pilot the policy • •	• One Policy document • Policy tested and EbA measures for climate change adaptation incorporated in 50 IDPs
3.3.1: Establish National and GRB level system for collating data and information on global best practices, lessons learnt, evidence from the field and scientific knowledge on ecosystem- and community-based approaches to adaptation.	A system for collating data and information on global and regional best practices, lessons learnt and evidence based scientific knowledge is not well-developed in Nepal. Location specific such system is more particularly lacking in GRB. There will be one GRB level and three ecological zone level (mountain, hill and Terai) systems established by the project at four centres (at Mustang for Mountain, at Pokhara for hill, Kaski; and at Chitwan for Terai ecozone). The Kaski one will serve at GRB level as well. The system will include MIS on climate change impacts and adaptation measures, climate change adaptation programmes in operation in GRB, market information on adaptation technology and tools,	• Conduct a study to identify appropriate system for data collation at national and GRB levels • Identify appropriate location for system establishment • Establish the system • Avail data to the Environment Protection and Climate Change Council (EPCCC) and Parliamentary Committees for Agriculture, Cooperatives and natural Resources.	• one System model • System piloted and tested in 15 locations

	information on access to finance for adaptation, etc.		
3.3.2: Capacitating three Provincial government in creating and operationalising an online platform and associated mobile phone application to facilitate access to information in the Decision-Support Tool for decision-makers, communities, NGOs/CBOs and other relevant stakeholders, as well as to allow them to upload data for tracking changes in ecological and socio-economic vulnerability to climate change in the GRB.	Tracking changes in ecological and socio-economic vulnerability to climate change is important for decision making and selecting appropriate adaptation measure. However, there should be a system where-in communities, NGOs/CBOs and other relevant stakeholders can upload the data for tracking changes in ecological and socio-economic vulnerability and accessing such information for coping with the potential disaster in the short-term and adopting adaptation measures in the longer-term. The project will support the development of an online platform that will be managed by the PCU of Province 4	• Identify model and develop apps • Pilot the model/apps • Mainstream the model/apps in the government's regular programme • Sharing data with NGOs/CBOs and other relevant stakeholders, as well as to allow them to upload data for tracking changes in ecological and socio-economic vulnerability to climate change	• One Apps model identified and developed • Model piloted in 15 sites • Operational data sharing and information uploading mechanism in place
3.3.3: Generation of the baselines data and mapping of vulnerability, hazard sites, ecosystem services and facilities in communities based on risk profiles.	Except 18 communities in Panchase (Kaski district) and Chilime (Rasuwa district) under EbA project baselines data and mapping of vulnerability, hazard sites, ecosystem services and facilities are not available. This information is must for communities to prepare their adaptation plan. Project aims to support 50 communities to adapt to the best option and be well-prepared to cope with potential disasters such as drought, torrential rain, landslides and floods. This will be done in close collaboration with the local bodies and the generated information will be maintained by them for sustainability reasons.	• Generate baseline data and map of vulnerability, hazard sites, ecosystem services and facilities in communities based on risk profiles. • Develop methodology for maintenance of such data • Mainstream the methodology in the local government's plans • Mapping of vulnerability ecosystems and hazardous sites • Document baseline information on climate change adaptation knowledge	• Baseline data • Methodology mainstreamed in 50 communities • Maps at least of 151 local governments
3.3.4: Establish climate change adaptation knowledge sharing and learning structures within key clusters to facilitate climate resilient planning and management	The proposed climate change knowledge sharing and learning structure is organised around knowledge-based management initiatives, more specifically through adaptation knowledge sharing. The knowledge management structure facilitates the development of a “knowledge culture” within key clusters by first supporting the decision making of knowledge workers through collaboration in planning and management, and by facilitating the exchange of tacit knowledge through interaction with other knowledge clusters in the GRB. This project will support to establish such structure at three locations as in 3.3.1.	• Identify the type of knowledge sharing and learning structure	• Three knowledge sharing structures in operation • Institutional set-up in place - 1 federal, 3 provincial and 151 local

E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, 1 page)

Monitoring and reporting mechanism

255. As IUCN is the accredited entity for the project, the project will comply with the IUCN Monitoring and Evaluation Policy (April 2015). IUCN recognises that the purposes of monitoring and evaluation (M&E) include: Learning and Improvement, Results Based Management, Accountability, and Evidence-Based Management.

256. The IUCN Monitoring and Evaluation Policy requires monitoring to comply with the so-called SMART criteria; (S)pecific, (M)easurable, (A)chievable, (R)elevant, and (T)ime-bound. In addition, the Policy recommends that evaluations explore the five major criteria, namely relevance, effectiveness, efficiency, impact, and sustainability, recognising that not all of the criteria need to be systematically reviewed in all cases.

257. Performance measurement will focus on two aspects of intervention: 1) inputs delivered leading to tangible results, and 2) delivery processes resulting in best practice models for climate change adaptation that can be replicated and scaled-up. Achievement on input delivery and output results will be monitored regularly through semi-annual and annual review, planning processes, and outcome and impact level results will be evaluated in the 4th and 7th years of the project.

Performance measurement framework (PMF)

258. For monitoring, reporting and evaluation, a PMF has been specially designed for this project (see Annex 11 for details). The PMF consists of seven distinct mechanisms (see Figure 4), each with distinct operational features and time frames. These include:

<u>Activity level:</u>

1) Monitoring beneficiary selection and community participation by communities
2) Monitoring implementation and input delivery on the ground by Field Execution Office
3) Monitoring Coordination with government in implementation by Project Coordination Unit (PCUs) of the Provincial Governments

<u>Output level</u>

4) Monitoring Project Outputs by the Project management Unit (PMU)

<u>Outcome level</u>

5) Monitoring Project Level Outcomes by MOFE/PSC as an Executing Agency
6) Monitoring Fund Level Outcomes by IUCN/Accredited Entity (IA)

<u>Impact level</u>

7) Monitoring Fund Level Impacts by Green Climate Fund

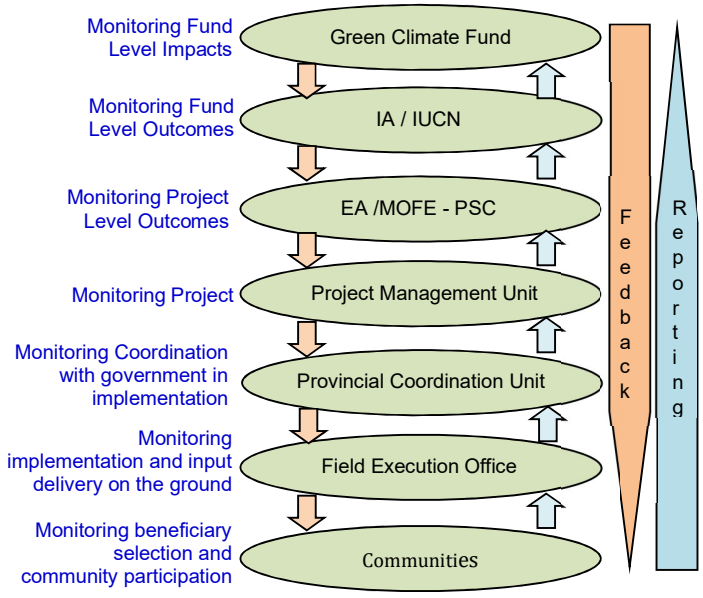

Figure 4: Monitoring and reporting channels and feedback mechanisms

Stakeholder involvement in monitoring and evaluation

259. The project executing consortium partners and local bodies will need to play key roles in executing elements of the PMF for which they have direct control and input.

260. Accordingly, the project will need to strengthen the development of M&E capacities of stakeholders and local bodies as an integral part of the PMF. Collaborating stakeholders and local bodies will be encouraged to actively participate with the Project Management Committee (PMC) including a) attending periodic joint monitoring of project activities; b) attending and participating in Semi-annual and Annual Review and Planning meetings; and c) Working closely with the PMC in developing Annual Work Plan.

261. Stakeholders will be engaged actively in the PMF through planning meetings and workshops, and by collecting information, monitoring and reporting on project performance indicators. For details on stakeholder engagement in monitoring, see Annex 7b.

Monitoring implementation challenges and risks

262. The implementation challenges and risks will be monitored by the PMU and the project stakeholders through on-going monitoring activities and semi-annual and annual review and planning and reported on in regular basis. Measures for addressing the reported challenges and risks will be presented to the PSC meeting with mitigating measures for approval and inclusion in the annual programme of the following year.

Financial monitoring

263. Financial monitoring and reporting will be as per Figure 3 in Section B.4. The PMU will be responsible for the accounting and reporting of all funds disbursed to executing entities.

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures (max. 3 pages)

264. Even though the AE, IUCN has not undertaken due diligence assessments of activities against the specific risks of project activities, however it has at the institutional level designed a number of processes/measures to address the risks of money laundering and countering the financing of terrorism and other prohibitive acts.

265. Firstly, IUCN's due diligence assessment process of implementing partners at the proposal development stage as well as pre-contracting (other than sovereign governments that are exempted since they are signatories to international agreements on stopping money laundering and terrorist finance or other prohibited financing), enables IUCN to gain a comprehensive understanding of the ownership of the organisations and its main funding sources, and also identifies whether or not these organisations have processes in place to minimize the risks of fraud and money-laundering. If otherwise, IUCN can decide to not engage with the concerned implementing partner.

266. Secondly, relevant check is at the stage of contracting where for each and every contract with an implementing partner, IUCN needs a signoff form to be completed and duly signed off. The sign-off form in its specific section on procurement process specifically queries whether the following assessments have been carried out which include relevant assessments:

- Due Diligence and Financial Capacity Assessment
- Financial background checks
- Business Risk & Opportunity Assessment
- UN Security Council Sanctions List
- EU Sanctions map
- US Office of Foreign Assets Control Sanctions List

267. Thirdly, the standard contract templates IUCN uses for GEF/GCF executing partners contains a number of requirements designed to minimize the risk of money laundering and fraud. Specifically, by requiring that the contracted funds are ring-fenced within the recipient organization, kept in a dedicated, exclusive bank account, and reported on with regards to very specific activities/deliverables and budget lines.

268. The procedures mentioned above are applicable to all recipient organisations such as grantees, implementing partners, etc. irrespective of the size of budget, scopes/objectives of their activities and timeframe of implementation.

269. The budget/activity costs submitted by recipient organisations need to be in compliance with relevant IUCN policies, procedures and guidelines and will be reviewed by the AE prior to approval

270. The AE has been implementing the above policies not just for reducing risks and minimizing uncertainties but more so for, prevention of unlawful activities such as money laundering, terrorist financing and/or other prohibited activities.

271. The AE has rigorous policies, procedures and guidelines determining contracting of both vendor/supplier/implementing partner/grantees as well as recruiting individual consultants and professionals. There are specifically developed templates and procedures to assess various aspects including general and background checks, finance review, legal review, HR review, communications, internal control systems, etc. of the to be contracted party/individual.

272. The due diligence assessment includes analysis of the administrative and structural processes of the contractor. This includes review of governance and management structure of the recipient organisation, review of articles/memorandum, review of the policies of the organization, scrutiny of Legal Status (Tax, Renew, Clearances), review of internal control systems, etc. In addition, in terms of financial processes, there is review of the accounting standards, financing analysis of audit reports, capital structure, verification of source of income and utilization of the expenditure, audit processes etc.

273. Besides, entities are bound to follow the rules and regulations of the government along with the AE's policies. In the project, the counterpart is obligated to comprehend and comply with both nature of rules and regulations, which lessen the chance of financial frauds as well as secure the utilization of the funds at the activity level. For reference, AE's framework of policy is attached herewith.

274. This project builds on the successes of the ecosystem-based adaptation initiatives taken by the government through various projects (particularly by the IUCN, UNDP and UNEP's joint Mountain EbA, IUCN and IIED led EcoDRR (EPIC), PPCR and SPCR) that promote climate change adaptation and/or protection and restoration of ecosystem. Many potential risks associated with project implementation are also mitigated through the MOFE's (EA) well established relationship with the executing entities (PCU, NTNC and IUCN Nepal), and the due diligence already carried out, which has ensured sound financial and programme monitoring systems as well as strong technical oversight.

275. The proposal has duly designed the gender action plan, carried out extensive stakeholder consultations and complied with requirements of the IUCN Environmental and Social Management System (ESMS). As such the process provided for inclusion and social equality and for risk management related to social and environmental risks. See Section G1 for more details.
276. During proposal development an analysis of technical, operational and other external risks has been carried out. The main risk factors are described in the tables below together with identified mitigation measures. The measures proposed to mitigate these risks in the proposal are drawn strongly from the existing EbA initiatives taken by the government. Building on the lessons learnt and consultation with the government, project will invest in community mobilisation as well as capacity building for communities and officials to promote engagement and appropriate refinement of project interventions during the implementation phase.
277. Risk mitigation measures including capacity building, strengthening institutions, regulatory frameworks and monitoring mechanisms will be incorporated. Table below provides an indication of the risks and the mitigation measures and controls that may be required to manage the risk. The risks rated as “high” will require particular attention during project implementation in order to ensure that the project objectives will be met.

Selected Risk, Description and Mitigations Measures

Selected Risk Factor 1:

Category	Probability	Impact
Technical and operational	Medium	Medium

Description

Constraints to implementing reforms necessary for addressing climate change risk - there are certain acts and regulations to be amended under the new constitution to harmonise the authorities and responsibilities between the three tiers of government in the new federal system. It might take some time to get such regulations and operational guidelines in place.

Mitigation Measure(s)

- Climate adaptation will be strengthened through the project supporting policy development and awareness-raising.
- The project will identify and support champions at all levels, from the public and private sectors.

Selected Risk Factor 2:

Category	Probability	Impact
Technical and operational	Medium	Medium

Description

Insufficient capacity to support emerging implementation challenges - the newly formed provincial and local governments are not yet fully equipped with required human resources and technical capacity.

Mitigation Measure(s)

- Capacity building to enable a range of institutions at different scales to effectively coordinate and engage
- Collaborative engagement with local communities
- The provision of continuous support and monitoring by the project team will provide rapid response support to emerging implementation challenges

Selected Risk Factor 3:

Category	Probability	Impact
Credit	Medium	Medium

Description

Securing government and private sector investment in EbA - government sector budget allocation is more on direct impact infrastructure construction with short-term plans; and the level of awareness in the private sector on climate change adaptation is at a rudimentary stage due to which it has not seen scope in investing in climate change adaptation.

Mitigation Measure(s)

- The involvement of partners will assist in mitigating this risk.
- Financing tools and risk mitigation instruments that demonstrate the potential for climate adaptation to yield a high return on investment will be developed and deployed

Selected Risk Factor 4:		
Category	Probability	Impact
Credit	Medium	Low
Description		
Resource capture - capacity development activities and small infrastructure construction activities may be influenced by the elites.		
Mitigation Measure(s)		
• Project will work directly with the communities and local government by following public hearing procedure • IUCN financial regulations will be followed strictly • IUCN procurement plan will be followed strictly		
Selected Risk Factor 5:		
Category	Probability	Impact
Prohibited practices	Medium	Medium
Description		
Risk related to conflict between ethnic groups - Conflict between communities and governments (local, provincial) over land use and natural resource planning may hamper implementation. Instability, conflict, and/or tensions may then constrain project implementation.		
Mitigation Measure(s)		
Continue collaboration and consultation with communities and provincial and local governments through equitable sharing platforms, maintaining objectivity. Provide recommendations based on evidence to all parties so that discussions are on an equal footing. These mitigation measures will reduce the probability of the risk occurring to low.		
Selected Risk Factor 6:		
Category	Probability	Impact
Other	Medium	Medium
Description		
Stakeholders may adopt corruption and nepotism, threatening the good governance practices.		
Mitigation Measure(s)		
Promote participatory and equitable practices. Project will conduct due diligence at all levels, ensures transparent fiscal mechanisms, and adheres to international procurement standards adopted and implemented by IUCN. These mitigation measures will reduce the probability of the risk occurring to low.		
Selected Risk Factor 7:		
Category	Probability	Impact
Other	Medium	Medium
Description		
Risks of invasive behaviour when introducing native species from different altitude and/or from neighbouring climate zones to test performance		
Mitigation Measure(s)		
The project will undertake specific risk assessment guided by the IUCN Guideline on Species Introduction85 and only proceed if the Department of Agriculture, Department of Forest and Soil Conservation has cleared the introduction.		
Selected Risk Factor 8:		
Category	Probability	Impact
Other	Medium	Medium
Description		
Standard operating procedure (SOP) may restrict access restriction to natural resource availability to local communities		
Mitigation Measure(s)		

[85] Available at https://portals.iucn.org/library/efiles/documents/2013-009.pdf

This activity might trigger the Standard in situations where restrictions are needed and put in place by entities that are not the users themselves.

Selected Risk Factor 9:

Category	Probability	Impact
Other	Medium	Medium

Description

The monitoring system might include elements of enforcement of access restrictions and hence affect vulnerable groups

Mitigation Measure(s)

There is a likelihood that this triggers the Standard, in particular as the system is monitored by the local and provincial level government structures

G. GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages

278. The project aims to improve climate resilience of vulnerable communities and ecosystems in the Gandaki River Basin and is expected to have environmental and social impacts that are overall highly beneficial. It is considered unlikely that the activities carried out under this project will have major adverse environmental and/or social risks and/or impacts. However, there is a possibility that some activities might involve minor or moderate environmental or social risks given the sensitivity of the receiving environment, the complex demographic and social context and the vulnerability of social groups, including indigenous groups as well as Dalits. Yet, it is not possible at this stage to ascertain environmental and social risks or impacts potentially caused by project activities because the exact sites for field interventions have not been identified and because decisions on specific interventions will be determined by the specific vulnerability of locations within each cluster. While the project document has established generic types of interventions, the exact nature of the field interventions (in the further referred to as sub-projects) will only be known after the sites have been selected and the environmental and social baseline of those sites has been established in year one of the project's operation based on focused consultations with relevant stakeholders, and in particular with women, indigenous groups, Dalits and disadvantaged groups.

279. The proposal has completed the screening procedures of the ESMS and has been classified as moderate risk project (category B). The full ESMS Screening Report including the discussion on potential environmental and social risks is attached (Annex 6a).

280. Annex 6b presents the Environmental and Social Management Framework (ESMF) that has been developed as a result of not yet knowing the sites and the resulting lack of baseline and of technical details of the concrete field interventions (sub-projects). The ESMF describes the process how sub-projects will be screened on environmental and social risks, how adherence to the four ESMS Standards[86] is ensured and how risks are avoided, or if avoidance is not possible, are minimised and/or compensated for.

281. The ESMF also includes an indicative list of potential adverse environmental and social risks based on the generic activities proposed for the interventions (Table 13). While not knowing the exact site of the field interventions and their specific details, it is expected that adverse social and environmental risks of such interventions can be determined with a reasonable degree of certainty, will be limited in scale and none any of them are expected to be irreversible. Table 13 also provides generic mitigations measures for the identified impacts; generally, the impacts are expected to be addressed either by applying standard best practice or readily-available mitigation measures together with an appropriate level of stakeholder engagement.

Capacity of the EEs to implement the ESMF

282. As presented in Section B.4, the MOFE is the EE. The MOFE is mandated as a focal by the government regarding environmental issues. The MOFE has two separate divisions looking after the environment and climate change. Environment and Biodiversity Division looks after the environment related matters; and the Climate Change Management Division looks after the climate related matters. These Divisions are led by Joint Secretary level technicians. Both the Divisions are fully equipped with institutional and legal frameworks and human resources. The Ministry has a standard monitoring and supervision schedules for each division and follows a standard

[86] IUCN ESMF four standards include: Standard on Involuntary Resettlement and Access Restriction, Standard on Indigenous Peoples, Standard on Cultural Heritage, and Standard on Biodiversity Conservation and Sustainable Use of Natural Resources.

reporting format. In addition, the MOFE has two departments related with this proposal. Department of Forests and Soil Conservation (DOFSC) looks after the forests and water (including river basins); and the Department of Environment (DOE) looks after the environmental issues. The DOFSC has its district level offices in all districts and two Soil Conservation Centers in each Province. The DOE has Environmental Inspectors for each district. Monitoring and supervision reports are posted in the MOFE's website - www.mofe.gov.np under the headings - reports, and news and notices.

283. In order to ensure compliance with the IUCN ESMS procedures, principles and standards and as such also with the GCF Policy on Environmental and Social Safeguards and the Performance Standards of the International Finance Corporation (IFC), the ESMF foresees capacity building measures for staff of the executing entity as well as for other relevant stakeholders.

Grievance Redress Mechanism (GRM)

284. The IUCN ESMS has a grievance mechanism that addresses stakeholders' complaints related to issues where IUCN projects have failed to respect ESMS principles, standards, and procedures. The aim of the grievance mechanism is to provide people or communities fearing or suffering adverse impacts from a project with the assurance that they will be heard and assisted in a timely manner. The institution-wide mechanism has been complemented by a project-level mechanism described in the ESMF to ensure its cultural appropriateness, effectiveness and accessibility. To ensure the access to full information about the Project to the stakeholders, local communities and concerned parties, the project will publish fact sheets in Nepali as well as other major languages, organise orientation to the local communities, involve stakeholders in ESMP monitoring, appoint ombudsperson in case of conflict, and install grievance box at the project site. Each grievance case will be reviewed to understand whether a potential breach of ESMS principles, standards or procedures has occurred. A process identifies the root causes of the subject of the grievance and ensures that issues of non-compliance with the ESMS are corrected; some cases may also require remedial actions to redress potential harm resulting from a failure to respect the ESMS provisions or preventive measures to avoid repetition of non- compliance. Further information on the overarching institution-wider Grievance Mechanism is available here.

ESMF implementation arrangement

285. The overall supervision of the ESMF implementation is with IUCN's regional ESMS Officer in accordance to IUCN's role as implementing and supervising agency. The procedures for identifying, assessing and managing risks have been described in Annex 6b: Chapter 8, roles and responsibilities are summarised in the Table 14. Addition to the supervision of ESMF implementation the regional ESMS Officer will also provide Training on ESMS for all projects staff and relevant project partners during the inception phase of the project.

G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

Stakeholder consultation on gender assessment

286. There was a detailed stakeholder analysis carried-out during the preparation of this proposal (see Annex 7a - Institutional and Stakeholder Analysis). Based on their roles, responsibilities, strengths, and capacity building needs, stakeholders were characterised as civil society, government, private sector, and international organisations involved in EbA. Such stakeholders were consulted in all 19 districts of the GRB by a group of multi sector experts including a gender expert and field facilitators for site specific firsthand information collection. Detail consultation process and outcomes is presented in Annex 7b. There were 1,421 people consulted during the feasibility study of this proposal. Out of them, 54.5% were women and 45.6% were men. Of the 939 community members consulted, 65% were women and 35% were men. Efforts were made to include people from all spheres of life in the community. The consultation for gender consideration was focused on a) provisions in major regulations, b) gender equality and inclusion in the socio-economic sector, c) policy and institutional environment towards a gender equity-based approach to EbA, d) institutional entry-points for mainstreaming gender equality/equity in climate change adaptation, and a capacity development needs for gender mainstreaming.

Summary of Gender assessment

287. Vulnerability in GRB continues to be highly correlated with gender, caste, ethnicity, regional identity, and geographic location and poverty[87]. In most communities, women are more vulnerable to impacts of climate change and natural disasters because of gender based discrimination, ingrained patriarchal socio economic and political system and their lower socio-economic status in comparison to men. When a woman's family is poor, comes from a Dalit group, they usually settle near the landslide prone river banks, and are thus more vulnerable.

288. Stakeholder consultation and review of secondary information for gender consideration for this proposal is summarised as follows:

[87] World Bank and DFID. 2006. Unequal Citizens: Gender, Caste, and Ethnic Exclusion in Nepal, Summary. Kathmandu.

- There is lack of sex-disaggregated data on the impact of climate change
- Women's representation in climate change policy, leadership and decision making is negligible
- There is inequitable division of labour, women bear heavy unpaid workload especially in rural area
- Due to high illiteracy (62%88) or low level of education, women's access to information on climate risks and mitigation measures is absent or poor
- Climate induced disaster is increasing the vulnerability of girls and young women in terms of safety and security, increasing risk of human trafficking and exploitative work in entertainment sector
- Women-headed households, that have increased following male out-migration, are particularly vulnerable to climate induced disasters with the loss of family support networks. Girls and even young boys are vulnerable to school drop outs
- High out-migration of youth/ men after climate induced disaster leads to a lack of labor, increase in underutilised farm land/ fallow land and land degradation, mostly in rural areas. It has implications on food security, health and nutrition of women and children.
- Restricted access to markets due to gender norms, restrict women's capacity to livelihood diversification which is a key for adaptation
- High out-migration of youth/ men after climate induced disaster and poverty leads to a lack of labor, increase in underutilised farm land/ fallow land and land degradation, mostly in rural areas implicating on food security, health and nutrition of women and children

289. Based on the assessment results, the following areas are identified for consideration in designing the gender action plan. a) Create sex disaggregated climate change data and information, b) Build gender equity, climate change awareness and adaptation capacity, c) Promote climate resilient livelihood, d) opportunities for women and youth through diversification, e) Engage Women in climate change planning, implementation and monitoring, and f) Manage and disseminate women friendly climate change information.

Summary of gender action plan (GAP)

290. Based on the gender assessment and areas identified for consideration, the Gender Action Plan (GAP) was designed. The GAP was designed in consultation with women's organisations – particularly women's self-help groups and CBOs and NGOs working in climate change adaptation in GRB. Ultimately the GAP has considerable focus on ensuring that women are integrally involved in project implementation and are beneficiaries of on-the-ground activities. The interventions have been designed to be culturally and socially acceptable to women.

291. All project outcome and output areas have been reinforced by gender specific activities to ensure that gender issues are duly addressed. The GAP targets women-headed households to increase their incomes and reduce their vulnerability to climate change. Women and women's groups will be actively engaged by project facilitators – both to take advantage of livelihood opportunities and to strengthen their capacity to participate confidently in community and project structures. The project aims for 65% of women to be direct beneficiaries and 60% of women to be indirect beneficiaries.

292. The Action Plan is based on the project's gender-responsive approach which is in alignment with national plans and policies including climate change, forest, agriculture and water, all of which promote increased participation of women and disadvantaged groups in decision-making and access to benefits. For example: equal pay between men and women for the same activities is not evident in the GRB. In the GRB, for rural road maintenance work, men are found being paid NRs.900 per day while women were paid NRs.700. When hiring staff or contracting workers, the project will ensure equal pay for the same work irrespective of gender, caste or any other factors. Budgetary allowances to support payment for pregnancy leave, and childcare will be ensured for project staff and women involved in training courses during the project.

Gender Action Plan implementation arrangement

293. The project will give priority to gender and social inclusion in all relevant activities. There are 38 activities designed over seven output areas and USD 163,914 allocated to implement the Climate Change and Gender Action Plan (Annex 8a). . The overall supervision of the GAP implementation is with the IUCN Nepal's Senior Climate Change and Gender Officer and Gender Officer of NTNC. IUCN Nepal and NTNC have proven success in meaningful engagement of women and disadvantaged people for ecosystem management and community development. Their implementation approach will be extensively used to safeguard gender and social issues in the project. Mother's groups, women-led community forest user groups, farmer groups, saving and credit groups, and enterprises will be prioritised to ensure benefits for women.

G.3. Financial management and procurement (max. 500 words, approximately 1 page)

[88] Population Census 2011. Central Bureau of Statistics, Kathmandu

Financial Management

294. *Financial monitoring*: As a GCF accredited entity (AE), the financial management and procurement of this project will be guided by IUCN financial rules available here and the Finance manual available here. IUCN financial policies include financial reporting templates and formats that are in line with internationally recognised reporting standards. This includes bank policy and procedures, operational policy, record management, monitoring and internal controls.
295. *Financial accounting and auditing*: USD will be used in Project accounts. Oanda.com website's exchange rate will be used for conversion of local currency (NRs) if required; this process is already setup in the accounting software. GCF grant funds for the project will be held within a nominated IUCN bank account. Funds will be disbursed as per the requirement as set out in the procurement plan and budget of the project document.
296. The project will be audited in accordance with IUCN policies and procedures according to the current audit policies, IUCN will appoint the Chartered Accountant, registered in the Association of Chartered Accountants of Nepal (ACAN). In IUCN, scheduled audits are performed during the project cycle as per IUCN assurance/audit plans, based on IUCN's guidelines. A scheduled audit is used to determine whether the funds were used for the appropriate purpose and in accordance with the work plan. A scheduled audit can consist of a financial audit or an internal control audit.
297. IUCN provides a variety of assurance activities which will comprise (but not be limited to): Periodic on-site reviews of the financial records (by qualified IUCN Staff or third party service providers, independent auditors or chartered accountants), and Programmatic monitoring of activities, which provides evidence regarding the state of project implementation and use of the GCF resources; and
298. Project accounts will be audited annually by an external Chartered Accountants, registered in the Association of Chattered Accounts of Nepal (ACAN). Special audits will be undertaken, by Chartered Accountants, registered in ACAN or by qualified IUCN Staff, to monitor executing partner activities.
299. *Disbursement structure and method*: As an AE, IUCN HQs/Asia regional office will be receiving the GCF fund for the project. The AE will sign a contract with the Executing Entity (MOFE/PMU). MOFE/PMU will contract out the work packages to PCUs in Provinces 3, 4, and 5; NTNC and IUCN Nepal. See Section B.4, Figure 2).
300. *Financial reports*: The project will produce at least the following types of reports: a) Financial Reports – Project Sources and Uses of Funds, Use of Funds by Project Activity, Project Balance Sheet, Project Cash Forecast, Annual Financial Statement (Audited); and b) Project Progress Report - Outcome/Output Monitoring Reports.

Procurement

301. *Procurement implementation arrangement*: As an AE, UCN will use its own procurement policy. IUCN has well-designed procurement policy namely - Policy and Procedure on Procurement of Goods and Services February 2018: Version 1.3" available here. In addition, the project will comply with relevant guidelines and directions of the Government of Nepal.
302. *Procurement risk assessment and minimisation*: IUCN seeks to minimise environmental impacts in all its procurement decisions. Suppliers and Proposals are evaluated on both environmental and commercial factors, including: capacity and expertise; whole-life-cost; quality; fit to requirements; environmental policy, impact and risk management approach; financial health of the supplier; and previous experience and reputation. Purchases are evaluated using a variety of criteria clearly detailed in each Request for Proposals (RfP). Only the criteria and their relative importance as stated in the RfP will be used to evaluate Proposals.
303. *Procurement procedures for the Project:* IUCN will ensure that all procurement by the Executing Entity and partners is in line with IUCN's procurement policy. All procurement of goods and services will be made with complete impartiality based solely on the merits of supplier proposals, including such considerations as cost, quality, environmental impact, delivery, and payment terms.
304. Procurement contracts shall be entered only with responsible suppliers who are reputable, well established and are suppliers of the type of goods and services being purchased in the normal course of their business. Parts of the project area are relatively remote and require transport on sealed and unsealed roads that are often in poor condition. The most suitable vehicles for project are dual cab four-wheel drive diesels and motorcycles.
305. The project budget includes funds for; stationery and consumables, furniture, common equipment and renovation, field equipment for staff, biodiversity monitoring equipment, computer equipment, electronics, power generation and security, vehicle running costs, vehicle hire (for periods before vehicles can be purchased and for occasions when large numbers of people need transport e.g. training courses), telecommunications, project marketing and up-scaling materials, teaching materials, training materials, utilities and miscellaneous items.
306. *Maintaining an inventory of procured goods*: Purchased goods (other than consumables) will be registered in IUCN's standard inventory record. An updated record will be maintained about the status and whereabouts of the purchased goods. The inventory will be verified on a yearly basis and a report prepared.

307. *Procurement reports*: Project will produce a) Procurement Management Report - Procurement Process Monitoring Report (Goods, Services, and Consultants). In addition, an updated inventorying report will be made available to the GCF/IA (IUCN) at the end of each year.

Detail Procurement Plan for this project is presented in Annex 10.

G.4. Disclosure of funding proposal

Note: The Information Disclosure Policy (IDP) provides that the GCF will apply a presumption in favour of disclosure for all information and documents relating to the GCF and its funding activities. Under the IDP, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Information provided in confidence is one of the exceptions, but this exception should not be applied broadly to an entire document if the document contains specific, segregable portions that can be disclosed without prejudice or harm.

Indicate below whether or not the funding proposal includes confidential information.

☒ No confidential information: The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

☐ With confidential information: The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:

- full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity's disclosure policy, and
- redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

H. ANNEXES

H.1. Mandatory annexes

☒	Annex 1	NDA No-objection letter(s) **(template provided)**
☒	Annex 2a	Gandaki Nepal Feasibility Study revised final 20 May 2020
☒	Annex 2b	Gandaki Nepal Reconciliation of Water Model for Entire Gandaki River Basin 20 May 2020
☒	Annex 2c	Evapotranspiration Calculation – Methods and Data
☒	Annex 3a	Gandaki Nepal Financial and Economic Analysis revised 20 May 2020
	Annex 3b	Gandaki Nepal Financial and Economic Analysis in Excel Sheet 20 May 2020
☒	Annex 4	Gandaki Nepal Revised budget in new template 20 May 2020
☒	Annex 5	Gandaki Nepal Implementation timetable revised 20 May 2020
☒	Annex 6a	ESMF Nepal - main document -revised 20 May 2020
☒	Annex 6b	E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3): **(ESS disclosure template provided)** ☐ Environmental and Social Impact Assessment (ESIA) or ☐ Environmental and Social Management Plan (ESMP) or ☒ Environmental and Social Management System (ESMS) ☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People's Plan, Land Acquisition Plan, etc.) ☒ Others Environmental and Social Monitoring Framework (ESMF)
☒	Annex 7a	Institutional and Stakeholder Analysis 20 May 2020
☒	Annex 7b	Stakeholder Engagement Plan 20 May 2020
☒	Annex 8a	Gender assessment and project/programme-level action plan
☒	Annex 8b	Gender Assessment Report
☒	Annex 8c	Social Inclusion Assessment Report
☒	Annex 9	Legal due diligence (regulation, taxation and insurance)
☒	Annex 10	Procurement plan
☒	Annex 11	Monitoring and evaluation plans
☐	Annex 12	AE fee request
☒	Annex 13a	Gandaki Nepal Co-financing commitment letters from GON, NTNC and IUCN
☒	Annex 13b	Gandaki Nepal Co-financing Government Commitment letter from GON in GEF Template
☒	Annex 14	Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule

H.2. Other annexes as applicable

☐	Annex 15	Evidence of internal approval **(template provided)**
☒	Annex 16	Map(s) indicating the location of proposed interventions
☐	Annex 17	Multi-country project/programme information **(template provided)**
☐	Annex 18	Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project

☐	Annex 19	Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
☐	Annex 20	First level AML/CFT (KYC) assessment
☒	Annex 21	Operations manual (Operations and maintenance)
☒	Annex 22a	Gandaki Nepal AE's response to GCF Technical Review
☒	Annex 22b	Gandaki Nepal AE's response to GCF Climate Investment Committee review
☒	Annex 22c	AE's Response to iTAP Reviewer's Comments Received on 3 Jan 2020
☒	Annex 22d	AE's Response to Independent Technical Advisory Panel's assessment 20 May 2020
☒	Annex 22e	AE's Response to iTAP Comments of 13 Feb in the format provided by GCF 3 Apr
☒	Annex 22f	AE's Response to iTAP additional questions to IUCN Nepal received on 29 April 2020
☒	Annex 22g	AE's Response to GCF Secretariat comments received on 13 May 2020
☒	Annex 23	Executing Entity's Capacity Assessment
☒	Annex 24	Carbon storage calculation 11 December 2019
☒	Annex 25	Gandaki Nepal IUCN's Due Diligence Procedure 30 March 2020
☒	Annex 26	Co-financing arrangement

* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.

No-objection letter issued by the national designated authority(ies) or focal point(s)

Annex 1: No Objection Letter from NDA Nepal

Government of Nepal
MINISTRY OF FINANCE

Government of Nepal
Ministry of Finance
Singhadurbar, Kathmandu

SINGHADURBAR
KATHMANDU, NEPAL

Ref: IECCD/2810

To: The Green Climate Fund ("GCF")

Kathmandu, 22 June 2018

Re: Funding proposal for the GCF by IUCN regarding Improving climate resilience of vulnerable communities and ecosystems in the Gandaki River Basin, Nepal

Dear Madam, Sir,

We refer to the project **Improving climate resilience of vulnerable communities and ecosystems in the Gandaki River Basin, Nepal** in Nepal as included in the funding proposal submitted by International Union for Conservation of Nature (IUCN) to us on 15 June 2018.

The undersigned is the duly authorized representative of Ministry of Finance, the National Designated Authority of Nepal.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project as included in the funding proposal.

By communicating our no-objection, it is implied that:

(a) The government of Nepal has no-objection to the project as included in the funding proposal;
(b) The project as included in the funding proposal is in conformity with Nepal's national priorities, strategies and plans;
(c) In accordance with the GCF's environmental and social safeguards, the project as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed.

We acknowledge that this letter will be made publicly available on the GCF website.

Kind regards,

Shreekrishna Nepal
Joint Secretary & Division Chief

CC

Ministry of Forest and Environment

International Union for Conservation of Nature (IUCN)

Tel: Minister 4211809, Secretary 4211332, International Economic Cooperation Coordination Division 4211372, 4211867
Fax No. 4211164, 4211165, Website: www.mof.gov.np

Environmental and social safeguards report form pursuant to para. 17 of the IDP

Basic project or programme information	
Project or programme title	Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal
Existence of subproject(s) to be identified after GCF Board approval	Yes
Sector (public or private)	Public
Accredited entity	International Union for Conservation of Nature (IUCN)
Environmental and social safeguards (ESS) category	Category B
Location – specific location(s) of project or target country or location(s) of programme	The project will implement field interventions in the seven sub-basins of the Gandaki River Basin in Nepal.
Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	Wednesday, May 20, 2020
Language(s) of disclosure	English (full ESMF) and Nepali (non-technical summary)
Explanation on language	English is spoken at the technical level and Nepali is the official language of Nepal. In order to ensure that local stakeholders who do not speak English, have equal access to relevant information, a non-technical summary of the Environmental and Social Management Framework (ESMF) has been translated into Nepali.
Link to disclosure	English: ESMF Main Document https://www.iucn.org/files/environmental-and-social-management-framework-esmf-gandaki-river-basin-nepal-gcf ESMF Appendix https://www.iucn.org/files/esmf-appendix-gandaki-river-basin-nepal-gcf Nepali: ESMF non-technical summary https://www.iucn.org/files/esmf-non-technical-summary-nepali-gandaki-river-basin-nepal-gcf
Other link(s)	IUCN website: https://www.iucn.org/gcf-iucn-partnership/projects Ministry of Forests and Environment (MOFE) website: English: ESMF Main Document http://mofe.gov.np/noticedetail/316/2020/96457431 ESMF Appendix http://mofe.gov.np/noticedetail/315/2020/69033091

	Nepali: ESMF non-technical summary http://mofe.gov.np/noticedetail/314/2020/99948999
Remarks	An ESIA consistent with the requirements for a Category B project is contained in the Environmental and Social Management Framework (ESMF).
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	Wednesday, May 20, 2020
Language(s) of disclosure	English (full ESMF) and Nepali (non-technical summary)
Explanation on language	English is spoken at the technical level and Nepali is the official language of Nepal. In order to ensure that local stakeholders who do not speak English, have equal access to relevant information, a non-technical summary of the Environmental and Social Management Framework (ESMF) has been translated into Nepali.
Link to disclosure	English: ESMF Main Document https://www.iucn.org/files/environmental-and-social-management-framework-esmf-gandaki-river-basin-nepal-gcf ESMF Appendix https://www.iucn.org/files/esmf-appendix-gandaki-river-basin-nepal-gcf Nepali: ESMF non-technical summary https://www.iucn.org/files/esmf-non-technical-summary-nepali-gandaki-river-basin-nepal-gcf
Other link(s)	IUCN website: https://www.iucn.org/gcf-iucn-partnership/projects MOFE website: English: ESMF Main Document http://mofe.gov.np/noticedetail/316/2020/96457431 ESMF Appendix http://mofe.gov.np/noticedetail/315/2020/69033091 Nepali: ESMF non-technical summary http://mofe.gov.np/noticedetail/314/2020/99948999
Remarks	An ESMP consistent with the requirements for a Category B project is contained in the Environmental and Social Management Framework (ESMF).
Environmental and Social Management (ESMS) (if applicable)	
Date of disclosure on accredited entity's website	N/A

Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), IPP Framework (if applicable)	
Description of report/disclosure on accredited entity's website	Wednesday, May 20, 2020
Language(s) of disclosure	English (full ESMF), and Nepali (non-technical summary)
Explanation on language	English is spoken at the technical level and Nepali is the official language in Nepal. In order to ensure that local stakeholders who do not speak English, have equal access to relevant information, a non-technical summary of the Environmental and Social Management Framework (ESMF) has been translated into Nepali.
Link to disclosure	English: ESMF Main Document https://www.iucn.org/files/environmental-and-social-management-framework-esmf-gandaki-river-basin-nepal-gcf ESMF Appendix https://www.iucn.org/files/esmf-appendix-gandaki-river-basin-nepal-gcf Nepali: ESMF non-technical summary https://www.iucn.org/files/esmf-non-technical-summary-nepali-gandaki-river-basin-nepal-gcf
Other link(s)	IUCN website: https://www.iucn.org/gcf-iucn-partnership/projects MOFE website: English: ESMF Main Document http://mofe.gov.np/noticedetail/316/2020/96457431 ESMF Appendix http://mofe.gov.np/noticedetail/315/2020/69033091 Nepali: ESMF non-technical summary http://mofe.gov.np/noticedetail/314/2020/99948999
Remarks	An Indigenous People Planning Framework is contained in page 45 of the ESMF (chapter 6.2).
Disclosure in locations convenient to affected peoples (stakeholders)	
Date	Wednesday, May 20, 2020

Place	The Nepali version of the non-technical summary of the ESMF is made available for the stakeholders at the Provincial Ministries of Bagmati, Gandaki and Province 5; Divisional Forest Offices and Soil Conservation Centres of Gandaki River Basin and Municipalities and Rural municipalities in the project intervention sites.
Date of Board meeting in which the FP is intended to be considered	
Date of accredited entity's Board meeting	Monday, June 22, 2020
Date of GCF's Board meeting	Tuesday, June 23, 2020

Note: This form was prepared by the accredited entity stated above.

Secretariat's assessment of FP131

Proposal name:	Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal
Accredited entity:	International Union for Conservation of Nature (IUCN)
Country/(ies):	Nepal
Project/programme size:	Small

I. Overall assessment of the Secretariat

1. The funding proposal is presented to the Board for consideration with the following remarks:

Strengths	Points of caution
Builds upon previous interventions (Global Environment Facility, United Nations Development Programme, United States Agency for International Development, Asian Development Bank, etc) to bridge particular existing gaps to enhance adaptive capacity and reduce vulnerability to climate change	Some environmental risks, in particular glacier lake outburst floods, are not fully incorporated/considered in the project
Close alignment with existing national policies, including nationally determined contribution, nationally appropriate mitigation actions, national adaptation plans, and national adaptation programme of action, in addition to sector strategies, including forest, REDD-plus, conservation, environmental and energy	Governance capacity at the provincial and local levels are not fully developed. While the project will address this issue, this may impact long-term sustainability
Targets the most vulnerable communities and people, including marginalized ethnic groups, Dalits and disabled people, as well as women	

2. The Board may wish to consider approving this funding proposal with the terms and conditions listed in the term sheet and addendum XVIII, titled "List of proposed conditions and recommendations", respectively.

II. Summary of the Secretariat's assessment

2.1 Project background

3. The "Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin in Nepal" project aims to sustainably mainstream and operationalize a river-basin approach for watershed management in order to make climate vulnerable

communities and ecosystems in the Gandaki River Basin (GRB) more resilient. The interventions are focused on:

(a) Enhancing the resilience of the livelihoods of vulnerable communities in the GRB region through climate resilient agroforestry and livelihoods improvement actions so they can adapt to climate change impacts, as well as improved irrigation systems and water source management to increase water availability and water use efficiency;

(b) Strengthening the climate resilience of ecosystems through community-based ecosystem management, including wetlands, grasslands and conservation ponds, in addition to invasive species management, and, furthermore, providing technical trainings to communities; and

(c) Providing institutional support to develop appropriate governance mechanisms, baseline data and information systems at the national and GRB level, and knowledge sharing and learning structures to facilitate climate resilient planning and management.

4. The project area covers the GRB, which contains 6 protected areas (out of 20 in Nepal), one United Nations Educational, Scientific and Cultural Organization World Heritage Site, and 3 Ramsar sites (out of 10 in Nepal). Due to a larger number of habitats created by the extreme altitudinal variation, the GRB has high biological diversity, with 14 plants listed in the appendices of the Convention on International Trade in Endangered Species.

5. Increases in temperature and shifts in the intensity of seasonal rainfall are observed to accelerate the intensity and frequency of extreme events, such as floods, landslides, and droughts that are erosive. A decrease in snowfall and overall drier winters in upper elevations leads to decreased water flow in the GRB and its tributaries by increasing frequency, duration and intensity of droughts and decreasing water availability in spring for agricultural and livestock production. More favourable conditions for invasive species are created, adversely affecting biodiversity and crops.

6. The GRB region has a population of 5,131,932 people (19.3 per cent of the total population of Nepal). The region has more than 40 ethnic groups. Most people in the region live in poverty, with the average income level at 95 per cent of the national average, and rely heavily on ecosystems and natural resources for agricultural and livestock production. Due to the migration of male labour and declining agricultural productivity, agricultural lands have been abandoned. Women have the primary responsibility for maintaining households and also provide the labour for agriculture, which has led to women and their dependents (children and the elderly) becoming more vulnerable.

7. Following the adoption of a new Constitution in 2015, the Government of Nepal established a new political/administrative structure, consisting of three tiers; federal, provincial and local. The GRB includes 151 local government bodies located within three provinces. Many environment-related responsibilities have been delegated to the provincial and local levels; however, climate-relevant polices and plans are either not fully in place or out of date to align with the new government boundaries.

8. The total project finance is USD 32.7 million, with a request to GCF for grant finance of USD 27.4 million (81 per cent). The Government of Nepal, through the Ministry of Forests and Environment and the National Trust for Nature Conservation Nepal are contributing USD 1.145 million and USD 3.6 million in the form of grants (in-kind), respectively. The International Union for Conservation of Nature (IUCN) Nepal also is contributing USD 0.565 million in the form of grants (in-kind).

2.2 Component-by-component analysis

Component 1: Community resilience – enhanced resilience of livelihoods of the vulnerable communities through adapting to climate change sustainably (total cost: USD 13.1 million; GCF cost: USD 12.7 million)

9. This component aims to improve the capacity of communities to effectively manage natural resources while improving their agricultural productivity for their livelihoods. The component has two key outputs:

(a) Increasing the productivity and climate resilience of communities: the interventions to achieve this output will build on establishing climate resilient agroforestry in 500 ha in the vulnerable area; applying ecosystem-based adaptation in constructing small nature-based structures in 60 sites, including bamboo check dams and plantations of grass and trees; and promoting drought and flood tolerant varieties for hill districts and plain areas; and

(b) Increasing water availability and water efficiency: this will be achieved through reconciling a water model for the entire GRB region; constructing and operating 300 micro and small scale irrigation systems; and establishing 310 water harvesting systems, including conservation ponds and water reservoirs, in addition to promoting water use efficiency.

10. The proposed interventions under this component take ecosystem-based adaptation approach to enhance livelihood options for the vulnerable communities.

Component 2: Ecosystem resilience – strengthened climate resilience of ecosystems (total cost: USD 15.15 million; GCF cost: USD 10.5 million)

11. This component focuses on restoring ecosystems to reduce the impacts of natural disasters, including landslides and floods; and providing technical assistance to increase the capacity of the communities to maintain and support climate resilient ecosystems.

12. The proposed interventions under this component include constructing climate resilient green belts; applying bio-engineering techniques to prevent road-slides and soil erosion while maintaining accessibility to rural areas; and biodiversity conservation activities, such as removing and reusing invasive species. These activities will be supported through technical assistance on creating a standard operating procedure and providing technical training to help the communities and the local government to continue interventions and maintain climate resilient ecosystems.

Component 3: Climate governance – strengthened climate governance and institutional framework to sustain climate (total cost: USD 2.092 million; GCF cost: USD 2.082 million)

13. This component aims to address the existing constraints in the governance structure as well as the hydrological boundaries. Interventions will promote community-based mechanisms for planning, restoration, monitoring and maintenance of the ecosystem established in components 1 and 2; create a knowledge management system that provides baseline data and information for climate resilient river basin management; and undertake development of a framework for assessment (quantification, valuation and attribution) of ecosystem services and national accounting.

14. Under this component, the project aims to promote community-based planning through multi-stakeholder consultations. Baseline data and information for 50 sites will be acquired and utilized to further support national, provincial and local plans and regulatory framework development and operation.

Gender; environmental and social management framework (ESMF); and monitoring and evaluation components (total cost: USD 0.867 million; GCF cost: USD 0.867 million)

15. The requested costs to cover the gender action plan, ESMF action plan, project start-up, monitoring, evaluation and closing are requested.

Project management (total cost: USD 1.48 million; GCF cost: USD 1.24 million)

16. GCF grant financing represents 83.7 per cent of the total project management costs. The requested project management costs amount to 4.74 per cent of the total grant requested from GCF.

III. Assessment of performance against investment criteria

3.1 Impact potential *Scale: Medium-high*

17. The GRB is subject to several climate change-related impacts. Changes in rainfall patterns are impacting the ecosystem services that the natural environment brings to the local population and the melting glaciers of the upstream Himalayas present an increased risk of glacier lake outburst floods throughout the GRB region. The project addresses these environmental changes in an integrated manner, from the perspective of the vulnerability of the local population.

18. The proposed project is using ecosystem-based adaptation measures to sustainably manage the natural resources in the GRB, where the large majority of the population is dependent on small-scale agriculture to support their livelihoods. Climate change is affecting rainfall patterns and the river basin hydrology, making the loss of livelihood options due to inclement weather or weather-based natural disasters more probable. For the direct beneficiaries the project will strengthen the basis upon which their livelihoods are based and the impact potential for them is high.

3.2 Paradigm shift potential *Scale: Medium-high*

19. The recent devolution of powers from the central to the provincial and local levels throughout Nepal necessitates institutional and human capacity-building to ensure that adequate governance is provided. The project will integrate climate change assessment in regional planning, which will enable the local and provincial governments to make appropriate medium- to long-term plans that are reflective of the changing conditions in the area.

20. The emphasis on ecosystem-based adaptation in planning to address the needs of the local population, with attention to the changing climate and its impacts, is only recently emerging in Nepal. The project will build capacity to make consideration of climate change pervasive throughout the governance structures.

3.3 Sustainable development potential *Scale: High*

21. The interventions that the project will support are all based on local environmental conditions as well as the skills and capacity of governmental institutions and those of the local communities. Due regard is given to the position of women and indigenous peoples in the area. When proven successful, the approach of the project can be easily extended to other comparable areas of Nepal.

22. The interventions of the project are all based on aligning the fulfilment of the needs of the local communities with the ecosystem services that the environment provides. Specific activities strengthen the ecosystems such that the delivery of ecosystem services is ensured even under scenarios of climate change.

3.4 Needs of the recipient *Scale: High*

23. Nepal is a least developed country placed in a challenging geography, with high risk of natural disasters occurring. The most recent major earthquake of April 2015 killed nearly 9,000 people and caused economic losses of approximately USD 5 billion. As such, Nepal has very limited fiscal space to build resilience against climate change impacts.

24. Under the new Constitution of 2015, many government functions were devolved to the (newly established) provinces and local government bodies. These lower levels of government are generally lacking in capacity to apply integrated approaches into regional planning, including climate change forecasts.

3.5 Country ownership *Scale: High*

25. The funding proposal aligns with all the national policies on climate change and the nationally determined contribution submitted to the United Nations Framework Convention on Climate Change.

26. The funding proposal was developed with full consultation of all relevant stakeholders, including representatives of indigenous peoples.

3.6 Efficiency and effectiveness *Scale: Medium-high*

27. Interventions on ecosystem-based adaptation tend to be relatively highly efficient, but the efficiency and effectiveness are highly dependent on local conditions, and they are difficult to estimate ex ante. The economic analysis that is provided by the accredited entity (AE) gives an economic internal rate of return (EIRR) of 16.68 per cent, which indicates that the project is likely to be cost effective.

28. The financial resources required for the implementation of the project are all provided by GCF in the form of non-reimbursable proceeds, 81 per cent of the total project cost. Co-financing of the remaining 19 per cent is in the form of in-kind contributions from the Government of Nepal, a local non-governmental organization and the AE.

IV. Assessment of consistency with GCF safeguards and policies

4.1 Environmental and social safeguards

29. The AE has conducted a screening procedure and produced a screening report that includes discussion on potential environmental and social risks of the project. The AE has classified the project as a moderate risk project (category B), and the Secretariat confirms the category B classification. While the project is generally aimed at improving the climate resilience of the vulnerable communities and ecosystems in the GRB, there is a possibility of some minor to moderate environmental and social risks or impacts on sensitive environments as well as on the socioeconomic dynamics of various social groups.

30. Since the sites and the corresponding baseline and technical details of the proposed interventions are still to be decided, in consultation with various relevant stakeholders, an ESMF has been prepared. The ESMF describes the screening process, procedural framework and guidelines for the AE to ensure that: (i) the interventions are assessed on their potential environmental and social risks and impacts; (ii) measures to avoid such risks and impacts are incorporated in the design; and (iii) possible management measures to minimize or mitigate possible impacts can be implemented. The ESMF likewise provides for the applicable policy and

regulatory framework in Nepal and identifies the potential environmental and social risks and impacts of the possible interventions. It also presents the organizational responsibilities and arrangements for implementing the procedures therein in consonance with the relevant provisions and tools to ensure compliance with the environmental and social management system standards of the AE.

31. Some of the key potential impacts during construction of the small nature-based structures (e.g. bamboo check dams, plantations of grass and trees) include soil disturbance and erosion and potential damage to cultural heritage resources. Construction of the water harvesting systems, such as conservation ponds and water reservoirs, may also accelerate soil erosion and lead to landslides due to loss of topsoil and vegetation cover. There is also the risk of selecting species that are non-native that might develop invasive characteristics. Restriction of access to natural resource availability to local communities may also occur, though it is expected that the communities will agree among themselves voluntary restrictions on the use of resources. Manual labour is also expected, such as in the weeding out of invasive species. The project is not expected to trigger any land acquisition and involuntary resettlement. The ESMF has also enumerated an exclusion list, which identified interventions that are considered high risk and will not be funded. Given the susceptibility of the area to natural hazards, such as earthquakes and floods, emergency response plans will be prepared, particularly including for construction works.

32. This project has identified the presence of indigenous peoples/ethnic groups as well as disadvantaged groups, such as Dalits, women and the poor, and it considers these group as main target groups. The AE states that applying the IUCN Environmental and Social Management System (ESMS) Standard on Indigenous Peoples will ensure that interests and concerns of these groups are fully addressed (see chapter 6 of the ESMF). The ESMF should include the International Finance Corporation Performance Standard 7 on indigenous peoples as the relevant GCF standard in its gap analysis in chapter 2, table 4. The AE is recommended to adopt GCF standards, including the Indigenous Peoples Policy. Nevertheless, the ESMF almost comprehensively addresses the relevant GCF standards.

33. The ESMF provides for the organizational capacity and arrangements as well as the budget for its implementation. Once the site is selected, the proposal is screened by the IUCN Regional ESMS Focal Point through the use of the ESMS questionnaire which is completed by the staff at the Field Execution Office. Based on the screening result, the need to prepare an environmental and/or social assessment report as well as to meet statutory environmental and social assessment requirements will be ascertained and conducted when triggered. The Field Execution Office will be responsible for the implementation of the mitigation measures during the operational phase of the project.

34. The ESMF also includes provisions for stakeholder consultation, information disclosure and a grievance redress mechanism. A stakeholder engagement strategy is included to provide the framework for continued stakeholder engagement and participation in the design and implementation of interventions. The institution-wide grievance and redress mechanism of the AE is in place and will be adopted in all project sites to be able to address stakeholders' complaints on the project's environmental and social performance on the ground. The GCF Indigenous Peoples Policy also states that the GCF Independent Redress Mechanism and the Secretariat's indigenous peoples focal point will be available for assistance at any stage, including before a claim has been made.

4.2 Gender policy

35. The proposal contains a gender assessment and a gender action plan, and, therefore, it complies with the operational guidelines of the GCF Gender Policy. The gender assessment indicates that Nepal has been improving the legal and institutional mechanisms to promote

women's rights, through establishing a National Human Rights Commission and National Women's Commission. Recent amendments to the country code have improved women's access to property but not access to land. Despite these changes, women in Nepal lag far behind men as they have low levels of access to social and political opportunities while discriminatory institutions, coupled with social norms and practices, restrict women's access to opportunities, resources and power.

36. The gender assessment is compiled based on a desk review and stakeholder consultation with women's self-help groups and community based organizations and non-governmental organizations working in climate change adaptation. The gender assessment indicates that the division of labour between women and men is skewed, based on socially prescribed gender roles. Norms and cultures and community structure assign women restricted roles, which most often involve household and family responsibilities, yet their ability to equally participate in decision-making within those households and outside in the community is greatly limited. Violence against women is an issue that affects women from all walks of life in Nepal with high incidence indicated in the assessment.

37. The assessment shows that women make a significant contribution within their households in reproductive roles and outside in agriculture, though this work lacks recognition and compensation. Even when their contribution is remunerated, there is a significant pay gap for the amount of work equal to that of men. The assessment also revealed that only 10 per cent of the total farms of Nepal are owned by women or are jointly owned. Male migration results in feminization of agriculture and presents more challenges for women to manage and maintain their farms. The inability to manage and maintain the land leads to a reduced income from agriculture and makes women highly dependent on forest resources for their food, household energy, and livelihoods. The fact that many households depend solely on forests for their household energy needs increases pressure on forested land as well as on women who are primarily responsible for the collection of firewood and fodder to fulfil their energy needs and for their livestock feed. The assessments acknowledged the disproportionate effect of climate change on women as most of their tasks are related to the natural environment. It also acknowledges that in the GRB vulnerability is highly correlated with gender, caste, ethnicity, regional identity and geographic location, and poverty. Gender-based discrimination and an ingrained patriarchal socio-economic and political system combined with women's lower socio-economic status compared to men makes women more vulnerable to the impacts of climate change and natural disasters. The assessment also indicates that women-headed households and Dalit women are much more vulnerable to climate change. Women still face challenges in access to land rights, financial resources, training and technology, and access to decision-making fora. The challenges illustrated above, in addition to negatively impacting women themselves, often prevent them from exerting their full potential in tackling climate change and other environmental challenges.

38. While women face many challenges, the assessment also shows that women have the knowledge and understanding of what is needed to adapt to changing environmental conditions and to devise practical solutions. Women's closeness to and use of natural resources also present ample opportunities to enhance their incomes and employment and to contribute significantly to their own, their family's and community's well-being and development.

39. The AE has provided a gender action plan (GAP) to fulfil GCF requirements as regards a gender policy. The GAP provides a number of activities aimed at addressing the various challenges illustrated in the gender assessment. It contains indicators, targets, timelines, budgets and provisions for having on board gender officers to support overall supervision of the GAP implementation. The AE will be conducting a rapid social analysis in each site to establish the social baseline to ensure that the various vulnerable groups identified in the assessment will be engaged in the project. The activities included in the GAP are geared towards targeting and ensuring representation of groups of vulnerable women, such as Dalit and women-headed

households. The GAP includes activities to ensure that women have equitable access to awareness-raising opportunities, are engaged in policy/strategy related discussions as well as in knowledge-producing and management aspects of the project. Further, women will engage in and benefit from investments that the project will make in climate resilient farming practices, agroforestry and livelihood improvement activities while ensuing the targeting of land managed by women. Given the high incidence of gender-based violence, the project will be mindful of the issue and will check that the situation is not exacerbated by awareness raising and the opportunities offered to women to engage in the project activities.

4.3 Risks

4.3.1. Overall programme assessment (medium risk)

40. The funding proposal requests a GCF grant of USD 27.4 million accounting for 83 per cent of the total financing. The total project cost is USD 32.7 million with co-financing by way of in-kind contributions from the Government of Nepal and IUCN.

41. It is noted that there is another GCF funded project in Nepal with similar interventions by the Food and Agriculture Organization of the United Nations (FP118). IUCN clarified that the Project Steering Committees (PSC) of the two projects will be chaired by the Ministry of Forest and Environment (MoFE) and there will be no overlapping areas. For playing complementary role in the projects, the Food and Agriculture Organization of the United Nations will be invited to the Gandaki Project PSC meeting and IUCN will be invited to the Churia Project PSC meeting,

42. Nepal is a least developed country and has experienced several shocks, including the earthquake in 2015, and a fuel crisis right after the disaster that led to the budget constraints of its Government.

4.3.2. Accredited entity/executing entity capability to execute the current programme (medium risk)

43. IUCN has experience in implementing ecosystem-based adaptation projects in Nepal as well as neighbouring countries. The Regional Office for Asia and IUCN Headquarters will be responsible for oversight of the project and ensuring the progress. The IUCN Nepal Country Office will provide technical advice to the executing entity (EE) to manage the project.

44. The MoFE will be an EE. MoFE has gained experience by implementing projects funded by other external donors (e.g. Global Environment Facility, Least Developed Countries Fund). Its total budget has been currently exceeding USD 80 million. The AE assessed the financial and procurement capacities of the EE and confirmed that the policies, capacities, and procedures of the EE are satisfactory.

4.3.3. Programme-specific execution risks (medium risk)

45. Project areas related to political boundary: the funding proposal states that the river basin approach taken by this project goes beyond political boundaries (district and municipality), which was one of the barriers to address climate change problems. While this is plausible from the climate change adaptation perspective, given the recent political transitioning to decentralization in the country, there is a risk that each local government may avoid taking responsibilities or compete over the same resources. The AE clarified that there would be a coordination mechanism in the preparation of an integrated water management plan for seven watersheds at the provincial level. There will be linkages of activities between provinces and municipalities, and the resources for monitoring will be also linked to the joint

plan. This will avoid the likelihood of duplication of resources and ensure the timely monitoring of activities during implementation.

46. The operations and maintenance (O&M) for water infrastructure: many project interventions focus on making water available, such as construction or improvement of water reservoirs, irrigation systems, and check dams. In addition, capacity-building activities include the introduction of technologies related to the irrigated production technology and efficient utilization of water. The funding proposal states that there will be no charge for the use of water resources, however, the water user groups will have their own by-laws to raise O&M funds. In case of larger sized constructions, local governments are involved for the O&M. However, the funding proposal is not clear about how the water-user groups and local governments will be able to sustain the financial viability of the O&M funds beyond their in-kind contribution.

47. Finalization of specific locations for interventions: the funding proposal aims to support the construction of climate resilient green belts to protect forests, wetlands, grasslands and conservation ponds from landslides and floods. The types of interventions have been identified, but the detailed locations for different interventions on the ground will be finalized during the first year of the project's operation. To avoid a significant budget deviation from the initial plans depending on the result of the needs assessment/consultations, close coordination and monitoring are required, especially during the first year of the implementation.

48. Economic viability: the project financial/economic analysis was carried out over a 20-year period based on the similar interventions and consultations with the governments and communities. The analyses yielded the financial internal rate of return (FIRR) of 22.6 per cent and an EIRR of 21 per cent. The sensitivity analysis was undertaken with different scenarios: 20 per cent increase of costs, 20 per cent decrease of benefits, and both at the same time. Even in the worst-case scenario provided by the AE, the analyses show that the project is still viable by resulting in 12.6 per cent of FIRR and 12.4 per cent of EIRR.

4.3.4. Compliance risk (medium risk)

49. While the AE (IUCN) has indicated that it has not yet undertaken specific due diligence assessments of activities against the specific risks of project activities, IUCN has at its institutional level designed a number of processes/measures to address the risks of money laundering and countering the financing of terrorism and other prohibitive acts. The AE will apply these processes and measures to the project and institute appropriate control measures to address those risks. The proposed activities themselves do not evidence an unusually high level of risk, but oversight by the AE will be required to prevent occurrences of money laundering, terrorist financing, or prohibited practices. The AE has acknowledged it will do so and that it has the capacity to do so. Based on the information provided by the AE and its commitments to ensure appropriate internal controls, the Compliance risk is rated as medium.

4.3.5. GCF portfolio concentration risk (low risk)

50. In case of approval, the impact of this proposal on the GCF portfolio risk remains non-material and within the risk appetite in terms of concentration level, results area or single proposal.

4.3.6. Recommendation

51. It is recommended that the Board consider the above factors in its decision.

Summary risk assessment		Rationale
Overall programme	Medium	

Accredited entity/executing entity capability	Medium	Given the recent decentralization process in Nepal, the coordination among local governments beyond their political boundary is critical for the project implementation The sustainability of the project will depend on the ability of government to finance operation and maintenance costs for water infrastructure beyond the project implementation duration
Project-specific execution	Medium	
GCF portfolio concentration	Low	
Compliance	Medium	

4.4 Fiduciary

52. The AE for the project is IUCN, which will assume the implementation function in addition to oversight function of the project. As an AE, IUCN will be overall responsible for the project, including project preparation and implementation, financial management and procurement. The IUCN Headquarters will be responsible for the overall financial and technical quality assurance of the project while the IUCN Asia Regional Office (ARO) will be responsible for the technical supervision of the project, supported by relevant global expertise and the national designated authority, the Ministry of Finance, and the MOFE, respectively.

53. As an AE, IUCN oversees project implementation in accordance with the project document, project operation manual, annual workplans and budgets. It will also provide technical guidance to ensure that the appropriate technical quality is applied to all project activities and provide financial reports to GCF for all project funds received. Furthermore, through its ARO and global headquarters, IUCN will review the draft disbursement plans and disburse funds based on key deliverables having been met as per the implementation timetable and in line with a disbursement plan, which it will approve and review annually. Supervision missions will be conducted on an annual basis for which oversight of project implementation and the budget will be reviewed in greater depth, with the aim of providing guidance to the project management team to ensure delivery of results. Funds will be transferred from GCF to IUCN according to the GCF accreditation master agreement (AMA) and the funded activity agreement related to the project. In turn, IUCN will disburse funds to MoFE.

54. The EE for the project is MoFE. An implementing agreement will be signed between IUCN and MoFE as the EE for the implementation of this project. An implementing partner agreement will also be signed between the IUCN Headquarters/ARO with MoFE outlining clear provisions to transfer GCF grant funds to the EE, MoFE and the project management unit (PMU). Funds will be disbursed based on biannual workplans and disbursement plans agreed between IUCN and the MoFE/PMU. IUCN has assessed the procurement and financial capacities of MoFE for the role of the EE in the project in line with its own policies and confirmed that MoFE has the required capacities, experience, policies and procedures and are satisfied.

55. A PMU will be established under the guidance of the PSC, whose main role is to provide overall direction to the project. Hosted by the Department of Forests and Soil Conservation, the PMU will be responsible for the coordination of all project activities funded by the project and undertaken by the EEs. It will be accountable for all fiduciary matters, including financial management, procurement and project disbursements. In addition, it will oversee the financial disbursement to province and local government for the implementation of approved project activities (conditional grants), prepare annual plans and budgets, and coordinate between project stakeholders.

56. In terms of the accounting and financial reporting for the project, the PMU will be responsible for the accounting and fiduciary management of all funds disbursed to executing entities. The PMU will prepare the project execution guideline/ manual in consultation with IUCN. It will highlight, among others, financial management, procurement, staff recruitment and

auditing matters. In support of the PMU function, the IUCN Nepal Country Office will provide all the technical services for project management, including staff recruitment, daily administrative operations, accounting management, and physical as well as financial and project progress reporting. The project will be audited in accordance with IUCN policies and procedures according to the current audit policies which will be conducted during the project cycle as per IUCN assurance/audit plans, based on IUCN guidelines. Project accounts will be audited annually by an external chartered accountants, registered in the Association of Chattered Accounts of Nepal while special audits will be undertaken, by registered Association of Chattered Accounts of Nepal chartered accountants or by qualified IUCN staff, to monitor executing partner activities.

57. The project will produce the following types of reports:

(a) Financial reports: project sources and uses of funds, use of funds by project activity, project balance sheet, project cash forecast, annual financial statement (audited); and

(b) Project progress report: outcome/output monitoring reports.

4.5 Results monitoring and reporting

58. As a cross-cutting project, the adaptation and forestry/land use interventions of the investment expects to benefit 833,647 direct and 1,052,500 indirect beneficiaries. Through coverage of over 90,000 ha under improved and effective management the mitigation interventions of an estimated 847,250 tonnes of carbon dioxide equivalent reductions over a 20-year asset lifespan.

59. The funding proposal and logical framework appropriately apply GCF fund level (impact and outcome) results management framework and performance measurement framework indicators, and the project has built in baselines and data collection with triangulation to inform progress reporting on expected results in addition to integrating project performance qualitative measures looking at behavioural changes and policy/enabling environment transformations.

60. Regarding section E.1 of the funding proposal, overall the logical framework complies with GCF standards and has been cleared through Secretariat review.

61. The funding proposal theory of change could benefit from further details reflecting on the causal pathways at the project level in relation to the climate rationale (which are ideally tested in implementation either with project performance management indicators or impact/data evidence generated to attribute changes to GCF investment) and demonstrate reasons that the interventions selected are the best and most effective option(s) to resolve the barriers or problems, with evidence on how the project intends to deliver paradigm shift.

4.6 Legal assessment

62. The AMA was signed with the AE on 11 October 2016, and it became effective on 11 January 2017.

63. The AE has not provided a legal opinion/certificate confirming that it has obtained all internal approvals and it has the capacity and authority to implement the project. It is recommended that, prior to submission of the funding proposal to the Board (a) the AE has obtained all its internal approvals and (b) GCF has received a certificate or legal opinion from the AE in form and substance satisfactory to GCF confirming that all final internal approvals by the AE have been obtained and that the AE has the authority and capacity to implement the project.

64. The proposed project will be implemented in Nepal, a country in which GCF is not provided with privileges and immunities. This means that, among other things, GCF is not protected against litigation or expropriation in this country, which risks need to be further assessed. The Secretariat submitted a draft agreement on privileges and immunities to the Government of Nepal on 17 November 2016, and again on 22 December 2018. The agreement remains under negotiation.

65. The Heads of the Independent Redress Mechanism and Independent Integrity Unit have both expressed that it would not be legally feasible to undertake their redress activities and/or investigations, as appropriate, in countries where GCF is not provided with relevant privileges and immunities. Therefore, it is recommended that disbursements by GCF are made only after GCF has obtained satisfactory protection against litigation and expropriation in the country, or has been provided with appropriate privileges and immunities.

4.7 List of proposed conditions (including legal)

66. In order to mitigate risk, it is recommended that any recommendation of the funding proposal by the Secretariat for approval by the Board is made subject to the following conditions:

(a) Delivery by the Accredited Entity to the Fund of a certificate or legal opinion confirming that it has obtained all its internal approvals within 120 days of the Board approval, if such certificate or legal opinion is not able to be provided prior to Board approval;

(b) Signature of the funded activity agreement in a form and substance satisfactory to the Secretariat within 180 days from the date of Board approval, or the date on which the Accredited Entity has provided a certificate or legal opinion confirming that it has obtained all internal approvals, whichever is later; and

(c) Completion of all due diligence to the satisfaction of the Secretariat.

Independent Technical Advisory Panel's assessment of FP131

Proposal name:	Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal
Accredited entity:	International Union for Conservation of Nature (IUCN)
Country/(ies):	Nepal
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: Moderately-High*

1. Nepal is a mountainous land-locked country containing the high Himalayas. Nepal has a marked altitude gradient, with the summit of Mount Everest at 8,848 m and the Terai floodplain at 60 m from mean sea level. The country, with an area of 147,181 km^2, can be subdivided into four broad physiographic units, namely (a) the high Himalayan (mountain) region, (b) the middle mountaneous region, (c) the Sivalik and Chure hills[1], and (d) the Terai floodplain. The high and upper parts of the middle hills contain glaciers that hold billions of tonnes of water. The high mountain region constitutes 16 per cent of the land area, while the middle hills cover 65 per cent of the land, most of which is covered by forest ranges, conservation areas and some terrace fields. The Teari floodplain constitutes 17 per cent of the land, which is covered by dense forests, wildlife reserves, subtropical forests and lands that are highly suitable for agriculture. Owing to the favourable agricultural opportunities and attractive topographical features, Teari is the most densely populated region in Nepal.

2. During winter, precipitation in the form of snow is stored primarily in the glaciers, which start to thaw when temperatures increase during spring and throughout summer. The glacial meltwater forms streams and decends gradually through the valleys and contributes fresh water to the mighty Himalayan rivers. The fresh water from springs and headwaters in the rivers offers a critical lifeline for agriculture and drinking water to the population living in the mountains as well as those in the Terai region.

3. The climate of Nepal varies widely both temporally and spatially. The average annual rainfall is 1,600 mm, ranging from a mere 300 mm to as much as 3,345 mm across the country. The monsoon causes over 80 per cent of annual rainfall to occur within a span of four to five months (June through to October), giving rise to seasonal availability of rainfall and run-off in the rivers. Simultaneously, altitude largely determines the geographic distribution of rainfall. Based on such realities, compounded by low winter temperatures and seasonal frost in the high Himalayas and in the middle hills, smallholder farmers continue to produce food under harsh conditions.

4. Historically, Nepal's economy has remained dependent on subsistence agriculture and forestry. Over the past few decades, tourism has started to contribute to the economy. The country has been largely dependent on the international import of commodities other than agricultural products, as against low levels of export, which in turn has put significant pressure

[1] For simplicity of analysis, the middle mountainous region and the Sivalik hills are combined under the term middle hills, as proposed by the funding proposal.

on foreign currency. It is claimed that insufficient production of key crops (such as rice and maize) to meet domestic demand may be attributed to the high import rates of staple crops in the country. During the past decade, agriculture exhibited a modest growth of 2.9 per cent, most of which has been achieved by expanding agricultural activities at the expense of natural areas, including forests.[2] Available literature indicates that the slow growth of the agriculture sector in recent years can be attributed to (a) farming practices that are highly dependent on weather conditions; (b) insufficient irrigation facilities; (c) unavailability of critical agricultural inputs such as seeds and fertilizers; and (d) an increasing trend of land fallowing and abandonment. It is also claimed that the early signs of a changing climate in Nepal has reduced the productivity of common crops.

5. Available long-term meteorological data obtained from the national repository suggest that climate change has been occurring in Nepal. On average, temperatures in the country have risen by 2.5 ^{0}C since 1977. Not only is there a strong interseasonal variability in the rate of change in temperature, there is also an altitude effect in such rates. The high mountains exhibit the highest rate of increase in average surface temperature, which is perhaps why glaciers have been melting with consequential impacts on glacial lakes.

6. An analysis using long-term meteorological data (for the period 1971–2014) indicates that both the mean and the maximum temperatures are found to be increasing across the country, more dramatically in the high Himalayas. It is also found that warm days, warm nights and the duration of warm spells are increasing in Nepal. The diurnal temperature range is also found to be changing, which may have significant implications for crop production. Available literature also suggests that the duration of cold spells is decreasing.

7. Nepal's rainfall significantly varies by ecoclimatic zone. For example, the Mustang district receives below 300 mm annually, while the corresponding rainfall is 3,345 mm in Pokhara. Nepal is highly influenced by monsoon rainfall, which generally arrives in June and continues until August, with the occasional departure of monsoon rains in September. Monsoon rainfall also exhibits spatial variability. While the north-western mountainous region receives 100 to 150 mm rainfall per month, most of the country receives 250 to 450 mm rainfall per month during the monsoon season. The average Terai rainfall is estimated to vary between 2,000 and 3,000 mm per annum.

8. Overall, with an exception in the high mountains, annual precipitation has been generally increasing in Nepal (during 1971–2014). However, a closer examination into the micro-structure of seasonal distribution of rainfall across the three broad physiographic units suggests that (a) winter precipitation is increasing in the high hills, while decreasing elsewhere; (b) the pre-monsoon rainfall is decreasing almost everywhere except close to the floodplain (i.e. Terai); (c) the monsoon is becoming increasingly wetter; and (d) throughout all the physiographic units, the post-monsoon rainfall is decreasing. While declining rainfall in combination with rising temperature has been giving rise to higher evapotranspiration, the greatly increased monsoon rainfall is not only causing floods, but also creating conditions in the steep slopes for landslides. Therefore, in the Gandaki River Basin (GRB), climate-induced hazards such as seasonal droughts, monsoon floods and landslides are found to have been occurring more frequently in recent times than before.

9. A model-based analysis[3] suggests that the mean annual temperature will continue to increase by 0.92 ^{0}C by the 2030s and 1.3 ^{0}C by the 2060s with respect to current averages. The

[2] In response to queries from the independent Technical Advisory Panel (TAP), the accredited entity confirmed that "the total physical agricultural area has not increased" (in the target Gandaki River Basin). Therefore, it may be inferred that the modest growth in agriculture might have been achieved through a moderate increment in productivity. It is claimed that greater growth in productivity could have been achieved had the production system not been impacted adversely by climate change.

[3] Nested climate models have been adequately downscaled to suit GRB, with the Representative Climate Pathway 4.5 scenario being used to make location-specific projections for the target region.

same modelling efforts have resulted in a forecast increase in annual precipitation of 2.1 and 7.9 per cent for the 2030s and 2060s, respectively. The annual rainfall for the high mountains is found to be greater, with an increase of to 2.6 and 9.5 per cent for the 2030s and 2060s, respectively. As anticipated, the higher level of climate forcing by using the Representative Climate Pathway 8.5 scenario results in more dramatic increases in temperatures and levels of annual rainfall for 2030s and 2060s.

10. The funding proposal therefore deals with a number of climate change related phenomena such as floods, landslides and droughts, with the focus on two such phenomena: rainfall-induced landslides and agricultural droughts, the latter of which is related to lack of adequate moisture on topsoils.

11. In particular, the funding proposal considers the planning and implementation of climate change adaptation measures across all the impacted ecosystems and communities upstream and downstream of GRB at the landscape level. The final outcome of the funding proposal aims at shifting the traditional management at the district and municipality (political/administrative boundary) level of landscape to management at the river basin wide level using an ecosystem-based approach. It should be highlighted that the long-term sustainability of ecosystem-based adaptation (EBA) strongly, or even fully, depends on a deep understanding of threats and risks regardless of whether these are climate change related or other type of risks. It is clear that climate change adaptation measures are very local and for each locality risks should be well analysed based on the climate change patterns of this particular locality. With the target river basin wide approach, all peculiarities of different climatic zones and sub-ecosystems should be taken well into consideration.

12. The rainfall in Nepal is found to exhibit high variability. There is a general understanding that total precipitation on an average annual scale has been slightly increasing (by less than 4 per cent) across the GRB districts. There has been a slight altitudinal effect on this modest increase in annual precipitation. Analysis of past observational data indicates a wide range of rainfall variability across the GRB districts. The same analysis finds a clear decline in the number of rainy days. A rise in overall annual precipitation and a simultaneous decline in the number of rainy days clearly indicate that the episodes with sharp rainfall bursts have been on the rise. This can potentially lead to landslides. The phenomenon in turn leads to sand casting on terrace fields, resulting in loss of production, and destruction of infrastructure, including road networks. Widespread landslides also lead to loss of habitats in the high mountains and in the middle hills.

13. The analysis of consecutive wet days on the basis of observed data clearly indicates that in the high mountains and also in the middle hills, the consecutive wet days counts have been increasing, while the same has been decreasing in the hills and the Terai area. From scientific literature, it is found that landslides are triggered by antecedent rainfall (also reported in the feasibility study, p.12). The consecutive wet days related analysis therefore leads to the inference that in the high mountains and middle hills, increased antecedent rainfall might have been triggering the occurrence of landslides.

14. The same analysis carried out on the basis of observed data sets also revealed that high-intensity rainfall episodes above a 99 percentile level have been on the rise, irrespective of altitude effects. Since the propensity of such events is concentrated in the monsoon season and the seasonal data suggest a rise in monsoon rainfall, a cause and effect relationship is found between high antecedent rainfall episodes leading to greater landslide risks (particularly in the high mountains and the upper parts of the middle hills) and also a chance of flooding during the monsoon. The rainfall availability in the pre- as well as post-monsoon season has been found to be declining, and consecutive dry days to be on the rise across the GRB districts. This explains hydrological aridity over the years.

15. The funding proposal relies heavily on projection datasets and subsequent analyses. As these datasets are derived from computational model-based analysis, having a common boundary assumption that the climate forcing will increase with time with the increase in atmospheric concentrations of greenhouse gases, a general rise in rainfall in monsoon-influenced regions is commonly obtained (irrespective of model). The model-based outputs under the Representative Climate Pathway 4.5 scenario for the 2016–2035 timeframe (signifying the 2030s) are used for the estimation of evapotranspiration, which is found to increase by 7 per cent in relation to the baseline. Evapotranspiration is expected to be increasingly pronounced at the upper and middle basins at higher altitudes than the floodplains. This will cause a decline in the productivity of natural grassland, which will in turn adversely affect livestock-based production systems. In addition, the percentage increase in evapotranspiration for the winter season is expected to be markedly higher owing to reduced rainfall and significantly increased temperature.

16. The funding proposal also presents a projection on crop-specific evapotranspiration. Projected future crop evapotranspiration is found to be higher for all the crops compared with respective historical crop evapotranspiration values. The mismatch between rising evapotranspiration and declining available moisture will tend to adversely affect crop yields. The anecdotal evidence from local-level consultations has confirmed such phenomena as experienced by the farmers in different physiographic regions.

17. References are made to a number of past projects. The International Union for Conservation of Nature (IUCN), the accredited entity, has already implemented three climate change adaptation related projects in Nepal, where EBA has been tested. The funding proposal presents the necessary evidence base regarding the technical, social and other reasons for identifying the efficacy of the projects as adaptation measures. A few recent projects using EBA have instilled the confidence within the Government of Nepal to consider EBA as part of its climate change adaptation strategy.

18. The project will directly benefit 198,016 vulnerable households out of 1,172,558 households representing 19 districts of GRB. Over 0.54 million women out of 0.83 million total beneficiaries will benefit (i.e. 65 per cent of the beneficiaries are women). The beneficiaries represent almost 17 per cent of the GRB households. The project aims at improving agricultural output, involving 0.113 million hectares of land and forest output of 0.285 million hectares of forest land. The project will directly improve the management of 56,400 hectares of forest through the 6,000 community forest user groups. In total, there will be some 250,000 indirect beneficiary households. The project will be implemented in seven years from inception, at a total cost of USD 32.715 million, of which a GCF grant of USD 27.4 million is requested.

19. The impact of a project is often determined by the adequacy of the selection of target area(s) and target beneficiary groups. The number of beneficiaries in different vulnerable districts within the GRB is presented. Although a significantly large proportion of the population (some 42 per cent) representing districts with “medium vulnerability” is targeted, it is claimed that only the most vulnerable members of the communities in those localities will be selected as the direct beneficiaries. In the selection process, fairness may be ensured by cross validation in the field involving local government institutions and elected leadership at the grass-roots level.

20. The independent Technical Advisory Panel (TAP) finds merit in the funding proposal. In view of the above analyses, the independent TAP is of the opinion that the impact potential of the project is moderately high.

1.2 Paradigm shift potential *Scale: Moderately-High*

21. In recent times, Nepal introduced its new constitution and the provisions therein clearly emphasize greater exercise of power through the empowerment of local area-specific

institutions at the grass-roots level, shying away from its century-old monarchy-based centralized power exercise. In managing ecosystems and provisioning disaster risk reduction related services, local area-specific institutions are given greater roles to play in the governance processes. However, this project aims to shift the planning and adaptation approach from political a boundary approach to a river basin approach, which is expected to be guided by constituting River Basin Organizations (RBO). The involvement of RBOs in EBA is considered to be a paradigm shift in the governance process. If the legal and institutional barriers are addressed properly, such a shift will have to be regarded as a paradigm shift.

22. But Nepal has not yet embarked upon such a modality and the established governance processes are not accustomed to dealing with a completely new governance mechanism[4]. No piloting has yet been done to present a viable case from which to learn. However, the new parliamentary government is eager to pilot the new governance mechanism to give EBA a test run towards a holistic development approach involving a river basin. It is premature to say whether or not the change in governance regime will be successful. However, the proposed EBA governance will integrate holistic and systems understanding of the complexity of issues governing the management of a large ecosystem such as a river basin.

23. The project will develop a comprehensive GRB management framework underpinned by EBA that will spell out governance arrangements and financing mechanisms and address legal gaps, including the promulgation of new legislation. The mechanism would involve the preparation of sub-watershed-level plans with relevant local government authorities and watershed-level plans with the relevant provincial governments within GRB. The processes will correct the prevailing political and/or administrative boundary-based design and implementation approach, thereby addressing the current disconnect between the upstream and downstream parts of a common and shared river basin. Moreover, the issues of climate change related vulnerabilities will be addressed through solutions that are oriented towards ecosystem-based goods and services, keeping the conservation concerns at the core.

24. This project is aimed at initiating the change in paradigm. There is political will to integrate the ideas into the policy framework. Perhaps the silverlining lies in the establishment of EBA as a response to climate change, since it has been successfully tested and adopted elsewhere. The new draft strategy to climate change adaptation integrates the river basin approach and considers EBA as a viable modality to deliver holistic adaptation. In the micro-scale testing of EBA in Nepal, several elements of EBA have shown early “no regret” successes regarding the delivery of adaptation. The communities are eager to replicate such small-scale actions using EBA, which indicates replication potential. Financing arrangements to trigger replication across various Nepalese river basins involving proposed/anticipated river basin-specific institutions remain to be worked out and are subject to endorsement of the draft national policy. Therefore, replication and scaling-up potential is assessed as moderately high.

25. For Nepal, EBA with adequate institutional back-up is fairly innovative and if the approach succeeds by involving beneficiary communities and other stakeholders, it will gradually draw the attention of the larger governance system (i.e. political processes), which is a prerequisite for a shift in the existing policy regime. One of the early actions of the project, if approved, will be to bring the project-related ideas on to the table of policy makers so that necessary political will may be mobilized through advocacy and a RBO-friendly policy may be endorsed through the political processes.

26. The project has given adequate attention to learning and knowledge-sharing. Not only will the farmers be provided with training on EBA and adaptive capacity-building on climate-

[4] Each sub-basin of GRB falls within the jurisdiction of two to three municipalities. The proposed river basin organization (RBO) does not have any specific legal mandate (as yet) and therefore may not deliver management and/or both provisioning and control functions straight away. Efforts must be made to address the current policy and legal gaps to ensure the right political ambience towards facilitating the EBA delivery of the RBO in a holistic way.

resilient agriculture, there are also plans to strengthen the institutional capacities of a number of relevant institutions. The latter will help to create the enabling environment to move towards the new governance paradigm involving the RBOs. It is found that the theory of change for the project highlights all the above-mentioned enablers towards realizing the paradigm shift and transforming governance arrangements.

27. In view of the above-mentioned observations, the independent TAP finds the paradigm shift potential of the project to be moderately high.

1.3 Sustainable development potential *Scale: Moderately-High*

28. Any development project, with or without clear linkage with climate change, is supposed to contribute to achieving the Sustainable Development Goals (SDGs). This project is no exception: it is expected to contribute to a number of SDGs. For example, the project will contribute directly to enhancing food security of farming communities, which is expected to contribute to SDG 2. The focus on women's participation suggests that the project will directly contribute to achieving gender equality and hence SDG 5. The project is likely to contribute to reducing poverty of smallholder farmers, which is a goal under SDG 1. Similar indirect contribution is expected in terms of achieving good health and well-being of communities, which falls under the purview of SDG 3.

29. The project is expected to deliver economic co-benefits by strengthening farmers' capacities to address environmental concerns in farming practices. The establishment of EBA is expected to boost ecosystem-based goods and services, which in turn will provide greater livelihood opportunities for the beneficiary communities. Additional benefits may be acrued as a result of improved forestry and potential enhancement of ecotourism opportunities, the latter being a major contributor to Nepal's economy. By design, the project will create greater employment and income opportunities through the establishment of small and medium-sized enterprises.

30. It is expected that by enhancing household-level food security, the project will contribute to the reduction of food importation at the national level, thereby saving valuable foreign currency for the country. Moreover, by contributing to economic sub-sectors such as agroforestry, ecotourism and production in small and medium-sized enterprises, the project is likely to generate an increased amount of revenues for the government (in the order of USD 4 million per annum).

31. The core of an EBA is the conservation, strengthening and restoration of ecosystems through improved management. Therefore, any EBA-type project directly helps in strengthening ecosystems. A number of co-benefits are likely to be accrued:

(a) Increased forest and vegetation cover will result from new plantations and the regeneration of forests, restoration of degraded lands and improved forest management;

(b) Forest biodiversity is expected to directly benefit from improved forest cover;

(c) Soil conservation, especially in hilly terrains, will be brought about by direct measures to reduce soil losses;

(d) The project is expected to contribute to the management of wetlands and water systems, which might also trigger enhanced retention of groundwater;

(e) Assuming that agricultural productivity will be enhanced by the various interventions, the project will contribute to the future expansion of agricultural activities in natural areas; and

(f) Through forest conservation, augmentation and regeneration, the project will contribute directly to the sequestration of carbon in forest stocks.[5]

32. A range of social benefits is also likely to be accrued by the project. By contributing to household food security, the project is likely to reduce malnutrition and enhance social well-being, especially in impoverished households. With greater agricultural productivity, and opportunities in agro-forestry, ecotourism and the establishment of small and medium-sized enterporises, the project will contribute to employment generation, which in turn will reduce poverty in the target areas. In this process, it is also expected that the overall socioeconomic status of GRB will be enhanced. One of the indirect social benefits that might be acrued involves the reversal of outmigration of frustrated male farmers. By gaining confidence from EBA-based adaptation activities and increased farm income streams, it is expected that they will start to come back to their ancestral villages, thereby contributing to social harmony. In the absence of males in impoverished households, the women face various types of social discrimination, including derogatory behaviour and even harassment. A reversal of such social issues will bring social harmony back to the target villages.

33. It is expected that the project will contribute to the empowerment of marginalized groups by involving women and poor and marginalized communities, including different castes and ethnic groups. By offering various institutional services and training, the project will help to build social capital and promote inclusive development and greater social cohesion.

34. The project promises to integrate gender concerns into the design and implementation of various activities. It intends to give priority to gender and social inclusion in all relevant activities. There is a gender and social inclusion action plan which highlights as many as 35 activities to address gender and ethnic issues. As indicated above, the project will directly contribute to achieving SDG 5. The projected gains from intrahousehold food security, crop productivity and employment will provide women with greater opportunities. Similarly, it is expected that women will have greater involvement in the participatory ecosystem management processes, which will empower women in the target areas.

35. The project has established direct linkages with the delivery of enhanced climate actions towards the achievement of SDG 13. The climate-induced drought and landslide issues will be addressed, while efforts will be made to ameliorate floods occurring during high-intensity rainfall events in the monsoon. There is evident potential for adaptation.

36. The emphasis of the project is on policy uptake and strong commitment towards bringing a (rather decisive) change to governance practices: from a business as usual area-specific institutional mandate to river basin based institutional involvement. The theory of change provides an explanation regarding modalities on how this will be achieved and how the existing political barriers will be addressed by the project. The financing to sustain the newly established RBOs beyond the lifetime of the project still remains hypothetical. The policymaking processes must address these gaps on an urgent basis so that the sustainability of the proposed RBOs will be beyond doubt.

37. In view of the above discussions on sustainable development, the potential to contribute to it appears moderately high.

1.4 Needs of the recipient *Scale: High*

38. Nepal and its poor population are highly vulnerable to climate change. Nepal's economy is largely dependent on agriculture, which provides for one third of the gross domestic product and employment of two thirds of the labour force of the country. In recent years, agricultural

[5] This must be processed through a centrally operated registry system and to be brought in to a monitoring, reporting and verification regime, as enshrined in the Paris Agreement.

production grew modestly, at a rate of 2.9 per cent per year. Such a growth rate is even lower than the already low 3.8 per cent growth rate in the economy reached during the past decade. Since a large majority of the Nepalese population, especially in the mountains, hills and the Terai region, is dependent on agricultural production, these realities have led to extreme inequality, leaving smallholder farmers in a marginal economic state. It may be argued that rising climate variability has been partly responsible for the poor performance in agricultural production in Nepal.

39. The country's mountains have experienced considerable changes in temperature over the past few decades, especially in terms of the diurnal temperature regime. The relationship between changes in temperature indices and crop production at different altitudes is not fully understood. Comprehensive information on the changes in rainfall patterns in the short term with respect to the crop production system is also not available (and/or presented). Moreover, there has been a gradual feminization of agricultural production due to the large-scale outmigration of the agricultural labour force to pursue overseas job opportunities. Despite clear understanding of the cause and effect relationship of climate-related factors and parameters with crop production, the need of the recipient country for international finance to address issues related to agricultural production cannot be discounted.

40. There is no denying that smallholders of Nepal, irrespective of their location within GRB or elsewhere, lack the financial resources critical to addressing issues related to improvement in agricultural productivity. Women producers, despite receiving occasional remittance, do not have access to financial resources either to afford quality inputs and technologies or to take advantage of growing value chains. They also lack technical knowledge regarding most types of impediments to agricultural production including those arising from climate variability. However, it is argued that the accredited entity will seek technical and management support of the various government offices that are operating at the local level.

41. The entire country, on the other hand, is going through an institutional transformational process. The emphasis of the new constitution is towards gradual devolution of power from the centre to the grass roots, thereby increasing the roles and responsibilities of local-level institutions in governance processes. However, there is a dearth of institutional capacity, which is often compounded by a lack of financial resources to increase the effectiveness of such local-level institutions. This is why many of the provisions under the current policy regime cannot be implemented, despite all the political will that has already transpired through political decision-making. Nepal, as a least developed country (LDC), has been struggling in institutional and financial aspects. Nepal's needs for institutional strengthening and the capacity to implement development projects are paramount.

42. Since the creation of common good is primarily the responsibility of the Government of Nepal and there is no direct private sector large-scale financing for this, international financing appears to be the viable alternative for Nepal. If approved, the GCF finance will address significant financial barriers of an LDC in the creation of public goods at the river basin level and the area will receive an opportunity to showcase the effectiveness of EBA in advancing adaptation in an area which is particularly vulnerable to climate change.

43. The project offers significant opportunities to strengthen institutions operating at different governance tiers and contribute to building implementation capacities in terms of EBA. The need for such institutional strengthening is recognized and the project embraces activities to address such capacity-building needs.

44. In view of the above discussions, the independent TAP recognizes that the needs of the recipient are high.

1.5 Country ownership *Scale: High*

45. Quite a few national policies and strategies in Nepal link climate change and related responses. Agriculture is identified as a sector likely to be impacted adversely by climate change and related phenemona. Nepal is the first country in the world to advocate the concept of developing a local area adaptation plan of action (LAPA[6]) and implementing it involving local-level institutions. LAPA has been highly regarded at the global level as the way forward towards delivering participatory community-based adaptation. However, the concept of offering holistic adaptation involving RBO needs to be integrated with political boundary-based LAPA. Much will depend on the mobilization of political will around setting up RBO and its functioning following the integration of the concept of LAPA within the RBO framework.

46. Following the emergence of parliamentary democracy in Nepal, the country formed a new ministry to look after affairs regarding environment and climate change. The institutional arrangements have been further consolidated by the formation of the Council for Climate Change (2009) and the Climate Change Policy (2011). The Strategic Programme on Climate Resilience (2009) encompasses issues such as integrated water resources management and climate-resilient agricultural development. There are various acts and policies that are operating in tandem to shape up adaptation to climate change at the national as well as the GRB level, which include the Environment Protection Act (1997), the Disaster Risk Reduction and Management Act (2017), the Forest Sector Strategy (2015), and the Nature Conservation National Strategic Framework (2015). The project is found to be in harmony with the existing legal and policy framework of Nepal.

47. The planned interventions are closely aligned with the Government of Nepal's national priorities for enhancing the resilience of communities and ecosystems. The project is aligned with relevant national policies, laws, including the Constitution, the national adaptation programme of action (NAPA), LAPA and the Climate Change Policy. Management of climate change induced extreme weather events such as drought, floods and landslides is included in the nationally determined contribution of Nepal. In this respect, the project is fully aligned with climate change related priorities of the government.

48. Despite the mentions of ecosystem enhancement and restoration in various policies for the optimization of goods and services from available natural resources, EBA has not yet been considered in the policy regime as the primary and/or preferred delivery mechanism. There is therefore a potential weak link between the adaptation delivery mechanism and EBA as the potential primary delivery modality. The local-level institutions are not yet fully prepared to deliver adaptation-related community-based services involving EBA. The capacity development programme and potential involvement of the local government units in the proposed participatory processes will become critical steps to bridge the gap.

49. The alternative governance mechanism is yet to be developed and subsequently endorsed by the policy makers. EBA is not yet among the industry best practices for mainstream climate change adaptation in Nepal, despite the initial projects implemented by IUCN. The knowledge management efforts must be enhanced through the project to build confidence on EBA to deliver adaptation. Fortunately, however, the draft policy[7] incorporates EBA as a viable modality to deliver adaptation. Following the endorsement of the draft policy, the policy disconnect will be eliminated.

50. IUCN has been working in Nepal for many decades. Its role in ecosystem management, biodiversity restoration and enhancement and natural resources management in Nepal is well recognized. It is therefore only natural that the proposed interventions in the project are focused on nature-based solutions, despite having a slight policy disconnect regarding EBA and

[6] Nepal's National Framework on Local Adaptation Plan for Action was formulated in 2011.
[7] Submitted to the Parliamentary body through the relevant Ministry for endorsement.

adaptation at the community level. Past and ongoing IUCN projects trialling EBA have enabled it to build significant capacity to implement climate change adaptation projects in Nepal. However, IUCN has not excelled in providing irrigation support to communities to compensate for lost moisture. The collaboration with relevant national organizations and their local-level expertise will be useful in addressing this apparent weakness. The coordination bodies at the delivery level might help in overcoming any deficiency regarding irrigation services.

51. In addition to engaging local-level institutions and enhancing their capacities, the project relies heavily on participatory processes to plan and deliver local-level adaptation. In the project development process, a significant effort has been given to engaging local-level stakeholders, including government- and local-level institutions, local civil society actors and agencies, ethnic and gender groups, etc. The project has been forwarded with a no-objection letter from the national designated authority. Moreover, it is claimed that the national designated authority has been involved in the development phases of the project. The project has gone through a consultative process involving various stakeholders. Such consultations will be key during the implementation of the project, especially at the formative stages.

52. In view of the above analysis, it appears that the general country ownership is high.

1.6 Efficiency and effectiveness *Scale: Medium-to-high*

53. The project's budget is estimated at USD 32.715 million, of which the GCF contribution is sought for USD 27.4 million (83.7 per cent of the total). The remainder (i.e. USD 5.31 million) will be in-kind contribution by the project partners, considered as co-financing (16.3 per cent). The co-financing ratio is 1:0.19. The GCF contribution is sought as grant. As Nepal is a member of LDC group, the grant support is fully justified.

54. The implementation of nature-based adaptation solutions will cost USD 18.4 or 28.4 per beneficiary. The cost for making the natural ecosystem and agro-ecosystem resilient will be in the order of USD 62.51 per hectare. These figures indicate that the project delivery is cost-effective.

55. The investment efficiency is calculated on the basis of considering the average life of trees planted as 20 years to determine the lifespan of the project and taking into account a discount rate of 10 per cent, which is typical for an LDC. With the project, the net present value will be USD 17 million. The benefit–cost ratio is estimated at 1.68, which indicates that the project is financially viable. The project is expected to come to the break-even point in 11 years. The financial internal rate of return is estimated at 22.64 per cent. Without the project, the net present value will be 0.283 million. The financial internal rate of return in such a scenario is reduced to 11.41 per cent and the project will come to breakeven point in 19 years. Clearly, the overall project is financially viable. With the project, the economic net present value if estimated at 21.926 million. The benefit-cost ratio is still healthy and the economic internal rate of return is 21.361 per cent. All these estimations lead to the conclusion that the project is financially and economically on a strong footing.

56. EBA has been implemented successfully in many parts of the world. It has also been pilot tested in Nepalese conditions. However, it remains questionable whether EBA is among the industry best practices to solve climate change induced extreme weather event related problems, especially in mountainous terrains such as GRB. The limited number of initiatives considered in the recent past by IUCN indicates that, by virtue of technical simplicity, lower unit cost per option compared with engineering-heavy alternatives, ease of replication at the farmer level and gender-friendliness, the EBA options fare well in comparison with other alternative adaptation options. In reality, EBA is not the most widely used concept in Nepal, where many community-based adaptation experimentations are ongoing. It is anticipated that the project, if

approved, will give confidence among practitioners to invest more on soft EBA-based adaptations in various Nepalese conditions.

57. The independent TAP finds efficiency and effectiveness as medium to high.

II. Overall remarks from the independent Technical Advisory Panel

58. The independent TAP recommends that the Board approve the project.

59. The independent TAP recommends that the accredited entity engage upfront with the policy-making groups for advocacy so that necessary policy and legal gaps may be addressed towards creating institutional enabling conditions to sustain the RBO and EBA in Nepal.

Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP131)

Proposal name:	Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal
Accredited entity:	International Union for Conservation of Nature (IUCN)
Country/(ies):	Nepal
Project/programme size:	Small

Impact potential
No comment.
Paradigm shift potential
No comment.
Sustainable development potential
No comment.
Needs of the recipient
No comment.
Country ownership
No comment.
Efficiency and effectiveness

No comment.

Overall remarks from the independent Technical Advisory Panel:

No comment.

Improving climate resilience of vulnerable communities and ecosystems in the Gandaki River Basin, Nepal

Annex 8a:
Gender Analysis and Gender Action Plan

Part I: Gender Analysis/Assessment: Guide (Project/Program Level)

As an AE, IUCN will follow its gender policy named "Gender Equality and Women's Empowerment Policy: Mainstreaming gender-responsiveness within the IUCN programme of work" available here.

Gender issues to be addressed

Maternal mortality: In Nepal the maternal mortality ratio is 258 deaths per 100,000 live births, which is quite high (MoH 2017)[1]. The government's Second Long-Term Health Plan (1997–2017) gives high priority to improving neonatal and maternal health outcomes and includes many initiatives to improve access for the poorest and socially excluded, including a safer motherhood program, and a female community health volunteer program, which are quite successful.

Major health problems specific to women - are prolapsed uterus, under nutrition and anemia due to heavy workloads, combined with inadequate access to nutritious food during menstrual cycles and post-delivery. This situation is prevalent in the far western areas, as well as in some parts of the Terai, where patriarchal and gender discriminatory norms are stronger, and the overall poverty level is very high. One study estimated that more than 600,000 women in Nepal are suffering from uterus prolapse (ICIMOD, 2011)[2].

Child mortality: The child mortality rate is broken into three different stages i.e. neonatal, infant and under five mortalities. Whereas the neonatal mortality means the probability of a child dying within the first month of life, infant mortality means the probability of the child dying within the first year of life and under five mortality means the probability of a child dying within the first five years of life. The ratio of neonatal mortality is 21 deaths per 1000 live births, infant mortality is 32 deaths per 1000 live births and under-five mortality is 39 deaths per 1000 live births in the five year of period from 2011-2016.

Neonatal and infant mortality: In GRB, neonatal mortality is 15 deaths per 1000 live births, infant mortality 23 deaths per 1000 live births and under five mortalities is 27 deaths per 1000 live births for the ten-year period (2007 – 2017) (MoH 2017). The under five mortality rates for both boy and girl children is the same - 34 % - which reflects a better survival status and non-discrimination for girl child in terms of survival in this area (Table 1).

[1] Ministry of Health, Nepal, New ERA and ICF. 2017. Nepal Demographic and Health Survey 2016. Kathmandu, Nepal: Ministry of Health, Nepal

[2] ICIMOD, 2011. *Gender Experiences and Responses to Climate Change in the Himalayas.* [Online] Available at: http://lib.icimod.org/record/27008/files/attachment_781.pdf

Table1: Key sex disaggregated socio-economic indicators of the Gandaki River Basin

Indicators	Mountain (upstream)	Hills (midstream)	Terai (downstream)	Total
Area (km2)	7363	21013	4400	32776
Population				
Male	32,229	1,757,681	582,762	2,372,672
Female	31,061	2,087469	640,730	2,759,260
Total	63,290	3,845,150	1,223,492	5,131,932
Population Density people/sq km	9	183	278	157
Literacy Rate (per cent)				
Male	73	80	82	78
Female	56	64	67	62
Total	65	72	74	70
Economically Active (per cent)				
Male	75	60	64	67
Female	69	59	53	60
Total	72	60	58	63
Under five mortality (per cent)				
Male	29	33	40	34
Female	24	32	45	34
Total	27	33	43	34

Source : CBS, 2011[3]

Population growth: Out of GRB's total human population of about 5.13 million 46 % are male and 54 % female. The male to female ratio is 0.85:1. The population increased at an average annual rate of 0.41 % over the past decade (CBS, 2011)[4]. The average family size is 4.21 which is less than national average of 4.88. Two mountain districts, Manang and Mustang, have the lowest number of households and female population.

Education: The share of total enrolment for girls is 50.4 % at primary level, 50.5 % at lower secondary, and 50.4 % at basic levels. This clearly demonstrates that the gender parity has been achieved in basic education, including primary and lower secondary education (1.02 at primary level, 1.02 at lower secondary level and 1.02 at basic level) (WEF, 2016)[5]. There is a huge disparity among boys and girls in terms of dropout rates from secondary school education. Early marriage is a main cause of girls dropping out of school, and economic condition and poverty is the main reason boys drop out. Both boys and girls from the well-off families get chance to go to school but in very few cases of school enrolment are found among the poor families.

Literacy: However, in terms of adult literacy rate, there is wide gender gap where 75 % of males and only 57 % of females are literate. As per 14th plan the literacy of 15-24 age groups of 88.6 %. This may be due to the situation of early school dropout rate is higher in case of girls and women. Mostly girls and women only completed the secondary level of school and after that they will marry or the parents are not willing to invest more in daughter education, so they cannot continue their education further at higher level. The male literacy rate is remarkably higher (78 %) than the female literacy rate (62 %) in the GRB, this sex-based difference in literacy is, however, lower than national average difference which is 75 % for male and 57 % for female.

[3] Central Bureau of Statistics Nepal 2011. Population Census Report.
[4] CBS . 2011. *Nepal Living standard survey, Statistical report,* Kathmandu: Central Bureau of Statistics/ National Planning Commission Secretariat, Government of Nepal
[5] WEF . 2016. *Global Gender Gap Index Report, Switzerland ,* s.l.: s.n.

Poverty: According to the latest 2018 Multidimensional poverty report of the GoN/National Planning Commission (NPC) 28.6 % of Nepal's population is multi-dimensionally poor. However, Nepal has halved its Multidimensional Poverty Index (MPI) from 59 % in 2006– to 29 % in 2014. Under-nutrition and completion of up to five years of schooling are two key indicators which contributed to the improvement of the MPI. For the first time this report enables the MPI to be disaggregated by the recently formed seven provinces of Nepal, whereby Province 6 and 2 have the highest rate of multidimensional poverty – with every second person being multi dimensionally poor (50 %) – followed by Provinces 5 and 7 (approximately 30 % being poor) (NPC, 2018)[6]. Some of the GRB is in province 5. See Figure 1 for the location of the Provinces.

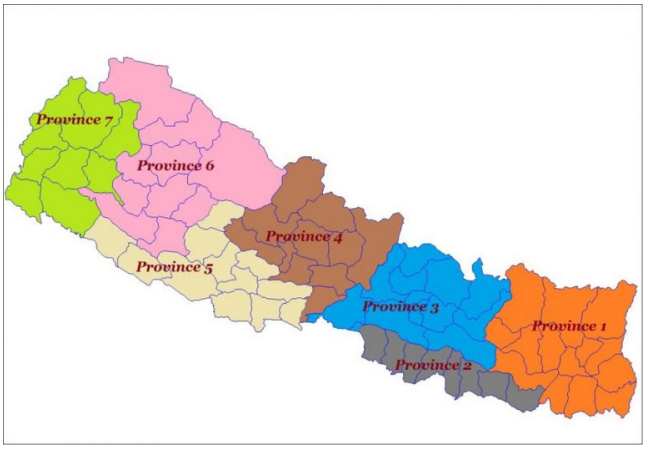

Figure 1: Map of Nepal showing location of provinces

Income level: The overall per capita income in the basis is NRs 49,362 per annum, which is lower than the national average of NRs 51,879. The average human poverty index (HPI) of the GRB is 30.27, compared to the national average of 31. In 2014, the Human Development Index (HDI) for all ethnic groups in the basin was 0.482, compared to national average of 0.490 The HPI of ethnic communities in the GRB is higher than the GRB average, and the HPI in five districts - Dhading, Rasuwa, Nuwakot, Mustang, and Gorkha -is very high (42.24 in Dhading). Kaski is the richest district with the lowest HPI of 16.50, followed by Chitwan with a HPI of 4.80. Rasuwa is poorest amongst 19 districts with the highest HPI of 42.24, followed by Nuwakot with a HPI of 35.66, Dhading with a HPI of 33.38 and Mustang 31.16 (NPC & UNDP, 2014)[7].

Nutritional status: The situation of under nutrition and malnutrition of girls is not as severe as in far western districts in province six. Comparatively, the districts of GRB are more accessible for roads and markets and have better food security. Nevertheless, there are pockets of poverty and certain caste groups including Chepang (in Dhanding and Chitwan), Majhi, Bote, and Tharu who are generally poor, not educated and live in remote areas. Girls get lower less priority in terms of nutritious food, are often subject to child marriage /early marriage, and are not given any priority for education beyond primary level, or health care.

In terms of under nutrition/malnutrition, a 2017 article in the daily newspaper Kantipur reported that in some areas of province 6, girls are highly undernourished compared to boys and even dying due to gender-based discrimination in food distribution and lack of timely health care for girl children. Very heavy workloads of rural and mountain-based women due to male out-migration, gender inequality in the household division of labour, and difficult mountain terrain, women have no time to take care of their children and themselves. This situation is contributing to the poor health outcome for women and girls (Kantipur Daily 2017, Dec.23 Saturday).

Gender Gap Index (GPI): The GGI for Nepal is 0.661, and Nepal ranks 110 out of 144 countries measured. Nepali women are progressing in terms of political representation they rank 68 out of 110. In health and survival, they rank 92. However, in terms of economic opportunity (115) and educational attainment (123) they are ranking far behind their global women counterparts.

[6] NPC .2018. Nepal Multidimensional Poverty Index: Analysis Towards Action. Kathmandu, Nepal: National Planning Commission, Government of Nepal /University of Oxford

[7] NPC & UNDP. 2014. *Nepal Human Development Report, Beyond Geography, Unlocking Human Potential.* s.l.: United Nations Development Program, Kathmandu, Nepal

Gender Empowerment Measure (GEM): for Nepal in 2011 was 0.568. Among ecological regions, the Mountains have the lowest value at 0.483, while the Hills have the highest at 0.572. This is due to the low share of Mountain women in Parliament at 18.6 %, compared to 28.9 % for the Hills and 32.9 % for the Terai, as well as low combined income values. Among development regions, the Far Western region (now province 6) has the lowest GEM value of 0.523, primarily due to its low share of women in administrative and professional positions. The Eastern region has the highest GEM at 0.575, followed by the Central and Western regions.

Table 2 shows population, family size, literacy rate, poverty rate and HDI showing the variation in each district of the GRB. The main purpose of this table is to show the indices and factors that are important to consider for vulnerability impact assessment. The NHDR report 2014 strongly emphasizes that inclusive development subsumes non-income dimensions of well-being, and includes distribution not only across individuals, but also across groups differentiated by gender, ethnicity, regional location, and so on. Another key factor is SIA also assesses these indicators to identify climate vulnerable groups in the study area.

Table 2: Population status, literacy rate and poverty index of Gandaki River Basin

SN	District	HHs	Total population[8]	Male	Female	Family size	Literacy[9] rate (%)	Poverty index[10]	HDI
1	Gulmi	64,821	280,160	120,885	158,165	4.32	72.6	27.4	0.464
2	Baglung	61,482	268,613	117,997	150,616	4.36	71.9	27.3	0.478
3	Rasuwa	9,778	43,300	21,475	21,825	4.43	54	42.2	0.461
4	Nuwakot	59,215	277,471	132,787	144,684	4.69	59.8	35.7	0.466
5	Manang	1,480	6,538	3,661	2,877	4.42	74.8	25.5	0.568
6	Mustang	3,354	13,452	7,093	6,359	4.01	66.2	31.2	0.508
7	Gorkha	66,506	271,061	121,041	150,020	4.08	66.3	33.6	0.481
8	Lamjung	42,079	167,724	75,913	91,811	3.99	71.1	27.0	0.507
9	Dhading	73,851	336,067	157,834	178,233	4.55	62.9	33.4	0.461
10	Chitwan	132,462	579,984	279,087	300,897	4.38	70.7	24.8	0.551
11	Syangja	68,881	289,148	125,833	163,315	4.20	76.6	25.3	0.493
12	Tanahun	78,309	323,288	143,410	179,878	4.13	74.8	29.7	0.506
13	Palpa	59,291	261,180	115,840	145,340	4.41	76.2	24.6	0.510
14	Nawalparsi	128,793	643,508	303,675	339,833	5.00	70.8	28.0	0.493
15	Kaski	125,673	492,098	236,385	255,713	3.92	82.4	16.50	0.576
16	Myagdi	27,762	113,641	51,395	62,246	4.09	71.9	28.5	0.490
17	Makwanpur	86,127	420,477	206,684	213,793	4.88	67.9	28.4	0.497
18	Parbat	35,719	146,590	65,301	81,289	4.10	73.8	24.6	0.410
19	Argakhanchi	46835	197,632	86,266	111,366	4.22	72.6	27.4	0.482

Source: CBS 2011: NHDR, 2014 and UNESCO, 2013

Employment: Women compromise 65 % of the workforce in agriculture and related tasks[11]. Fifty to 80% of the population in the GRB depends on agriculture for their livelihood. The major cereal crops grown are paddy, maize, wheat, millet, barley and buckwheat. Improved varieties of crops are also grown throughout the region (MoFSC, 2016)[12].

In Nepal, rural women play a major role in the collection of various forest products. Supporting their families through the use of such products has become increasingly difficult in the present scenario of a rapidly degrading environment. Nepal is one of the countries worldwide in which women's participation in community forest management has advanced. Compared to other management regimes, the membership and participation of women in community forestry is admirable. The Master Plan for the Forestry Sectors (MPFS) recognizes women as primary

[8] CBS . 2011- Central Bureau of Statistics National Census Report, 2011. Kathmandu
[9] UNESCO . 2013- Literacy Status in Nepal (Literacy age group by 5+), UNESCO, Kathmandu
[10] NHDR . 2014- National Human Development Report for Nepal, 2014, UNDP, Kathmandu
[11] MAFC . 2007. Gender Strategy. Ministry of Agriculture, Food Security and Cooperatives. Nepal
[12] MoFSC . 2016. Chitwan Annapurna Landscape (CHAL) Strategy and Action Plan 2016-2025, Kathmandu, Nepal: Ministry of Forests and Soil Conservation, Government of Nepal

users of forest resources and has made policy recommendations for the representation of women in the executive committee. It recommended, "one third of executive committee members should be women". Similarly, Community Forest (CF) Guidelines 1996 and 2001 stipulate that 33 % of the executive committee should be made up of women representatives. The revised CF Guidelines of 2009 even stipulate that at least 50 % of the executive committee should be women. Despite this the representation of women's in Community Forest User Group (CFUG) executive committees at the national level stands at 26.9 %, which is quite low according to policy requirements[13].

Looking at the employment situation in Nepal the male employer is higher (2.59) than the female employer (1.56). The employment rate of male is more than double (35.73) compared to female employment rate (16.53) but the rate of employment of women over the period is in increasing trend. The population composition in Nepal suggests that around 500 thousand persons are entered in labour market each year. But, due to the limited opportunities youth of Nepal are tending to migrate abroad to secure employment opportunities. The statistics shows that about 4.3 million youths have gone abroad in foreign employment. Similarly, report also suggests that unemployment rate in Nepal is 2.3% and semi-unemployment rate is 30%. Likewise, the youth under employment rate is 35.8%. In a single day around one thousands of Nepalese youth leave the country in the search of job (MoF, 2018)[14]. The table three present the employment status of male and female over the period, showing high percentage of self-employment for both male and female between 1981-2011.

Table 3: Employment status of Male and Female over the period in percentage

Employment Status	Male				Female			
	1981	1991	2001	2011	1981	1991	2001	2011
Employer	0.9	0.7	3.9	2.59	0.4	0.4	3.7	1.56
Employee	11.8	27.8	33.7	35.73	3.8	12.0	12.8	16.53
Self-employment	83.2	69.5	56.7	57.63	90.0	83.7	70.6	76.66
Unpaid family labour	1.7	1.5	5.7	0.8	4.0	3.5	12.9	1.97
Not Stated	2.4	0.4	-	3.20	1.8	0.5	-	3.29
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Political participation: Traditionally, Nepali women have played a limited role in political leadership. in recent years the rate women's political engagement is gradually increasing as the government has allotted a quota for women's representation, but it is still not sufficient. Nepal is in the new journey of federal state and successfully completed the local, provincial and federal elections in the year 2017. Which is a historic milestone for the country as it was held after almost two decades and also has provision of gender and social inclusion in the political leadership. But still representation of women in political parties is low, especially at the higher levels of power. During the 2017 elections a total of 35,041 local representatives were elected across 753 local units, 6 metropolises, 11 sub-metropolises, 276 municipalities, and 460 rural municipalities. Out of 35,041 elected representatives 40.96 % (14,352) were women, a direct result of the mandatory rule of the election commission (EC), mandating that at least 40.4% of the total political nominees should be female, and a mandatory rule that chief and deputy chief nominations of each political party in each local unit should be gender equal (if the political party nominated a man for chief positions then the deputy chief should be women or vice versa). From this rule 91% of the deputy positions (deputy mayors in municipalities and vice chairpersons in rural municipalities) were won by women, but men won 98% of chief positions (mayors and chairpersons) which means women were nominated for chief post in only 25% of the total positions. Furthermore, there were no quota for women for local level positions i.e.

[13]Kalpana, G. and Uprety, D. 2011. What does research into use actually mean: a view from the reality of practice? Paper for SAEP workshop, Hyderbad. India from 7-9th Jan.

[14] Ministry of Finance . 2018. Economic Survey 2017/2018. Government of Nepal

ward members. As a result, out of 13,484 ward members positions only 2% were won by women (Election Commission 2017)[15] .

Life expectancy: of Nepalese people is gradually increasing. The 14th Plan of Nepal has shown life expectancy of 71 years. According to the latest WHO data published in 2018, life expectancy in Nepal is 70.2 years. Specifically, male life expectancy is 68.8 years while female life expectancy is 71.6 years. Nepal ranks 117th position in the world[16] for life expectancy.

Legal Status of Women in Nepal

Internationally, Nepal has made strong commitment to human rights, and ratified almost all major international human rights conventions, including CEDAW in 1991. Nepal signed the United Nations Framework Convention on Climate Change (UNFCCC) at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992. Nepal ratified the Convention on the 2nd of May 1994, and the Convention came into force in Nepal on the 31st of July 1994. Therefore, it is a duty of the Government of Nepal to implement the provisions of these conventions. Moreover, Nepal has domesticated international commitment in national protection mechanisms as per the article 9(1) of the Nepal Treaty Act, 1990.

Nepal has been making legal and institutional improvements for the promotion of women's rights, by establishing protection mechanisms such as National Human Rights Commission and National Women's Commission. However, the status of Nepali women still remains vulnerable due to weak enforcement of laws, policies and plan of action, and poor performance of state mechanisms. It is partly happening due to lack of infrastructure, resources and responsible governance, but mostly because of state's unwillingness to invest enough resources for the protection of women and their rights (NAWHRD 2018)[17].

The Gender Inequality Index of the 2018 UNDP indicates that the inequality between men and women achievements are known as reproductive health, measured by maternal mortality ration and adolescent birth rates; empowerment, measured by proportion of parliamentary seats occupied by females and proportion of adult females and males aged 25 years and older with at least some secondary education; and economic status expressed as labour market participation and measured by labour force participation rate of female and male populations aged 15 years and older in which Nepal ranks in 118th position out of 160 countries in global scenario in terms of Gender Inequality Index, 2018. Similarly, the Gender Development Indicator (GDI) shows that Nepal falls under the category of medium human development ranking 149th position out of 189 countries in the world with lowest GDI among South Asian countries.

Still, the status of Nepalese women lags far behind that of men- low levels of access to education, economic, social, and political opportunities and they are socially excluded. Among others, discriminatory social institutions, social norms, and practices are the main hindering factors in restricting women's access to opportunities, resources and power (Basnet, 2013)[18]. Gender discrimination and social exclusion in Nepal starts right after the birth and it continues throughout the life cycle in different forms (Pokhrel, 2008)[19] and entrenched in the political, economic, and social fabric of Nepal (ADB, 2010)[20].

[15] Election Commission. 2017. "Gender-based Elected Representatives' Numerical Description." Available at http://result.election.gov.np/GenderWiseElectedSummary.aspx.

[16] World Health Organization (WHO) .2018. Statistics of Nepal. World Health Organization. Accessed from: https://www.who.int/countries/npl/en/

[17] NAWHRD. 2018. Nepal CEDAW shadow Report

[18] Basnet, L. D. (2013). *Gender discrimination and children's right to education in Nepal: Perspectives of parents and children*. Master's thesis, Norwegian University of Science and Technology Faculty of Social Sciences and Technology Management Norwegian Centre for Child Research, Trondheim, Norway.

[19] Pokharel, S. 2008. Gender discrimination: Women perspectives, *Nepalese Journal of Development and Rural Studies*

[20] ADB. 2010. *Overview of Gender Equality and Social Inclusion in Nepal*, Manila: ADB

The population census conducted in 2011 has shown that 21% of the households in Nepal are women-headed as compared with the total households living in poverty (25.16%). The percentage of women-headed households is 23.8% (M0PE, 2017)[21] with approximately 47% of these households deriving their income from agricultural wages.

Despite this central role in agriculture, women face structural constrains in relation to land tenure rights. CEDAW[22] reports that women's access to land in Nepal is consequently limited. Women account for only 6 % of total landowners and hold a combined share of only 4 % of arable land. In addition, female-headed households average only 0.50 ha of farmland, compared to 0.78 ha for male-headed households. Women's land ownership varies across the country: 21 % of households in the Eastern Region, 25.5 % in the Tarai's Mid-West Region, and over 30 % in urban areas[23]. The recent Government strategy of granting a concession in registration fees when land is recorded in the name of a woman has increased the number of such transactions[24].

For instance, in all communities of Nepal land is inherited from the father to the son. In the 2001 Census, only about 11 % of households reported any land in female legal ownership. Only seven % recorded female ownership of livestock. Overall, less than one % of households have female ownership of all of the three assets: house, land and livestock (WB and DFID, 2006)[25]. Thus, women are discriminated against when it comes to inheritance as well as property rights in general.

Recent amendments to the Country Code of Nepal have also improved women's access to property other than land. Unmarried daughters now have the right to ancestral property (other than land) irrespective of age, whereas previous conditions required that they be above the age of 35. However there are ongoing restrictions in relation to women's independent use of their property: women are often required to receive permission from a male relative before disposing of any immovable property[26].

The Gender Equality Act (2006) advanced the property rights of women even further and gives equal property right on ancestral property to son and daughters. It removed and amended discriminatory language. As per latest census data female ownership of fixed assets is 19.71 % of households, land or house or both in the name of female member of the household (CBS, 2012)[27].

Most households in the GRB have landholdings of less than 1 ha. Moreover, only 3 % of households have landholdings of more than 2 ha. This shows that the land highly fragmented. Furthermore, except Dhading, Gorkha and Manang, all districts have landless households with Syangja is having the highest landless households.

[21] Ministry of Population and Environment (MoPE) . 2017. National Population Report 2017. Singha Durbar, Kathmandu

[22]CEDAW. 2003. Consideration of Reports Submitted by States Parties Under Article 18 of the Convention on the Elimination of All Forms of Discrimination against Women: Nepal, Combined Second and Third Periodic Reports of States Parties, CEDAW/C/NPL/2-3, CEDAW, New York, NY.

[23]Wiley et al. 2009. Land Reform in Nepal: Where is it coming from and where is it going? The Findings of a Scoping Study on Land Reform for DFID Nepal. Kathmandu. Nepal.

[24] Asian Development Bank, Department for International Development UK and the World Bank. 2012.Gender and Social Exclusion Assessment, Vol II. Agriculture. ADB-UKAID-WB. Nepal.

[25] WB and DFID. 2006. Unequal Citizens: gender, caste and ethnic exclusion in Nepal: Summary (English), Kathmandu. The World Bank.

[26]Social Institutions and Gender Index. 2012. OECD. Retrieved from World Wide Web: http://www.genderindex.org/country/Nepal

[27] CBS, 2012. *CBS/NPC/Government of Nepal 2012. National Population and Hosing Census 2011 (National Report), Kathmandu, Nepal ,* Kathmandu: Central Bureu of Statistics, National Planning Commission Secretariat, Government of Nepal.

The Gender Development Index (GDI), score for Nepal for 2017 was 0.925. The female GDI value is 0.552 in contrast with 0.598 for males. In the year 2011, among the ecological regions, the GDI value based on the geometric mean is the highest for the Hills at 0.515, followed by the Terai at 0.458 and the Mountains at 0.430. Gender disparities in health, education and income remain major challenges across Nepal. Nationally, the average income of women is 57 per cent lower than the average for men, whereas 80.1 per cent of women are economically active, which is a paradox that reflects the lower economic status of women. In Nepal, 29.6 % of parliamentary seats are held by women, and 27.3 % of adult women have reached at least a secondary level of education compared to 43.1 % of their male counterparts.

Beliefs, Perceptions and Stereotypes related to Gender

In the project area across mountains, hills and Terai (plains) beliefs, perception and stereotypes related to gender are similar. However, there are location specific differences. In the mountain area there is more equality between the sexes and women are engaged in tourism related activities, hotel business, livestock raising and agriculture. Men share household activities of cooking and child care.

This pattern is similar in hilly areas. Women in hilly areas are more literate and due to relatively easy access to roads, electricity, mobile phone, radio and television, to some extent internet, and proximity to urban cities and exposure to the outside world hence they are much aware about their disadvantaged position. However, within the hills there are remote areas and poverty pockets where women are discriminated against.

In the Terai certain caste groups (e.g. Chepangs, Tharus, Mahji, Mushars, and Madhesis) practice early and child marriage, and dowry systems. It is a commonly held perception in the GRB that women are caretakers and nurturers and their role is more appropriate within the household. However, with the new political system, and exposure to the outside world due to radio, FM, TV, and mobile phone, even illiterate women are becoming more aware. Their engagement in various community groups helps them to understand about climate change risk and adaptation.

Division of Labour

In Nepal, the division of labour is based on socially prescribed gender roles. Men do more of the outside work, political work, trading and marketing, and paid jobs, whereas women are more engaged in household work, care work and agriculture work.

The historical gender roles, spaces and stereotypes of the 'public' male breadwinner (provider) and 'private' female care-giver are taken in the current changing situations. A patriarchal culture dominates in Nepal, which from birth to old age gives preference to men. Women's work is given little status while the ability of men to earn money brings respect, and their traditional role of provider gives them higher economic and social status. Women's decision-making role and control over resources is negligible in most households. Issues concerning property, marriage, expenditure and education are men's business and women can exert little or no influence over the outcomes (Helvetas, 2015)[28]. This is due to the household status of women's as they are engaged or spend most of the time in the household and agricultural activities and is often unpaid. Men are predominantly the ones who interact with the outside world while women's major sphere of operation is within household. Women's role in the society is mainly in care sector, predominantly their reproductive work, bearing, rearing, and nurturing children and household maintenance. Women have important roles as primary land, water and natural resources manager. Therefore, in Nepal most conservation and management of natural resources is the responsibility of women and control over the resources is the responsibility of men. The large portion of unpaid work is assigned to women and girls, especially collecting

[28] Helvetas .2015. *Empowering Women*. Kathmandu; Helvetas

firewood, water, and fodder, and caring for livestock, crops, and households (child care, cooking and cleaning).

Due to migration of mostly male members in search of better employment abroad, rural labour force is getting feminized. It has further increased burden of household chore on women's shoulders. Due to migration of male-labours and declining agricultural productivity, agricultural lands are abandoned. As women are taking care of the households and agriculture, women and their dependents (children and elderly people) living in rural area deriving their income from agriculture has become more vulnerable.[29]

In some ethnic groups and social classes, women's roles in the economy goes beyond the domestic sphere as when Thakali women are Involved in the hotel and catering business, or when educated Gurung women have positions in the private and public sectors or when women from labouring households and from the so called occupational castes work as field labourers or porters for others.

In the poor households, ploughing, roofing, climbing the trees to lop the fodder, threshing rice, sowing, making bamboo baskets and bamboo mattress, manufacturing agricultural implements, etc. are the major tasks of the males whereas transplanting millet and paddy, grinding maize and millet, husking and winnowing of crops, cooking rice and washing utensils are the female's works. Digging, wedding, harvesting and carrying load are common for both sexes. Mothers usually nurse the infants. Mothers have major role for infants' caring which is also supported by grandmother, sister or elder children (retrieved from https://en.wikipedia.org/wiki/Women_in_Nepal).

Participation in Formal and Informal Economy

The Gross Domestic Product (GDP) of Nepal is USD 20.88 billion and GDP per capita USD 2,313 (NLSS -2011)[30]. The average annual economic growth rate from 2012-2016 was 1.40 %. The Gini Coefficient which measures income inequality was 32.8 in 2014 (ADB, 2017).

In Nepal's 14th 3-year periodic plan (2016-2019), an average annual growth rate of GDP of 7.2 % was projected. Among other objectives in this plan, is a focus on cross-cutting issues such as gender equality, an inclusive society, environmental protection and capacity development of different institutions.

Agriculture and tourism are the two major sectors of the economy. Remittances are significantly contributing to the economy in the GRB, as number of migrant household from this area is highest in the entire country. Climate change has impacted the farming systems in the GRB.

Nepali girls and women work for more than boys and men, spending 25 % to 50 % more time on households' tasks, economic and agricultural activities. Yet, due to the nature of women's work which is often unpaid, on the one hand, and the flawed definition of economic activity, on the other hand, women's economic participation remains statistically invisible. Women in the more orthodox Hindu communities who are largely confined to domestic and subsistence production display a much less significant role in major household economy decision than those in the Tibeto-Bunnan communities where women participate actively in the market economy.

The role played by women in the care sector, predominantly their reproductive work, bearing, rearing, nurturing children and household maintenance are activities that fall outside the national accounting systems. While these activities are crucial for household members' well-

[29] Ministry of Population and Environment (MoPE). 2017. National Population Report 2017. Singha Durbar, Kathmandu

[30] *Nepal Living Standards Survey 2010/2011.GoN. 2011.* Thapathali, Nepal: Central Bureau of Statistics. National Planning Commission Secretariat.

being and effective participation in different spheres – economic, social and political, they continue to remain non-economic activities. By virtue of women performing these roles which are statistically not counted as economic and hence not monetarily valued, women's roles and their contribution is assigned low status.

In GRB 60 % of females are economically active compared to 67 % of males. The proportion of economically active women in Nepal is quite high compared to other South Asian Countries. According to the National Labour Force Survey, 80.1 % of women are economically active compared to 87.5 % of men (NLFS, 2014)[31]. This is in part due to the predominance of women in subsistence agriculture, where women are highly active following high levels of male outmigration. Of those employed, 89 % of women are engaged in agriculture and forestry compared to 70 % of men. However, the wages of women lag well behind those of men. In non-agricultural wage employment, women are concentrated in low-paying and less-productive jobs of low capital intensity. Female migration is also increasing, with official figures reaching 11,007 in 2008 (of a total of 266,666 migrants in that year), although this probably understates the volume given the numbers migrating without official permission (ADB, 2010). It has been estimated that 11 % of total remittances are from women migrants. The Foreign Employment Act, 2007 aims to protect the rights of workers and professionals.

Situation of Women and Men in the Specific Sector of Intervention

In Nepal, agriculture accounts for nearly 70 per cent of total employment and contributes nearly one-third of Nepal's gross domestic product (GDP). Women in Nepal constitute 72.8 per cent of the agricultural labour force, (MOAD, 2017)[32]. Government agricultural services are provided only through groups. According to UNFPA[33] women participation in farmer groups had reached 30 % by 2006 and 30-40 % in its training programs; livestock training was even higher, at 57 %. The benefits of agricultural extension and training have still largely accrued to men. For example, extension agents are more likely to contact men rather than women, and gendered norms make it difficult for women farmers to seek out male extension agents.

As high as 80 per cent of women are involved in agriculture and livestock sector in the GRB, and a trend of "feminization of the agricultural sector" is emerging as an outcome of high male outmigration. The role of women and their informed and meaningful engagement in the sector is critical for food security. This issue needs to be taken in to account seriously by the project when designing adaptation activities and interventions. The paradox is despite their substantive engagement in the sector, they are not treated as farmers and they don't have the same access to land, water, seeds, training and credit as men. Only 10 % of the total farms of Nepal are owned by women or jointly owned (MOAD, 2015)[34].

Nepal is one of the countries worldwide in which women's participation in community forest management has advanced. Compared to other management regimes, the membership and participation of women in community forestry is admirable. Women are considered as primary users of forests in Nepal. They have a broad and differentiated knowledge in relation to the use of forests in terms of burning, quality of woods, best fodder species, decomposition and quality of leaf litter, medicinal value of herbs, nutritional value of forest fruits and vegetables, amongst others. In rural areas of Nepal, women play a major role in the collection of various forest products. Supporting their families through the use of such products has become increasingly difficult in the present scenario of a rapidly degrading environment.

[31] *Nepal Living Standards Survey 2013/2014.GoN. 2014.* Thapathali, Nepal: Central Bureau of Statistics. National Planning Commission Secretariat.

[32] MoAD. 2017. *Agriculture Diary.* Agriculture Information and Communication Centre, Ministry of Agricultural Development, Singha Darbar, Kathmandu, Nepal

[33] UNFPA. 2007.Gender Equality and Empowerment of Women in Nepal. United Nations Population Fund. Kathmandu.

[34] MoAD. 2015. Agriculture Development Strategy. Kathmandu: Government of Nepal, Ministry of Agriculture Development.

Out of total 19361 Community Forest (CF), about 1072 CFs are managed by women (5.53 %) (DoFSC), however, the community forests handed over to women are usually small in area and either degraded or plantation in nature and male membership dominates in the Groups (FUGs) with a share of 80-85 %[35]. This is due to the fact that the head of the household is usually registered as the member at the CFUG.

People in the GRB are highly dependent on forest resources for their food, household energy, and livelihoods. As almost three fourths (72.4 per cent) of households solely depend on forest to fulfil their household energy, the pressure on forest is increasing (MoFSC, 2016) and women who are primarily responsible to collect fire wood and fodder must travel longer and further to collect fire wood as well as fodder for their livestock. This gender specific role and need of women must be considered by the project.

A study conducted by Asian Development Bank (ADB) in Nepal revealed that each female water carrier must reserve 1.3 hours per day during the monsoon season and an average of 2-3 hours per day in the dry season to meet their daily household supply but women's participation in water sector is mainly project related and due to intervene of donors. A study by the International Water and Sanitation Centre (IRC) of community water supply and sanitation projects in 88 communities in 15 countries found that projects designed and run with the full participation of women are more sustainable and effective than those that do not involve women as full partners[36].

Anticipated differences in Men's and Women's Vulnerability and Adaptive Capacity to Climate Change

The impacts of climate change are not 'gender neutral' – women's high dependence on agriculture means climate impacts on the sector have a disproportionate effect on women. A recently published, first of its kind, national household survey on impact of climate change in Nepal (CBS, 2016)[37] reports that the highest percentage of sample households (92.03 %) observed invasive creeper species in agricultural land and that this has contributed to a decrease in their income. This is an area for consideration by the project - to enhance income and employment opportunity for women through eco-tourism and off farm skill development training, in addition women responsive agriculture interventions.

The NAPA 2010, states that women's access to water resources would decrease leading to an increase in their workload, with detrimental effects on their reproductive health. An alarming health issue for rural women in Nepal is uterus prolapse due to heavy workloads and inequitable division of labour. Climate induced resource conflicts increase social violence, violence against women, anxiety and depression in women. Which ultimately increase the vulnerability of women.

Vulnerability in GRB is highly correlated with gender, caste, ethnicity, regional identity, and geographic location and poverty. Women, because of gender based discrimination and ingrained patriarchal socio economic and political system and their lower socio-economic status in comparison to men are more vulnerable to impacts of climate change and natural disasters. The level of social inclusive participation, decision making, and leadership roles played by poor,

[35] MFSC. 2010. Approach paper to 3-year interim plan (2011-2013) Forest and Soil Conservation Chapter, MFSC/NPC, Nepal.

[36] Wijk-Sijbesma, C.A. van, Mukherjee, N. and Gross, B. 2001.Linking sustainability with demand, gender, and poverty: A study in community-managed water supply projects in 15 countries. International Water and Sanitation Reference Centre, Washington, D.C. and Delft. The Netherlands.

[37] CBS . 2016. *National Climate Change Impact Survey . A Statistical Report.* s.l.:Government of Nepal, National Planning Commission, Central Bureau of Statistics, Kathmandu

women, marginalized ethnic groups, Dalits and disabled people is more theoretical, than actual practice.

On the other hand, poor Dalits, because of their poverty and caste-based discrimination and their settlement location usually near the landslide prone river banks, are more vulnerable. Similarly, certain poor ethnic groups or indigenous peoples who are primarily dependent on forests and water resources for their livelihoods are highly vulnerable. These three groups are potential target groups for the project. Even within the better off districts of the GRB, there are pockets of poverty in certain geographic and remote areas. These sites are vulnerable to climate change and climate induced disaster.

Some specific groups within the GRB, including small farm holders, cattle herders, poor and marginalized groups, elderly people, children and women are particularly vulnerable due to climate change and are impacted mostly. The poor and socially excluded groups often live in disaster prone areas such river corridors, foothills, near slumps and landslides and as a result, they are more vulnerable than others. For example, the Chepang are the poorest ethnic group in Chitwan district. They live in the hilly areas and because of drought and landslides their land productivity has declined, and they are forced to work in stone quarries for their livelihoods. Quarrying has accelerated landslides and as a result, the Chepang are pushed further below the poverty line.

Existing Gender Inequalities that may be Exacerbated by Climate Change Impacts

Women have the knowledge and understanding of what is needed to adapt to changing environmental conditions and to come up with practical solutions. But they are still a largely untapped resource. Restricted land rights, lack of access to financial resources, training and technology, and limited access to political decision-making spheres often prevent them from playing a full role in tackling climate change and other environmental challenges.

Trafficking of children and women in Nepal is a pressing issue. Around 16,500 Nepali citizens, mostly unmarried women and children, were trafficked in 2014-16, according to a national report released by the National Human Rights Commission (NHRC, 2016)[38](cited in e-kantipur). The Nepal Police records indicate 1,233 women and children missing (i.e. likely trafficked) in a three-month period after the Gorkha earthquake. 85 % of rescued trafficking victims had never been to school, which indicates a nexus with gender discrimination, illiteracy and poverty, in this case natural disaster and climate hazard is also a key trigger. The Human Trafficking and Transportation (Control) Act, 2007, provides for the protection and rehabilitation of trafficking victims.

This basin is the biggest of Nepal's four river basins in terms of total glacier area coverage. It contains 1025 glaciers, 338 lakes and is susceptible to frequent glacial lake outburst floods (GLOFs) (Final Report Desakota Part II). There has been increased frequency and intensity of rain, flood and landslides (Shrestha, 2003)[39]. The basin is particularly vulnerable to water-induced hazards during the monsoon season. Of the 2,719 fatalities that resulted from floods and landslides in Nepal between 2000 and 2014, 939 (35 %) occurred in the GRB, which has only 22 % of Nepal's land area.

Events tend to be more common in the mid hills, especially the districts of Parbat, Syangja, Gorkha, Dhading, and Nuwakot – Dhading had the highest incidence of floods and landslides with 123 events over the 15-year period. However, more families are affected downstream, with Nawalparasi having the highest number of affected families (8,187 out of 22,637) (Ministry of

[38] NHRC .2016. *Kathmandu Post, 2016. Nepalease trafficked in last two years.* [Online] Available at: http://kathmandupost.ekantipur.com/news/2016-04-26/16500-nepalistrafficked-in-last-two-years-nhrc.html

[39] Shrestha, K. . 2003. *Change and Water Resources of Nepal, Climate change and water resources in South Asia,* s.l.: Asianics Agro-Dev. International (Pvt) Ltd.

Home Affairs disaster database, 2015 cited in HIAware Research 2017). Although the most common climate induced disasters are floods and landslides, the greatest economic loss in the basin is from forest fires which are worsened by wind in the dry season. The severity of landslides has been further aggravated by the Gorkha Earthquake 2015.

In the GRB, 72.4 % of households depend solely on forests to meet their energy requirement (Subedi, et al., 2015). Because of drying of water sources and degrading forests, the workload of women is increasing in terms of collecting firewood and fetching drinking water.

Inequalities between Different Social Groups

Inequalities in the basis of gender or the economic class is greatly hampered the climate change adaptation. The fourth assessment report on the climate change also mentioned that "socially and economically disadvantaged and marginalized people are disproportionally affected by climate change" (IPCC, 2014)[40].

Women in Nepal do, in general, have less economic assets, lower wages, poorer education, higher rates of illiteracy, little knowledge of their legal rights, less confidence in public, and are bound to their responsibilities at home. However, there are sharp differences in the empowerment and inclusion levels of women depending on class, caste, ethnicity, religion and age. Furthermore, patriarchal values lead to suppression of women not only by men but also by women e.g. mother-in-law discriminating against daughter-in-law or higher cast women discriminating against lower cast women.

The GRB is inhabited by more than 40 ethnic groups and indigenous communities and in the Terai there are mostly Tharus, an indigenous community, and Khas- Aryan groups. In 2014, the Human Development Index (HDI) for all ethnic groups in the GRB was 0.482 compared to the national average of 0.490. Ethnic groups have comparatively lower literacy levels (66.93 per cent) compared to national average of 69.73%. Likewise, the life expectancy at birth of the ethnic group was 69.86 years compared to national average of 71 years. Average HDI, adult literacy rate and life expectancy values of these districts are also lower than the national average. Average HDI of 19 districts in the GRB is 0.501. Kaski have highest HDI of 0.576 followed by Manang with HDI of 0.568. With an HDI of 0.461 for both Dhading and Rasuwa they are lowest in the rank among the 19 GRB followed by Nuwakot with HDI of 0.466. The overall per capita income for people in GRB is NRs 49,362, while the per capita income for ethnic groups is NRs 37,720 as compared to a national average of NRs 51,879 (NPC & UNDP, 2014).

The average human poverty index (HPI) of the GRB is 30.27, compared to the national average of 31 (NPC & UNDP, 2014). The HPI of ethnic communities in the GRB is higher than the GRB average, and the HPI in five districts - Dhading, Rasuwa, Nuwakot, Mustang, and Gorkha -is very high (42.24 in Dhading). Kaski is the richest district with the lowest HPI of 16.50, followed by Chitwan with a HPI of 4.80. Rasuwa is poorest amongst 19 districts with the highest HPI of 42.24, followed by Nuwakot with a HPI of 35.66, Dhading with a HPI of 33.38 and Mustang 31.16 (NPC & UNDP, 2014).

Some specific groups within the Gandaki River Basin like small farm holders, cattle herders, poor and marginalized ethnic and Dalit communities, elderly people, children and women are particularly vulnerable due to climate change and are impacted mostly. Both gender equity and social inclusion has been strongly advocated and addressed, mostly by the non-government sectors as they have to comply with their donor's requirement. However, the level of social

[40] IPCC . 2014. *Climate Change 2014, Synthesis Report Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* s.l.:[Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland

inclusive participation, decision making, leadership roles played by poor, women, marginalized ethnic groups, Dalits and disabled people is more on paper and policy, than in practice.

Due to the inequalities that exist between different social groups the impact of climate change is also differs. The poor and disadvantage group are more affected by the impact of climate change as they are more exposed to climate hazards, are more susceptible to damage caused by climate hazards and have low ability to cope with the climate change impacts. Evidence shows that due to the inequality in terms of the financial resources, disadvantages group are compelled to stay in the region that is vulnerable to flooding event (Islam and Winkel, 2017)[41].

Nepal has a high incidence of Gender based Violence. And which everyone, regardless of their sex can be affected, women remain by large the main victims. In 2017, 149 people were killed as a result of GBV in Nepal. Of these victims, 140 were female, 75 of whom were killed because of domestic violence (WB, 2018).[42] This situation also affect the women's capacity to adapt the climate change so the project will consider the issue and control for not exacerbate the gender base violence by providing the opportunities to engage in the project activities and raising awareness on this.

Women's and Men's anticipated Roles in the Project

Incorporating a gender perspective successfully and effectively requires that men and women understand the process of climate change, and share information on counteracting its negative impacts on an equal basis to both women and men. So the project mainly focused on the awareness raising on the process of climate change and its impacts. It is important that women have equal access to knowledge, awareness, capacity building, resources and technology, which are prerequisites in influencing climate change. Likewise, it is fundamental that women participate more actively in decision-making and policy development at all levels. So in every stage of the project i.e. from beginning to closing of the project activities women will be taken into consideration or be taken as a key important stakeholder. The project also focuses on the benefit of women participants. More specifically, in this project, women are expected to contribute to identify the site specific climate change problems and share with the project their traditional practices being followed to cope with such extreme weather events. Men are expected to support women in household chores and free women for adopting adaptation measures.

Access to Resources

The distributions of the resources in the Nepal are still not well-managed. The major two factors economic and social identities have great impact in the distribution of the resources in Nepal basically in the distribution of land (ADB, 2010). The current land tenure practices happening in the Nepal is traditional customary forms of land tenure. This customary practice is not based on the equality of the resources so there still remains huge inequality in the basis of the distribution of land. According to the statistics, lands are disproportionately distributed among the Dalits, Adivasi, Janajatis and women. Glancing at the data around 95% of Dalits living in terai region of Nepal do not possess their own land and termed as landless while in the case of hilly region 49% of hilly Dalits possess less than 0.25 ha of land (ADB, 2010).

Women in Nepal do, in general, have less economic assets, lower wages, poorer education, higher rates of illiteracy, little knowledge of their legal rights, less confidence in public, and are bound to their responsibilities at home. However, there are sharp differences in the empowerment and inclusion levels of women depending on class, caste, ethnicity, religion and age. Furthermore, patriarchal values lead to subjugation of women not only by men but also by

[41] Islam, S.N. and Winkel, J. .2017. Climate Change and Social Inequality. New York: Department of Economic and Social Affairs: United Nations.
[42] https://blogs.worldbank.org/endpovertyinsouthasia/addressing-gender-based-violence-nepal

women e.g. mother-in-law discriminating against daughter-in-law or higher cast women discriminating against lower cast women.

Due to a patriarchal and patrilineal system, women in Nepal had been denied full access to and control over family property. The legal framework maintained this discrimination until the 11th Amendment of the Civil Code (commonly referred to as the Women's Bill, 2002), which repealed several discriminatory provisions of the Civil Code along with other acts and entitled women to significant rights. The amendment provided equal inheritance rights to unmarried daughters and sons (where previously an unmarried daughter had inheritance rights only if she was over 35 years of age) and removed discriminatory conditions that prevented women from having full access to property. Women were granted the right to their husband's property upon divorce and the provision of receiving monthly or yearly support in lieu of property. Widows were given full rights to their property allowing them to use it even if they remarry (where previously they were required to return property to the deceased husband's household upon remarriage).

Women in Nepal have legal access to bank loans and other forms of financial credit. However, women's access to institutional credit from banks and financial institutions in 2004 was only 1.7 %, and women's access remains marginal compared to men as the land is the most important source of collateral.

In the Gandaki Basin, large sections of the rural and urban population lack minimal access to water for drinking, sanitation and irrigation, their livelihoods depend on agriculture, wage earning, ecosystem services, and rain-fed agriculture, they live in fragile dwellings and have weak social support networks. These people are most likely to be affected by climate change. To address this situation, adaptation and resilience-building requires integrated and holistic management of natural, human, cultural, physical and financial capitals.

Access to Information

In Nepal, from the service provider side there is equal access to information and opportunities provided but due to low level of education, literacy women may not have good knowledge and understanding on the climate change risks and adaptions solutions. The information provided may be high tech to the illiterate women so the vulnerable communities' men and women have not equal access to information and opportunities necessary to participate and benefit fully from the anticipated outcomes of the project. The GRB is comparatively advanced in terms of gender equality compared with the far western region (province 7) and Central –Eastern Terai region (province 2) where gender based discrimination is widespread and many harmful practices like segregation, keeping women and girls out of the home during menstruation (chaupadi) and child delivery is very much alive in the far west, and pardha (veil) system and women's seclusion from men is still practiced in the Terai. Tibeto-Burman ethnic groups and Tharus which are dominant in this region are comparatively more advanced in terms of treating women equally and women are to some extent engaged in enterprise and market-oriented trading activities as well agriculture.

In GRB there is strong presence of women led community organizations like mother's group (aama Samuha), natural resource management and conservation groups e.g. CFUGs, buffer zone conservation groups, farmer's groups, saving credit groups and cooperatives and female community health volunteers group which will be instrumental to reach and deliver project specific services and technologies to women. The project will provide the project related information and opportunities to the vulnerable communities through these networks and institutions as well as individual households. Understanding of climate change impacts and adaptation practices is weak among the various ethnic groups, Dalits and disabled groups and communities.

Access to Education

No, due to the socio cultural norms and traditions the access to education, technical knowledge and skill are different with respect to social groups and also difficult for poor and marginalised women to access education, technical knowledge and skill upgradation. Girls specially the daughters and sisters of the rich family have more access to education and jobs such as school teachers, social workers and the like. Because of reading and writing skills of the well-off families, the local level government and semi- government jobs also fall in their hands, so they have better access to technical knowledge and skill upgradation.

In GRB, there are the Women development officers who are implementing most of the gender issues lack technical skills to implement all the relevant development programs. At the local level skills and technologies are still weak for managing and conserving natural resources. When district forest offices or other relevant agencies have to address gender issues, they set aside this job saying it's not our field and let the WDO take care of this, because they do not have sufficient knowledge. The training programs in the field level are not targeting the women and deprived groups and sometimes they are not communicated for skill development opportunities.

Due to extreme variation in topography and existence of micro-climates in short distances, the geographic domain of one specific technology is small in general in Nepal and have limited knowledge on technology adopted in other topography more particularly in the hills and mountains. Due to this reason the researchers are not well-versed with the impact of climate change and the adaptation technology required in all the context which also hinder in the access to technical knowledge and skill required to women in the GRB area.

Provision to for Women and Men to Access Project supported Services and Technologies

In the Gandaki River Basin various government, non-government and local CBOs are active in implementing the different projects, development activities and government policy to ensure sustainable livelihoods, conservation of resources and to tackle climate change impacts to reduce vulnerabilities. So far, all sectors of programs and policies have considered social inclusion and gender equality as a cross-cutting theme in order to implement the program and mainstream the policies to increase human, social, financial, natural and physical assets. However, the services and technologies provided by the project may not be available and accessible to both women and men equally due to the level of education, participation and socio cultural norms and practices. Therefore, the project will provide equal level of services and technologies to both men and women in the GRB area by applying the Ecosystem based Adaptation approaches. The project will explore and provide the gender friendly technology. Furthermore, the project will value and utilise the traditional knowledge of women and indigenous people for the area. Local people are often not aware of technology that reduces vulnerability and increases resilience to climate change which will provide by this project. likewise, the project will also have trained or build the capacity of men and women on the handling and maintenance of technology and services provided by the project.

Participation in Decision Making

After the promulgation of the constitution in Nepal the participation of the women and men from the vulnerable communities have gradually increased in the decision making processes but still there are constraints that restrict women's active participation in household and community level decision. Although women's involvement in household and community level has been increasing due to out-migration of male members in the society, the voice of women in decision making process is still unheard at the level expected due to domination of male members in the society. There are a wide range of mechanisms for citizens to participate in planning and decision making about climate adaptation. However, women, ethnic minorities, indigenous peoples, Dalits, disabled and others often have limited access to decision making as the caste

based system still exists in the community. The caste system has hampered both male and female in taking part in the decision making process.

In the Nepali context, the empowerment and development of women is inextricably bound to the dominant Hindu social structure, which influences all aspects of social, cultural, and economic life. This structure assigns women restricted roles, which most often involve household and family responsibilities. Nepali women have internalized this system and this makes it difficult for them to envision themselves in roles outside the home. Women participate in the household decision making processes in this area and they play an active role in community management including, drinking water management, natural resource management and conservation. The heavy unpaid workload of rural women and inequitable division of labour is not counter balanced by income, meaningful representation in decision making forums, or an equitable share of benefits. The project will try to apply the norm of equal pay to both men and women and also raise the awareness

The socio-cultural norms and traditions make difficult for vulnerable communities specially women to influence decision-making processes. Some factors that discourage women's and vulnerable communities participation at the community level are lack of recognition in public sphere, lack of knowledge, lack of information and lack of putting their voices properly. Furthermore, within the vulnerable community's women participation in decision making hinders due to high male members in the community level groups and forums and most of the decision making process is dominated by male member of the society. Women, poor, ethnic groups, marginalized peoples and Dalit households do not usually hold influential positions in community institutions, nor do they have the financial means to implement new innovative measures. They also have less access to the services provided by government line agencies.

The GRB are listed within the top 10 districts with migrant household /population, reflecting a high rate of male migration from 41 %t of total households in Myagdi to 54 % of total households in Gulmi and Arghakhanchi districts, the highest in Nepal (CBS, 2012). Migration has a direct implication on decision-making roles and responsibilities for women who become the de facto household heads in the absence of men. This brings both opportunity as well as challenges for women to adapt to climate risk and vulnerabilities.

The armed conflict and upper escalating rate of out migration in the country have increased the responsibility of women in agriculture. However, women are still regarded as independent and autonomous farmer by the social practices of the country. They are directly involved in the agricultural practice system of the country but aghast they have not the direct influence in the decision making power regarding the use of land and agriculture production of the country (ADB, 2010).

Barriers to the introduction and implementation of gender responsive climate resilient solutions

There are several key barriers to the introduction and implementation of gender responsive climate resilient solutions as presented below:

- **Lack of sex-disaggregated data, information, monitoring and evaluation**
  - Lack of sex- disaggregated data of climate vulnerability and risk resulting in poor understanding of gender-differentiated risk of climate change and climate induced disaster
  - Non-Inclusion of gender specific indicators in the entire monitoring and evaluation cycle of climate change projects and programs of government and NGOs/INGOs
  - Lack of synergy and capacity across sectors/ministries/agencies to address gender-environment data gaps and gender-responsive M&E

  This project aims to address this to some extent.

- **Women's negligible representation in climate change policy, leadership and decision making**
  - Lack of conscious effort to increase representation of women in climate leadership and decision making
  - Lack of opportunity for women and their representative organizations' views being represented in formal climate change policy, leadership and decision-making
  - Lack of planned and quality training on gender and climate change to women and men policy makers, decision makers, and implementers
  - Lack of planned, regular training and awareness raising activities on gender equity, climate risk and locally appropriate adaptation measures, focused on rural women and disadvantaged people

- **Heavy unpaid workload especially of rural women and inequitable division of labour**
  - Women contribute their substantive labour (unpaid) in agriculture and natural resource management which does not reflect in corresponding increase in income, and meaningful representation at decision making forums and committees.
  - Women reported during field visit difficulties in adapting agricultural practices to climate change patterns. The burden posed by the demand for increased agricultural production/ yields amidst changing climate pattern is taking its toll on women, who are managing agriculture and livestock in the absence of males.
  - Due to social norms and inequitable gender division of labour; unpaid work is assigned to women and girls especially collecting firewood, water, fodder, livestock care, farm care, and they are highly impacted by climate change. In addition to this, women must do domestic work like child care, cooking and cleaning, which is the cause of "gendered" vulnerability to climate change.

- **Low level of education /illiteracy/ climate risk awareness and access to information**
  - Women's limited access to climate risk information, early warning systems and training is making them more vulnerable and restricting their capacity to adapt.
  - Women's high level of illiteracy, low level of education and awareness is a barrier

- **Gender discrimination, cycle of poverty, and physical vulnerability of girls and women**
  - Early and child marriage of girls, no opportunity for economic and social advancement, repetitive life -cycle of poverty and disempowerment
  - Climate induced disaster is increasing the vulnerability of girls and young women in terms of safety and security, increasing risk of human trafficking and exploitative work in entertainment sector as seen after earthquake and floods
  - Women-headed households, that have increased following male out-migration, are particularly vulnerable to climate induced disasters with the loss of family support networks. Girls and young boys are vulnerable to school drop outs.

- **Limited livelihood options and access to productive assets**
  - Low access to finance, family property, productive assets and restricted access to markets due to gender norms, restrict women's capacity to livelihood diversification which is a key activity for adaptation.

- **Migration/ increase in fallow land and land degradation**
  - High out-migration of youth/ men after climate induced disaster and poverty leads to a lack of labour, increase in underutilized farm land/ fallow land and land degradation, mostly in rural areas.
  - Implications on food security, health and nutrition of women and children

Due to their high influence in decision making, participation of men and wealthier people in economic development interventions in the project sites is high. In contrast, due to low influential power in decision making, participation of women and ethnic groups in income generation is moderate, and participation of poor households, marginal groups and Dalit households in economic development is low.

Opportunities to Promote the Leadership of Women in Local Governance and Institutions

Nepal is going through political transformation and this could be an advantage to mainstream and integrate gender inclusion and poverty reduction issues for better livelihoods through managing and conserving natural resource programs. It is time now to have clear policies outlined in the new constitution to ensure the voices, and access and benefit sharing of women, deprived communities and indigenous people for their livelihoods. It is also an important opportunity for the political leaders to show their commitment to uplift women, deprived groups and indigenous people to empower them in social, economic and cultural aspects. They can play a decisive role to develop programs to empower and enable women and deprived groups securing their livelihoods.

After the promulgations of constitution of Nepal there are lots of opportunities to promote the leadership of women in local governance/political systems and formal/informal institutions. In the local election of Nepal 2017 women also got leadership position in local level due to mandatory rule of election commission of Nepal. Similarly, there are gradually improving the government policies and law for the women leadership position in different sectors. An increase in meaningful participation in the sector of conservation and development will definitely ensure the efficiency of the programs being implemented. Gender mainstreaming and inclusive legal policies of participation will support women and deprived groups to remove the negative socio-cultural norms and enable them to fight for their rights in resource management and decision making of all sectors. One major input will be to eliminate discrimination from resource management and development programs.

Capacity building, empowerment, awareness raising, sustainable development and accountability programs will not only raise the human resource capacity of the central or district level program implementers, policy makers or service receivers. For gender mainstreaming and inclusion programs these programs will support the deprived communities to have their share in participation and encourage them fully participate in all the development and conservation activities.

The project aims to enhance women's participation in formulation of policies, strategies and plans where women will have opportunity to articulate their needs and priorities and ensure that the policy tools are gender friendly.

Differential Needs/Priorities of Women and Men and Project plan to Address

Growing evidence suggests that men and women experience climate change differently and have different priorities and ability to respond to negative climate change impacts. In order to enable men and women to meet their own needs and leverage their strengths and contributions, we must pay close attention to gender-based differences and embed them into the design of climate change policies and programs.

There are several areas where there is disparity in the impact of climate change in Nepal. The main disparities are: differential perceptions of climate change due to low level of education of women compared to men, differential interest of climate smart agricultural enterprise, access to climate information, approach in managing climate risks, etc. Disparities that makes women more vulnerable in Nepal also include high level of poverty and more impact on women due to

low social women are given as compared to men. Women also play roles like caring of children elderly and sick people, fetch water and fuel wood, and work as unpaid family labour. Hence it is important to see how does the project address gender differences in vulnerability and adaptive capacity in order to ensure that the outcome does not put either women or men at a relative disadvantage to the other? And also to see how does the project address any specific gender needs to reduce vulnerability to climate change?

Project Plan to take into Account the Needs of Specific (Vulnerable) Sub-Groups

The project will take account of specific vulnerable sub groups needs and participation in all stages of project. The project focuses on nature-based solutions incorporating local knowledge, skills and innovation in the use of local resources for climate change adaptation. It assumes that if forests, grasslands and agro-ecosystems are protected and managed in a manner that generates desired ecosystem goods and services, diversifies livelihood options and increases gender equality and social inclusion, then vulnerable communities and ecosystems will be more resilient to impacts of climate change.

The project will focus on gender-responsive implementation of activities and promote gender-sensitive development impacts by integrating gender into its operational moDalities. There are varying levels of access to resources-knowledge, skills, and finance-that will shape how women and men adapt to climate impacts and they may share the benefits of climate finance differently.
Actively engaging women as “agents of change” in climate solutions yields multiple other benefits, including gender equality, women’s empowerment, and social inclusion. The project will focus on women playing a central role in planning and implementing activities and will seek to ensure that they directly benefited from project interventions and that their workloads and livelihoods are not adversely affected. From the project interventions the livelihood condition will be improved.

It is anticipated that because of increased income and other benefits, communities will have increased access to better education, health, and community services. They will also have increased participation in community decision making thereby enhancing good governance practices for e.g. from the forest restoration and livelihood related activities communities people will earn more income and also save their time which could be utilised for the education and health of their family members.

Proposed Specific Response Strategy for Each Target Group

The project will give due priority to gender and social inclusion in all activities wherever applicable. Firstly, the project will do vulnerability assessment of the gender and based on the results the project activities for gender and social inclusion will be intervened. Because of increased income and other benefits, communities will have increased access to better education, health, and community services. They will have increased participation in community decision making thereby enhancing good governance practices.

Plan to Utilise Specific Knowledge and Skills of Women and Men to Contribute to Project Outcomes

The project will utilised the specific knowledge and skills of women and men, especially from vulnerable groups through the development of indigenous (and local) business opportunities, promotion of indigenous and tradition knowledge and also undertaken the Free Prion Information Consent (FPIC) process as a part of project initiation and implementation time regarding resource conservation and enterprise development. The project will recognize that local communities usually have significant experience, knowledge and skills in bioengineering on the use of local resources. Such innovation will be identified and used by the project, subject to agreement of local people. The traditional, local and indigenous knowledge and skill of

vulnerable groups will be considered throughout the project cycle for the achievement of project goals.

The project will prioritise enhancing adaptation capabilities of the most vulnerable communities, including marginalized and indigenous communities whose livelihoods are dependent on ecosystem goods and services with a large potential for social co-benefits (lower starting point, higher multiplier effect).

Project Identified Opportunities to Challenge Gender Stereotypes

By involving local people from different segments of population such as women, poor and marginalized communities, different castes, and ethnicity in the project, not only are the involved people being empowered; the intervention will also help to break down different kinds of discrimination including caste-determined social and cultural barriers. Capacity enhancement and shared learning on resilience building will strengthen and increase social capital and behavioural changes with community empowerment and social inclusion and build solidarity within the communities.

Some of the opportunities and actions need to be taken into consideration for the positive gender relations in the project as follows

- **Build gender equity, climate change awareness and adaptation capacity**
  - Develop GESI and climate change mainstreaming strategy for the Eco System Based Adaptation
  - Develop GESI and climate change training manual for implementing partners and local government
  - representatives
  - Plan and provide regular training on Gender Equity, Women's empowerment and climate change at all levels central, provincial, local and community level, for both men and women
  - Increase access of women to information and capacity building training on climate risk and adaptation measures,
  - Ensure women's participation in workshops/ meetings
  - Train women to improve their capacity in weather observation and forecasting
  - Actively engage and train women in fresh water conservation, management and its effective allocation for household use and irrigation

- **Address lack of sex disaggregated climate change data and information**
  - Develop gender-sensitive early warning systems
  - Develop gender-responsive maps and analysis of hazards and vulnerabilities
  - Systematic collection and update of sex disaggregated data of climate vulnerability and risk
  - Use of gender responsive climate change monitoring and evaluation indicators in the entire project cycle

- **Livelihood diversification and alternative livelihood promotion for women and youth**
  - Effective use and promotion of cooperatives, micro finance and other banking facilities for livelihood diversification of women and disadvantaged people
  - Integrate gender analysis and value-chain analysis to improve agribusiness, reduce poverty, and improve inclusive markets
  - Promotion of ecotourism and skill training in bakery, homestay, nature guide, handicrafts, cook amongst youth both female and male
  - Research and introduce new agriculture production practices and technology suitable to women in light of feminization of agriculture

- Introduction of more climate resilient seeds and other farm inputs and extension services appropriate for women
- Introduce and promote micro insurance for crops, livestock, fruits and weather-based insurance scheme

- **Engage women in climate change planning, implementation and monitoring**
  - Promote and adapt bottom up approaches to climate change adaptation planning like LAPA and CAPA, for which Nepal is a pioneer
  - Ensure equal engagement of women, and disadvantaged communities in local adaptation planning, its implementation and monitoring
  - Tackle gender inequality at the broader level-for adaptation financing to be effective and equitable from –legislative, policy, programs, to market level
  - Effective implementation of already existing provisions in constitution, law, sectoral programs and policies related to gender equality, women's empowerment, social inclusion to enhance resilience

- **Knowledge management and documentation**
  - Systematic documenting of traditional and local knowledge of climate change and adaptation practices of women and disadvantaged people especially Chepang, Majhi, Mushar, Bote, Tharus, Dalits, and indigenous people more dependent on forest and water for their livelihoods.

Part II: Gender Action Plan: Template (Project/Program Level)

Gender Indicators and Targets in the Project

In order to ensure that gender mainstreaming is explicitly visible in the project design, adequate efforts were made. In all outcomes and outputs, gender specific areas were identified and separate gender related indicators were picked-up from the project logical framework. Quantifiable performance indicators were to ensure women's participation and benefits were pooled together with clear time-bound targets. These are summarised in Table 4.

Table 4: Gender Indicators and Targets

Outcome/ Output/ Activities	Indicators	Targets	Completion timeline (by the end of the year)	Respon-sibilities
Project impact: Increased Resilience of Communities, including women and girls within the Gandaki River basin through Ecosystem and Livelihood Adaptation to Climate Change	• Reduce vulnerability of target households	• Reduce vulnerability of 198,016 households with focus on women headed households. • At least 65% women will be benefitted directly and 60% women will be benefitted indirectly	7	PMU
Outcome 1: Enhanced resilience of livelihoods of the vulnerable communities through adapting to climate change sustainably	• Number of male and female farmers adopt the resilient farming practices	• Raised awareness of at least 300,000 women on climate threats and related appropriate responses • At least 18,900 farmers (65% women, 20% Dalits, and 15% disadvantaged group) participating in resilient farming practices and at least 20% women, 10% Dalit and 5 % disadvantaged group adopting resilient farming practices.	7	PMU
Output 1.1: Climate resilient agroforestry and livelihood improvement actions implemented for coping with extreme events	• Hectares of land under agroforestry practices and managed by men and women farmers	• Establish and improve agroforestry practices in 500 ha of land including 350 ha managed by women • 75% women participating in establishment and improvement of agroforestry practices and 20% Women, 10% Dalits and 5 % disadvantaged group engage in income generation from agroforestry practices	3	PEU and service providers
Output 1.2: Interventions for water availability and water use efficiency from irrigation systems and improved water sources implemented	• Number of Irrigation schemes improved and managed by men and women	• Irrigation schemes established: 150 small and 170 micro schemes (100 small and 100 micro schemes managed by women, • At least 50% women are trained and capacitated on water resource management and at least 20% women engaged in income generating activities such as agriculture farming	5	
Outcome 2: Strengthened climate resilience of ecosystems	• Hectares of land have improved management and protection from climate risks	• 90,000 ha of forest, 6,000 ha of grassland and 150 freshwater sites under improved management and protection from landslides and floods: 2500 ha forest land, 500 ha grassland, 750 ha wetlands and 320 conservation ponds with women's involvement of 65%, • Involvement in ecosystem management and protection: 66,600 community	7	PMU

		members (women 65%, Dalits 20%, 15% disadvantaged groups), at least 65% women benefitted from ecosystem management and protection		
Output 2.1: Natural ecosystem restoration based actions implemented for reducing impacts of landslides and floods	Kilometer of green belts and rural roads with number of plants and number of men and women practiced natural ecosystem restoration	8 km gender friendly green belt and enrichment plantation at 700 sites, carry out plantation along 70 Km rural road and train 250 community members on natural ecosystem restoration with 70% women's involvement • 10 % plant will be planted to meet the women demanded species, 70% plant survived and 10% community members trained and practiced natural ecosystem restoration	4	PEU and service providers
Output 2.2: Technical capacity of GRB communities enhanced in maintaining and supporting climate resilient ecosystems	Number of community groups trained on maintaining and supporting climate resilient ecosystems	Train 250 Community Groups including 70% women in GRB to enhance technical capacity of GRB communities to maintain climate resilient ecosystem 70% women awareness level enrich on climate resilient ecosystem and 10 % women groups technical capacity enhanced and adopted climate resilient ecosystem management practices	4	PEU and service providers
Outcome 3: Strengthened climate governance and institutional framework to sustain climate	• Number of policy and plans document included gender and social inclusion issues	• At least 150 plans/ policies/ strategies /regulations that include climate adaptation measures are prepared with 60% women's participation and gender and social inclusion issues are included • 198,016 HH aware on climate governance and institutional framework and 50,000 households participating in climate governance including at least 20 women headed households	6	PMU
Output 3.1: Community-based mechanism for planning, restoration, monitoring, and maintenance of ecosystems established	• Number of institutions with improved governance	• Operate 50 community schools including 70% women's participation to train communities to track the restoration and conservation of the ecosystems in target areas through field schools and 200 community groups will plan and manage the structures and tools for conservation and restoration of ecosystem • At least 60% women are involved in the preparation of planning and management structures and tools for conservation and restoration of ecosystem and 10% group institutional governance strengthening	4	PEU and service providers
Output 3.2: Ecosystem-based climate change adaptation approaches incorporated into government policies and plans	• Number of integrated sub riverine watershed and water resource management plan and SOPs with gender responsive and social inclusive budget for ecosystem based CC	• At least 21 gender and social inclusive integrated sub-riverine watershed and water resource management plans and SOPs prepared • At least 60% women are involved in the preparation of integrated sub riverine watershed and water resource management plants and SOPs and ensure that the government policies and plan allocated at least 35% gender responsive and social inclusive budgeting for ecosystem based CC approaches	4	

	approaches			
Output 3.3: Knowledge management established for climate resilient River Basin Management	• Number of climate data base management centre and CLAs	• Established one GESI disaggregated climate data base management centre and three GESI friendly communication, learning and adaptation (CLA) structures	6	
		• At least 60% women are involved in the generation of baselines data and map vulnerability, hazard sites, ecosystem services and facilities in communities based on risk profiles and establishment of CLA management committee with representation of women, vulnerable people, Dalit, indigenous people and disadvantaged groups.		

Arrangement for the Implementation of Gender Action Plan

Preparation of Gender Action Plan: Based on the gender assessment and areas identified for consideration, gender action plan was designed. The GAP was designed in consultation with women's organizations – particularly women's self-help groups and CBOs and NGOs working in climate change adaptation in GRB. The ultimate GAP has considerable focus on ensuring that women are integrally involved in project implementation and are beneficiaries of on-the-ground activities. The interventions have been designed to be culturally and socially acceptable to women.

All the project outcome and output areas have been reinforced by gender specific activities to ensure that gender issues are duly addressed. The GAP targets women-headed households to increase their incomes and reduce their vulnerability to climate change. Women and women's groups will be actively engaged by project facilitators – both to take advantage of livelihood opportunities and to strengthen their capacity to participate confidently in community and project structures. The project aims to cover 65% women as direct beneficiaries and 60% women as indirect beneficiaries.

The Action Plan is based on project's gender-responsive approach which is in alignment with national plans and policies including climate change, forest, agriculture and water, all of which promote increased participation of women and disadvantaged groups in decision-making and access to benefits. For example: equal pay between men and women for the same activities is not evident in the GRB. In the GRB, for rural road maintenance work, men are found being paid NRs.900 per day while women were paid NRs.700. When hiring staff or contracting workers, the project will ensure equal pay for the same work irrespective of gender, caste or any other factors. Budgetary allowances to support payment for pregnancy leave, and childcare will be ensured for project staff and women involved in training courses during the project.

In order to ensure that the mainstreamed gender issues are properly addressed, there are 38 activities designed and USD 100,000 dedicated to implement the Climate Change and Gender Action Plan (Table 5). The overall supervision of the GAP implementation is with the IUCN Nepal's Senior Climate Change and Gender Officer and Gender Officer of NTNC. IUCN Nepal and NTNC have proven success in meaningful engagement of women and disadvantaged people for ecosystem management and community development. Their implementation approach will be extensively used to safeguard gender and social issues in the project. Mother's groups, women-led community forest user groups, farmer groups, saving and credit groups, and enterprises will be prioritized to ensure benefits for women.

Activities	Indicators and Targets	Completion timeline	Responsibilities
Impact Statement: Increased Resilience of Communities, including women and girls within the Gandaki River basin through Ecosystem and Livelihood Adaptation to Climate Change **Outcome Statement:** o Enhanced resilience of 65 % vulnerable women livelihoods through adapting to climate change sustainably o Strengthened Climate Resilience of Ecosystem enhancing technical capacity of 65 % of women in adoption of climate resilient ecosystem management and protection interventions o Strengthened Climate Governance and institutional framework through strengthening institutional capacity of 35 % of women lead institutions and allocation of 35 % gender responsive and social inclusive budget for climate change in government policies and plans			
Output(s) Statement: o 500 hac of Climate resilient agroforestry promoted and for 65% of women livelihood improvement actions implemented for coping with extreme events by the end of project o Interventions for water availability and water use efficiency from 120 irrigation systems involving 50 women headed HHs and improved 320 water sources implemented by the end of project o Natural ecosystem restoration based actions implemented for reducing impacts of landslides and floods in 70 km area through 70% women participation by the end of project o Invasive species management actions implemented in 1000 ha of priority community forests, 500 ha of grasslands and 750 wetlands for the benefits of women by the end of project o Women members included Community-based mechanism for gender responsive and social inclusive planning and budgeting, restoration, monitoring, and maintenance of ecosystems established by the end of project o Ecosystem-based climate change adaptation approaches incorporated into at least 15 government policies and plans events by the end of project o Knowledge management centre and CLA structure established for climate resilient Integrated River Basin Management events by the end of project			
Activities	Targets	*Timeline*	Responsibility
Support women, Dalits and marginalised people enhanced access to technology to adopt climate resilient livestock and agricultural systems	65 % of Women, Dalit and Marginalised people in project area have access to technologies	By 7th year of project	AE
Training women in diversified, climate resilient livelihood options (including livestock, fisheries, agriculture, agro-forestry, farm based tourism)	30% women, 20% girls, 30% men and 20% boys trained in project area	By 7th year of project	EE
Promote equal Access to women and men to farm credit, improved crop varieties and improved livestock breeds by promoting rural microfinance such as Savings and Credit Cooperatives and agro-vet suppliers in the community.	50% women and 10 microfinance in the project area	By 7th year of project	EE

Ensure participation of both men and women in nature-based structures development	65 % women participate in development of nature based infrastructure	By 7th year of project	AE
Establish women, Dalit and marginalised people managed irrigation schemes	20 small irrigation scheme established by women, Dalit and marginalise people	By 7th year of project	AE
Support the development of women/Dalit managed cooperatives	20 cooperatives (of which 30% are female managed) in the project area	By 7th year of project	EE
Equal access to women and men of micro finance and banking facilities for livelihood diversification	50% women have access to micro finance in the project area	By 7th year of project	AE
Promotion of ecotourism and skill training in bakery, homestay, nature guiding, and handicrafts amongst youth both female and male	30% women, 20% girls, 30% men and 20% boys trained in project area	By 7th year of project	AE
Engage women in microenterprise development in NTFP and agriculture products	19 women microenterprise in the project area	By 7th year of project	EE
Support the extension of existing micro insurance programme for crops, livestock, fruits and weather-based events and orient women and men on the process to access such services.	50% women orient and 30% will adopt micro insurance in the project area	By 7th year of project	AE
Engage women, Dalits and disadvantaged people in the preparation and implementation of preparedness plans	50% women, Dalits and disadvantaged people engaged	By 6th year of project	EE
Ensure women, Dalits and disadvantaged people have equitable access to climate resilient veterinary Service Centres	50 % women, Dalits and disadvantaged people getting veterinary services from the centres in the project area	By 6th year of project	AE
Provide women, Dalits and disadvantaged people access to community Seed Bank and Agri-tools Centres	20% additional women, Dalits and disadvantaged people access to CSB	By 6th year of project	AE
Promote the involvement of women, Dalits and disadvantaged people in Community Information and learning Centres, rescue centres and emergency facilities for preparedness and response to climate induced disasters	Additional 20 % women, Dalits and disadvantaged people using information and learning center	By 6th year of project	AE
Conduct the vulnerability assessment exercise to identify the vulnerable area and group and also know the whether project activities will hamper on gender access	Identify 30% project area where women, Dalits and marginalised people are more vulnerable	By 3rd year of project	EE
Ensure equitable involvement of women, Dalits and disadvantaged people in participatory vulnerability mapping	50 % women participation in vulnerability mapping	By 6th year of project	EE
Employ women, Dalits and disadvantaged people in forest management, regeneration and plantation establishment	50 % women, Dalits and disadvantaged people employed by the project in the project area	By 7th year of project	EE
Promote gender friendly Ecosystem based Adaptation technologies	30% gender friendly technology promoted in the project area	By 7th year of project	EE
Trained women, poor, Dalit and marginalised people on Ecosystem based Adaptation technologies	65% women, poor, Dalit and marginalised people trained on EbA technologies	By 7th year of project	EE
Capacity building of CFUGs on natural ecosystem restoration	70% women from 250 CFUG trained on	By 7th year of	EE

	natural ecosystem restoration	project	
Encourage women, Dalits and disadvantaged people to take on managerial and leadership roles in committees	40% leadership position by women, Dalits and disadvantaged people	By 7th year of project	EE
Training in leadership and committee roles and responsibilities	At least 30% training participants will be women, Dalits and disadvantaged group people	By 7th year of project	EE
Reduce women's workloads by introducing improved cook stoves and enhancing access to drinking water, and access to rice and flour mills	2 hrs workload of women saved	By 7th year of project	AE
Employ women, Dalits and disadvantaged people in grassland management and regeneration and ensure equal payment for women and men for the same activities	50 % women, Dalits and disadvantaged peoples participated	By 6th year of project	EE
Employ women, Dalits and disadvantaged people in freshwater system management and regeneration	50 % women, Dalits and disadvantaged people employed by the project in the project area	By 6th year of project	AE
Build capacity of women water Users' Group on operation and maintenance of the water harvesting scheme	65% women water users groups members trained on water harvesting scheme	By 5th year of project	AE
Ensure active and full participation of women, Dalit and disadvantaged people in development of sub watershed plan and watershed management decision –making	50% participants from women, Dalits and disadvantaged people	By 6th year of project	EE
Established the separate men and women managed demonstration sites	25 % women managed demonstration sites in the project area	By 7th year of project	EE
Developing and implementing Gender Mainstreaming Strategy (GMS) throughout the project	One gender mainstreaming strategy for project developed	By 2nd year of project	AE
Develop gender focused training manual for livelihood resilience, ecosystem resilience	One training manual developed	By 2nd year of project	AE
Sensitize participants and stakeholders (both women and men) on the difference between participation (just attendance) and active or meaningful participation (interactive and influencing decision making)	65% women sensitized and 30% meaningful participation of women increased in the project area	By 7th year of project	AE
Ensure equal engagement of women, Dalits and disadvantaged communities in climate change adaptation including LAPA and CAPA, local adaptation planning, implementation and monitoring	50% participants from women, Dalits and disadvantage people in all stages	By 6th year of project	AE
Ensure accountability and transparency in climate adaptation budget allocation for women and disadvantaged people	Provision of 20% gender responsive budget	By 6th year of project	EE
Documentation of traditional and local knowledge of women, Dalit and disadvantaged people dependent on forest, water and land	20% documented knowledge is women, Dalits and disadvantaged people	By 6th year of project	AE
Systematic collection and updating of sex, ethnic group and wealth disaggregated data on climate vulnerability and risk	One data management system developed	By 6th year of project	EE
Production of knowledge products in the in posters, local newspapers, and electronic media which are women friendly.	10 gender friendly knowledge products	By 7th year of project	EE
Disseminate the knowledge products through women, Dalit and disadvantaged	Disseminate the project knowledge	By 7th year of	EE

people's networks	product in 10 networks of women, Dalits and disadvantaged people	project	
Use of gender responsive monitoring and evaluation indicators in the entire project cycle	Include 5 indicators related to gender	By 7th year of project	AE

Implementation arrangement: By designing separate activities and implementing them has ensured that the mainstreamed gender issues in the project are well addressed with quality and quantity on time. In order to facilitate this implementation process, separate arrangement has also been made for the gender consultant, and associated budget for travel and DSA (Table 6).

Table 5: Gender Action plan implementation budget (US$)

Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount
GAP activity cost	10,091	20,182	20,182	20,182	10,091	10,091	10,091	100,909
Technical resource person	5,062	7,593	7,593	7,593	7,593	7,593	7,593	50,618
Travel and DSA	1,477	1,818	1,818	1,818	1,818	1,818	1,818	12,386
Total	16,630	29,593	29,593	29,593	19,502	19,502	19,502	163,914

Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal

Annex 8b: Gender Assessment Report

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Abbreviations

ADB	Asian Development Bank
CAPA	Community Adaptation Plan of Action
CBOs	Community Based Organizations
CBS	Central Bureau of Statistics
CCGAP	Climate Change Gender Action Plan
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
DADO	District Agriculture Development Office
DDC	District Development Committee
DEO	District Education Office
DFO	District Forest Office
DLSO	District Livestock Service Office
DRR	Disaster Risk Reduction
DSCO	District Soil Conservation Office
DSCWM	Department of Soil Conservation and Watershed Management
EbA	Ecosystem Based Adaptation
Eco-DRR	Ecosystem – Disaster Risk Reduction
EWS	Early Warning System
FECOFUN	Federation of Community Forest Users, Nepal
FGDs	Focus Group Discussions
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
FNCSI	Federation of Nepal Cottage and Small Industries
GAFSP	Global Agriculture and Food Security Program
GCF	Green Climate Fund
GDI	Gender Development Index
GDP	Gross Domestic Product
GEM	Gender Empowerment Measure
GESI	Gender Equity and Social Inclusion
GGI	Gender Gap Index
GLOF	Glacial Lake Outburst Flood
GoN	Government of Nepal
GRB	Gandaki River Basin
HDI	Human Development Index
HPI	Human Poverty Index
I/NGOs	International /Non-Government Organizations
ICIMOD	International Centre for Integrated Mountain Development
IFAD	International Fund for Agriculture Development
ILO	International Labour Organization
LAPA	Local Adaption Plan of Action
MOAD	Ministry of Agricultural Development
MOFALD	Ministry of Federal Affairs and Local Development
MOFSC	Ministry of Forest and Soil Conservation
MOLD	Ministry of Livestock Development
MOPE	Ministry of Population and Environment
MOWCSW	Ministry of Women, Children and Social Welfare
MPI	Multidimensional Poverty Index
MSFP	Multi-stakeholder Forestry Program
NAP	National Adaptation Plan
NAPA	National Adaptation Program of Action

NHRC	National Human Rights Commission
NLFS	National Labor Force Survey
NPC	National Planning Commission
NRM	Natural Resource Management
NTFP	Non-timber Forest Product
NTNC	National Trust for Nature Conservation
PRA	Participatory Rural Appraisal
SAARC	South Asian Association for Regional Cooperation
SDC	Swiss Development Cooperation
TWG	Thematic Working Group
UNDP	United Nation Development Program
UNFCCC	United Nation Framework Convention on Climate Change
USAID	United States Agency for International Development
VDC	Village Development Committee
WCO	Women Children Office
WDO	Women Development Office

1. Introduction

Nepal is facing a wide range of impacts from climate change including changes in rainfall patterns, longer droughts, frequent landslides and soil erosion, flash floods, increased risks of glacial outbursts and rising temperatures. These changes are having negative impacts on agriculture and food security, water resources, forests and biodiversity, health, tourism and infrastructure. This leads to reduced adaptive capacity and increased vulnerability of communities and ecosystems. Accordingly, there is an urgent need to enhance the adaptive capacity and resiliency of both ecosystems and vulnerable communities.

The Government of Nepal (GoN) has given strong emphasis to the river basin approach through different sectorial policies, plans and strategies. It has also started using Ecosystem based Adaptation (EbA) and Ecosystem-based disaster risk reduction (Eco-DRR) through various projects and has recently recommended up-scaling and replicating best practices and learning from past EbA projects to wider areas.

IUCN, as the Accredited Entity (AE) for the Green Climate Fund (GCF), with the Department of Soil Conservation and Watershed Management (DSCWM)/Ministry of Forest and Soil Conservation, and the National Trust for Nature Conservation (NTNC) have collaborated on the development of the proposed project "Enhancing Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin"

1.1 Socio Economic Background

Population: According to the 2016 update of the 2011 census, Nepal's population is 28.33 million. The average annual population growth rate during the period 2012-2016 was1.14 per cent (ADB, 2017). The population density is 192 persons per km^2. The sex ratio is 94.6 males per 100 females, meaning that Nepal's population comprises 48.5 per cent male and 51.8 per cent female. The Census data of 2011 shows that female headed households have increased by 11 percentage points from 14.87 per cent in 2001 to *25.73 per cent* in 2011.

Caste/Ethnicity: There are 125 caste/ethnic groups reported in the 2011 census. Chhetri is the largest caste/ethnic group with 16.6 per cent (4,398,053) of the total population followed by Brahman-Hill (12.2 per cent; 3,226,903) and Kirat (5 per cent).

Languages: There were 123 languages reported as spoken as mother tongue in the 2011 census. Nepali is spoken as mother tongue by 44.6 per cent (11,826,953) of the total population followed by Maithili (11.7 per cent 3,092,530) and Bhojpuri (6.0 per cent; 1,584,958).

Religion: Of the ten categories of religion reported in the census, Hinduism is followed by 81.3 per cent (21,551,492) of the population, Buddhism 9.0 per cent (2,396,099) and Islam 4.4 per cent (1,162,370).

Poverty: The Gross Domestic Product (GDP) of Nepal is USD 20.88 billion and GDP per capita USD 2,313 (NLSS -2011). The average annual economic growth rate from 2012-2016 was 1.40 per cent. The Gini Coefficient which measures income inequality was 32.8 in 2014 (ADB, 2017)

In Nepal's 14^{th} 3-year periodic plan (2016-2019), an average annual growth rate of GDP of 7.2 per cent has been projected. Among other objectives in this plan, is a focus on cross-cutting issues such as gender equality, an inclusive society, environmental protection and capacity development of different institutions.

1.2 Objectives of the Study

This gender assessment aims to provide an overview of the situation of Gender Equity/Equality in Nepal, identifying key gender issues and other categories of discrimination and vulnerabilities especially caste,

poverty and ethnic vulnerabilities relevant to the project. The assessment identifies gender-mainstreaming opportunities within the project components.

This Gender Equity/Equality assessment provides grounded justification for preparing a Climate Change Gender Action Plan (CCGAP) with indicators, targets and activities identifying women as beneficiaries, leaders and decision makers with tentative cost estimates.

1.3 Method

The assessment is based on a desk review of available literature and data as well as consultation with a wide range of stakeholders from the national level, provincial level, and local level down to the level of vulnerable communities.

- Relevant data and information were collected from published secondary data and publications from the Central Bureau of Statistics of Nepal Census Data of 2011, the World Human Development Report 2016, the National Human Development Report Nepal -2014, the Multidimensional Poverty Index Report from the National Planning Commission of Nepal -2018, World Bank, ADB, the Ministry of Population and Environment, the Ministry of Forest and Social Conservation, and various other reports and publication of INGOs, NGOS working in climate change, forestry, natural resource management (NRM) and disaster risk reduction (DRR) sectors in Nepal.
- The units of analysis used for the gender equity assessment are: the household level for quantitative data wherever it was available, the community level for focus group discussions, and key informant interviews at the national and provincial level. Data and information are disaggregated by gender as well as poverty, caste and ethnic groups as far as possible.
- All 19 districts within the Gandaki River Basin (GRB) were visited by a group of multi sector experts including a gender expert and field facilitators for site specific firsthand information collection and consultation with key stakeholders and vulnerable communities. Information collection was done through direct observation, interviews and focus groups discussion guided by a pre-prepared checklist.

2. A Review of National Gender Policies, Legislation and Strategies

2.1 Gender Equality/Equity in Constitution and Law

The Constitution of Nepal 2015

The Constitution of Nepal is a significant milestone for gender equity and social inclusion (GESI). It enshrines equal rights for women, the poor, the vulnerable and people from different social groups. Positive provisions include affirmative action to address historical disadvantage and a ban on sex or caste/ethnicity-based discrimination.

The article on Rights of Women establishes the right to equal lineage; right to safe motherhood and reproductive health; right to participate in all bodies of the State; right to property and family affairs; and positive discrimination in education, health, employment and social security. It also makes any act of violence against women punishable by law. The Right to Equality further elaborates the special provisions by law for the protection, empowerment or development of citizens. The Right to Social Justice establishes the people's right to participate in state bodies based on the principles of inclusion and proportional representation.

Property Rights (Economic Rights)

Due to a patriarchal and patrilineal system, women in Nepal had been denied full access to and control over family property. The legal framework maintained this discrimination until the 11th Amendment of the Civil Code (commonly referred to as the Women's Bill, 2002), which repealed several discriminatory provisions of the Civil Code along with other acts and entitled women to significant rights. The

amendment provided equal inheritance rights to unmarried daughters and sons (where previously an unmarried daughter had inheritance rights only if she was over 35 years of age) and removed discriminatory conditions that prevented women from having full access to property. Women were granted the right to their husband's property upon divorce and the provision of receiving monthly or yearly support in lieu of property. Widows were given full rights to their property allowing them to use it even if they remarry (where previously they were required to return property to the deceased husband's household upon remarriage).

The Gender Equality Act (2006) advanced the property rights of women even further and gives equal property right on ancestral property to son and daughters. It removed and amended discriminatory language. As per latest census data female ownership of fixed assets is 19.71 percent of households, land or house or both in the name of female member of the household (CBS, 2012)

2.2 Gender Equality and Inclusion Indicators in the Socio-Economic Sector

Multidimensional Poverty Index -2018

The latest 2018 Multidimensional poverty report of the GoN/National Planning Commission (NPC) notes that 28.6 per cent of Nepal's population is multidimensionally poor. However, Nepal has halved its Multidimensional Poverty Index (MPI) from 59 per cent in 2006– to 29 per cent in 2014. Under-nutrition and completion of up to five years of schooling are two key indicators which contributed to the improvement of the MPI. For the first time this report enables the MPI to be disaggregated by the recently formed seven provinces of Nepal, whereby Province 6 and 2 have the highest rate of multidimensional poverty – with every second person being multi dimensionally poor (50 per cent) – followed by Provinces 5 and 7 (approximately 30 per cent being poor) (NPC, 2018). Some of the GRB is in province 5. See Figure 1 for the location of the Provinces

Figure 1: Map of Nepal showing location of provinces

In terms of under nutrition/malnutrition, a 2017 article in the daily newspaper Kantipur reported that in some areas of province 6, girls are highly undernourished compared to boys and even dying due to gender-based discrimination in food distribution and lack of timely health care for girl children. Very heavy workloads of rural and mountain-based women due to male out-migration, gender inequality in the household division of labor, and difficult mountain terrain, women have no time to take care of their children and themselves. This situation is contributing to the poor health outcome for women and girls (Kantipur Daily 2017, Dec.23 Saturday).

In the GRB the situation of under nutrition and malnutrition of girls is not as severe as in far western districts in province 6. Comparatively, the districts of GRB are more accessible. Nevertheless, there are pockets of poverty and certain caste groups including Chepang (in Dhanding and Chitwan), Majhi, Bote, and Tharu who are generally poor, not educated and live in remote areas. Girls get lower less priority in terms of nutritious food, are often subject to child marriage /early marriage, and are not given any priority for education beyond primary level, or health care.

Human development Index (HDI) and Human Poverty Index (HPI)

The Human Development Index (HDI) score for Nepal in 2011 was 0.458, the lowest ranking among countries of the South Asian Association for Regional Cooperation (SAARC), aside from Afghanistan (NPC & UNDP, 2014). Among the ecological regions, the Hills have the highest HDI value at 0.520, compared to the Terai (plains) at 0.468 and the Mountains at 0.440. The Human Poverty Index (HPI) value for Nepal in 2011 is 31.12. Urban-rural differences are considerable, with rural poverty nearly 1.8 times higher than urban poverty.

Global Gender GAP Index (GGI), World Economic Forum

The Global Gender Gap Index (GGI) measures gender parity between males and females. The GGI for Nepal is 0.661, and Nepal ranks 110 out of 144 countries measured. Nepali women are progressing in terms of political representation they rank 68 out of 110. In health and survival, they rank 92. However, in terms of economic opportunity (115) and educational attainment (123) they are ranking far behind their global women counterparts.

The Gender Development Index (GDI), UNDP

The Gender Development Index (GDI), score for Nepal for 2011 was 0.534. Among the ecological regions, the GDI value based on the geometric mean is the highest for the Hills at 0.515, followed by the Terai at 0.458 and the Mountains at 0.430. Gender disparities in health, education and income remain major challenges across Nepal. Nationally, the average income of women is 57 per cent lower than the average for men, whereas 80.1 per cent of women are economically active which is a paradox that reflects the lower economic status of women.

The Gender Empowerment Measure (GEM), UNDP

The Gender Empowerment Measure (GEM) for Nepal in 2011 was 0.568. Among ecological regions, the Mountains have the lowest value at 0.483, while the Hills have the highest at 0.572. This is due to the low share of Mountain women in Parliament at 18.6 per cent, compared to 28.9 per cent for the Hills and 32.9 per cent for the Terai, as well as low combined income values. Among development regions, the Far Western region (now province 6) has the lowest GEM value of 0.523, primarily due to its low share of women in administrative and professional positions. The Eastern region has the highest GEM at 0.575, followed by the Central and Western regions.

Employment, Income and Labor Migration

The proportion of economically active women in Nepal is quite high compared to other South Asian Countries. According to the National Labor Force Survey, 80.1 per cent of women are economically active compared to 87.5 per cent of men (NLFS, 2014). This is in part due to the predominance of women in subsistence agriculture, where women are highly active following high levels of male outmigration. Of those employed, 89 per cent of women are engaged in agriculture and forestry compared to 70 per cent of men. However, the wages of women lag well behind those of men. In non-agricultural wage employment, women are concentrated in low-paying and less-productive jobs of low capital intensity. Female migration is also increasing, with official figures reaching 11,007 in 2008 (of a total of 266,666 migrants in that year), although this probably understates the volume given the numbers migrating without official permission (ADB, 2010). It has been estimated that 11 per cent of

total remittances are from women migrants. The Foreign Employment Act, 2007 aims to protect the rights of workers and professionals.

Health

In Nepal the maternal mortality ratio is 229 deaths per 100,000 live births, which is quite high (PEHRC, 2016). The government's Second Long-Term Health Plan (1997–2017) gives high priority to improving neonatal and maternal health outcomes and includes many initiatives to improve access for the poorest and socially excluded, including a safer motherhood program, and a female community health volunteer program, which are quite successful.

Major health problems specific to women-specific are prolapsed uterus, under nutrition and anemia due to heavy workloads, combined with inadequate access to nutritious food during menstrual cycles and post-delivery. This situation is prevalent in the far western areas, as well as in some parts of the Terai, where patriarchal and gender discriminatory norms are stronger, and the overall poverty level is very high. One study estimated that more than 600,000 women in Nepal are suffering from uterus prolapse (ICIMOD, 2011).

Education

The share of total enrolment for girls is 50.4 per cent at primary level, 50.5 per cent at lower secondary, and 50.4 per cent at basic levels. This clearly demonstrates that the gender parity has been achieved in basic education, including primary and lower secondary education (1.02 at primary level, 1.02 at lower secondary level and 1.02 at basic level) (WEF, 2016). However, in terms of adult literacy rate, there is wide gender gap where 75 per cent of males and only 57 per cent of females are literate.

There is a huge disparity among boys and girls in terms of dropout rates from secondary school education. Early marriage is a main cause of girls dropping out of school, and economic condition and poverty is the main reason boys drop out.

Human Trafficking

Trafficking of children and women in Nepal is a pressing issue. Around 16,500 Nepali citizens, mostly unmarried women and children, were trafficked in 2014-16, according to a national report released by the National Human Rights Commission (NHRC, 2016)(cited in e-kantipur). The Nepal Police records indicate 1,233 women and children missing (i.e. likely trafficked) in a three-month period after the Gorkha earthquake. 85 per cent of rescued trafficking victims had never been to school, which indicates a nexus with gender discrimination, illiteracy and poverty, in this case natural disaster and climate hazard is also a key trigger. The Human Trafficking and Transportation (Control) Act, 2007, provides for the protection and rehabilitation of trafficking victims.

2.3 Policy and Institutional Environment towards a Gender Equity-based Approach to Ecosystem based Adaptation (EbA)

2.3.1 The Evolution of Climate Change Policy and Gender and Inclusion Policy in Nepal

There are a range of laws, policies and programs related to climate change adaptation in Nepal. This part of the assessment examines their evolution and the extent to which they take gender into account and future prospect for Gender Equality based Approach to EbA.

National Adaptation Plan of Action, NAPA (2010) Nepal submitted its NAPA to the UNFCCC Secretariat in September 2010. Seven Thematic Working Groups (TWG) contributed to the NAPA development process, including 1. Agriculture and food security (nutrition) 2. Climate induced disasters 3. Forests and biodiversity 4. Public Health (WASH), 5. Tourism, natural and cultural heritage 6. Urban settlements and infrastructure, and 7. Water resources and energy. Gender and inclusion and livelihoods and

governance are two cross cutting themes aimed at addressing the different sector specific aspects of climate change. Each group is supposed to assess the gender implications for their theme.

Local Adaptation Plan of Action, LAPA (2011) The Government of Nepal has approved the LAPA framework with the objective of supporting climate adaptation at the local level to ensure mainstreaming climate adaptation into development planning framework in the leadership of local government bodies. LAPAs were introduced as a mechanism for formulating the National Adaptation Plan. Four directive principles guide their development: a bottom up approach, inclusiveness, responsiveness and flexible processes. The planning units for LAPAs were Village Development Committees (VDCs) and municipalities. Following the restructure of local government under the newly federated structure of Nepal, the new municipalities are now the planning units for LAPAs.

Climate Policy Nepal (2011): Nepal's Climate Change Policy of 2011 recognizes that there are differential impacts of climate change on communities. It acknowledges that the impact of climate change is greater in poor, developing, landlocked countries and on rural women. The Policy provides for women's participation in the implementation of climate adaptation programs. Section 8.4.2 of the Policy calls for "ensuring the participation of poor people, Dalits, marginalized indigenous communities, women, children and youth in the implementation of climate adaptation and climate change related programs." The policy provides for capacity building of local bodies and the implementation of local level activities.

National Adaptation Plan (2017): Nepal has initiated the NAP formulation process based on UNFCCC COP decisions and on 'initial guidelines (Decision 5/CP.17)' and the technical guidelines developed by the LDC Expert Group (LEG).

The NAP has two key objectives: (i) reducing vulnerability to the impacts of climate change by building adaptive capacity and resilience; and (ii) facilitating the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programs and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate (GON/MOPE NAP: 2017). The NAP has 7 thematic working groups and 2 cross cutting working groups on gender and inclusion and Livelihood and governance.

Sector Specific Gender Policies and Guidelines – The Ministry of Federal Affairs and Local Development GESI Policy, the Ministry of Urban Development GESI Operational Guidelines, the Ministry of Forest and Soil Conservation GESI Strategy, the Ministry of Education Consolidated Equity Strategy, and the Ministry of Health GESI Operational Guidelines – recognize the need to address GESI issues programmatically and institutionally to achieve sector objectives. However, so far, the Ministry of Population and Environment, which is the focal ministry for climate change, does not have a standalone GESI strategy/policy or operational guidelines for climate change.

All of the sector specific GESI strategies and guidelines emphasize participation of Women, Dalits, Adibasi/Janajatis, Madhesis, Muslims, persons with disability, and excluded communities in the formulation, implementation, monitoring and evaluation of sector policies, plans and programs (GESI Framework, IDPG Nepal -2017). They also recognize the need to identify the specific barriers faced by women, the poor, the vulnerable and the excluded in the concerned sector and plans to address it to the extent possible to achieve the overall sector objective.

2.4 Institutional Entry Points, for Mainstreaming Gender Equality/Equity in Climate Change Adaptation

2.4.1 The Government of Nepal's Existing Institutional Mechanisms for GESI and Climate Change

The Climate Change Council: The government established the Climate Change Council in 2009. It is headed by the Prime Minister and it provides coordination, guidance and direction for the formulation and implementation of climate change-related policies.

Central Level: The National Planning Commission (NPC); the Ministry of Women, Children and Social Welfare (MOWCSW) and its Department of Women Development; the Ministry of Federal Affairs and Local Development (MOFALD) and its Dalit and Adibasi/Janajati coordination committees; constitutionally established:

- National Commissions for Women, Dalits, Indigenous Nationalities, Madhesis, Muslims, and Tharus
- A National Inclusion Commission that is mandated to protect the rights of Khas Aryas, and "backward" classes, persons with disabilities, senior citizens, laborers, peasants, minority and marginalized communities, people of the Karnali, and the indigent class.

Gender/GESI Focal Points are appointed in the NPC, MOFALD, MOWCSW and the ministries of Education, Health, Urban Development, Forest and Soil Conservation, Agriculture and Population and Environment. The Ministry of Women, Culture and Social Welfare is the focal ministry for Gender and Social Inclusion thematic group under the NAP process.

District Level: At the district level there are numerous institutional structures including, Women and Children Offices (WCOs), Social Committee with a Social Development Officer of District Development Committees (DDCs); Indigenous/Janajati District Coordination Committees and Dalit Class Upliftment District Coordination Committees, the Gender Mainstreaming Coordination Committees (GMclimate change), and GESI Implementation Committees.

Village/Municipality Level: At the village and municipality level there is a Representative Integrated Planning Committee in each VDC; Ward Citizens' Forum and Citizen Awareness Centers where women, disadvantaged and marginalized groups are represented.

Climate specific, sector specific and local government level institutional frameworks provide the enabling environment and working conditions for gender equity/equality mainstreaming and its implementation through climate change adaptation programs and projects. They are relevant for Ecosystem based adaptation projects as well.

2.4.2 Institutional Efforts for GESI mainstreaming in NRM including Agriculture

Agriculture and Forestry: The Ministry of Agriculture started integrating women into its training programs in the 1990s and has established institutional structures to support gender mainstreaming in its departments, divisions, policies, and programs. It has 6 per cent women's representation among staff, yet it's Gender Equity and Environment Division still faces challenges in implementing its responsibilities due to a lack of gender sensitivity, small budgets, and the lack of a gender results monitoring mechanism. The Ministry plans to set up *farmers' consultative committees and village agriculture committees* to ensure farmers' participation in agriculture related activities and decision-making processes. Proportionate representation of Women, Dalits, Madhesis, and Adivasi Janajatis will be ensured in these committees (ADB, 2010)

The Ministry of Forest and Social Conservation has its own well -developed GESI strategy and Gender focal points at the ministry level represented by a joint secretary as well as five gender focal points

placed in all five departments (Risal, 2016). However, the implementation of the GESI strategy is very weak. Community based forest management by users group, an innovative and a worldwide replicated practice of forest management for which Nepal is one of the pioneers, falls under this ministry. The gender and socially inclusive results seen at the grass root forest users group level has not been translated into national level institutional structures of the ministry, which is a critical gap.

Federation of Community Forest Users Group (FECOFUN) has effectively influenced community-based forest policy and associated development processes. It has established rules to include women in the decision-making arena and it supports local forest user groups to include women and disadvantaged people in forest management, and users committee and groups. By law, one-third of the executive committee members of community forest user groups must be women.

National Federation of Irrigation Water Users Association is quite similar to FECOFUN in terms of purpose, but it has not yet been as successful in representing the voices of their women and poor members in the policy and development arenas. There is a potential for developing organizational coalitions and networking activities in the agriculture sector for advocating the rights of women and small farmers and influencing policy.

Though the forestry and agriculture sectors have made efforts to mainstream gender in policy and strategy, effective institutional frameworks and adequate human resource for gender and social inclusion remain of utmost importance. The establishment of gender divisions/units and provision of a fulltime gender focal person with TOR in these ministries could contribute to positive outcomes, if they have adequate institutional authority and targeted budgets (Risal, 2016). Improved accountability to gender and inclusion mainstreaming from the various department and division heads is also required, currently there is a gap in this aspect.

2.4.3 Gaps in climate change policies from a gender equity mainstreaming perspective

Nepal's NAPA /NAP acknowledges gender specific vulnerabilities and women are recognized as a vulnerable group, but it does not provide any specific targets for women's involvement or capacity building, nor does it contain any gender specific projects. The NAPA project profiles generally target vulnerable groups and communities and recognize that climate change impacts affect poor communities more severely.

Although at the local level women are environmental managers, they are usually not included in the decision-making process of NAPA projects. Even though gender analysis and gender mainstreaming are mentioned in the NAPA document, they are not prioritized in the NAPA project profile. Climate Experts underline the importance of gender mainstreaming in climate change programs, but the process for developing one of the most important climate change related programs (NAPA) was in the end not very consultative and inclusive for women (Mainlay & Tan, 2012).

Although various sector ministries have taken the lead and developed their own sector specific Gender Equality and Social Inclusion (GESI) strategy, policy or guideline, the Ministry of Population and Environment does not have a standalone GESI strategy/policy or operational guidelines for climate change which is a ***critical gap*** in the sector.

3. Baseline

3.1 A "Gendered" assessment of vulnerability in to climate change and climate change induced disasters the Gandaki River Basin

Adaptation efforts may be unsuccessful if isolated in sector-specific strategies. Multi-sectoral, and multi-stakeholder approaches appear to tackle interlinked issues more effectively, e.g., food and nutrition security, with health, water management, livelihoods, gender considerations" (IUCN, 2017)

Vulnerability status of proposed project sites of Gandaki River Basin: The NAPA analyzed the districts in the Gandaki River basin with respect to climate change vulnerability. The following table presents the status of the 19 districts in the GRB in terms of vulnerability (IUCN, 2018).

Table 1: Climate change vulnerability status of the Gandaki River Basin, 19 districts

Vulnerability status	Districts
Very high	Lamjung
High	Chitwan, Dhading, Gorkha, Manang,
Medium	Mustang, Nawalparasi, Makawanpur, Tanahu, Kaski, Parbat, Baglung, Myagdi, Rasuwa
Low	Syangja, Gulmi, Arghakhanchi, Nuwakot
Very low	Palpa

Project Communities

There are 1,172,558 households in the GRB (CBS, 2011). Among these households, the project aims to cover at least 195,912 (16.71 per cent) of households directly through project inputs and another 10 per cent indirectly through spill-over effects, with a focus on women headed household. In the following para brief status of socio-economic and environmental development of the project area is highlighted.

Social development status: The GRB is inhabited by more than 40 ethnic groups, and indigenous communities and in the Terai there are mostly Tharus, an indigenous community, and Khas- Aryan groups. In 2014, the Human Development Index (HDI) for all ethnic groups in the GRB was 0.482 compared to the national average of 0.490 (NPC & UNDP, 2014). Ethnic groups have comparatively lower literacy levels (66.93 per cent) compared to national average of 69.73%. Likewise, the life expectancy at birth of the ethnic group was 69.86 years compared to national average of 71 years. Average HDI, adult literacy rate and life expectancy values of these districts are also lower than the national average. Average HDI of 19 districts in the GRB is 0.501. Kaski have highest HDI of 0.576 followed by Manang with HDI of 0.568. With an HDI of 0.461 for both Dhading and Rasuwa they are lowest in the rank among the 19 GRB followed by Nuwakot with HDI of 0.466

Economic development status: The overall per capita income for people in GRB is Rs 49,362, while the per capita income for ethnic groups is Rs 37,720 as compared to a national average of Rs 51,879 (NPC & UNDP, 2014).

The average human poverty index (HPI) of the GRB is 30.27, compared to the national average of 31 (NPC & UNDP, 2014). The HPI of ethnic communities in the GRB is higher than the GRB average, and the HPI in five districts - Dhading, Rasuwa, Nuwakot, Mustang, and Gorkha -is very high (42.24 in Dhading). Kaski is the richest district with the lowest HPI of 16.50, followed by Chitwan with a HPI of 4.80. Rasuwa is poorest amongst 19 districts with the highest HPI of 42.24, followed by Nuwakot with a HPI of 35.66, Dhading with a HPI of 33.38 and Mustang 31.16 (NPC & UNDP, 2014).

Agriculture and tourism are the two major sectors of the economy. Remittances are significantly contributing to the economy in the GRB, as number of migrant household from this area is highest in the entire country. Climate change has impacted the farming systems in the GRB.

Environmental context: This basin is the biggest of Nepal's four river basins in terms of total glacier area coverage. It contains 1025 glaciers, 338 lakes and is susceptible to frequent glacial lake outburst floods (GLOFs) (Final Report Desakota Part II). There has been increased frequency and intensity of rain, flood and landslides (Shrestha, 2003). The basin is particularly vulnerable to water-induced hazards during the monsoon season. Of the 2,719 fatalities that resulted from floods and landslides in Nepal between 2000 and 2014, 939 (35 per cent) occurred in the GRB, which has only 22 per cent of Nepal's land area.

Events tend to be more common in the mid hills, especially the districts of Parbat, Syangja, Gorkha, Dhading, and Nuwakot – Dhading had the highest incidence of floods and landslides with 123 events over the 15-year period. However, more families are affected downstream, with Nawalparasi having the highest number of affected families (8,187 out of 22,637) (Ministry of Home Affairs disaster database, 2015 cited in HIAware Research 2017). Although the most common climate induced disasters are floods and landslides, the greatest economic loss in the basin is from forest fires which are worsened by wind in the dry season. The severity of landslides has been further aggravated by the Gorkha Earthquake 2015.

The GRB is a home for most of the species stated in CITES Category I that are present in Nepal. It is also a Trans Himalayan migratory corridor for many bird species. There is expanding proliferation of invasive species (filed visit/direct observation) and various scientific studies have indicated climate change as driving force (Dukes, 2011).

In the GRB, 72.4 per cent of households depend solely on forests to meet their energy requirement (Subedi, et al., 2015).

3.2 Current State and Trends in Gender Equality in the GRB

Out of GRB's total human population of about 5.13 million 46 per cent are male and 54 per cent) female. The male to female ratio is 0.85:1. The population increased at an average annual rate of 0.41 per cent over the past decade (CBS, 2011). The average family size is 4.21 which is less than national average of 4.88. Two mountain districts, Manang and Mustang, have the lowest number of households and female population.

The male literacy rate is remarkably higher (80 per cent) than the female literacy rate (65 per cent) in the GRB, this sex-based difference in literacy is, however, lower than national average difference which is 75 per cent for male and 57 per cent for female.

The under five mortality rates for both boy and girl children is the same - 34 per cent - which reflects a better survival status and non- discrimination for girl child in terms of survival in this area (Table 2)

Table 2: Key sex disaggregated socio-economic indicators of the Gandaki River Basin

Indicators	Mountain (upstream)	Hills (midstream)	Terai (downstream)	Total
Area (km^2)	7363	21013	4400	32776
Population				
Male	32,229	1,757,681	582,762	2,372,672
Female	31,061	2,087469	640,730	2,759,260
Total	63,290	3,845,150	1,223,492	5,131,932
Population Density people/sq^2km	9	183	278	157
Literacy Rate (per cent)				
Male	73	80	82	78
Female	56	64	67	62
Total	65	72	74	70
Economically Active (per cent)				
Male	75	60	64	67
Female	69	59	53	60
Total	72	60	58	63
Under five mortality (per cent)				
Male	29	33	40	34
Female	24	32	45	34
Total	27	33	43	34

(CBS, 2011)

Caste/ethnicity and religion

Hinduism is the dominant religion (83 per cent) followed by Buddhism (13 per cent), Christianity (2 per cent) and Islam (1 per cent) in the GRB. The major caste/ethnic groups in the landscape are Bramhin, Chhetri, Magar, Gurung and Kami. Other castes, such as Newar, Tamang, Tharu, Sarki, and Damai/Doli are also found in the landscape, but their population size is small. The landscape is rich in linguistic diversity where more than 50 different languages spoken.

Landholdings

Most households in the GRB have landholdings of less than 1 ha. Moreover, only 3 per cent of) households have landholdings of more than 2 ha. This shows that the land highly fragmented. Furthermore, except Dhading, Gorkha and Manang, all districts have landless households with Syangja is having the highest landless households.

Fifty to 80 per cent of the population in the GRB depends on agriculture for their livelihood. The major cereal crops grown are paddy, maize, wheat, millet, barley and buckwheat. Improved varieties of crops are also grown throughout the region. (MoFSC, 2016).

Energy consumption

The sources of energy for cooking in the GRB are fuel wood, LPG (gas), Biogas, Kerosene, Electricity and animal dung cake. Fuel wood is the most common source of energy and been used by 72.4 per cent) of households, followed by LPG (Subedi, et al., 2015). Women in the project area contribute up to 70 per cent of the labor required for water management and more than 65 per cent in firewood collection and fodder collection (field observation, key informant interview from project area).

Women's Access to information, institutions and opportunities

The GRB is comparatively advanced in terms of gender equality compared with the far western region (province 7) and Central –Eastern Terai region (province 2) where gender based discrimination is widespread and many harmful practices like segregation, keeping women and girls out of the home during menstruation (*chaupadi*) and child delivery is very much alive in the far west, and *pardha* (veil) system and women's seclusion from men is still practiced in the Terai. Tibeto-Burman ethnic groups and Tharus which are dominant in this region are comparatively more advanced in terms of treating women equally and women are to some extent engaged in enterprise and market-oriented trading activities as well agriculture.

In GRB there is strong presence of women led community organizations like mother's group (aama Samuha), natural resource management and conservation groups e.g. CFUGs, buffer zone conservation groups, farmers groups, saving credit groups and cooperatives and female community health volunteers group which will be instrumental to reach and deliver project specific services and technologies to women.

Women, migration and their role in decision making in GRB

Women participate in the household decision making processes in this area and they play an active role in community management including, drinking water management, natural resource management and conservation.

The GRB are listed within the top 10 districts with migrant household /population, reflecting a high rate of male migration from 41 per cent of total households in Myagdi to 54 per cent of total households in Gulmi and Arghakhanchi districts, the highest in Nepal (CBS, 2012).

Migration has a direct implication on decision-making roles and responsibilities for women who become the de facto household heads in the absence of men. This brings both opportunity as well as challenges for women to adapt to climate risk and vulnerabilities.

With all three levels of election - national parliament, provincial and local bodies - completed under the federal system of governance and around 33 per cent of women being represented in the local governing bodies as Mayors and deputy mayors as well as members, there is huge opportunity to promote the leadership of community women as well as to enhance the effectiveness of and engagement of women representatives in the project. However, there is still a patriarchal bias to accept women's leadership amongst male leaders and most of the women being elected for the first time in the leadership position are learning by doing and need support to enhance their effectiveness.

3.3 A gender disaggregated assessment of Vulnerability in the project area

Vulnerability in GRB continues to be highly correlated with gender, caste, ethnicity, regional identity, and geographic location and poverty. Women, because of gender based discrimination and ingrained patriarchal socio economic and political system and their lower socio-economic status in comparison to men, are more vulnerable to impacts of climate change and natural disasters.

On the other hand, poor Dalits, because of their poverty and caste-based discrimination and their settlement location usually near the landslide prone river banks, are more vulnerable. Similarly, certain poor ethnic groups who are primarily dependent on forests and water resources for their livelihoods are vulnerable. These three groups are potential target groups for the project. Even within the better off districts of the GRB, there are pockets of poverty in certain geographic and remote areas. These sites are vulnerable to climate change and climate induced disaster.

Beliefs, Perception and Stereotypes related to gender

In the project area across mountains, hills and Terai (plains) beliefs, perception and stereotypes related to gender are similar. However, there are location specific differences. In the mountain area there is more equality between the sexes and women are engaged in tourisms related activities, hotel business, livestock raising and agriculture. Men share household activities of cooking and child care.

This pattern is similar in hill areas. Women in hill areas are more literate and due to relatively easy access to roads, , electricity, mobile phone, radio and television, to some extent internet, and proximity to urban cities and exposure to the outside world hence they are much aware about their disadvantaged position. However, within the hills there are remote areas and poverty pockets where women are discriminated against.

In the Terai certain caste groups (e.g. Chepangs, Tharus, Mahji, Mushars, and Madhesis) practice early and child marriage, and dowry systems.

It is a commonly held perception in the GRB that women are caretakers and nurturers and their role is more appropriate within the household. However, with the new political system, and exposure to the outside world due to radio, FM, TV, and mobile phone, even illiterate women are becoming more aware. Their engagement in various community groups helps them to understand about climate change risk and adaptation.

Th division of labor is based on socially prescribed gender roles. Men do more of the outside work, political work, trading and marketing, and paid jobs, whereas women are more engaged in household work, care work and agriculture work. In this GRB 60 per cent of females are economically active compared to 67 per cent of males.

Key Climate Change Risks in the Gandaki River Basin

1. "Gendered" vulnerability to climate and disaster risk –women and disadvantaged group are more vulnerable
2. Negative impact on agriculture, food security and livelihoods

3. Abandoned/fallow land in hills due to degradation, siltation, no irrigation and low productivity (effecting food security)
4. Less snow in mountains, fast melting glaciers and high possibility of glacial lake outburst flood(GLOF)
5. Frequent Landslides/ floods /forest fires in the hills
6. Deforestation and forest degradation
7. Drought, drying up of springs and decrease in surface water in the hills and the Terai
8. Floods/ River cutting/Fertile soil erosion in the Terai and hills
9. Increased incidence of Forest fire due to drought and dry wind from February till May
10. Increase in invasive species in forests and agriculture land
11. Loss of biodiversity

(Source: Field Study Reports, pre- feasibility report, expert group consultation, Secondary literature, IUCN/NTNC 2018 Nepal)

The national climate change impact survey (CBS, 2016) indicates that about half of the surveyed households (49.33 per cent have heard about climate change. Most households in the mountain area (63.59 per cent) and female respondents (60.92 per cent) were found to have not heard about climate change.

Based on the country's ecological belts, up to 80.35 per cent of the households in Mid-western mountain have not heard about climate change. Households from the Terai (51 per cent) are found to be more informed. Most households (59 per cent) noted that deforestation was the main cause for climate change. While 41 per cent of households believed that it is caused by natural phenomenon, 33 per cent of households think human interventions and 30 per cent of household think urbanization are major causes of climate change.

The survey reveals that almost all households have observed an increase in the incidence of drought (99.33 per cent) in last 25 years followed by disease/insect (97.69 per cent) and sporadic rain (93.07 per cent). The survey shows that 74.29 per cent of total households have observed changes in water sources. The findings of this survey match with our findings about key climate change risks gathered from field visits, direct observation, key informant interviews in the proposed project districts of GRB, and triangulation with climate change expert opinion.

Differentiated Impact of Climate Change Risk on Women in GRB

In the following section, an attempt has been made to assess how climate change risk is having a differentiated impact on women.

In Nepal, agriculture accounts for nearly 70 per cent of total employment and contributes nearly one-third of Nepal's gross domestic product (GDP). Women in Nepal constitute 72.8 per cent of the agricultural labor force, (MOAD, 2017). The impacts of climate change are not 'gender neutral' – women's high dependence on agriculture means climate impacts on the sector have a disproportionate effect on women.

As high as 80 per cent of women are involved in agriculture and livestock sector in the GRB, and a trend of "feminization of the agricultural sector" is emerging as an outcome of high male outmigration. The role of women and their informed and meaningful engagement in the sector is critical for food security. This issue needs to be taken in to account seriously by the project when designing adaptation activities and interventions. The paradox is despite their substantive engagement in the sector, they are not

treated as farmers and they don't have the same access to land, water, seeds, training and credit as men. Only 10 per cent of the total farms of Nepal are owned by women or jointly owned (MOAD, 2015).

People in the GRB are highly dependent on forest resources for their food, household energy, and livelihoods. As almost three fourths (72.4 per cent) of households solely depend on forest to fulfill their household energy, the pressure on forest is increasing (MoFSC, 2016) and women who are primarily responsible to collect fire wood and fodder must travel longer and further to collect fire wood as well as fodder for their livestock. This gender specific role and need of women must be considered by the project.

A recently published, first of its kind, national household survey on impact of climate change in Nepal (CBS, 2016) reports that the highest percentage of sample households (92.03 per cent) observed invasive creeper species in agricultural land and that this has contributed to a decrease in their income. This is an area for consideration by the project - to enhance income and employment opportunity for women through eco-tourism and off farm skill development training, in addition women responsive agriculture interventions.

The NAPA 2010, states that women's access to water resources would decrease leading to an increase in their workload, with detrimental effects on their reproductive health. As we explained earlier in this report an alarming health issue for rural women in Nepal is uterus prolapse due to heavy workloads and inequitable division of labor.

The NAPA, states that climate induced resource conflicts increase social violence, violence against women, anxiety and depression in women. This is a serious gender issue and the project will have to design interventions bearing in mind women's role in water management, forest conservation and other natural resource conservation, and introduce technologies to reduce their work burden and engage them in effective management and governance of natural resources.

Barriers/Challenges to Gender Responsive Climate-resilient Solutions

There are several key barriers to the introduction and implementation of gender responsive climate resilient solutions as presented below:

1. Lack of sex-disaggregated data, information, monitoring and evaluation

- Lack of sex- disaggregated data of climate vulnerability and risk resulting in poor understanding of gender-differentiated risk of climate change and climate induced disaster
- Non-Inclusion of gender specific indicators in the entire monitoring and evaluation cycle of climate change projects and programs of government and NGOs/INGOs

2. Women's negligible representation in climate change policy, leadership and decision making

- Lack of conscious effort to increase representation of women in climate leadership and decision making
- Lack of opportunity for women and their representative organizations' views being represented in formal climate change policy, leadership and decision-making
- Lack of planned and quality training on gender and climate change to women and men policy makers, decision makers, and implementers
- Lack of planned, regular training and awareness raising activities on gender equity, climate risk and locally appropriate adaptation measures, focused on rural women and disadvantaged people

3. Heavy unpaid workload especially of rural women and inequitable division of labor

- Women contribute their substantive labor (unpaid) in agriculture and natural resource management which does not reflect in corresponding increase in income, and meaningful representation at decision making forums and committees.

- Women reported during field visit difficulties in adapting agricultural practices to climate change patterns. The burden posed by the demand for increased agricultural production/ yields amidst changing climate pattern is taking its toll on women, who are managing agriculture and livestock in the absence of males.

- Due to social norms and inequitable gender division of labor; unpaid work is assigned to women and girls especially collecting firewood, water, fodder, livestock care, farm care, and they are highly impacted by climate change. In addition to this, women must do domestic work like child care, cooking and cleaning, which is the cause of "gendered" vulnerability to climate change.

4. Low level of education /illiteracy/ climate risk awareness and access to information

- Women's limited access to climate risk information, early warning systems and training is making them more vulnerable and restricting their capacity to adapt.

- Women's high level of illiteracy, low level of education and awareness is a barrier

5. Gender discrimination, cycle of poverty, and physical vulnerability of girls and women

- Early and child marriage of girls, no opportunity for economic and social advancement, repetitive life -cycle of poverty and disempowerment

- Climate induced disaster is increasing the vulnerability of girls and young women in terms of safety and security, increasing risk of human trafficking and exploitative work in entertainment sector as seen after earthquake and floods

- Women-headed households, that have increased following male out-migration, are particularly vulnerable to climate induced disasters with the loss of family support networks. Girls and young boys are vulnerable to school drop outs.

6. **Limited livelihood options and access to productive assets**

- Low access to finance, family property, productive assets and restricted access to markets due to gender norms, restrict women's capacity to livelihood diversification which is a key activity for adaptation.

7. **Migration/ increase in fallow land and land degradation**

- High out-migration of youth/ men after climate induced disaster and poverty leads to a lack of labor, increase in underutilized farm land/ fallow land and land degradation, mostly in rural areas.

- Implications on food security, health and nutrition of women and children

3.4 Recommendations: Key Gender-related Activities to address gendered climate risk and barriers

- **Build Gender Equity, Climate Change Awareness and Adaptation Capacity**
  1) Develop GESI and climate change mainstreaming strategy for the Eco System Based Adaptation
  2) Develop GESI and climate change training manual for implementing partners and local government
  3) representatives
  4) Plan and provide regular training on Gender Equity, Women's empowerment and climate change at all levels central, provincial, local and community level, for both men and women

5) Increase access of women to information and capacity building training on climate risk and adaptation measures,
6) Ensure women's participation in workshops/ meetings
7) Train women to improve their capacity in weather observation and forecasting
8) Actively engage and train women in fresh water conservation, management and its effective allocation for household use and irrigation

- **Address lack of sex disaggregated climate change data and information**
  1) Develop gender-sensitive early warning systems
  2) Develop gender-responsive maps and analysis of hazards and vulnerabilities
  3) Systematic collection and update of sex disaggregated data of climate vulnerability and risk
  4) Use of gender responsive climate change monitoring and evaluation indicators in the entire project cycle
- **Livelihood diversification and alternative livelihood promotion for women and youth**
  1) Effective use and promotion of cooperatives, micro finance and other banking facilities for livelihood diversification of women and disadvantaged people
  2) Integrate gender analysis and value-chain analysis to improve agribusiness, reduce poverty, and improve inclusive markets
  3) Promotion of ecotourism and skill training in bakery, homestay, nature guide, handicrafts, cook amongst youth both female and male
  4) Research and introduce new agriculture production practices and technology suitable to women in light of feminization of agriculture
  5) Introduction of more climate resilient seeds and other farm inputs and extension services appropriate for women
  6) Introduce and promote micro insurance for crops, livestock, fruits and weather-based insurance scheme
- **Engage Women in Climate Change Planning, Implementation and Monitoring**
  1) Promote and adapt bottom up approaches to climate change adaptation planning like LAPA and CAPA, for which Nepal is a pioneer
  2) Ensure equal engagement of women, and disadvantaged communities in local adaptation planning, its implementation and monitoring
  3) Tackle gender inequality at the broader level-for adaptation financing to be effective and equitable from –legislative, policy, programs, to market level
  4) Effective implementation of already existing provisions in constitution, law, sectoral programs and policies related to gender equality, women's empowerment, social inclusion to enhance resilience
- **Knowledge Management and Documentation**
  1) Systematic documenting of traditional and local knowledge of climate change and adaptation practices of women and disadvantaged people especially Chepang, Majhi, Mushar, Bote, Tharus, Dalits, and indigenous people more dependent on forest and water for their livelihoods.

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