Bhutan for Life

Environmental and Social Management Plan for

Jigme Dorji National Park (2021)

1. Introduction

(A) Project Background

The Bhutan for Life (BFL) project aims to ensure a robust network of protected areas and biological corridors that secures human well-being, biodiversity conservation and increase climate resilience in Bhutan. The project provides a 14-year financial bridge that allows for immediate improvement in the management of Bhutan's protected areas for climate resilience, and the prompt delivery of mitigation, adaptation and biodiversity gains, while the country gradually ratchets up its own financing resources.

BFL seeks to achieve the following objectives:

- Help Bhutan remain carbon neutral by increasing forest and vegetative cover within the Protected Area System;
- Enhance the socio-economic wellbeing of communities in and in the vicinity of the PAS through climate-informed natural resources management;
- Maintain stable, thriving and diverse populations of key species contributing toward national and global biodiversity goals;
- Strengthen organizational, institutional, and financial capacity for effective management of PAS.

BFL includes five components that reflect these goals, divided into 16 milestones (or outputs) and over 80 detailed activities.

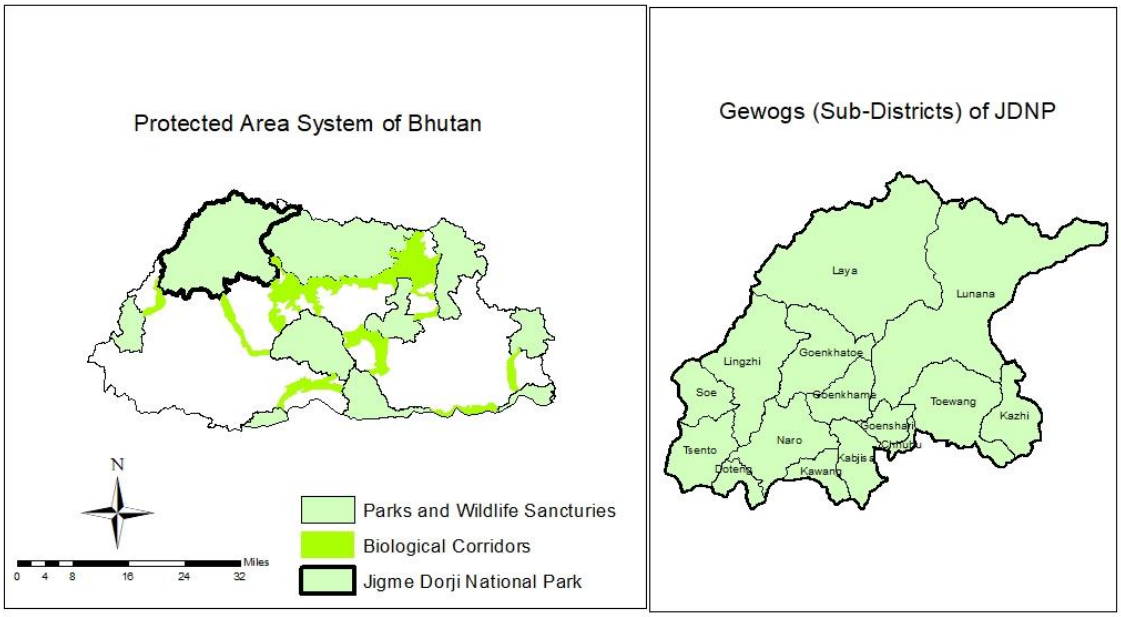


Fig 1: Location of Jigme Dorji National Park

(B) Scope of ESMP

The preparation of this Environmental and Social Management Plan (ESMP) was required in order to manage the environmental and social impacts through and specific mitigation actions required to implement the project in accordance with the requirements of WWF's Social Safeguards Integrated Policies and Procedures (SIPP), the project's Environmental and Social Management Framework (ESMF), and applicable national legislation and regulations.

The ESMP provides an overview of the environmental and social baseline conditions on the routes of the proposed second segment of the project, summarizes the potential impacts associated with the proposed activities and sets out the management measures required to mitigate any potential negative impacts.

This ESMP will be implemented by BFL focal person in each park authority (PA) and biological corridor (BC), and by the contractor to be commissioned by each PA/BC for the project.

(C) Purpose of ESMP

This Site-Specific ESMP is a project-specific source document detailing the environmental and social protection requirements to mitigate and minimize the adverse impacts. The ESMP's primary purpose is to ensure that the environmental requirements and social commitments associated with the project are carried forward into implementation and operational phases of the project and are effectively managed. The specific objectives of this ESMP are as hereunder:

Minimizing any adverse environmental, social and health impacts resulting from the project activities;

- Conducting all project activities in accordance with the relevant RGoB Laws and WWF's safeguard operational policies and guidelines;
- Preventing environmental degradation as a result of either individual subprojects or their cumulative effects;
- Enhancing the positive environmental and social outcomes of project activities;
- Ensuring that the proposed mitigation measures are feasible and cost-efficient;
- Providing an Action Plan to ensure that the project impact mitigation measures are properly implemented and monitored;
- Ensuring that all stakeholders are engaged in the project activities' preparation and implementation, and their concerns are fully addressed.

(D) Applicable law, policies, and regulation

This ESMP is developed by following the guidelines as set forth in the BFL's ESMF.
Applicable RGoB laws and policies include the Constitution of the Kingdom of Bhutan, 2008; legislation on land and moveable property (Land Act of Bhutan 2007; Land Rules, 2007; The Moveable Cultural Property act of Bhutan, 2005); legislation and regulations on forests and protected areas (National Environment Protection Act, 2007; Forest and Nature Conservation Act of Bhutan, 1995; Forest and Nature Conservation Rules and Regulations of Bhutan, 2017;National Forest Policy, 2011); legislation on water and waste prevention (Water Act of Bhutan, 2011; Waste Prevention and Management Act, 2009); legislative requirements on environmental assessment (Environmental Assessment Act, 2000 and Regulations on the Environmental Clearance of Projects, 2001); and other relevant laws (The Local Government Act of Bhutan, 2009; Livestock Act of Bhutan, 2001; The Biodiversity Act of Bhutan, 2003;

The Pesticides Act of Bhutan, 2000; The Penal Code of Bhutan, 2004; National Access and Benefit Sharing (ABS) Policy (Draft), 2014) and Local Government Act of Bhutan, 2009.

WWF's safeguards policies that are relevant to this project are as follows: Policy on Environment and Social Risk Management; Policy on Protection of Natural Habitats; Policy on Involuntary Resettlement; Policy on Indigenous Peoples; Standard on Pest Management; Policy on Accountability and Grievance System; Standard on Physical Cultural Resources; as well as general standards on occupational and community health and safety and on energy efficiency.

In general, RGoB's laws, policies, and guidelines are in line with the WWF's environmental and social safeguards requirements. However, there are a few differences between the two systems. With regard to environmental impacts, there are no direct contradictions between the RGoB laws and regulations and the WWF's SIPP, but the requirements of the latter are more extensive. All project activities should fully comply both with the RGoB's Regulations on the Environmental Clearance of Projects, and with the procedures and mitigation measures prescribed in this ESMF. In case that the WWF's SIPP requirements are more extensive, strict, or detailed than the RGoB legislation and policies, the former will apply to all project activities.

With regard to social impacts, the primary discrepancies between the RGoB laws and regulations and the WWF's SIPP refer to the status of non-title holders and informal land use, and the commitment to participatory decision-making processes. First, according to the WWF's SIPP, all users of land and natural resources (including people that lack any formal legal ownership title or usage rights) are eligible to some form of assistance or compensation if the project adversely affects their livelihoods. The RGoB laws only recognize the eligibility of land owners or formal users to receive compensation in such cases. Second, the WWF's SIPP require extensive community consultations as part of the development of various safeguards documents and during project activities. RGoB legislation does not include similar requirements. For the purposes of the BFL project, the provisions of the WWF's SIPP shall prevail over the RGoB legislation in all cases of discrepancy.

The occupational health and safety of workers in construction will be in compliance with Labour and Employment Act-2007, Regulation on Occupational Health, Safety and Welfare, 2012 and any other national documents. The list of the OHS requirements shall be attached along the Bill of Quantities (BoQ) along with an appropriate item description to allow the bidder to quote reasonably against the item, and to enable strict compliance and ease the monitoring during the project implementation time

2. Environmental and Socio-Economic Conditions:

(a) Geological and topographical conditions

The topography of landscape features in Jigme Dorji National Park is generally rugged with the hills rising from south to north, and likewise the elevation changes from 1,200 m.a.s.l. (meters above sea level) in the south to 7,314 m.s.a.l. in the north. The areas above 6,000 meters remain permanently covered with snow. Most of Bhutan's popular snow-capped mountain peaks, such as Mt. Jomolhari (7,314 m/23,996 ft), Mt. Jichudrakey (6,794 m/22,290 ft), Mt. Tsherimgang (6,650 m/21,818 ft), Mt. Gangchentag (6,794 m/22,290 ft), Mt. Matsangang

(7,194 m/23,602 ft), Mt. Tsendagang (6,994 m/22,946 ft), Mt. Jaikangphugang (7,194 m/23,602 ft), and Mt. Gangchensingye (a.k.a. Table Mountain; 7094 m/23,274 ft), are all found inside JDNP along the international border with China. At the base of almost all these peaks huge glacier lakes are formed.

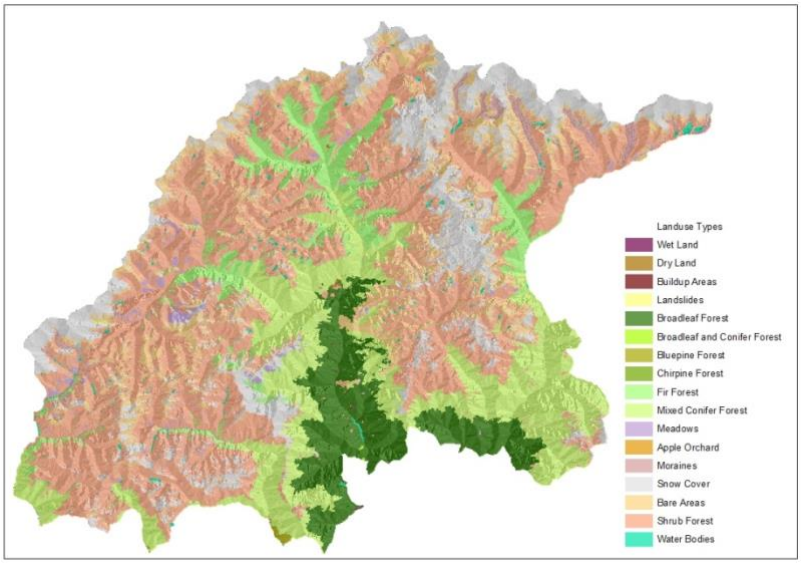


Fig 2: Landuse map of Jigme Dorji National Park

(a) Climatic conditions

All places inside the park experience all four seasons. The climate in the lower areas is generally warm and moist with good amount of rainfall in summer and cold and dry in winter, whereas in the uplands it is cool and moist in summer and extremely cold and snowy in winter. Due to absence of permanent weather stations in the park, area-wise amount of precipitation has not been consistently determined.

The huge variations in topography, elevations, and climate conditions have direct influence on vegetation types and livelihood of the people, and these factors explain the existence of types of vegetative covers and livelihood patterns of people living in different vegetation zones. These geophysical features also pose serious challenges in terms of difficult working conditions for the park staff.

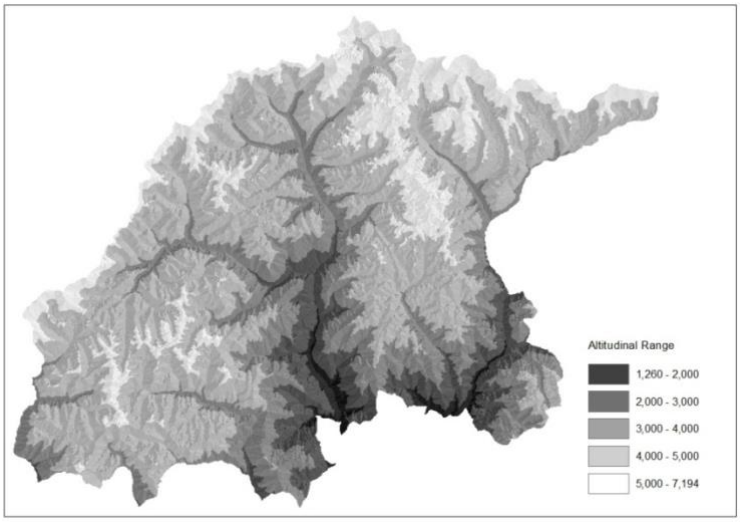


Fig 3: Elevation range under Jigme Dorji National Park

(b) Hydrological conditions

JDNP is also famous for many alpine lakes. Most of these lakes are formed in deep valleys where huge quantities of water are impounded. The colour of the lakes varies from dark grey to reddish to turquoise blue. The lakes serve as natural reservoirs of water for downstream valleys and as habitat for many alpine birds and animals.

Hydrologically, the park constitutes the water tower and major watershed for four major rivers of the country: Pachhu, Wangchhu, Phochhu, and Mochhu. On the downstream courses of these rivers mega hydropower projects have been built and some are in the process of being built. Sale of electricity generated from these power stations account for a huge percentage of the gross domestic product (GDP).

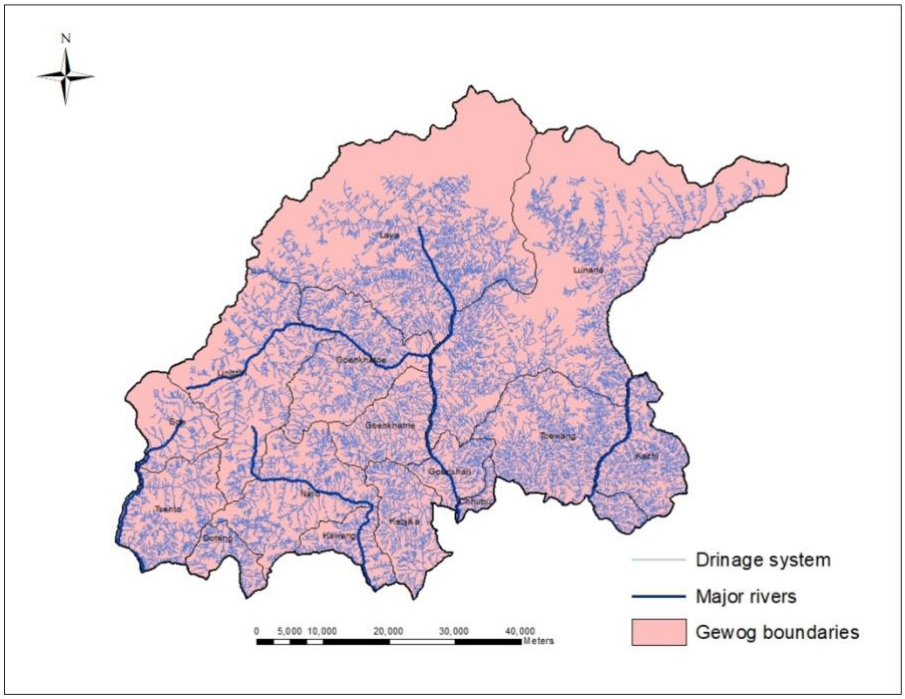


Fig 4: Riverine system of Jigme Dorji National Park

(c) Floral characteristics

In total, the park has 1,434 species of vascular plants belonging to 144 families and 563 genera (9 genera and 13 species of gymnosperms and 554 genera and 1,421 species of angiosperms (JDNP 1996). The park has many types of vegetation andlanduse types which is largely due to dramatic changes in elevation and climatic conditions (JDNP 1996).

In the lowest areas of the park, one can find temperate warm broadleaved forests that are dominated by tall and voluminous trees with broad leaves, particularly belonging to the families of Lauraceae, Moraceae, Euphorbiaceae, Leguminosae (Fabaceae), and combretaceae. The lower areas facing south with mostly dry conditions are dominated by chirpine forest that are usually fire prone with scanty undergrowths.

Between 2,000 to 3,500 meters, one can see temperate cool broadleaved forests that are characterized by oaks, such as Quercus semicarpifolia, and Quercus griffithii, and some species of rhododendrons such as Rhododendron arboreum. Pure stands of broadleaved and coniferous

forests are hard to find, but in some areas where humans traditionally managed forests for leaf litter collection there are pure stands of oak.

In areas between 3,500 – 4,000 meters, the vegetation gradually transitions into mixed conifer forest interspersed by hemlock (Tsuga dumosa), fir (Abies densa), spruce (Picea spinulosa), and juniper (Juniperus indica). In most areas, the vegetative cover transitions from dominant stands of hemlock to fir to juniper. Also found interspersed in these forest types are Campbell's maple (Acer campellii), Himalayan birch (Betula utilis), larch (Larix griffithii), different species of bamboos and rhododendrons. Collectively, this ecoflouristic zone is known as sub-alpine forest.

Ascending above 4,000 meters until 5,000 meters, one encounters thickets of stunted junipers, small-leaved rhododendrons (such as Rhododendron ciliatum and R. setosum) and riverine willow (Salix sikkimensis), and Lyonia ovalifolia. In areas cleared for grazing, the alpine pastures and meadows are dominated by species of Potentilla, Geranum, Primula, Juncus, and Pedicularis.

Areas immediately below the snow line are commonly known as alpine screes where dominant herb species of Draba, Corydalis, Saxifraga, Androsace, and Geocarpus abound.

Due to presence of generally lush undergrowths and grasses, grazing by domestic cattle is prevalent in almost all vegetation zones of the park.

Around 300 species of medicinal plants are expected to be found inside the park, mostly in the alpine region. Most valuable and widely collected are Chinese caterpillar (Ophiocordyceps sinensis), Picrorhizakurroa, and Aconitum laciniatum and A. patulum. In the lower areas, Himalayan yew (Taxus baccata) and several species of Artemisa (e.g., A. dubia, and A. myriantha) are believed to have chemical contents that can cure many diseases.

Fig 5: Floral diversity of Jigme Dorji National Park

(d) Faunal characteristics

Much as the floristic diversity, the faunal diversity of JDNP is astounding with species from both the Palearctic and Indo-Malayan biogeographic realms (Wangchuk et al. 2004). So far,

the park management has uncovered the presence of mostly the vertebrates. Except for a few butterflies and a few insects, the park has yet to dive into the world of invertebrates.

As of now, 52 species of mammals belonging to 19 families and 43 genera are confirmed to be present inside JDNP. Of these, five are endangered, six are vulnerable, and nine are near threatened as per the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species (IUCN 2014). In addition, 10 of these species are listed in the Schedule I of the Forest and Nature Conservation Act (FNCA) of 1995.

A total of 373 species of birds have been documented, and of which eight species are listed in the Schedule I of FNCA, 1995. The endangered Black-necked Crane (*Grus nigricolis*) makes an occasional visit to the national park during its migration to and from China. The critically endangered White-bellied Heron has feeding and nesting sites along the Phochhu and Mochhu rivers, especially in the three Gewogs of Toewang Chubu and Goenshari under Punakha Dzongkhag.

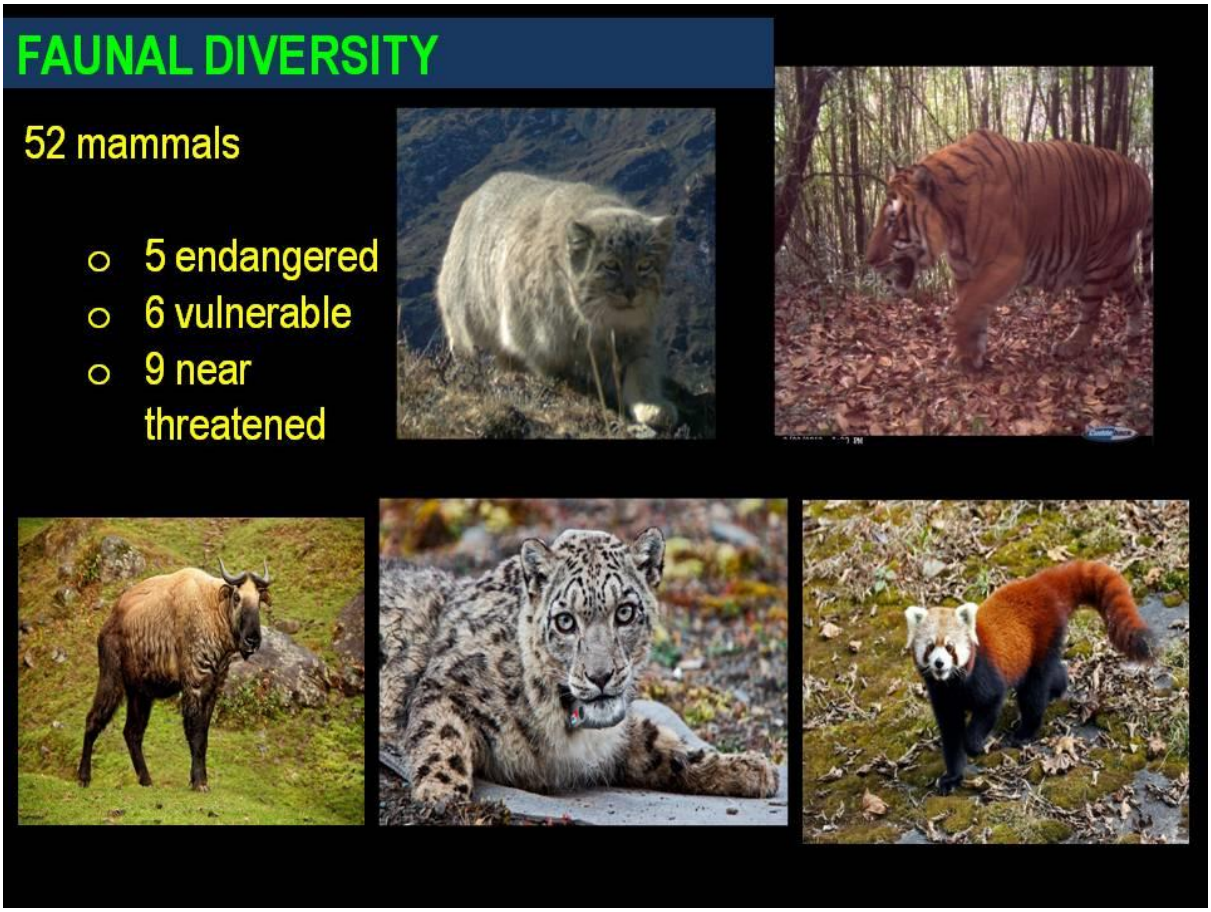


Fig 6: Faunal diversity of Jigme Dorji National Park

(e) Socio-economic conditions

Through support from Bhutan for Life Project, socio-economic surveywas carried in Year 2 where a population estimate of 5026 people in 975 households living in 138 villages in 43 chiwogs under 10 gewogs administered by Park Management was obtained. There is a total of 2542 male and 2485 female population. The mean for both the household and population size

are highest in Laya and Lunana. The population density is highest in Goenshari and Khamaed gewogs.

People residing in the park above 4,000 meters practice somewhat semi-nomadic pastoralist livelihood, primarily subsisting on raising yaks. It is typical of a yak herder to own more than 100 yaks which are considered as the stable source of livelihood. Number of yaks owned is considered a status symbol among the yak herding communities.

As opposed to the popular trademark of yak herding, some upland communities grow wheat and vegetables during the short growing period in summer to supplement their diet and to grow fodder for their yaks.

Lowland people are those residing below 4,000 meters in the park. They subsist on agro-pastoralist or mixed farming lifestyle wherein agriculture is the mainstay of livelihood and domestic cattle are raised for dairy products and farmyard manure.

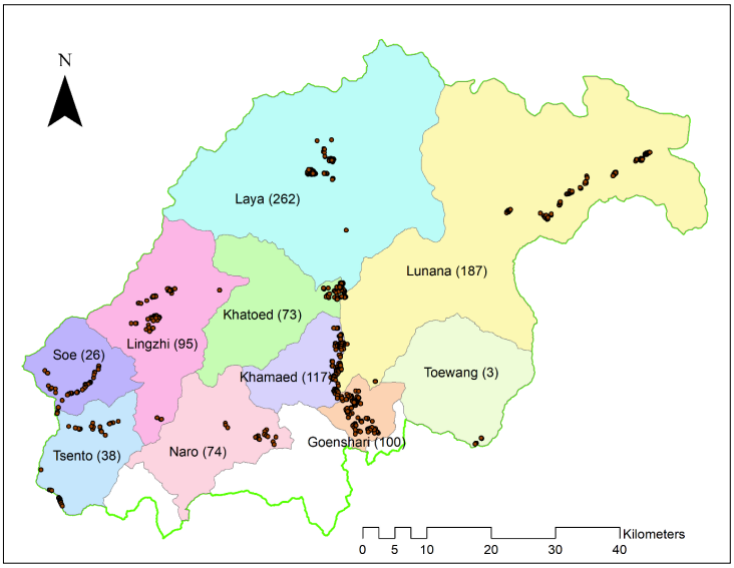


Fig 7: JDNP boundary (green lines) and settlements (brown dots). Figures in the bracket are the number of households in each gewog. The hollow polygons (white) within the park boundary are the gewogs falling inside the park with no resource allocation and monitoring activities (the gewogs are Chubu, Doteng, Kawang and Kabjisa)

Gewog	Total Household	Mean Household	Estimated Population			Mean population	Population density (per sq. km)
			Male	Female	Total		
Goenshari	100	3.4	351	377	728	25.1	8.42
Khamaed	117	4.5	382	413	795	30.6	5.33
Khatoed	73	5.2	222	189	411	29.4	1.43
Laya	262	32.8	554	540	1094	136.8	1.13
Lingzhi	95	9.5	240	200	440	44.0	1.14
Lunana	187	14.4	392	420	812	62.5	0.65
Naro	74	5.3	166	126	292	20.9	1.06
Soe	26	3.7	103	116	219	31.3	1.33
Toewang	3	1.5	4	2	6	3.0	0.02
Tsento	38	3.5	128	101	229	20.8	1.17
TOTAL	975	83.75	2542	2484	5026	404.21	21.68

Table 1: Population estimates for resident communities of park administered gewogs 2020

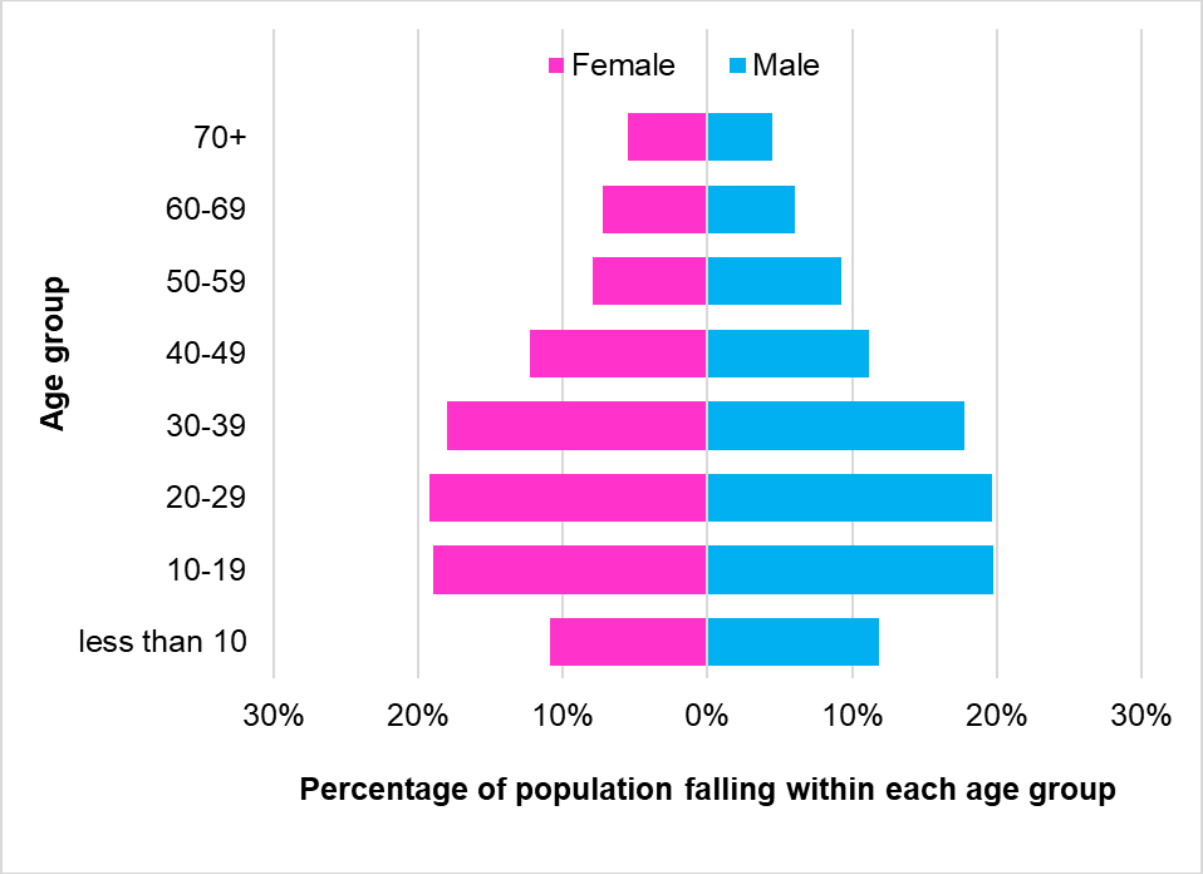


Fig 8: Distribution of population according to age group and gender in JDNP 2020.

3. Planned activities in Y2021

The planned activities in JDNP that require an ESMP are the following:

Activity 1: Enhance Jhomolhari Trekking route with additional amenities

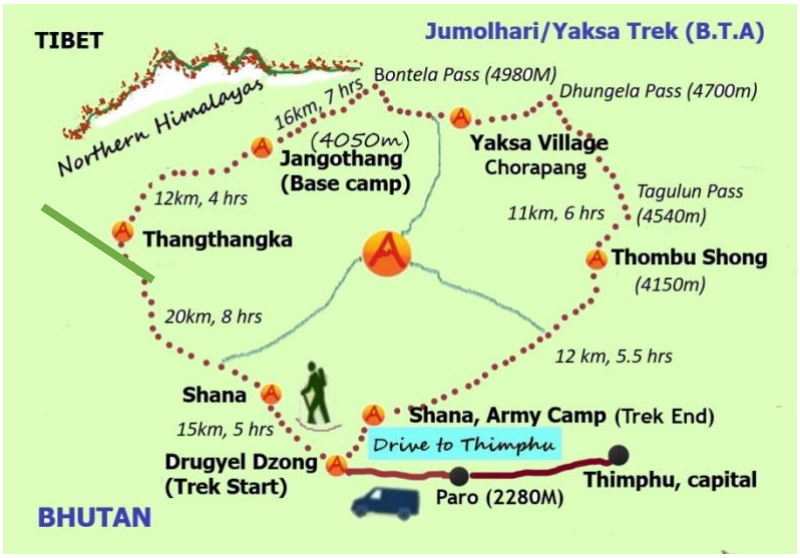
Allocated budget: Nu. 2m (Additional 11.37m will be proposed in BFL year 4)
Activity Timeline: Year 3 & Year 4

The Jomolhari trek route is the most popular trek in the country as it passes through a gorgeous natural landscape of blue pine forests, high ridges and pristine lakes while at the same time offering the opportunity to visit some ancient lhakhangs, dzongs and villages.With altitude differences of 2,500m and nearly 5,000m (lowest and highest point of the route), it offers a wide range of landscape, fauna and flora. The highlight of this trek is the spectacular view of Mount Jomolhari from Jomolhari Basecamp, Jangothang.Jomolhariaccommodates the highest numbers of nature tourist's that come for trekking, hiking, camping and birding in Bhutan.

Along the Jomolhari trek route, various tourists' camp sites were established by Tourism Council Bhutan (TCB) and handed over to JDNP for management. However, being old and desperately worn, there is need of major maintenances for the campsite at Thangthangkha and Jomolhari base-camp. Further additional recreational activities along the trekking route have to be developed, especially to engage the tourist during the day halt. At present, there is no proper designated campsite at Shana and Thongphu and tourist camp in the unmanaged open

ground devoid of basic facilities like restrooms, water supply and garbage disposal pits. Thus the main objective of coming up with this activity are:

- To maintain and develop natural trekking route and infrastructure
- To develop natural areas into outdoor recreational sites
- Support the local community on ecotourism activities
- To enhance sustainable management of natural resources



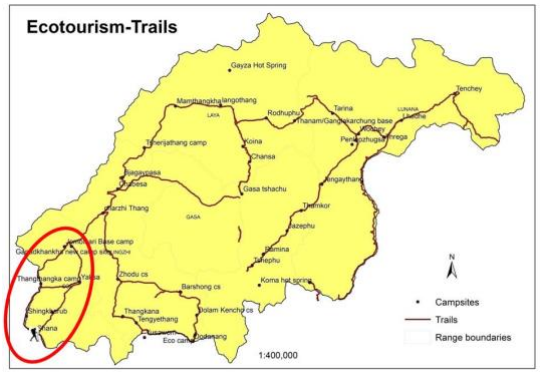


Fig 9. Overview of Jomolhari Trek route under Jigme Dorji National Park

The activity will be carried out along 71 Kms (Shana to Jomolhari-37 kms &Yaksa to Shana-23 kms) Jomolhari trail passing through Yaksa-Nubri, Shana-Chunyul, Jumphu, Dozoding, Dagojang and Jagothang Chiwogs under Soe and Tsento Gewogs. The expected quantity of water to be used during construction and operation is approximately 50,000 Litres. The 40MT of stone, 20MT of aggregates and 20MT of sand will be used during the construction period. As trail is located away from motorable road, the expected quantities of resources will be collected from nearby project sites. The pack pony will be used as a mode of transport of materials. Around 20 community people will be employed during the project period. The detail of budget and implementation time is reflected in work plan.

The following sub-activities will be implemented under this activity. The proposed ecotourism product development is also reflected in 12 Five Year Plan of the Department:

Sub-activity 1: Develop alternate trekking route along Jomolhari trek (from Shana to Thongduzam).

Due to rural electrification transmission line, the beauty and charm of the existing trek route along Jomolhari is being obscured. The current trekking route is overpopulated by the local tourists, businessmen and local travelers. Many tourist and tour operator have complained and suggested for alternate trek route, in order to keep the continued flow of tourist along Jomolhari trek route. Developing alternative trek route away from the electricity line is deemed the best solution for this problem.

Therefore, the proposed project aims and intends to develop an alternate trek route, from Shana to Thongduezam, which is approximately 8 km. Proper nature trek route as per the guideline will be developed and report on completion will be shared to Tourism Council of Bhutan for

designation and management. The necessary clearances for the proposed trekking route will be gathered from the concerned agencies upon presentation of detail survey and suitability reports. The proposed new trekking route shall be developed in such a way that local travelers and horses will be discouraged to travel or enter, which has been the main source of problem from overcrowding of the trek route and putting the charm and fun of a tour in jeopardy. Proper information sign and signage will be developed and installed along the trek route. Two gazebo canopies will be constructed along the trek route for stopovers. The trekking route will be good opportunities for birding, watching wildlife and experience other recreational eco-system services by the visitors.

Social and Economic Impacts

The proposed trek route will have minimal negative social and economic impacts on the communities. Although there is a shop residing along the existing trek route and tourist hardly visit it since most of trekkers either carry their own food and other necessary item from the start of the trek or it is being arranged by their tour operators. The main customers of shop are local travelers who will be catered better due to alternate route. If the tourist uses the alternate trek route, there will be less congestion in the existing trek route which further will benefit local tourists, businessmen and local travelers. There are no communities residing along the alternate trek route.

Sub-activity 2: Develop tourist campsite at Shana and Thongphu.

In order to develop tourist camp with well-furnished basic needs, the project will need to construct the camping grounds, restrooms, water supply and development of camping ground fence by utilizing locally available materials as far as possible to maintain the eco-concept of the camp. The construction will be carried out through proper consultation with the relevant stakeholders and reviewed in order to understand the plan. The relevant clearances and documents for the establishment of the camp will be gathered from the concerned agencies upon identification and assessment of potential pros and cons of the eco-camp construction site. Adequate meetings/consultations will be held with the local communities to understand and discuss on the implementation of the plan. This proposal of campsite construction is going to benefit the communities to generate incomes, the tourists by availing a comfortable stay and experiences and eventually the conservation of environment through proper waste and land management. The consultations will be held in March, 2022 prior to implementation of activities.

The main aim of developing campsite at Shana at Day 0 is to give room for tourist to acclimatize with local environment conditions and have a good night sleep before they start a long day hiking. For the tourists driving from Thimphu and other distant regions, the need of campsite at Shana is deemed necessary. Thongphu campsite is proposed as the park management has received several feed backs from tourists, Association of Bhutanese Tour Operators and Tourism Council of Bhutan on the need of campsite in between Shana and Thangthankha as most tourist especially the older generations and kids face difficulty in reaching Thangthangkha from Shana in a day.

Sub-activity 3: Develop Biking trail at Jomolhari landscape

During the day halt at Jomolhari base-camp, the tourists remain struck without any activities. Need to set up the outdoor leisure activities have become vital for the tourists. The development of biking trail would help tourists get engaged and see the landscape and wildlife in their short visit. The proposed biking trail measures about 15 km that will start from Jomolhari base-camp to Gunglung and Bagala and back. Two gazebos and viewing decks will be constructed along the biking trail to view the wildlife and landscape along the biking trails. The management of

the biking trail and operation of the bike services will be given to youth group of Soe (group is not launched officially) in order to promote ecotourism activities within highlanders. Further, the group is also proposing to provide yak and horse-riding fun and experience along this biking trail for the tourist.

Selection criteria for the ecotourism site are as follows:

The selected area is prioritized by the department and government since it is one prominent trail in the country with increasing number of visitors viable for return of the investments. With covid situation, the government plans to prepare for post covid scenario and invest on tourism products with substantial return to the government revenue. Therefore, the trail is been selected.

- There is only one community residing at the base of Jomolhari and youth group was formed from that community. Therefore, this initiative can greatly benefit the entire communities.
- The site has already established ecotourism product to which the new products will just be value addition which will have more impact in terms of visitor engagement and service delivery rather than creating a whole new product in new site.

Through learning from this site, other sites would also be prioritized in the coming year where communities in other location would be benefited.

Sub-activity 4: Construct visitor information centre at Jomolhari base and equip with basic facilities

Communities of SoeYoutay and SoeYaksa has a unique culture of making traditional products from yak hair such as traditional tent (locally known as *Ja*), ropes, key hanger, neck belts for dogs, traditional rice sack and handlooms, etc. This culture of making local products is dwindling as these products are now replaced by cheap available alternate products available in nearby local markets. With the help of current project, this product which is at the verge of extinction can be revived by establishing a local product display room (Information Centre) at the Jomolhari base campsite. The product from other highland communities such Lingzhi and Naro will also be collected and displayed in the VIC. Through this display room, local products can be made available to the tourists where tourists will have access to unique local products, even compel to take home as souvenirs and community can harness income from the sale of these products. This will not only benefit the tourists and the locals but also help in keeping age-old tradition alive, thereby aiding in the preservation and conservation of culture. Besides serving as a souvenir shop, the centre will serve as information link to alpine Bhutan as it will provide information on every aspect from highland culture and livelihood, treks and mountains, flora and fauna diversity, and information on historical sites including the sacred lakes. The Visitor Information Center will be constructed at Jomolhari base camp.

Sub-activity 5: Promote ecotourism through consultations and establish homestays at Shana, SoeYoutay and Yaksa

Ecotourism is mainly focused on the preservation and sustaining local diversity of natural and cultural environments. In order to maintain the concept of ecotourism, consultative meetings will be conducted with relevant stakeholders to encourage and support local economy through tourist related activities like sale of local products, charging fees on camping and riding yak and horses, and other camp facilities. Besides, some portion of the revenue generated from the tourism can also be deposited to conservation funds. The tour guide and agents will be made aware to not to create any mishap or disturbance to nature's life cycle. And will encourage incorporating programs to have minimal or no adverse impacts on the natural environment and also enhance the cultural integrity of the local people. The local service providers will also promote recycling, energy efficiency, proper waste management and water use. The stakeholders implementing ecotourism activities will be made aware on following the principles of ecotourism and some basic dos and don'ts. Successive meetings and awareness programs will be conducted to make people aware that ecotourism is the only way to maximize the economic, environmental and social benefits in such landscapes as this.

Nine home stays, three from SoeYaksa, three from SoeYoutay and three from Shana communities will be selected and trained on how to manage the home stay. The households will be selected based on their willingness/voluntarily basis. If there are more households coming forward, it will be selected based on criteria set aside by Tourism Council of Bhutan in guideline for registration of village home stays, 2019 (condition of house, capacity of household members to cater service, toilet facilities, management etc) in consultation with Local Government and household owners. The community management plan including bylaws will be developed after the development of homestays. The plan and bylaws will aid households to get equal share of guest.

The Construction of necessary infrastructure such as restrooms, bathrooms, hotstone baths, dinning and logistic rooms will be developed with the support of fund from the project. However, this will be on the cost sharing basis at 50:50 (promoter and the project). The training on how to manage the home stay will be conducted by the park management. And the management guidelines on how to provide the services and how much should be the rates on each service elements will be guided and monitored by the TCB. The marketing of the guests will be based on how the arrangements are made with the TCB and ABTO.

Sub-activity 6: Maintenance of campsites

The Park management has earlier constructed and designated two campsites; Thangthangkha & Jomomolhari base campsites both along Jomolhari trail. Both campsites are ideally located and equipped with basic camping facilities such as restrooms, kitchen, dining and water supply. Further, the camping grounds are enclosed with fence. The campsites were constructed almost a decade ago and due to excessive use, it has now become desperately worn and is in need of major maintenances. No major maintenances were done since the inception of camping ground. Thus, through this project, all available facilities at camping ground will be maintained and made functional.

The local workers will be employed for the maintenance of campsites. The workers will be camping at site, and there will be 5 workers for 2 weeks at each site. The expected quantity of water is 2000 liters during construction and operation. And, expected quantity of construction materials to be used is 2MT of stone, 1MT of aggregate, and 1MT of Sand at each site.

Sub-activity 7: Develop procedures on effective waste management plan

The waste management responsibility within the campsite will rest on campsite In-charge. However, the waste management procedures in line with existing government waste management strategy along the trekking route shall be developed and monitored by the Park Management. The wastes will consist mainly of the packages of the foods, waste foods, plastic covers, plastic bottles, canes and other items that the tourist discards. The waste can be managed properly by segregating it into two major categories: biodegradable and non-degradable solid wastes. Biodegradable wastes can be dumped directly into the prepared pits nearby while the non-degradable has to be collected in a waste collection bins solely meant for it in a place. This way it can be later ramped and transported back to nearest town for further disposal through scrap dealers. Generally, public awareness on waste management along the trekking route and campsite will be conducted and encouraged to manage mostly based on 3Rs, viz: Reduce, Reuse and Recycle concept.

Fig 10. The existing tourist campsites: Thangthanka campsite (Left) and Jomolhari base campsite (right)

Reduce

- Reduce the use of paper as far as possible by using cloth napkins, cloth towels that can be washed and reused
- Avoid products that are packaged for single use.
- Waste-free lunches: If guests go on a day trip, provide them with a lunchbox and avoid,as much as possible, the lunch bags will have to be discarded after use.
- Educate to turn off lights and turn down heating/air conditioning when rooms are unoccupied.
- Use proper insulation and reflective roof covering(plastic sheet) for heating and lighting)

Re-use

- Encourage to use reusable food and beverage containers, cups, plates, napkins, towels, etc.
- Use daylight exclusively in the lobby, campsites for as much of the day as possible.
- Choose the products that are disposable and reusable.

Recycle

- Recycle Bins: Create designated holding "bins" for each type of waste and place in convenient locations
- The recyclable waste will be gathered and transported to be sold to the scrap dealers in the nearest town
- Make compost pits for kitchen waste and food scraps at campsites

social and environmental risks and impacts

Some of the social and environmental impacts from the activity are as follows:

- There is possibility of conflict of interest among stakeholders since many stakeholders are involved for the success of the ecotourism product. The overall trek route is managed by Park and TCB (Tourism council of Bhutan) whereas ABTO (Association of Bhutanese Tour Operators) and GAB (Guide Association of Bhutan) are the end users of the trek. If any activity is carried out in isolation, there is risk of arising conflict in future especially if the activity doesn't address the emerging need/requirement at field level. Therefore, consultation would be carried out to address this issue so that interest of all the stakeholders are noted and their issues are addressed.
- There is also risk of conflict arising within communities regarding contract awarding for the work. For this, the participation in the tendering works will be kept open to all communities residing nearby the project site. The proper consultation will be carried during the award of the work and proper disclosure of result for the tender awarding will be carried out in presence of all the applicant. Furthermore, if any applicant have any grievances reading the result, their grievances will be addressed.

- Waste generated as a result of construction activities will be managed based on 3Rs, viz: Reduce, Reuse and Recycle. It will protect the health and safety of the communities and the tourist. Waste management is every one's responsibility and all visitors including the community themselves should help in managing the waste at site. Communities' awareness will be created and tourist will be briefed on waste management.
- Some of the other impacts are noise disturbance (minor) and Workers' health and safety.

Project sub-activities and budget:

Project Result	Project activities	Budget (in million)	Implementation Year	
			Year 3	Year 4
Objective 1: To develop natural trekking route and infrastructure				
Output 1.1: Develop an alternate trekking route from Shana to Thongduzam (8Kms)	Survey and identification of new trekking route			
	Site clearing and development of trekking route	0.8	0.8	
	Construction of wooden bridges	0.15	0.15	
0utput 1.2: Maintenance of campsite at Thangthangka	Maintenance of toilet, kitchen, dining hall, water supply & Fencing	0.7		0.7
Output 1.3: Maintenance of campsite at Jomolhari base	Maintenance of toilet, kitchen, dining hall, water supply & Fencing	0.7		0.7
Output 1.4: Construction of Gazebos	Identify suitable construction site			
	Construction of Gazebos (5 nos)	0.5		0.5
Output 1.5: Installation of direction guide sign and signages	Making and painting of the signage (10 nos)	0.15		0.15
	Fixing of the signage	0.2		0.2
Objective 2: To develop natural areas into recreational sites				
2.1Develop alternative campsite at Thongphu	Identification of appropriate campsite			
	Site clearance and development camping ground	0.1	0.1	
	Construction of dining hall and kitchen (Wooden)	0.7	0.7	
	Construction of restrooms (2 nos)	0.25	0.25	
	Construction of water tank and water supply system	0.2	0.2	
	Fencing of camping ground	0.1	0.1	
2.2 Develop alternative campsite at Shana	Identification of appropriate campsite			
	Site clearance and development camping ground	0.1		0.1
	Construction of dining hall and kitchen (Wooden)	0.7		0.7
	Construction of restrooms (2 nos)	0.25		0.25

	Construction of water tank and water supply system	0.2		0.2
	Fencing of camping ground	0.1		0.1
2.3 Develop 15 km Biking trail	Seeking governmental approval and also for removing of forest produces.			
	Conducting trail alignment survey	0.05		0.05
	Develop of the biking trail	1		1
Construct Visitor Information Centre (VIC) at Jomolhari base camp	Construction of VIC	4		4
	Equip VIC with basic furniture and facilities for display	0.5		0.5
	Produce a documentary on Jomolhari trek for promotion and marketing	0.5		0.5
Objectives 4: Support the local community on ecotourism activities.				
4.1 Establish two homestay facilities at Shana,Yaksa and Soe (9 homestays in total)	Selection of the appropriated farm house for home stay establishment.			
	Develop necessary facilities for the visitors.	0.675		0.675
4.2 Conduct training on promotion and development of ecotourism activities	Conduct training on homestay management	0.25		0.05
	Conduct training on local guide			0.05
	Conduct training on local product development.			0.05
	Conduct training of Souvenir development			0.05
	Conduct training and awareness on waste management			0.05
4.3 Consultation Workshop	Stakeholder consultation workshop	0.5	0.25	0.25
4.3 Project M&E	Monitoring and evaluation of project			
Total :		**13.375**	2.55	10.825

Activity 2: Improvement of water hole and saltlick sites: Select appropriate location of the waterhole, procure required materials and carry out the construction after clearing the site

Budget allocated: Nu. 500,000.00

Activity Timeline: October-December 2021

Under the Bhutan for Life project, the JDNP management will be improving waterhole and salt lick in the identified sites under Lingzhi Park Range and Soe Park Range. The frequency of wildlife sighting in national parks engaged in salt lick and waterhole sites demonstrates the significance of the areas. It also highlights the need to focus conservation efforts on their protection. The proposed areas for this activity fall inside the alpine meadows and on the gentle slope.

There are 114 households (92hh in Lingzhi, 8hh in SoeYaksa and 14hh in Gunitsawa-Shana) at the project site and its vicinity. The primary livelihood source of the communities is animal husbandry and NWFP collection.

The sub-activities are:

i. Create waterholes in the blue sheep and snow leopard habitat under Lingzhi range (Gugula&Gunigu sites) and Soe range jurisdiction (Jagaershong) to make water available especially in winter season; and
ii. Improve Lamey-base saltlick site under SoeYaktsa. Lamey-base saltlick area is an old saltlick site especially for Takin during summer while they migrate up in the alpine pasture. However, local people of SoeYaksa disturb the site as they store firewood and yak dung in the caves near the site. Therefore, the Range staff plans to improve the site and find alternate measures to mitigate the problem. Prior to maintenance of saltlick site, proper consultation will be carried out involving the local government representatives.

The local workers will be employed for both creation of waterholes and improvement of salt lick site. The workers will be camping at site, and there will be 5 workers for 1 week at each site. The expected quantity of water is 10000 liters during construction and operation. And, expected quantity of construction materials to be used is 4MT of stone, aggregate, and sand.

Social and environmental risks:

Since the proposed activity aims to create water hole away from settlements, there will be no social impacts. Regarding the environmental risk, the impacts will be minimal due to less excavation (4ft*4ft) of surface area.

- At the salt lick site, since the site will be improved there will be no major environmental impacts rather more number of animals are expected to visit the site which might risk poaching of the animals. Frequent monitoring will be conducted to ensure any poaching activity does not happen in the area.
- Waste generated from the activity which will be very minimal will be managed properly.
- Occupational health and safety of the workers will be taken care.
- Since the local herder store firewood and Yak dung in caves near the site, there is risk of disturbing the animals when they come for saltlick therefore, separate area will be identified for storing yak dung and firewood for herders.

Activity 3: Improvement of alpine meadows at Soe&Lingzhi: Clearing and control burning of unpalatable Rhododendron and Willow shrub in Lingzhi and Soe Range areas

Budget allocated: Nu. 423,000.00

Activity Timeline: August-September 2021

Alpine area plays an important role in the make-up of larger ecosystem and contributes to the biodiversity that is essential to the survival of many species in the region. Over 70% of JDNP land cover falls under alpine area and these areas serve as important habitat for blue sheep and snow leopards. Further around 258 herders rear about 16282 yaks in alpine areas. This indicates that alpine meadows not just serve as important wildlife habitat but also serve as important grazing area for livestock that contribute largely towards highland economy. All herders possess traditional rights to graze their livestock in those alpine areas.

Lately, due to the restriction on burning of pasture lands by park management, the dense undergrowths such as *Rhodendron, Rubus, Ribes, Salix, Koenigia* shrubs has come up in the communal pasture lands resulting in shrinkage of pasture lands. This move has rose an arrogance among highland communities and if not managed this will lead to a serious problem in the future. Therefore, through this activity park management aims to manage the communal pasture lands in alpine meadows by allowing them to carry out control burning, slashing of dwarf *Rhodendron, Rubus, Ribes, Salix, Koenigia* shrubs and involve them to incorporate traditional site enrichment measures.

There are 114 households (92hh in Lingzhi, 8hh in SoeYaksa and 14hh in SoeYoetoe) at the project site and its vicinity. The villages are located about 2-5 kms away from project site. The primary livelihood source of the communities is animal husbandry and NWFP collection.

The herders will be employed for management of communal pastureland in alpine meadows. They will be camping at site, and there will be 10 workers for 1 week at each site. The total of 28 areas of the pasture land will be managed. Prior to execution of management works, proper consultation will be carried out involving local leaders and herding communities.

Fig 11. Communal pastureland overtaken by dwarf rhododendron shrubs under Lingzhi

social and environmental risks:
This activity intends to help alpine pastoralist by reviving the communal grazing lands. This will directly benefit 114 herders residing in the area. However, the activity involves following risks:

- Chances of outbreak of large-scale forest fires,
- Threat to wildlife and air pollution etc.
- To minimize the risk, two numbers of foresters will be deployed for full time to monitor the implementation of activity. The burning of an area will be restricted to only few hours in the morning when it is not windy.
- There is also risk of injuries of the worker while implementing the work therefore, occupational health and safety of the workers will be ensured.

Activity 4: Maintenance of Soe Park Range Office

Allocated budget: Nu. 300,000.00

Activity Timeline: April-June 2021

This is a rehabilitation activity to maintain existing infrastructure in Soe Park Range under JDNP. Due to heavy windstorm on 22nd November 2020, the roof of the Soe Park Range Office at Dangochung was partly blown off. The beams and concrete supporter were all fragmented and destroyed by strong force of the wind. This has endangered the entire structure. Currently 11 forestry staffs use this structure as office and residence. Thus, through Bhutan for Life Project, we will be carrying out the following maintenance works:

- Re-roofing of Soe Park Range: The maintenance of beam and post will be carried out, those cracked will be replaced. The re-roofing works will be carried out which involves replacement of broken roof tusk, damaged CGI sheet etc.
- Maintenance of flooring, ceiling and toilet: The entire ceiling and part of floor will be replaced. The water pipeline and other concrete maintenance works inside toilet will be carried out.

Fig 12: Room of Soe Park Range damaged by windstorm

Fig 13. Ceiling and floor damaged by down pour penetrated through damaged roof

There are 4 government offices and 3 households residing nearby Park Range office. The local communities (1 wood carpenter & 4 laborers) will be employed for the period of 1 month. The expected quantity of water is 500 liters during construction and operation. And, expected quantity of construction materials to be used is 1MT of stone, 0.5MT of aggregates, and 1MT of sand. Since the construction area is located away from motorable road, the required materials will be collected from nearby construction site. The other materials required are 50 bags of cement and 200cft of timber.

Social and environmental risks:

The activity involves following risk

- conflict with communities,
- waste generation from construction activities,
- workers health and safety, and
- noise pollution to neighborhoods.

All these risks will be prevented and mitigated through transparent work award, designation of proper waste collection sites and proper management. Worker's health and safety guidelines will be followed and odd hour work timings will be restricted.

4. Environmental and Social Impacts and Mitigation Measures

[Provide narrative: Describe adverse environmental and social impacts of each of the planned activities, then fill out the table below]

Potential impact	**Impact scale**	**Proposed mitigation measures**	**Responsible party**	**Costs**
Activity 1: Enhance Jhomolhari Trekking route with additional amenities				
Conflict of interest among stakeholders (The overall trek route is managed by Park and TCB, ABTO and GAB are the end users of the trek. If we carry out any activity in isolation, the conflict may arise in future especially if the activity doesn't address the emerging need/requirement at field level.)	Long term/Major	Before: Prior to implementation of activity, proper stakeholder consultation has to be carried out to assess the feasibility of activity. The stakeholders should include Park Mgt/DoFPS, Tourism Council of Bhutan (TCB), Association of Bhutanese Tour Operators (ABTO), Guide Association of Bhutan (GAB) & Bhutan Power Corporation(BPC). The consultation will also include field verification by the stakeholders.	Park Management	Nu. 0.2m (not embedded in activity)
Conflict within communities (Conflict may arise within communities regarding contract awarding) Waste: generation of waste as a result of construction activities	Short term/Major Short term Minor	Before: The work awarding should be done in presence of Park management, representative of local government and concerned site engineer. All people residing in project site should be notified regarding the availability of work. Pre-construction: requirements for appropriate waste management should be included in the bidding documents, as a precondition for the contractor's selection During construction:	Park Management & Gewog Administration BFL Focal Point & Community Contractor	Incorporated in the contract agreement.

		• Identification of the different waste types at the project site; • Proper containers/waste bins should be provided; • Dumping of waste or in other non-designated places should be prohibited; • Collection, transportation and final disposal of all waste should be undertaken regularly [weekly]; • Burning of construction waste should be prohibited. After construction: All waste shall be removed from the project site.		
Noise disturbance: Possible noise disturbance wild animals	Short term Minor	*Pre-construction:* requirements to limit noise pollution should be included in the bidding documents, as a precondition for the contractor's selection *During construction:* • Noise level control should be performed before the startup of construction activities; • The equipment should be fitted with appropriate noise devices that will reduce sound level; • The construction work should not be permitted during the nights, the operations on site shall be restricted to the hours 7am-7pm;	BFL focal person in JDNP & Community Contractor	Incorporated in the contract agreement.

Workers' health and safety including COVID (Refer to the full OHS guidelines attached where ever relevant)	Short term Minor	During Construction: • Comply with the workers' health and safety guidelines; • Ensure regular health screening for the workers pre and during construction activities; • Ensure that no underage workers, or children are engaged; • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers; • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices; • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. • Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.)	BFL Focal Point & Community Contractor	Incorporated in the contract agreement.

Lack of skillful masons & escalation in cost of the project	Short term Major	• There is every possibility that the Government might regulate supply chain to eliminate the risk of COVID-19 import cases. There is also high risk of escalation in price of materials and equipment. • Therefore, the park management in collaboration with Local Government Administration will ensure community contractors to deploy at least one skillful mansion. • Expedite site identification and preparation of technical estimates. • Place the order for materials immediately.	BFL focal and community contractor	

Potential impact	**Impact scale**	**Proposed mitigation measures**	**Responsible party**	**Costs**
Activity 2: Improvement of water hole and saltlick sites: Select appropriate location of the waterhole, procure required materials and carry out the construction after clearing the site				
Waste: soil from excavation activities and waste from construction activities	Short term Minor	• Proper containers/waste bins should be provided at the project site; • Dumping of waste in the waterholes, on the sides of the road, on private land, or in other non-designated places should be strictly prohibited; • Dumping of waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived;	BFL focal person in JDNP Contractor	Incorporated in the contract agreement.

		• Collection, transportation and final disposal of all waste should be carried out on a daily basis and not left in the protected areas; • Burning of construction waste should be prohibited.		
Workers' health and safety including COVID (Refer to the full OHS guidelines attached where ever relevant)	Short term Minor	Comply with the workers' health and safety guidelines; • Ensure that no underage workers, or children are engaged; • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers; • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including • wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices; • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. • Strictly abide by COVID prevention protocols Ensure that they wash your hands regularly with soap and water, or clean them with alcohol-based hand rub. Use face mask at work site	BFL focal person in JDNP Contractor	Incorporated in the contract agreement.

Increase poaching	Short term Minor	• Creation of waterholes/salt lick in areas where poaching is limited; • Park authorities shall carry out increased patrolling during and after the waterhole construction.	BFL focal person in JDNP Contractor	Patrolling as part of their regular patrolling.

Potential impact	**Impact scale**	**Proposed mitigation measures**	**Responsible party**	**Costs**
Activity 3: Improvement of alpine meadows at Soe&Lingzhi: Clearing and control burning of unpalatable Rhododendron and Willow shrub in Lingzhi and Soe Range areas				
Community conflict (Since alpine meadow works will be carried out in communal pasture lands, prior consultation has to be carried out)	Short term Minor	Proper consultation has to be carried out with all herders and local government leaders prior to implementation of activity	BFL focal person in JDNP	Embedded in activity
Waste: waste from construction activities	Short term Minor	• Proper containers/waste bins should be provided at the project site; • Dumping of waste in the waterholes, on the sides of the road, on private land, or in other non-designated places should be strictly prohibited; • Dumping of waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived;	BFL focal person in JDNP Contractor	Incorporated in the contract agreement.

		• Collection, transportation and final disposal of all waste should be carried out on a daily basis and not left in the protected areas; • Burning of construction waste should be prohibited.		
Workers' health and safety including COVID (Refer to the full OHS guidelines attached where ever relevant)	Short term Minor	Comply with the workers' health and safety guidelines; • Ensure that no underage workers, or children are engaged; • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers; • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices; • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. • Strictly abide by COVID prevention protocols Ensure that they wash your hands regularly with soap and water, or clean them with alcohol-based hand rub. Use face mask at work site	BFL focal person in JDNP Contractor	Incorporated in the contract agreement.

Increase poaching	Short term Minor	• Improvement of alpine meadows in areas where poaching is limited; • Park authorities shall carry out increased patrolling during and after the alpine meadow improvement.	BFL focal person in JDNP Contractor	Patrolling as part of their regular patrolling.

Potential impact	**Impact scale**	**Proposed mitigation measures**	**Responsible party**	**Costs**
Activity 4: Maintenance of Soe Park Range Office				
Conflict within communities (Conflict may arise within communities regarding contract awarding)	Short term Minor	Before: The work awarding should be done in presence of Park management, representative of local government and concerned site engineer. All people residing in project site should be notified regarding the availability of work.	BFL focal person in JDNP	Embedded in activity
Waste: waste from construction activities	Short term Minor	• Proper containers/waste bins should be provided at the project site; • Dumping of waste in the waterholes, on the sides of the road, on private land, or in other non-designated places should be strictly prohibited; • Dumping of waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived;	BFL focal person in JDNP Contractor	Incorporated in the contract agreement.

		• Collection, transportation and final disposal of all waste should be carried out on a daily basis and not left in the protected areas; • Burning of construction waste should be prohibited.		
Workers' health and safety including COVID (Refer to the full OHS guidelines attached where ever relevant)	Short term Minor	Comply with the workers' health and safety guidelines; • Ensure that no underage workers, or children are engaged; • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers; • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices; • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. • Strictly abide by COVID prevention protocols Ensure that they wash your hands regularly with soap and water, or clean them with alcohol-based hand rub. Use face mask at work site	BFL focal person in JDNP Contractor	Incorporated in the contract agreement.

Noise disturbance: Possible noise disturbance	Short term Minor	*Pre-construction:* requirements to limit noise pollution should be included in the bidding documents, as a precondition for the contractor's selection *During construction:* • Noise level control should be performed before the startup of construction activities; • The equipment should be fitted with appropriate noise devices that will reduce sound level; • The construction work should not be permitted during the nights, the operations on site shall be restricted to the hours 7am-7pm; • Earplugs and protecting devices shall be provided to workers on site.	BFL focal person in JDNP Contractor	Incorporated in the contract agreement.

5. ESMP Implementation arrangements

The implementation of project activities will be carried out by the BFL focal person JDNP. The focal person will be responsible for compliance with all procedures outlined in this ESMP, as well as compliance with any requirements to obtain clearances, permits, approvals, or consent documents from relevant authorities and stakeholders.

This ESMP should be part of the contract that the PA will sign with the Contractor(s) for implementation of the planned activities in JDNP in 2021. The Contractor is obligated to perform all proposed preventive or mitigation environmental and social measures in this plan and to keep the evidence of any documents related to applying these measures (e.g., letter asking the municipality for disposal of inert waste, records on OHS information session performed for all workers before start of activities, all developed EHS plans, etc.). An OHS information session should be organized by the Contractor for all workers prior start the project activities and prior any specific tasks with high health risks.

The JDNP Supervising Engineer needs to monitor the implementation of proposed measures by the Contractor and Contractor's subcontractors with visual checking, reviewing the records of evidence that the measures have been applied and ask the Contractor to apply the measures as soon as possible. Non-compliances should be recorded and the Report on any non-compliance should be reported to the ESS officer immediately, and the ESS officer will report it to the PCU (M&E Officer). Each non-compliance should be closed with appropriate measure/s and the evidence should be kept.

Disbursement of project funds to the PA will be contingent upon their full compliance with the safeguard's requirements.

6. ESMP monitoring arrangements

The BFL focal person in JDNP will closely monitor the implementation of all planned activities and the required mitigation measures, and ensure that they fully comply with this ESMP and with the terms and conditions included in the environment clearances issued by RGoB's national authorities. JDNP is also fully responsible for the compliance of all external contractors and service providers working in the JDNP with the safeguard's requirements outlined in the ESMP.

The monitoring of activities under this ESMP will be carried out in the following manner:

Sl.No	Activities	Monitoring team	Timeline		Location	Means of Verification
			Start	Complete		
1	Enhance Jhomolhari Trekking route with additional amenities	Field focal (Monthly monitoring after the start of the activity)	March 2021	December 2022	Soe&Tsento Gewog	Monthly reports prepared by implementing entities and submitted to PCU/ESS
		ESS officer	4th week October 2021			Monitoring report
2	Improvement of water hole and saltlick sites: Select appropriate location of the waterhole, procure required materials and carry out the construction after clearing the site	Field focal (Weekly monitoring after the start of the activity)	October 2021	December 2021	Soe&Lingzhi	Monthly reports prepared by implementing entities and submitted to PCU/ESS
		ESS officer	2nd week Nov, 2021			Monitoring report
3	Improvement of alpine meadows at Soe&Lingzhi: Clearing and control burning of unpalatable Rhododendron and Willow shrub in Lingzhi and Soe Range areas	Field focal (Weekly monitoring after the start of the activity)	August 2021	September 2021	Soe&Lingzhi	Monthly reports prepared by implementing entities and

						submitted to PCU/ESS
		ESS officer	3rd week of Sept, 2021			Monitoring report
4	Maintenance of Soe Park Range Office	Field focal (Daily monitoring after the start of the activity)	April 2021	June 2021	Soe	Monthly reports prepared by implementing entities and submitted to PCU/ESS
		ESS officer	3rd week June, 2021			Monitoring report

1.Enhance Jhomolhari Trekking route with additional amenities

Monitoring by implementing entities:

- At least weekly field visits
- Monthly reports prepared by implementing entities and submitted to ESS officer

Monitoring by ESS officer:

- Field monitoring by ESS officer – monitoring of the work once during the implementation and through field report from IAs after completion of the work.
- Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

2. Improvement of water hole and saltlick sites:

Monitoring by implementing entities:

a. Field visits at least twice—during the intervention and then monthly as part of the "SMART patrolling" activity (will be adapted based on field conditions, and also based on the availability of SMART patrolling activities).

b. Reports by the implementing entities submitted to ESS officer once during the intervention and once after the completion of work.

Monitoring by ESS officer at PCU:

c. Field monitoring by ESS officer –monitoring through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.

d. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

3.Improvement of alpine meadows at Soe&Lingzhi:

- Monitoring by implementing entities:
  - Field visits at least twice—during the intervention and within three months after the intervention
  - Reports by the implementing entities submitted to ESS officer within a week after each field visit
- Monitoring by ESS officer at PCU:
  - Field monitoring by ESS officer –monitoring through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
  - Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs

3.Maintenance of Soe Park Range Office

- Monitoring by implementing entities:
    - At least weekly field visits
    - Monthly reports prepared by implementing entities and submitted to ESS officer
- Monitoring by ESS officer at PCU:
    - Field monitoring by ESS officer –monitoring through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
    - Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

7. Capacity Need and Budget

Activities under this ESMP will be implemented by the BFL focal person, supervising engineer, and a contractor that will employ workers. The budget for each activity is as follows:

1. Enhance Jhomolhari Trekking route with additional amenities – Nu. 2m ((*Additional 11.37m will be proposed in BFL year 4)*
2. Improvement of water hole and saltlick sites: Select appropriate location of the waterhole, procure required materials and carry out the construction after clearing the site- Nu. 0.5
3. Improvement of alpine meadows at Soe&Lingzhi: Clearing and control burning of unpalatable Rhododendron and Willow shrub in Lingzhi and Soe Range areas-Nu. 0.423m
4. Maintenance of Soe Park Range Office- Nu. 0.3m

A separate budget of Nu. 0.2m will cover the implementation of the ESMP mitigation measures. The activity involves carrying out consultation workshops with TCB, ABTO, GAB, BPC, LG and communities on the feasibility of implementing the proposed activities. Several rounds of consultation is also required during selection and designation of campsites, selection of farmhouse, waste management around the trek route etc. The budget will be utilized for logistic arrangement for the consultation meeting along.

8. Consultation and Disclosure Mechanisms

This ESMP has been prepared in a participatory manner involving concern Section Heads and Range Officers. A community consultation has been carried out to discuss and prioritize the ecotourism activities with the communities. Another round of consultation with the relevant stakeholders such as Park Mgt/DoFPS, Tourism Council of Bhutan (TCB), Association of Bhutanese Tour Operators (ABTO), Guide Association of Bhutan (GAB) & Bhutan Power Corporation (BPC) will be carried out soon and the relevant minutes of meeting and participants list will be attached with this ESMP. The consultations are mainly carried out to inform and discuss the local communities and relevant stakeholders regarding the project activities, to decide on the location of the activities, solicit their opinions, and enable them to give their opinion and feedback on the activity and proposed mitigation measures.

The detailed minutes of the consultation meeting will be kept as a requirement for this ESMP, along with a full list of participants (disaggregated by gender and age).

The full English version of this ESMP, as well as an executive summary in Bhutanese, shall be disclosed on the website of MoAF, BFL and WWF, Bhutan Program. Hard copies of the ESMP should also be available at the PA Management Office and at the PCU Office.

9. Stakeholder engagement plan

The local community that resides in the vicinity of the planned BFL activities in JDNP will be engaged throughout the implementation of these activities.
For all activities–one consultation meeting has to be organized during the intervention period, and subsequent consultations have to be held annually (these can be combined with consultations for other BFL or non-BFL activities).

1. Enhance Jhomolhari Trekking route with additional amenities-
    - Consultation with communities was held on 16th July, 2021, the detailed report is attached in the annexure.
    - Consultation with TCB, ABTO, GAB, LG and Communities on the feasibility of implementing proposed activities was held on 15/02/21 in TCB conference hall. During the meeting field visit was proposed by the members to study the alternative trek route in way forward.
    - The field visit is scheduled from 29/08/21 to 04/09/21 during which study will be carried out by the stakeholders to verify the location of the activities. Minutes of the same is attached in the annexure.
    - The other rounds of consultation will be carried out prior to implementation of each sub-activity with concerned stakeholders including the communities.
2. Improvement of water hole and saltlick sites: Select appropriate location of the waterhole, procure required materials and carry out the construction after clearing the site- Consultation with communities-October 2021

3. Improvement of alpine meadows at Soe&Lingzhi: Clearing and control burning of unpalatable Rhododendron and Willow shrub in Lingzhi and Soe Range areas-Consultation with communities-August 2021
4. Maintenance of Soe Park Range Office- consultation is not required as it is on an existing structure

The BFL focal person will submit the official minutes of consultation meetings (along with a list of participants, disaggregated by gender and age) to ESS officer within one week after the completion of the consultation. The ESS officer will submit the consultation reports to the PCU (M&E officer) one week after their receipt. The PCU (M&E officer) will report to the Secretariat on a semi-annual basis.

Annexure1.

Consultation with Local Communities on Enhancement of Jhomolhari Trekking Route with Additional Amenities

The Park management in collaboration with the Gewog Administration of Soe Gewog, Thimphu Dzongkhag and Tsento Gewog, Paro Dzongkhag has conducted consultation on 16th July 2021 at GT Hall of Tsento Gewog Administration taking in consideration of the RGoB Covid-19 protocols on meetings and gatherings. The consultation was attended by 18 participants including local government leaders (Gup, Mangmi, Tshogpa) and representative community members from both the Gewogs and Park Officials of Soe Park Range Office (List of participants attached).

Figure 2: Participants of consultation workshop

Figure 2: BFL/ESS Focal presenting on details of proposed activities

The Park Range Officer of Soe having welcomed all the stakeholders has briefed the participants on as to why the consultation was called for, and informed the meeting on the intent of the project. It was then followed by detailed presentation on proposed activities by Park BFL/ESS focal.

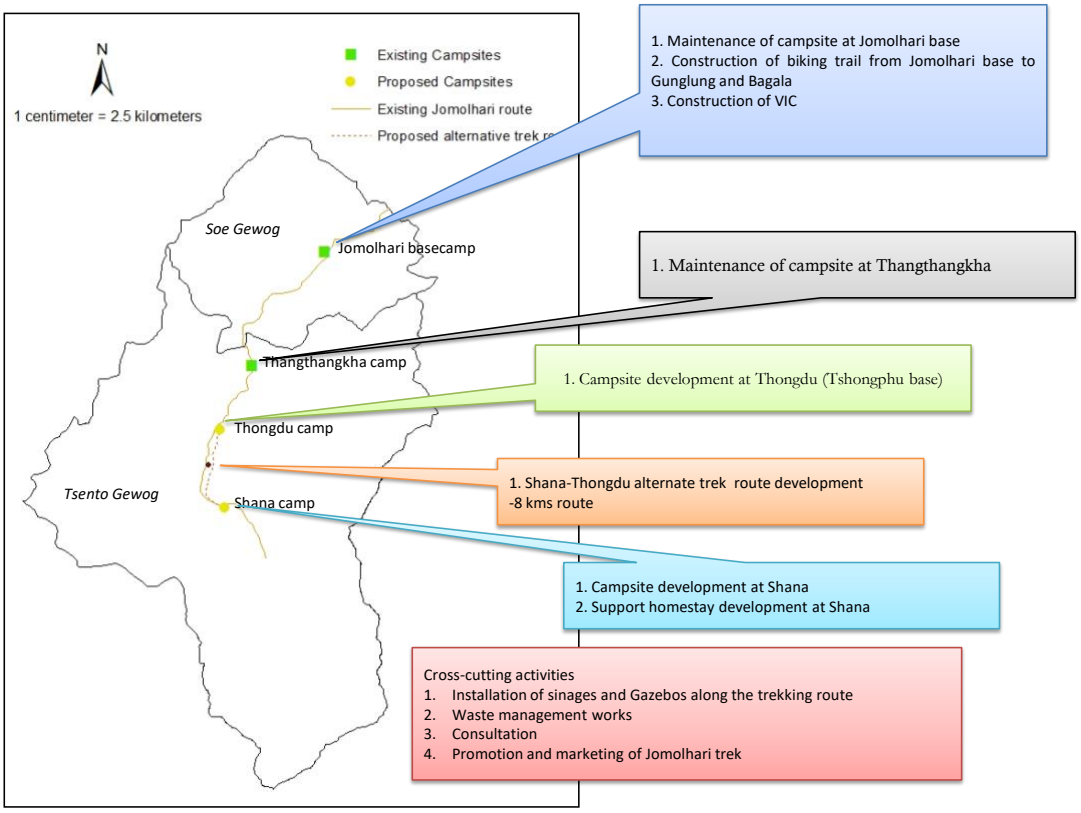


Figure 3: Overview of proposed activities

Having advocated on the proposed activities, the park management through tried to extract pertinent information to find it out whether or not the communities would provide assurances in successful completion of the project. All participants were made to express their views on the following questions:

1. Awareness/education on proposed activities.
2. Intended benefits from proposed activities.
3. Possible impacts (social impacts) from proposed activities.
4. Reasons for their expression of interests.

On questions from 1-2, the applicants were well informed of the proposed activities and intended benefits from proposed activities through exchange of views between communities and also having derived benefits from eco-tourism activities in the past from same area. The 99% of the participants expressed their interest in all proposed activities; however one participant shared his concern on the alternative trek route development and its possible impact on the communities. He expressed that if proposed trek route from Shana to Thongdu is developed for tourist, they may not be able to get support from donors and Tourism Council of Bhutan for maintenance of existing trek route. To address his concern, Soe Park Range Officer shared that alternate trek route is proposed because due to rural electrification transmission line, the beauty and charm of the existing trek route along Jomolhari is being obscured. The current trekking route is overpopulated by the local tourists, businessmen and local travelers. Many tourist and tour operator have complained and suggested for alternate trek route, in order to keep the continued flow of tourist along Jomolhari trek route. Further he elaborated that proposed new trekking route shall be developed in such a way that local travelers and horses will be discouraged to travel or enter, which has been the main source of problem from overcrowding of the trek route and putting the charm and fun of a tour in jeopardy. The local travelers and horses will continue to use existing trek route and on the maintenance of existing trek route since the tour companies need to use existing trek route for transportation of food and logistic materials, they have to support local government for maintenances. Further, Soe Gup has shared that having alternate trek route will have added advantage to communities due to increased inflow of tourist, less crowding in existing trek route and can also be used as emergency route for local travelers if incase there are blocks and landslides in existing trek route. He also expressed that local communities will benefit through employment (site workers) during trek route development phase.

Risk Identification

Since the idea of enhancing Jomolhari trek route with additional amenities is well received, the consultation meeting also discussed on the risks associated with carrying out of proposed activities. It was revealed that the following risks are likely to emerge during implementation of the project and may extend beyond the project period.

1. Lack of skillful masons
2. Increase in COVID-19 cases- disruption in supply & movement restrictions
3. Cost escalation

High Risk/high probability - Increase in COVID-19 cases	**High Risk/Low probability**
Low Risk/High Probability - Cost escalation - Lack of skillful masons	**Low Risk/Low Probability**

Source: (adapted from DFID, 2003)

Risk Management

Each identified risk has been assessed in terms of its probability of occurrence and its intensity in course of the project implementation. The risks have been classified into the following categories together with some remedial measures:

1. Risk Category one: High Probability, High Risk

This category of risk is known as "Killer Risk", which will result in total failure of the project. An increase in COVID-19 cases has been placed under this category. In case if there is an increase in COVID-19 spread then there is a risk of disruption in supply chain and restrictions on movement resulting in postponement of the activity. In order to avoid the risk, the park management has consulted the engineer, expedited site identification and preparation of technical estimates. The order will be placed immediately.

2. High Probability, Low Risk

Under this risk category, the group has identified 2 risks with high probability of occurrences. For instance, in the midst of COVID-19 pandemic there is every possibility that the Government might regulate supply chain to eliminate the risk of COVID-19 import cases. If prices of equipment escalate then there will be a repercussion on fulfilling the set target. However, the project will not be halted.

The skillful masons are not available in all villages including our project sites. Therefore, the park management in collaboration with Local Government Administration will ensure community contractors to deploy at least one skillful mansion.

Consultation Meeting on Enhancement of Jomolhari Trek Route with Additional Amenities											
Discussion on feasibility of proposed activities including environmental and social impact and safeguards											
Venue: Gewog DT Hall, Tsento Gewog, Paro Date: 16/07/2021 Time: 10.00 hrs											
SL No	Name	Age	Male/ Female	Designation	Office	Dzongkhag	Gewog	Chiwog	Village	Contact No	Attendance (Sign/Thumb impression)
1	Dolay Tshering	56	M	Tsento Gup	Tsento Gewog	Paro	Tsento	Phangdo	Namje	17642059	
2	Kencho Dorji	43	M	Soe Gup	Soe Gewog	Thimphu	Soe	Jangsa	Jangsa	17172340	
3	Kunzang Wangchuk	42	M	Sr. Forester	Soe	-11-	-11-	Dangochay	-11-	17666582	
4	Tshering yangay	46	M	Forest Ranger	JDWP	Thimphu	Soe	Dongsa	Dongsa	17635662	
5	Chencho Dorji	52	M	Tshogpa	Tsento Gewog	Paro	Tsento	Shana	Shana	17743235	
6	Sangchu	28	M	Public	-	Thimphu	Soe	Dozothang	Dozothang	17301996	
7	Norbu	70	M	11	Tsento	Paro	Tsento	Yaksa	Yaksa	17864984	
8	Changlo Tshering	48	M		Tsento	Paro	11	11	1	17994878	

Consultation Meeting on Enhancement of Jomolhari Trek Route with Additional Amenities											
Discussion on feasibility of proposed activities including environmental and social impact and safeguards											
Venue: Gewog DT Hall, Tsento Gewog, Paro Date: 16/07/2021 Time: 10.00 hrs											
SL No	Name	Age	Male/ Female	Designation	Office	Dzongkhag	Gewog	Chiwog	Village	Contact No	Attendance (Sign/Thumb impression)
9	Yeshi Wangmo	25	F	ADM	Tsento Gewog	Paro	Tsento			17936302	
10	Tobgay	69	M	Tshogpa Yaksa Nubri	Tsento Gewog	Paro	Tsento	Nubri	Nubri	17679969	
11	Tashi Lhamo	25	F			Thimphu	Soe	Jangsa	Jangsa	17678051	
12	Phub Dem	31	F	Tshogpa	Soe Gewog	Thimphu	Soe	Tekithang	Tekithang	17576543	
13	Chopel Zangmo	34	F	11	11	11	11	Jangsa	Jangsa	17473647	
14	Chencho Gyeltshen	39	M	Mangmi	Tsento Gewog	Paro	Tsento	Shana	Chugel	17394576	
15	Tshering Dorji	41	M	11	Soe Gewog	Thimphu	Soe	Dongsa	Dongsa	17480297	
16	Tsheten Mo	39	F		Tsento Gewog					17676125	

Consultation Meeting on Enhancement of Jomolhari Trek Route with Additional Amenities											
Discussion on feasibility of proposed activities including environmental and social impact and safeguards											
Venue: Gewog DT Hall, Tsento Gewog, Paro Date: 16/07/2021 Time: 10.00 hrs											
SL No	Name	Age	Male/ Female	Designation	Office	Dzongkhag	Gewog	Chiwog	Village	Contact No	Attendance (Sign/Thumb impression)
17	Chhimi Namgyal	40	M	Sr. Forest Ranger	Soe Range JDNP	Thimphu	Soe	Dangochog	Dangoch	17909769	(signed)
18	Yonten Jamtsho	33	M	FO	JDNP HQ	Gasa	Khamaed	Damji	-	17556969	(signed)

འཇིགས་མེད་རྡོ་རྗེ་རྒྱལ་ཡོངས་གླིང་ག།

Jigme Dorji National Park
Department of Forests & Park Services
Head Office: Damji, Gasa

"Managing Bhutan's Natural Heritage"

JDNP/SFES-08/2021-2022/**40**   15/07/2021

The Gup (s),
Tsento Gewog Administration, Paro Dzongkhag
Soe Gewog Administration, Thimphu Dzongkhag

Sub: **Consultation meeting on enhancement of Jomolhari trekking route with additional amenities**

Dear Gewog Thrizins,

The Park Management with support from Bhutan for Life Project is planning to develop Jomolhari trek route with additional amenities. The amenities include maintaining and developing natural trekking route and infrastructures, developing natural areas into outdoor recreational sites and support local community on ecotourism activities.

In this regard, the Park Management is planning to have consultation meeting with your administrations on 16/07/2021 at Tsento Gewog Administration Office, Paro to discuss on feasibility of proposed activities including environmental and social impacts. We would like to request you, your staffs (Mangmi and Tshogpa's) and few community people to be present during the consultation meeting.

The working lunch and DA for participants will be met by Park Management. We thank you for your corporation and continued supports.

Sincerely

Rinzin Dorji
Chief Forestry Officer

Chief Forest Officer
Jigme Dorji National Park
Damji, Gasa

Cc:
- ✓ Project Directors, PCU/BFL for information
- ✓ Mr. Yonten Jamtsho, BFL/ ESS Focal, Park HQ, Damji and Mr. Chimi Namgyel, Park Range Officer, Soe Park Range to coordinate and conduct consultation meeting

Take Nothing but memories, leave nothing but foot prints.

Consultation meeting with the stakeholders (ABTO, TCB, DoFPS)

Date: 15/02/2021

Stakeholder consultation meeting to enhance Jomohari Trek route
Development proposal presented by JDNP, Dept of Forest and Park Services

Venue: TCB conference hall "B"
Date: 15th Feb 2021
Time: 10:00 – 12:45 pm

Member Present (list enclosed)

Welcome Remark

The Director General, TCB welcomed and appreciated all the participants for attending the consultation meeting. Explaining his inability to attend throughout the meeting, he noted that such a consultation meeting among the relevant stakeholder was important and provided an opportunity to bring about greater impact to any developmental activities. Furthermore, he expressed that a frequent meeting especially with Dept. of Forest and Park services was needed to fulfill tourism development aspirations.

Presentation and Discussion

Chief Forest Officer, JDNP highlighted the objectives of their proposal presentation to the meeting. Subsequently, a detailed proposal to enhance Jomolhari trek route was presented to the meeting (PPT annexed).

Decisions:

Following a thorough discussions, the meeting agreed that:

- Tsarijathang re-route trek route is to be used once tourists arrival resume and that the tour operators should be informed accordingly by ABTO;
- Shatem campsite will be enlisted into the Tashel system post field assessment based on existing practices or procedures for formalizing the campsite;
- A re-route trek will be developed in between Shanna to Thongduzam which will cater to only people;
- Safety of the campers need to be ascertained considering the live wire running overhead the campsite;
- Shanna campsite operated by private individual need to be streamlined by ensuring provision of minimum facilities;

- Within the overall Jomolhari landscape development, a biking trail will be developed. Additionally, ABTO was requested to gather feedback from tourists through the tour operators on the viability of biking;
- Wastes management along trek routes and campsites need to be strengthened with coordinated efforts from all concerned agencies. It was proposed that a subsequent discussion among park, gewog and TCB be coordinated to draw up a viable solution. In particular, the following points were mentioned:
    - Providing a compactor at Thangthangkha and Jangothang so the waste was compacted to be easy to carry;
    - Provide incentives in form of money/cash to people who bring wastes;
    - Built waste collection shed at Shanna;
    - Finalise wastes pick up from the collection shed in discussion with gewog administration.
- Institute a coordination mechanism to bring together relevant stakeholders from time to time to share updates on the initiatives being undertaken and to discuss and sort out issues and challenges.

Way forward

- Form taskforce member drawn from BPC, JDNP and TCB to study the re-route trek route, study the possibility of shifting cable lines, (if applicable) determine safety of the campers where cable lines ran over the camp ground and to come up with realistic estimates in relation to the enhancement proposal.
- JDNP to coordinate a meeting with gowog officials of Tsento and the camp operators to discuss on wastes and management of campsite respectively.

Annexure . BFL: SUGGESTED OCCUPATIONAL HEALTH AND SAFETY STANDARDS

Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. Implementing entities should hire contractors that have the technical capability to manage the occupational health and safety issues of their workers, extending the application of the hazard management activities through formal procurement agreements.

This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. It is based on the IFC's Environmental, Health, and Safety Guidelines (April 30, 2007)[1] and the Occupational Health and Safety Guidelines of Bhutan's Construction Development Corporation Ltd., which relies on the national Regulation on Occupational Health, Safety and Welfare 2012, Regulation on Working Conditions 2012 and Labour Act 2007, and in compliance to Sl. No. 21 of Regulation on Occupational Health, Safety and Welfare 2012.

1. General Facility Design and Operation

Integrity of Workplace Structures

Permanent and recurrent places of work should be designed and equipped to protect occupational health and safety:

- Surfaces, structures and installations should be easy to clean and maintain, and not allow for accumulation of hazardous compounds.

- Buildings should be structurally safe, provide appropriate protection against the climate, and have acceptable light and noise conditions.
- Fire resistant, noise-absorbing materials should, to the extent feasible, be used for cladding on ceilings and walls.
- Floors should be level, even, and non-skid.
- Heavy oscillating, rotating or alternating equipment should be located in dedicated buildings or structurally isolated sections.

Severe Weather and Facility Shutdown

- Workplace structures should be designed and constructed to withstand the expected elements for the region and have an area designated for safe refuge (e.g., in case of earthquake).

Workspace and Exit

- The space provided for each worker, and in total, should be adequate for safe execution of all activities, including transport and interim storage of materials and products.

Fire Precautions

The workplace should be designed to prevent the start of fires through the implementation of fire codes applicable to industrial settings. Other essential measures include:

- The workplace shall be provided with adequate means of protection and escape in case of fire.
- The workplace shall be provided with adequate number of relevant fire extinguishers.
- Workers shall wear shoes without iron or steel nails or any other exposed ferrous materials which is likely to cause sparks by friction.
- Smoking, lightening, or carrying of matches, lighters or smoking materials shall be prohibited.
- All other precautions, as are reasonably practicable, shall be taken to prevent initiation of ignition from all other possible sources such as open flames, frictional sparks, overheated surfaces of machinery or plant, chemical or physical, chemical reaction and radiant heat.
- At every workplace adequate provision of water supply for firefighting shall be provided and maintained.
- Equipping facilities with firefighting equipment (e.g., fire extinguishing bottle). The equipment should be maintained in good working order and be readily accessible. It should be adequate for the dimensions and use of the premises, equipment installed, physical and chemical properties of substances present, and the maximum number of people present.
- Manual firefighting equipment shall be easily accessible and simple to use.
- Fire extinguishers and emergency alarm systems that are both audible and visible should be in place.

Lavatories and Showers

- Adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work in the facility (at least one for every 20 workers). Toilet facilities should also be provided with adequate supplies of hot and cold running water and soap.

Potable Water Supply

- Adequate supplies of potable drinking water should be provided to workers at the work site.

Clean Eating Area

- Where there is potential for exposure to substances poisonous by ingestion, suitable arrangements are to be made for provision of clean eating areas where workers are not exposed to the hazardous or noxious substances.

Lighting

- Workplaces should, to the degree feasible, receive natural light and be supplemented with sufficient artificial illumination to promote workers' safety and health, and enable safe equipment operation. Supplemental 'task lighting' may be required where specific visual acuity requirements should be met.
- Emergency lighting of adequate intensity should be installed upon failure of the principal artificial light source to ensure safe shut-down, evacuation, etc.

Safe Access

- Passageways for pedestrians and vehicles within and outside buildings should be segregated and provide for easy, safe, and appropriate access.
- Equipment and installations requiring servicing, inspection, and/or cleaning should have unobstructed, unrestricted, and ready access.
- Covers should, if feasible, be installed to protect against falling items.
- Measures to prevent unauthorized access to dangerous areas should be in place.

First Aid

- The employer should ensure that qualified first-aid can be provided at all times. A sufficient number of first aid boxes or cupboards shall be provided and maintained so as to be readily available during all working hours, provided that the distance of the nearest first aid box or a cupboard stall be not more than 200m from any working place.
- First aid kits include all equipment outlined in Annex 1 to these Guidelines.
- Remote sites should have written emergency procedures in place for dealing with cases of trauma or serious illness up to the point at which patient care can be transferred to an appropriate medical facility.

Work Uniform

- The contractor shall provide a working uniform to each worker.
- All workers shall be required to attend the duty in proper uniform unless otherwise instructed by the Contractor.

Air Supply

- Sufficient fresh air should be supplied for indoor and confined workspaces. Factors to be considered in ventilation design include physical activity, substances in use, and process related emissions. Air distribution systems should be designed so as not to expose workers to draughts.
- Re-circulation of contaminated air is not acceptable. Heating, ventilation and air conditioning (HVAC) systems should be equipped, maintained and operated so as to prevent growth and spreading of disease agents (e.g. Legionnella pneumophilia) or breeding of vectors (e.g. mosquitoes and flies) of public health concern.

2. <u>Information Provision on</u> Occupational Health and Safety (OHS)

- The Contractor is responsible to hold an information session to familiarize all workers with the OHS procedures specified in these guidelines, in order to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow workers.
- The information session should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Any site-specific hazard or color coding in use should be thoroughly reviewed as part of orientation training.

3. Physical Hazards

Physical hazards represent potential for accident or injury or illness due to repetitive exposure to mechanical action or work activity.

Rotating and Moving Equipment

Injury or death can occur from being trapped, entangled, or struck by machinery parts due to unexpected starting of equipment or unobvious movement during operations. Recommended

protective measures include:

- Designing machines to eliminate trap hazards and ensuring that extremities are kept out of harm's way under normal operating conditions. Examples of proper design considerations include two-hand operated machines to prevent amputations or the availability of emergency stops dedicated to the machine and placed in strategic locations.
- Where a machine or equipment has an exposed moving part or exposed pinch point that may endanger the safety of any worker, the machine or equipment should be equipped with, and protected by, a guard or other device that prevents access to the moving part or pinch point. Guards should be designed and installed in conformance with appropriate machine safety standards.

Noise

- No worker should be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C).
- The use of hearing protection should be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB(A).
- Although hearing protection is preferred for any period of noise exposure in excess of 85 dB(A), an equivalent level of protection can be obtained, but less easily managed, by limiting the duration of noise exposure. For every 3 dB(A) increase in sound levels, the 'allowed' exposure period or duration should be reduced by 50 percent.
- Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible.
- Periodic medical hearing checks should be performed on workers exposed to high noise levels.

Vibration

Exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, should be controlled through choice of equipment, installation of vibration dampening pads or devices, and limiting the duration of exposure.

Electrical

Exposed or faulty electrical devices, such as circuit breakers, panels, cables, cords and hand tools, can pose a serious risk to workers. Overhead wires can be struck by metal devices, such as poles or ladders, and by vehicles with metal booms. Vehicles or grounded metal objects brought into close proximity with overhead wires can result in arcing between the wires and the object, without actual contact. Recommended actions include:

- Marking all energized electrical devices and lines with warning signs
- Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance

- Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools
- Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits
- Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas
- Appropriate labeling of service rooms housing high voltage equipment ('electrical hazard') and where entry is controlled or prohibited
- Establishing "No Approach" zones around or under high voltage power lines
- Rubber tired construction or other vehicles that come into direct contact with, or arcing between, high voltage wires may need to be taken out of service for periods of 48 hours and have the tires replaced to prevent catastrophic tire and wheel assembly failure, potentially causing serious injury or death
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work

Eye Hazards

Solid particles from a wide variety of industrial operations, and/or a liquid chemical spray may strike a worker in the eye causing an eye injury or permanent blindness. Recommended measures include:

- Use of machine guards or splash shields and/or face and eye protection devices, such as safety glasses with side shields, goggles, and/or a full-face shield. Frequent checks of these types of equipment prior to use to ensure mechanical integrity is also good practice.
- Where machine or work fragments could present a hazard to transient workers or passers-by, extra area guarding or proximity restricting systems should be implemented, or PPE required for transients and visitors.
- Provisions should be made for persons who have to wear prescription glasses either through the use overglasses or prescription hardened glasses.

Welding / Hot Work

Welding creates an extremely bright and intense light that may seriously injure a worker's eyesight. In extreme cases, blindness may result. Additionally, welding may produce noxious fumes to which prolonged exposure can cause serious chronic diseases. Recommended measures include:

- Provision of proper eye protection such as welder goggles and/or a full-face eye shield for all personnel involved in, or assisting, welding operations. Additional methods may include the use of welding barrier screens around the specific work station (a solid piece of light metal, canvas, or plywood designed to block welding light from others). Devices to extract and remove noxious fumes at the source may also be required.

Working Environment Temperature

Exposure to hot or cold working conditions in indoor or outdoor environments can result temperature stress-related injury or death. Use of personal protective equipment (PPE) to protect against other occupational hazards can accentuate and aggravate heat-related illnesses. Extreme temperatures in permanent work environments should be avoided through implementation of engineering controls and ventilation. Where this is not possible, such as during short-term outdoor work, temperature-related stress management procedures should be implemented which include:

- Monitoring weather forecasts for outdoor work to provide advance warning of extreme weather and scheduling work accordingly
- Providing temporary shelters to protect against the elements during working activities or for use as rest areas
- Use of protective clothing

- Providing easy access to adequate hydration such as drinking water or electrolyte drinks, and avoiding consumption of alcoholic beverages

Ergonomics, Repetitive Motion, Manual Handling

Injuries due to ergonomic factors, such as repetitive motion, overexertion, and manual handling, take prolonged and repeated exposures to develop, and typically require periods of weeks to months for recovery. These OHS problems should be minimized or eliminated to maintain a productive workplace. Controls may include:

- Facility and workstation design with 5th to 95th percentile operational and maintenance workers in mind
- Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds
- Selecting and designing tools that reduce force requirements and holding times, and improve postures
- Incorporating rest and stretch breaks into work processes, and conducting job rotation
- Implementing quality control and maintenance programs that reduce unnecessary forces and exertions

Working at Heights

Fall prevention and protection measures should be implemented whenever a worker is exposed to the hazard of falling more than two meters; into operating machinery; into water or other liquid; into hazardous substances; or through an opening in a work surface. Fall prevention / protection measures may also be warranted on a case-specific basis when there are risks of falling from lesser heights. Fall prevention may include:

- Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area
- Proper use of ladders and scaffolds by trained workers
- Use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard area, or fall protection devices such as full body harnesses used in conjunction with shock absorbing lanyards or self-retracting inertial fall arrest devices attached to fixed anchor point or horizontal life-lines
- Appropriate training in use, serviceability, and integrity of the necessary PPE
- Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrested fall

Illumination

Work area light intensity should be adequate for the general purpose of the location and type of activity, and should be supplemented with dedicated work station illumination, as needed. Controls should include:

- Use of energy efficient light sources with minimum heat emission
- Undertaking measures to eliminate glare / reflections and flickering of lights
- Taking precautions to minimize and control optical radiation including direct sunlight.
- Exposure to high intensity UV and IR radiation and high intensity visible light should also be controlled
- Controlling laser hazards in accordance with equipment specifications, certifications, and recognized safety standards. The lowest feasible class Laser should be applied to minimize risks.

4. Personal safety equipment for workers

All workers are equipped with the following personal safety equipment: helmet, gloves, ordinary boots and reflective vest.

Workers that are exposed to dust should also be provided with eye protection glasses and face mask. Workers that are exposed to noise should be provided with ear plugs. Workers that need to work in the dark should be provided with hand and cap lamps.

Workers are instructed regarding safety equipment as follows:

- Always wear complete set of protective wear.
- Do not wear loose clothing, such as overhang shirt, jackets, mufflers etc.
- Tuck shirt and jacket well.
- Secure helmet with belt under the chin.
- Tuck the bottom sleeves of trouser inside safety boot.
- Dress with reflector

5. Standards for workers' accommodation[2]

1. General living facilities

- The location of the facilities is designed to avoid flooding or other natural hazards
- The living facilities are located within a reasonable distance from the worksite.
- Transport is provided to worksite safe and free.
- The living facilities are built using adequate materials, kept in good repair and kept clean and free from rubbish and other refuse.

2. Drainage

- The site is adequately drained.

3. Heating, air conditioning, ventilation and light

- Living facilities are provided with adequate heating, ventilation, and light systems including emergency lighting.

4. Water

- Workers have easy access to a supply of clean/ potable water in adequate quantities.
- The quality of the water complies with national/local requirements or WHO standards.
- Tanks used for the storage of drinking water are constructed and covered to prevent water stored therein from becoming polluted or contaminated.
- The quality of the drinking water is regularly monitored.

5. Wastewater and solid waste

- Wastewater, sewage, food and any other waste materials are adequately discharged in compliance with national and/or international standards and without causing any significant impacts on camp residents, the environment or surrounding communities.
- Specific containers for rubbish collection are provided and emptied on a regular basis.
- Pest extermination, vector control and disinfection are undertaken throughout the living facilities at least once.

6. Rooms/dormitories facilities

- Rooms/dormitories are kept in good condition.
- Rooms/dormitories are aired and cleaned at regular intervals.
- Rooms/dormitories are built with easily cleanable flooring material.
- Rooms/dormitories and sanitary facilities are located in the same buildings.
- Residents are provided with enough space.
- The number of workers sharing the same room/dormitory is minimized.

- Doors and windows are lockable and provided with mosquito screens when necessary.
- Mobile partitions or curtains are provided.
- Adequate number of furniture such as table, chair, mirror, and lamps are provided for all workers.
- Separate sleeping areas are provided for men and women.

7. Bed arrangements and storage facilities

- A separate bed is provided for every worker.
- The practice of "hot-bedding" is prohibited.
- There is a minimum space of 1 meter between beds.
- The use of double deck bunks is minimized.
- If double deck bunks are in use, there is enough clear space between the lower and upper bunk of the bed.
- Workers are provided with comfortable mattresses. Workers may be expected to use their own pillows and bed linens.
- Workers wash bed linen frequently and applied with adequate repellents and disinfectants (where conditions warrant).
- Adequate facilities for the storage of personal belongings are provided.
- Separate storages for work clothes and PPE and depending on condition, drying/airing areas are provided.

8. Sanitary and toilet facilities

- Sanitary and toilet facilities are constructed from materials that are easily cleanable.
- Sanitary and toilet facilities are cleaned frequently and kept in working condition.
- Toilets, showers/bathrooms and other sanitary facilities are designed to provide workers with adequate privacy including ceiling to floor partitions and lockable doors.
- Separate sanitary and toilet facilities are provided for men and women.
- Toilet facilities are conveniently located and easily accessible.
- Toilet facilities are environmentally friendly (e.g., pit toilet) and sewage is not disposed into the worksite.
- Open defecation in the vicinity of project sites should be prohibited.
- An adequate number of hand wash basins and showers/bathrooms facilities are provided.
- Shower facilities are provided with water heating facilities.

9. Cooking and laundry facilities

Cooking and laundry facilities should available for workers at the worksite or in close vicinity to it. These facilities should be kept in clean and sanitary conditions.

10. Leisure, social and telecommunications facilities

- Basic social collective spaces should be available to workers.
- Workers are provided with dedicated places for religious observance, as appropriate.
- The employer provides workers with local sim cards that can be used for communication on their personal cell phones.

Contents of first aid box or cup-boards

The first aid boxes or cup-boards shall be distinctively marked with white cross on a green background and shall contain the following equipment:

1. Small sterilized dressings (12)
2. Medium size sterilized dressings (6)

3. Large size sterilized dressings (6)
4. Large size sterilized burn dressings (6)
5. (1/2 oz.) Sterilized cotton wool (6 packets)
6. (2oz.) Bottle containing a two per cent alcoholic solution of iodine (1)
7. (2oz.) Bottle containing Betadine (antiseptic solution) having the dose and mode of administration indicated on the label (1)
8. Roll of adhesive plaster (1)
9. A snake bite lancet (1)
10. Torch light (1)
11. Pair of scissors (1)
12. Tablets Aspirin (5gms) 2 dozen
13. Burn Ointment (2 tubes)
14. Dettol (2 phial, about 2 ozs)
15. Bandages 4 inches wide
16. Bandages 2 inches wide
17. Triangular bandages (2)
18. Packets of safety pins (1)
19. A supply of suitable splint