

**Environmental and Social Considerations in Detailed Planning Survey  
(Technical Cooperation for Developing Planning)**

DATE: 16<sup>th</sup> September 2016

**1. Full title of the Project**

Project for the Formulation of Comprehensive Development Plan for Bhutan 2030 (hereinafter referred to as “the Project”)

**2. Type of the Project**

Formulation of a master plan

**3. Categorization and Its Reason**

The Project formulates comprehensive development plan for the Bhutan of which target year is 2030.

The Project is categorized as a “Category B” project because of the following reason. The Project is not likely to have significant adverse impact on the environment under the JICA Guidelines for Environmental and Social Considerations (2010) in terms of its sectors, characteristics and areas.

**4. Agency or Institution Responsible for the Implementation of the Project**

Department of Human Settlement under the Ministry of Works and Human Settlement of Bhutan

**5. Outline of the Project**

(1) Expected Goals which will be attained after implementing the Proposed Plan

The output of the Project is Comprehensive Development Plan for Bhutan 2030 which will be used as part of national development policies such as the five-year plans.

(2) Outputs

The output of the Project includes, at least, the following items:

- Comprehensive Development Plan for Bhutan;
- General Guidance for developments incidental to the proposed Comprehensive Development Plan for Bhutan; and
- Recommendation for Implementation framework of Comprehensive Development Plan for Bhutan.

## 6. Description of the Project Site

### (1) Target Area

The Project covers the entire land area of Bhutan (Figure 1).



Source: Central Intelligent Agency, USA

**Figure 1: Map of Bhutan**

### (2) Description of the Environments

#### (2)-1 Natural Environment

##### 1) Physical environment<sup>1</sup>

Bhutan is a landlocked country of which area is 38,394 km<sup>2</sup>. It borders with China (north) and India (east, west and south).<sup>2</sup> Its terrain is rugged, and the altitude is from 160 m to 7,000 m. There are four (4) main rivers namely Drangme Chu, Puna Tsang Chu, Wang Chu and Amo Chu, and they flows into Brahmaputra River in India. Glaciers in the northern Bhutan consist of about 10 % of the land area and are important water source of the country.

In Bhutan, there are three climate zones (alpine, temperate, subtropical) and dominated by monsoons. Each zone has distinctive vegetation.

<sup>1</sup> The Information in this section is from “Statistical Yearbook of Bhutan 2015 (National Statistics Bureau, Royal Government of Bhutan)” unless otherwise noted.

<sup>2</sup> The World Factbook (Central Intelligent Agency, USA)

## 2) Ecosystems and species<sup>3</sup>

Bhutan is in Eastern Himalaya of which biodiversity is high. Regarding its ecosystems, 70.46% of the land is covered with forests, and their status is reported to be good. There are also many species because of its diversified habitats.

The direct threats to the ecosystems are land use change, forest fire, over logging, firewood collection, over grazing, illegal forest use, poaching, unsustainable agriculture practices, pollution, alien species and human-wildlife conflict. The indirect threats are considered to be climate change, population increase and poverty. Because of these threats, the extinction of species is also a concern in Bhutan<sup>4</sup>.

Conservation International, international nature conservation NGO, identifies Bhutan as part of “Himalaya”<sup>5</sup>, which is one of the “Biodiversity Hotspots” in the world. It means that it is necessary to urgently take appropriate actions to conserve its ecosystems and species.

## 3) Conservation measures

51.44%<sup>6</sup> of its land is covered with protected areas. The protected area network consists of National Parks (5 sites), Wildlife Sanctuaries (4 sites), Strict Nature Reserve (1 site) and Biological Corridors. In the Strict Nature Reserve, there is no permanent residential area and all activities but research works are prohibited. In other protected areas, there are Core Zones, Buffer Zones and Multiple-use Zones. Local people live in the Multiple-use Zones. All development projects in the protected areas are subject to Environmental Impact Assessment.

Bhutan is a member state of the Convention Concerning the Protection of the World Cultural and Natural Heritage, but there are no World Natural Heritage Sites. The following four (4) sites are submitted on the Tentative List of the Convention<sup>7</sup>: Royal Manas National Park, Jigme Dorji National Park, Bumdeling Wildlife Sanctuary and Sakteng Wildlife Sanctuary. There are three (3) Ramsar sites<sup>8</sup>: Bumdeling, Gangtey-Phobji and Khotokha.

BirdLife International, international nature conservation NGO, identifies internationally important habitats as Important Bird and Biodiversity Areas (IBAs) and promotes their conservation with local

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<sup>3</sup> Information in this section is from “The Fifth National Report to the Convention of Biological Diversity Secretariat (National Environment Commission, Royal Government of Bhutan) ” unless otherwise noted.

<sup>4</sup> <https://www.cbd.int/countries/profile/default.shtml?country=bt#facts>

<sup>5</sup> [http://www.conservation.org/global/japan/priority\\_areas/hotspots/asia-pacific/Pages/Himalaya.aspx](http://www.conservation.org/global/japan/priority_areas/hotspots/asia-pacific/Pages/Himalaya.aspx)

<sup>6</sup> National Biodiversity Strategies and Action Plan (2014)

<sup>7</sup> UNESCO: <http://whc.unesco.org/en/statesparties/BT/>

<sup>8</sup> Ramsar Convention: <http://www.ramsar.org/sites/default/files/documents/library/sitelist.pdf>

government and NGOs. There are 23 IBAs and only eight (8) of them are under protection of the government<sup>9</sup>.

## (2)-2 Social Environment

### 1) Population

In Bhutan, the first Population and Housing Census was conducted in 2005, and the second census is planned in 2016. The projected population of 2014 is about 745,000<sup>10</sup>.

### 2) Religion

Bhutan is a Buddhism country and many people still also believe in traditional animism<sup>11</sup>. 75.3% of its population is Lamaistic Buddhist, 22.1% is Indian- and Nepalese-influenced Hinduism and 2.6% is others<sup>12</sup>.

### 3) Ethnic groups and languages<sup>13</sup>

There are three (3) big ethnic groups in Bhutan, namely Tshanglas, Ngalops and Lhotshampa. Bumthaps, Khengpas, Kurtoeps, Brokpas, Bramis, Doyas Monpas and others are also recognized. 18 languages are recognized in the country and some of them are on the brink of extinction.

### 4) Cultural Heritages

The Department of Culture, Ministry of Home and Cultural Affairs, conserves and promotes the conservation of the cultural heritages including intangible cultural heritages.

There are no World Cultural Heritage Sites, but the following four (4) sites are submitted on the Tentative List of the Convention<sup>14</sup>: Ancient Ruin of Drukgyel Dzong, Dzongs (the centre of temporal and religious authorities: Punakha Dzong, Wangdue Phodrang Dzong, Paro Dzong, Trongsa Dzong and Dagana Dzong), Sacred Sites associated with Phajo Drugom Zhigpo and his descendants and Tamzhing Monastery.

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<sup>9</sup> Important Bird Areas in Asia: Key sites for conservation (BirdLife International, 2004)

<sup>10</sup> Population Projection Bhutan 2005-2030 (national Statistical Bureau)

<sup>11</sup> Tourism Council of Bhutan (in Japanese):

[http://www.travel-to-bhutan.jp/about\\_bhutan/%E7%A4%BE%E4%BC%9A%E3%81%A8%E5%AE%97%E6%95%99](http://www.travel-to-bhutan.jp/about_bhutan/%E7%A4%BE%E4%BC%9A%E3%81%A8%E5%AE%97%E6%95%99)

<sup>12</sup> The World Factbook – Bhutan : <https://www.cia.gov/library/publications/the-world-factbook/geos/bt.html>

<sup>13</sup> Tourism Council of Bhutan (in Japanese):

[http://www.travel-to-bhutan.jp/about\\_bhutan/%E7%A4%BE%E4%BC%9A%E3%81%A8%E5%AE%97%E6%95%99](http://www.travel-to-bhutan.jp/about_bhutan/%E7%A4%BE%E4%BC%9A%E3%81%A8%E5%AE%97%E6%95%99)

<sup>14</sup> UNESCO: <http://whc.unesco.org/en/statesparties/BT/>

## 5) Poverty<sup>15</sup>

The poverty rate in Bhutan decreases from 31.7% in 2003 to 12% in 2012. The government has achieved its goal of the Tenth 5-Year Plan (to reduce the poverty rate to 15%). The reasons are considered to be improvement of infrastructure such as roads, electricity, telecommunication, water supply in rural areas, and implementation of specific poverty alleviation programmes.

The analysis shows that the poverty is a rural phenomenon, those employed in agriculture are poorer, poverty is less acute in households with educated heads, and poor families also tend to have a bigger family size.

The poverty rates of Dagana, Lhuentse, Pemagatshel, Samdrup Jongkhar, Samtse and Zhemgang Dzongkhags are more than the national average (12%), and the rate of Lhuentse is 31.9% which is the worst of the country. However, the poverty rate and the GNH Index need to be carefully compared. For example, the poverty rate of Lhuentse is the worst in the country but its GNH Index is 0.773 which is categorized as “High category” by the 2015 GNH Survey. Although the Multi-dimensional Poverty Index of Gasa is the worst, its poverty rate is low and the GNH Index is very high.

## 6) Gender and children

Regarding the gender, the issues have are some differences among areas in Bhutan because of the cultural differences, however the common issues are domestic violence (including DV to males) and lack of understanding about the social roles of women<sup>16</sup>. Asian Development Bank states that the issues are education gaps, fewer jobs, locked into agriculture, multiple work burdens, adult female illiteracy, DV and few female public officials or civil servants<sup>17</sup>. According to the 2015 GNH Survey, female’s GNH Index is 0.730 and the index in 2010 was 0.695<sup>18</sup>. It may be considered that there are some issues but, in general, the situation has been improved.

Regarding the right of children, the common issues are various types of violence (adult to child or child to child) and limited participation of children (especially young generation) to decision making system. Regarding the child labour, although there are no accurate data, it is considered not to be a big issue in the country<sup>19</sup>.

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<sup>15</sup> ELEVENTH FIVE YEAL PLAN 2013-2018

<sup>16</sup> The interview with National Commission on Women and Children on 19<sup>th</sup> August 2016.

<sup>17</sup> Country Partnership Strategy: Bhutan 2014- 2018 (Asian Development Bank)

<sup>18</sup> Provisional Findings of 2015 GNH Survey (Centre for Bhutan Studies and GNH Research, 2015)

<sup>19</sup> The interview with National Commission on Women and Children on 19<sup>th</sup> August 2016.

## 7) Infectious diseases

The infection rate of HIV/AIDS in Bhutan is low. 380 cases are reported by June in 2014 and the prevalence is 0.15% of the total population<sup>20</sup>. But, the number of patients in 2000 was 38, and the rapid increase of the number is the concern of the government.

Regarding Tuberculosis (TB), it is necessary to pay attention to the situation because 1,011 cases are reported and 20 patients die in 2014<sup>21</sup>. It is also a concern that patients with Multi Drug Resistant TB and TB/HIV may increase in the future<sup>22</sup>.

## 8) Solid wastes

Department of Engineering Services (Ministry of Works and Human Settlement) states the following concerns regarding the solid waste management in urban area<sup>23</sup>.

- The dumping site of Thimphu has already been overloaded.
- There are insufficient numbers of waste collection vehicles in urban areas.
- It is necessary to conduct public awareness activities to reduce solid wastes and not to dump waste illegally.
- The department does not have an expert on the solid waste management.

## 8) Greenhouse gases<sup>24</sup>

The estimated sequestration capacity of the forests in 2000 is 6.3MtCO<sub>2</sub>eq<sup>25</sup>, while the total emission in the same year is 1.6 MtCO<sub>2</sub>eq. It means that Bhutan is a net sink for greenhouse gases. However, emissions from sectors such as industrial processes and transport are showing a rapidly increasing trend. Bhutan is highly vulnerable to adverse impacts of climate change due to the fragile mountainous ecosystems and economic structure. It is therefore important for Bhutan to take appropriate mitigation and adaptation measures.

# 7. Legal framework of the Environmental and Social Considerations in Bhutan

## (1) Relevant Laws

The Constitution states that Buddhism is the spiritual heritage of Bhutan in Article 3 and preserving, protecting and promoting the cultural heritage of the country in Article 4. In its Article 5, it states protecting, conserving the natural resources of Bhutan, and preventing all forms of ecological

<sup>20</sup> <http://www.unct.org.bt/mdgsinbhutan/>

<sup>21</sup> Statistical Yearbook of Bhutan 2015 (National Statistical Bureau)

<sup>22</sup> ELEVENTH FIVE YEAL PLAN 2013-2018

<sup>23</sup> The interview on 17<sup>th</sup> August 2016.

<sup>24</sup> Intended Nationally Determined Contribution (2015) submitted to the 21<sup>st</sup> Conference of parties for United Nations Framework Convention on Climate Change : UNFCCC

<sup>25</sup> MtCO<sub>2</sub>eq means “equivalent to one million tons of CO<sub>2</sub>”.

degradation. It also states in Article 5 that a minimum of 60% of total land shall be maintained under forest cover for all time, and that the Parliament may, by law, declare any part of the country to a protected area.

Based on the National Environment Strategy (1998), National Environment Protection Act, an umbrella act for all environmental legislations, was enacted in 2007.

Environment Assessment Act was enacted in 2000 to regulate environmental impact assessment (EIA) in all development projects in Bhutan. There are rules and regulations and guidelines related to EIA and Strategic Environmental Assessment (SEA) as follows:

- Regulation on Environmental Clearance of Projects (2002)
- Regulation on Strategic Environmental Assessment (2001)
- Environmental Assessment General Guidelines (2012) and other guidelines for seven (7) sectors
- National Guidelines for Strategic Environmental Assessment in Bhutan (Draft): It is planned to be finalized in October 2016.

Cultural heritages are essential components of Bhutan, and Cultural Heritage Act has been drafted<sup>26</sup>. The act (draft) identifies and establishes Movable Cultural Properties, Intangible Cultural Heritages and Cultural Sites, and recognizes conserves the entire country as Cultural Landscape.

The natural resources and biodiversity are the other important components of the country. There are following policies and acts to promote their conservation.

- National Biodiversity Strategies and Action Plan (2014)
- Biodiversity Act of Bhutan (2003)
- National Forest Policy (2010)
- Forest and Nature Conservation Act of Bhutan (1995, revised in 2006)
- Forest and Nature Conservation Rules of Bhutan (2006)

Table 1 shows other related laws to the environmental considerations in Bhutan.

**Table 1 Related laws of the environmental considerations in Bhutan**

No.	Name	Relevant authority
1	Environmental Standards	National Environment Commission
2	Drinking Water Quality Standard	National Environment Commission
3	Waste Prevention and Management Act	Ministry of Works and Human Settlement

<sup>26</sup> The interview with Department of Culture, Ministry of Home and Cultural Affairs, on 15<sup>th</sup> August 2016.

No.	Name	Relevant authority
4	Waste Prevention and Management Regulation	Ministry of Works and Human Settlement
5	Child Care and Protect Act	National Commission on Women and Children
6	Child Adoption Act	National Commission on Women and Children
7	Domestic Violence Prevention Act	National Commission on Women and Children
8	Immigration Act	Ministry of Home and Cultural Affairs
9	Immigration Rules and Regulations	Ministry of Home and Cultural Affairs
10	Disaster Management Act	Ministry of Home and Cultural Affairs
11	Labour and Employment Act	Ministry of Labour and Human Resources
12	Land Act of Bhutan	National Land Commission
13	Land Rules and Regulations	National Land Commission
14	Rules and Regulations for Lease of Government Reserved Forest Land & Government Land	National Land Commission

Sources: Detailed Planning Survey Team

Table 2 shows the relevant international conventions of which Bhutan is a member state.

**Table 2 Relevant international conventions**

No.	Name
1	Convention on Wetlands of International Importance especially as Waterfowl Habitat
2	Convention Concerning the Protection of the World Cultural and Natural Heritage
3	Convention on International Trade in Endangered Species of Wild Fauna and Flora
4	Convention on Biological Diversity
5	United Nations Framework Convention on Climate Change
6	Convention on the Elimination of All Forms of Discrimination against Women
7	Convention on Rights of the Child
8	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

Sources: From the website of each convention.

## (2) Environmental Impact Assessment

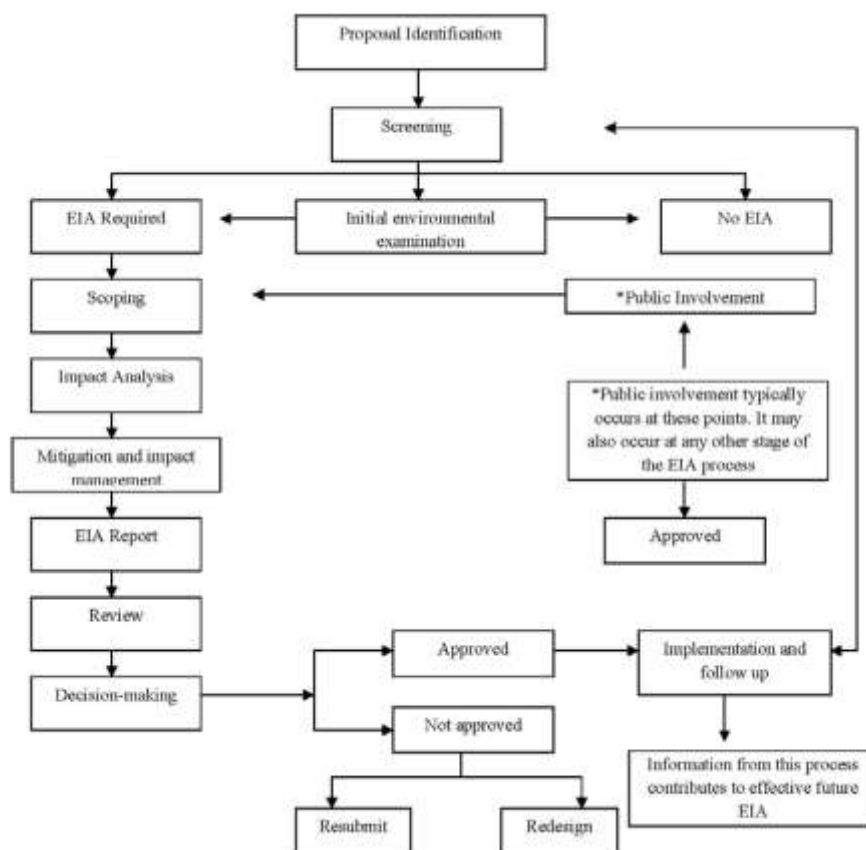
### 1) National Environment Commission

National Environment Commission (NEC) was established under National Environment Protection Act (2002) as the highest decision-making body on all matters relating to the environment and its management. One of its roles is to mainstream the environment into planning processes, and Environment Assessment Act (2000) and EIA are the important tools to implement the role.

### 2) Process of EIA

Figure 2 shows the flow of EIA process.





Source: Environmental Assessment General Guidelines (2012)

**Figure 2 Flowchart of EIA process**

**Screening:** Competent authorities are authorized to screen issue or deny environmental clearance for the activities and projects listed on the Annex 2 of the Regulation on Environmental Clearance of Projects (2002). Regarding activities and projects which are subject to Article 17 of the Regulation, applicant is requested to acquire the official clearance of concerned agencies before submitting the application to NEC. Environmental Assessment General Guidelines (2012) recommends conducting Initial Environmental Examination at the screening stage to consider whether an activity or project needs EIA.

**Appeals and Legal Challenges:** There is a mechanism to appeal and take legal challenges to the result of EIA.

## (2) Strategic Environmental Assessment

### 1) Legislation

Legislation regarding the implementation of SEA is Environment Assessment Act (2000) and

Regulation on Strategic Environmental Assessment (2001). National Guidelines for Strategic Environmental Assessment in Bhutan has been being drafted and is planned to be finalized in October 2016.

A frameworks (tentative) of the implementation of the SEA for the Project was discussed and agreed among the Department of Human Settlement, Environment Unit of Ministry of Works and Human Settlement (MoWHS) and the Survey Team as shown in Table3, Table 4 and Table 5<sup>27</sup>.

**Table 3 Proposed Framework of the SEA for the Project (tentative)**

No.	Step	Note
1	Clarification of the objectives	To decide consistent and clear environmental objectives of the Plan.
2	Data collection	To collect basic data and information on environmental issues for the city and regional development schemes.
3	Planning scenarios	To discuss and decide contents of scenarios.
4	Scoping	To conduct scoping for each scenario and to decide data collection method.
5	Environmental survey	To collect data and information for each scenario.
6	Analysis and evaluation	To analyse collected data and information, and to evaluate impacts induced by each scenario.
7	Comparative evaluation	To evaluate the scenarios from environmental, technical and economic aspects in quantitative and qualitative ways.
8	Decision	To decide one scenario based on the comparative evaluation.
9	Monitoring	To establish a monitoring structure periodically to evaluate the selected scenario.
10	Participation of stakeholders	To involve stakeholders as much as possible especially at planning stage of the scenarios.

Source: Effective SEA cases in the World (Ministry of the Environment and Mitsubishi Research Institute, 2003, in Japanese).

**Table 4 Proposed framework of Stakeholders Meetings (tentative)**

No.	Step	Note
1	Information analysis	To evaluate and analyse data collected by GNH 2015.
2	Formulation of alternative scenarios	To formulate alternative scenarios by working groups. The working groups composed of related governmental agencies.
3	1st SHM	To explain the alternative scenarios and collect opinions from related stakeholders. The SHM is held at each of three (3) regions (*1). The SHM is conducted as a workshop, and its duration is two days. Working language: Dzongkha
4	Formulation of the optimal scenario	Based on the opinions, the alternative scenarios are further developed and evaluated from environmental/ social, economic and technical points of views. The working groups are in charge of the works. The optimal scenario is formulated.
5	2nd SHM	The optimal scenario is presented at the 2nd SHM which is held at Thimphu. Working language: English

<sup>27</sup> The discussion with the Department of Human Settlement, Ministry of Works and Human Settlement, on 3<sup>rd</sup> August 2016.

6	Review and approval	The final report is reviewed and approved by the NEC and the GNHC.
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Note: \*1: Three regions are Western region (8 Dzongkhag and 2 Thromde); Central region (6 Dzongkhag and 1 Thromde); and Eastern region (6 Dzongkhag and 1 Thromde)

**Table 5 Proposed participants of the Stakeholders Meetings (tentative)**

SHM	Place	Participants	Number of participants
1st SHM	Held at each region.	<p>Eastern and Central regions:</p> <ul style="list-style-type: none"> <li>➤ About 6 persons (representatives and planners) from each Dzongkhag and Thromde.</li> </ul> <p>Western Region</p> <ul style="list-style-type: none"> <li>➤ About 6 persons (representatives and planners) from each Dzongkhag and Thromde.</li> </ul> <p>Representatives from related governmental agencies, NGOs and private sectors.</p>	<p><u>Eastern Region</u> About 60 persons</p> <p><u>Central Region</u> About 60 persons</p> <p><u>Western Region</u> About 100 persons</p>
2nd SHM	Held at Thimpu.	<p>Representatives from Dzongkhag and Thromde.</p> <p>Representatives from related governmental agencies, NGOs and private sectors.</p>	From 100 to 150 persons

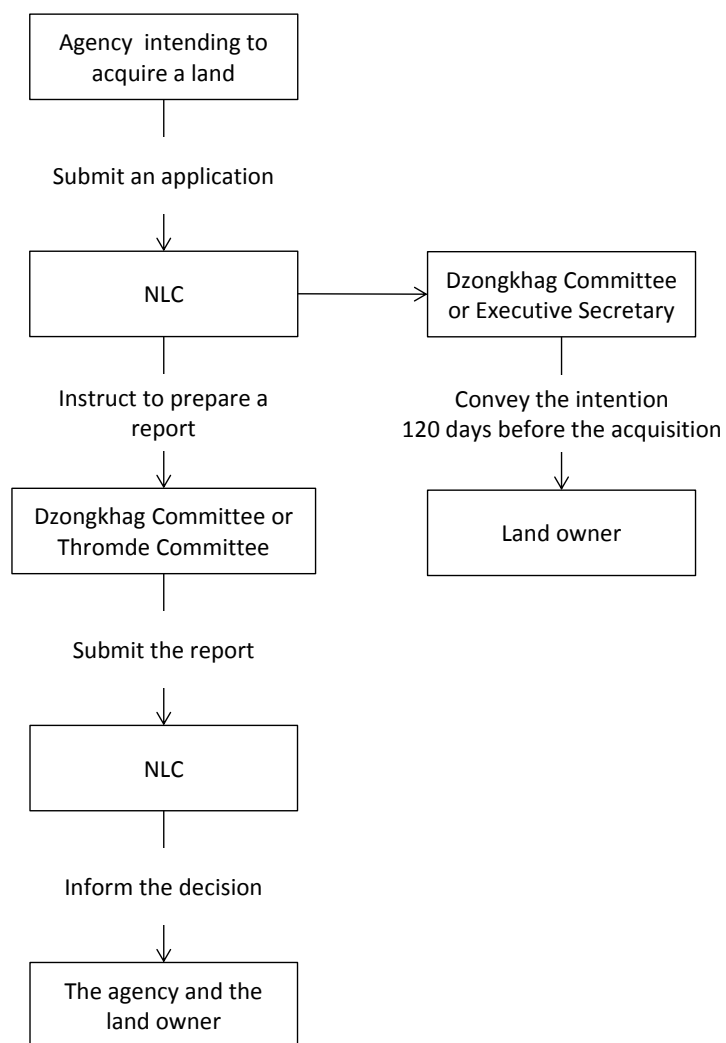
On 3<sup>rd</sup> August 2016, the meeting was held among NEC and the above-mentioned three parties. The agreed items are the followings:

- When the Project starts, MoWHS formulates a Terms of Reference (TOR) of the SEA and submits it to NEC. Both parties discuss the TOR in detail and agree the contents. MoWHS implements the SEA based on the TOR.
- Environmental Statement of the Project is approved by the NEC or NEC Commission.
- NEC is in charge of monitoring the Plan.
- There is no fee structure of SEA implementation at the moment.

#### (4) Land Acquisition

Land acquisition for public project is conducted based on Land Act (2007) and Land Rules and Regulations (2007). National Land Commission is in charge of its implementation. Although there is no legislation related to involuntary resettlement, various acts and regulations such as Environmental Assessment Act (2002) require public consultations in their implementation.

Figure 3 shows the flow of land acquisition. Compensation is made to land owners before land acquisition.



Source: Land Rules and Regulations (2007)

**Figure 3 Flowchart of land acquisition**

## 8. Provisional Scoping

A provisional scoping is conducted for a Comprehensive Development Plan. The results are shown in Table 6.

Table 6 Provisional Scoping of the Project

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
Pollution Control	1	Air quality	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <p>[Construction Stage]</p> <ul style="list-style-type: none"> <li>➤ Air pollution caused by heavy machines and vehicles</li> </ul> <p>[Operation and monitoring stage (O&amp;M stage)]</p> <ul style="list-style-type: none"> <li>➤ Air pollution by factories in industrial parks</li> <li>➤ Air pollution by increased cars in core cities in all Dzongkhags</li> <li>➤ Air pollution by dusts from mines</li> </ul>
	2	Water quality	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <p>[Construction Stage]</p> <ul style="list-style-type: none"> <li>➤ Water pollution caused by heavy machines and vehicles</li> </ul> <p>[O&amp;M stage]</p> <ul style="list-style-type: none"> <li>➤ Waste water from factories and accommodations such as hotels</li> <li>➤ Waste water from core cities in all Dzongkhags</li> <li>➤ Waste water from mines especially tailings (surface and ground water)</li> <li>➤ Waste dumping site leachate</li> </ul>
	3	Wastes	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					<p>[Construction Stage]</p> <ul style="list-style-type: none"> <li>➤ Wastes from construction sites</li> </ul> <p>[O&amp;M stage]</p> <ul style="list-style-type: none"> <li>➤ Wastes from factories and accommodations such as hotels</li> <li>➤ Wastes from core cities in all Dzongkhags</li> <li>➤ Medical wastes</li> <li>➤ Wastes from mines especially tailings</li> </ul>
	4	Soil contamination	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <p>[Construction Stage]</p> <ul style="list-style-type: none"> <li>➤ Soil contamination by oil and others from heavy machines and vehicles</li> </ul> <p>[O&amp;M stage]</p> <ul style="list-style-type: none"> <li>➤ Soil contamination by factories in industrial parks</li> <li>➤ Soil contamination by mines</li> <li>➤ Soil contamination by waste dumping site leachate</li> </ul>
	5	Noise and vibration	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <p>[Construction Stage]</p> <ul style="list-style-type: none"> <li>➤ Noise and vibration from heavy machines and vehicles</li> <li>➤ Noise and vibration during road works</li> </ul>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					[O&M stage] <ul style="list-style-type: none"> <li>➤ Noise and vibration from factories in industrial parks</li> <li>➤ Noise and vibration from mines</li> </ul>
	6	Subsidence	C	C	[Construction Stage] Details of impacts (including their existences) are not known because specific plans are not available. [O&M stage] Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted. <ul style="list-style-type: none"> <li>➤ Large-scale activities of pumping up ground water for factories</li> <li>➤ Ground subsidence by development of mines</li> </ul>
	7	Odor	C	C	Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted. [Construction Stage] <ul style="list-style-type: none"> <li>➤ Odor from construction sites</li> </ul> [O&M stage] <ul style="list-style-type: none"> <li>➤ Odor from waste water and/or wastes from factories and accommodations such as hotels</li> <li>➤ Odor from wastes from core cities in all Dzongkhags</li> <li>➤ Odor from waste dumping sites</li> </ul>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
	8	Sediment	C	C	Details of impacts (including their existences) are not known because specific plans are not available.
Natural Environment	9	Protected areas	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <p>[Planning stage]</p> <ul style="list-style-type: none"> <li>➤ 51.4% of the land area belongs to the national protected areas, and there are Multiple-use zones in the areas where people are allowed to live. Although the Project does not plan large-scale activities in the protected areas, it is necessary to consider how to improve the lives of these people in the protected area in line with nature conservation within the Multiple-use zones.</li> <li>➤ Regarding plans related to transport sector, it is necessary to consider not cutting cross the protected areas.</li> <li>➤ If there is a protected area in the downstream of target area of the Project, impacts including indirect ones to the protected area need to be carefully assessed.</li> </ul> <p>[O&amp;M stage]</p> <ul style="list-style-type: none"> <li>➤ If project sites are close to the protected areas, it is necessary to conduct appropriate monitoring.</li> </ul>
	10	Ecosystem	C	C	Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.



Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					<p>[Planning stage]</p> <ul style="list-style-type: none"> <li>➤ One of the four (4) pillars of GNH states the conservation of natural environment, and it is required to recognize that all natural habitats in Bhutan are important and to integrate the philosophy into the planning.</li> <li>➤ The ecosystems in the alpine zone are very fragile and it is required to plan activities as little as possible. If trekking and other tourism activities are planned, appropriate regulations are to be imposed.</li> <li>➤ Accommodation facilities should be well planned to limit their impacts to the surrounding ecosystems.</li> </ul> <p>[O&amp;M stage]</p> <ul style="list-style-type: none"> <li>➤ If project sites are close to unprotected important ecosystems such as IBAs, it is necessary to conduct appropriate monitoring.</li> </ul>
	11	Hydrology	C	C	<p>[Planning stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ If hydropower plant with reservoir is planned, there may be some impacts to hydrology of the river and others.</li> </ul> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
	12	Topography and geology	B-	C	<p>[Construction stage]</p> <p>Construction works in mountainous and/or hilly areas may cause soil erosions.</p> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p>
Social Environment	13	Involuntary resettlement	C	C	<p>[Planning stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ It is necessary to avoid involuntary resettlement as much as possible especially in densely populated areas.</li> </ul> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p>
	14	Poor people	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available. Poverty reduction is one of the targets which GNH philosophy tries to achieve, and the Project is to develop the country in line with the GNH philosophy. The Project therefore needs to pay attention to the people who are in poverty.</p>
	15	Indigenous or ethnic minority	C	C	<p>There are many dialects (or languages) and cultures in Bhutan and the constitution state the respects and conservation of these cultures.</p>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					Although details of impacts (including their existences) are not known, the Project understands these cultures well and develops the plan of the country to achieve a balanced society.
	16	Local economies, such as employment, livelihood	A+	A+	It is expected that the basic and social infrastructures are improved and new industries are to be developed, which contributes local and national economy throughout the Project period including O&M stage.
	17	Land use and utilization of local resources	C	C	<p>[Planning stage]</p> <p>Details of impacts (including their existences) are still not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ Areas prone to natural disaster should be avoided.</li> </ul> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p>
	18	Water usage	C	C	<p>[Planning stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ It is necessary to consider climate resilience of industrial and agricultural sectors.</li> </ul> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans</p>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					are not available.
	19	Existing social infrastructures and services	C	A+	<p>[Planning and construction stages]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p> <p>[O&amp;M stage]</p> <p>It is expected livelihoods of local people are improved.</p>
	20	Social institutions such as social infrastructure and local decision-making institutions	C	C	Details of impacts (including their existences) are not known because specific plans are not available.
	21	Misdistribution of benefits and damages	C	C	Details of impacts (including their existences) are not known because specific plans are not available.
	22	Local conflicts of interest	C	C	Details of impacts (including their existences) are not known because specific plans are not available.
	23	Cultural heritages	C	C	<p>[Planning stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ The conservation of traditional cultures, one of the four pillars of GNH, should be respected and integrated into the plan.</li> <li>➤ Cultural Heritage Act (Draft) is to designate Movable Cultural Property,</li> </ul>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					<p>Intangible Cultural Heritage and Cultural Sites, and to recognize and conserve the entire Bhutan as “Cultural Landscape”. It is therefore necessary to pay special attention to the cultural heritages.</p> <ul style="list-style-type: none"> <li>➤ It is important to understand the Buddhism and related cultures in the country.</li> <li>➤ The cultural heritages and landscapes are important elements of the tourism, and traditional lifestyles of local people contribute the promotion of tourism.</li> </ul> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p>
	24	Landscape	C	C	<p>[Planning stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ The conservation of traditional cultures, one of the four pillars of GNH, should be respected and integrated into the plan.</li> <li>➤ Cultural Heritage Act (Draft) is to designate Movable Cultural Property, Intangible Cultural Heritage and Cultural Sites, and to recognize and conserve the entire Bhutan as “Cultural Landscape”. It is therefore necessary to pay special attention to the cultural heritages.</li> <li>➤ It is necessary to pay special attention to landscapes with the Buddhism facilities such as monasteries.</li> </ul>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					<ul style="list-style-type: none"> <li>➤ The cultural heritages and landscapes are important elements of the tourism, and traditional lifestyles of local people contribute the promotion of tourism.</li> <li>➤ Solar power and wind power development may give adverse impacts to landscapes. Routes of transmission lines need to be well considered.</li> </ul> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p>
	25	Gender	C	C	Details of impacts (including their existences) are not known because specific plans are not available.
	26	Children's rights	C	C	Details of impacts (including their existences) are not known because specific plans are not available.
	27	Infectious diseases such as HIV/AIDS	C	C	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ Although the infection rate of HIV/AIDS in Bhutan is low, the government expresses its concern about the rapid increase of the patients. It also needs to pay attention to Tuberculosis.</li> </ul>
	28	Labor conditions	C	C	<p>[Construction stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ Thorough implementation of the Labour and Employment Act is required to</li> </ul>

Category	No.	Environmental Item	Evaluation		Explanation on impacts
			Planning and construction stages	Operation & monitoring stage	
					<p>prevent child labour.</p> <p>[O&amp;M stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available.</p>
Others	29	Accidents	B-	B-	<p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <p>[Construction stage]</p> <ul style="list-style-type: none"> <li>➤ It is necessary to prevent accidents to workers and neighboring residents as much as possible.</li> </ul> <p>[O&amp;M stage]</p> <ul style="list-style-type: none"> <li>➤ Increase of traffic is expected and it is necessary to prevent traffic accidents as much as possible.</li> </ul>
	30	Trans-boundary impacts / global warming	C	A+	<p>[Construction stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following items should be noted.</p> <ul style="list-style-type: none"> <li>➤ Reduction of idling of heavy machines and vehicles</li> <li>➤ Introduction of low-fuel consumption machines and vehicles</li> </ul> <p>[O&amp;M stage]</p> <p>Decrease of greenhouse gasses emissions from vehicles is expected. The forest cover and protected areas are maintained.</p>

A+/-: Significant positive/negative impact is expected. B+/-: Positive/negative impact is expected to some extent. C: Extent of positive/negative impact is unknown. A further examination is needed, and the impact could be clarified as the study progress. D: No impact is expected.



## **9. Alternative to the Project Activities including “Zero (without project)” Option**

Alternatives to the project activities will be studied in the Project.

## **10. Result of the Consultation with the Recipient Government on the Environmental and Social Considerations including Roles and Responsibilities**

The Detailed Planning Survey Team explains that the Project shall comply with the national laws and guidelines and the “JICA Guidelines for Environmental and Social Considerations (2010)”. Both parties agree on the compliance to ensure that appropriate considerations shall be implemented for the environmental and social impacts expected by the Project. The Team also explains that a Strategic Environmental Assessment (SEA) shall be conducted in the Project as part of a master plan study, and it shall involve related stakeholders.

## **11. Terms of Reference for the Environmental and Social Considerations**

### **(1) Rationale**

The Project formulates a comprehensive development plan for Bhutan. It is required to conduct a Strategic Environmental Assessment (SEA) as the Environmental and Social Considerations for the Project under the following Bhutanese laws, regulation and JICA Guidelines.

- National Environment Protection Act (2007);
- Environment Assessment Act (2000);
- Regulation on Strategic Environmental Assessment (2001), and,
- JICA Guidelines for Environmental and Social Considerations (2010).

National Guidelines for Strategic Environmental Assessment has been being drafted, and is planned to be finalized in October 2016. The Guidelines are to be used in the Project if it is put in force before the Project.

### **(2) Description of the SEA**

#### **1) Objectives**

The objectives are;

- (a) To integrate the Four Pillar of the Gross National Happiness Policy into the Plan
- (b) To identify and assess potential impacts induced by the Project;
- (c) To avoid, reduce and mitigate these impacts;
- (d) To collect comments from stakeholders and reflect them to options proposed by the Project;
- (e) To evaluate the options from technical, financial and environmental points of view; and,
- (f) To select the optimal option for the Project.

## 2) Study areas of the SEA

Entire Bhutan

## 3) Methodology and the flow of the implementation of the SEA

- (a) Consistent and clear environmental objectives of the Project are decided based on the Four Pillars of the Gross national Happiness Policy
- (b) Terms of Reference (TOR) of the SEA are drafted based on the “Proposed participatory planning process (tentative: Table 7)” and submitted to the National Environment Commission. Discussions with the commission are held and the TOR is finalized. Based on the TOR, the SEA is conducted.
- (c) Baseline surveys are conducted on the environmental and social conditions of the Study areas and the country. Secondary data are utilized for the surveys. The following items should be well surveyed.
  - Laws and regulations (including standards) of Bhutan related to the environmental and social considerations (including SEA and Environmental Impact Assessment);
  - Natural conditions such as protected area system, internationally recognized important habitats and endangered species; and
  - Social conditions such cultural heritages and vulnerable people.
- (d) Planning the options with which potential negative impacts on the social and natural environments are avoided, reduced and mitigated as much as possible.
- (e) A scoping for the options is conducted.
- (f) Based on the results of the scoping, social and environmental surveys are conducted to collect more information if necessary.
- (g) Impacts of the options are analyzed and evaluated, and the evaluation is conducted from technical, financial and environmental points of view.
- (h) Mitigation measures and a monitoring system of the selected option are recommended.
- (i) Comments from stakeholders are collected and reflected in the process of developing the options and selecting the optimal option. It is therefore required to hold stakeholders meetings.
- (j) Stakeholders Meetings are held in the Project. Table 7 shows proposed participatory planning process under the SEA for the Project, and Table 8 shows proposed participants for the Stakeholders Meetings. Both of them need to be reviewed and integrated into the above-mentioned TOR (refer to (b)).

**Table 7 Proposed participatory planning process under the SEA**

No.	Step	Note
1	Information analysis	To evaluate and analyze data collected by GNH 2015.
2	Formulation of alternative scenarios	To formulate alternative scenarios by working groups. The working groups composed of related governmental agencies.
3	1st SHM	To explain the alternative scenarios and collect opinions from related stakeholders. The SHM is held at each of three (3) regions (*1). The SHM is conducted as a workshop, and its duration is two days. Working language: Dzongkha
4	Formulation of the optimal scenario	Based on the opinions, the alternative scenarios are further developed and evaluated from environmental/ social, economic and technical points of views. The working groups are in charge of the works. The optimal scenario is formulated.
5	2nd SHM	The optimal scenario is presented at the 2nd SHM which is held at Thimphu. Working language: English
6	Review and approval	The final report is reviewed and approved by the NEC and the GNHC.

Note: \*1: Three regions are Western region (8 Dzongkhag and 2 Thromde); Central region (6 Dzongkhag and 1 Thromde); and Eastern region (6 Dzongkhag and 1 Thromde)

**Table 8 Proposed participants for the Stakeholders Meetings**

SHM	Place	Participants	Number of participants
1st SHM	Held at each region.	<u>Eastern and Central regions:</u> ➤ About 6 persons (representatives and planners) from each Dzongkhag and Thromde. <u>Western Region</u> ➤ About 6 persons (representatives and planners) from each Dzongkhag and Thromde. ➤ Representatives from related governmental agencies, NGOs and private sectors.	<u>Eastern Region</u> About 60 persons <u>Central Region</u> About 60 persons <u>Western Region</u> About 100 persons
2nd SHM	Held at Thimphu.	➤ Representatives from Dzongkhag and Thromde. ➤ Representatives from related governmental agencies, NGOs and private sectors.	From 100 to 150 persons

### (3) Implementation Organizations of the SEA Study

The SEA is conducted by Department of Human Settlement, Ministry of Works and Human Settlement, and the JICA Study Team.

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