



Royal Government of Bhutan
Ministry of Agriculture and Forests
Department of Forests and Park Services
Social Forestry and Extension Division



Evaluation of the National Plantation Strategy for Bhutan 2010

Social Forestry and Extension Division
Royal Government of Bhutan

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Royal Government of Bhutan

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Bhutan

Foreword

The history of forest plantation in Bhutan dates back to 1947. The first plantation was initiated in 1947 by civil authority in southern part of Bhutan. The Forest Act of Bhutan 1969 nationalized all forest resources in the country. The first National Forest Policy (NFP) 1974 prescribed long-term principles, objectives and mandated to maintain a minimum of 60% of the total land under cover. Afforestation Division was created in 1989 to backstop afforestation and reforestation programme throughout the country. In 1991, the Master Plan for Forestry Development provided guidelines for long-term development of forestry sector mainly to stop forests degradation. In 1996, the National Reforestation Strategy was developed to contribute biodiversity conservation, watershed and environmental protection and providing needs of the people and industries. The Forest and Nature Conservation Rules (FNCR) 2006 included provisions for leasehold forestry plantation, the community forests establishment, and plantation on the private registered land. The policies and rules for plantation programme became more enabling to different stakeholders and individuals. In 2010, the National Plantation Strategy (NPS) for Bhutan was developed to reinforce the National Reforestation Strategy 1996 and inclusion of the community forest plantation, leasehold forestry, urban and recreational plantations.

During the implementation of NPS 2010, substantial changes have taken place in the policies, rules and regulations, social and environmental circumstances. Now, the Forest and Nature Conservation Rules and Regulation of Bhutan (FNCRR) 2017 is in place, and in line with the changes in legal frameworks and climate change, the evaluation of NPS 2010 is expected to identify issues and explore opportunities and improve the plantation programme. Moreover, this evaluation is expected to explore options to include REDD+ programmes in the new strategy. The evaluation of NPS 2010 is timely and we expect that output of this document will be incorporated in the new strategy to which will suite the current field conditions and serve as the main implementing document to address technical, legal, environmental, social and economic issues.

This evaluation would have not been possible without the fund support from REDD+ of the WMD for consultancy services. Therefore, I sincerely would like to thank funding agency and all the officials, communities and other stakeholders who contributed directly or indirectly to this document.



Lobzang Dorji
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Executive Summary

The National Plantation Strategy (NPS) for Bhutan was formulated in 2010 and has been operational for last eight years. Within this period, substantial changes have taken place in the policies, legal frameworks, and social and rapid environmental climate change circumstances. Hence, the evaluation of the NPS 2010 and formulation of the new plantation strategy has been recommended in the context of emerging issues and challenges and to address them. The Government had established Green Bhutan Corporation Limited (GBCL) in 2017 and handed over all the plantation activities for implementation. Since then, the GBCL is operational as state-owned enterprise (SOE) and responsible for implementing the plantation activities in the country.

The NPS 2010 has 8 objectives, 11 strategies and 60 strategic actions to be implemented by the different stakeholders. The objectives of the evaluation are:

Evaluation of the implementation of the National Plantation Strategy for Bhutan 2010, and prepare evaluation report. And to come out with concise and key issues identified and conclude with some key recommendations that are very specific to new strategy development based on current scenario (political, policy, social and environmental context).

The Social Forestry and Extension Division (SFED) has been instrumental in affecting the growth in plantation programme, and more focus on improving the quality and increasing the seedling survival rates in the field. Although, the overall plantation programme has been able to ensure contribution to reforestation and afforestation in many parts of the country, but the biggest challenge reported is securing sufficient funding to improve proper planning, implementation and pre-requisite maintenance of plantations for a minimum of five years. The plantation programme in the past has suffered heavily due to insufficient funding from the Government for both creation and maintenance of the plantations. The maintenance

of plantation is inevitable after investment of huge fund for establishment, and most of them failed due to lack of fund support for maintenance after establishment. The plantation programme can be made successful if provided adequate budget for the maintenance at least for first 3 years.

The plantation programme is financially supported by the Government; however, there are cases hydropower projects support the plantation establishment as rehabilitation projects. However, irony is that, there is lack of fund support for maintenance after the establishment of the plantations. The plantation carried out by the community forest management groups (CFMG) in the community forest (CF) has been reported successful. Similarly, the plantations carried out by Bhutan Particle Board Product Limited (BBPL) and Bhutan Carbide and Chemical Limited (BCCL) were found more successful. In order to fulfill the long-term policy goal and to ensure success of the plantation, a plough back mechanism has to be established. The hydropower, tourism sector and other Industries are some of the beneficiaries and potential sources of fund.

In terms of relevance of the plantation programme, it has been found relevant in the context of maintaining of 60% forest cover for all times to come. The implementation of the plantation programme is also in line with National Forest Policy (NFP) of Bhutan 2011. So far, the norms and standards for nursery and plantation were revised twice in a decade after it was first developed in 2004. The rates in the norms and standards become inconsistent or obsolete with market rates, particularly for fencing materials and labor charges because market is dynamic. However, the plantation targets were somehow achieved on time and within the cost estimated as per the norms and standard. In the current 12th five year plan, the projected target for climate restoration is 2000 hectares. The plantation has been considered as important and priority programme of the Department in every five year plan and given emphasis with some amount of budget allocated to support the programme.

None of the strategic actions under research and development (R&D) have been initiated due to lack of expertise and facilities. Although, the research on plantation was required there is no institutionalized R&D component for the plantation programme, no plantation research policy, protocols and methodologies. One of the most important strategic components that need to be strengthened and improved is the research aspects related to the plantation programme.

The conservation and protection of natural resources by means of afforestation and reforestation is an important effort to balance the increasing needs of the people and the industries. However, the evaluation report pointed out poor M&E system where proper guidelines should be in place to facilitate implementer and stakeholders to monitor and evaluated plantation programme. Other immediate pertinent interventions recommended are mapping of barren and degraded area for effective planning and implementation of the plantation programme and comprehensive impact assessment on different types of plantation on the environment, society, economy and culture.

Abbreviation

BBPL	Bhutan Board Product Limited
BCCL	Bhutan Carbide & Chemical Limited
BT FEC	Bhutan Trust Fund for Environmental Conservation,
CF	Community Forest
CFMG	Community Forest Management Group
CFO	Chief Forestry Officer
CNR	College of Natural Resources
DFS	Dzongkhag Forestry Sector
DoFPS	Department of Forests and Park Services
FMU	Forest Management Unit
FMU	Forest Management Unit
FNCR	Forest and Nature Conservation Rules
FRCRR	Forest and Nature Conservation Rules and Regulations
FRMD	Forest Resources Management Division
FYP	Five Year Plan
GBCL	Green Bhutan Corporation Limited
GNHC	Gross National Happiness Commission
LG	Local Government,
M&E	Monitoring and Evaluation
MHPA	Mangdechhu Hydroelectric Project Authority,
MoAF	Ministry of Agriculture and Forests
NECS	National Environment Commission Secretariat
NFP	National Forest Policy
NGO	Non-government Organization
NPS	National Plantation Strategy
NRDCL	Natural Resources Development Corporation Limited
NRPC	Natural Resource Pricing Committee
NWFP	Non-wood Forest Products
PA	Park Area
PHPA	Punatsangchhu Hydroelectric Project Authorities
PSC	Plantation Steering Committee
R&D	Research and Development
RGoB	Royal Government of Bhutan
RNR	Renewable Natural Resources

RSPN	Royal Society for Protection of Nature
SFED	Social Forestry and Extension Division
SRF	State Reserved Forest
ToR	Terms of Reference
WMD	Watershed Management Division
WWF	World Wildlife Fund

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1. Background

1.1. Introduction

In 1996, the National Reforestation Strategy (NRS) was developed to contribute biodiversity conservation, watershed and environmental protection and providing needs of the people and industries. During the implementation of the NRS 1996, it was recommended further to reinforce the methods described in the NRS (such as natural regeneration, enrichment plantation, standard plantation, rehabilitation of critical watersheds, agro-forestry, and landscape development). In line with the guiding policies, rules and regulations, the NRS 1996 was revised and developed the National Plantation Strategy (NPS) for Bhutan in 2010 mainly to reinforce the NRS 1996 and inclusion of community forestry (CF) plantation, leasehold forestry (such as industrial, institutions, private entrepreneurs, protection from environmental degradation), urban and recreational plantations. The NPS 2010 was instrumental to achieve the comprehensive plantation programmes and to maintain the sustainable growth of the plantation programme and maximise the economic, environment and social benefits.

With the implementation of NPS 2010, as of now about 25,644 hectares of forest land area has been brought under reforestation and afforestation programme. Over the past years, significant changes have taken place in the policies, rules and regulations and social environment, and various new challenges in developmental activities. In line with the steady changes in legal frameworks, rapid environmental climate change and developmental activities, the evaluation and revision of the NPS 2010 for Bhutan was recommended mainly to address suitable adjustment of various changes in the current field conditions and incorporation of REDD+ programmes, overcome problems and constraints and improve upon the sustainable plantation programme in the country and contribute to maintain 60% of forest cover at all times.

1.2. Vision statement of the national plantation strategy for Bhutan 2010

Enhanced plantation programme that ensure the conservation of the environment, biodiversity, watersheds and beautification of the landscape; the provision of a sustainable supply of forest products to meet demands and to strengthen local people's livelihoods; and a contribution to the national economy through fully developed forest-based industries and the export of forest products.

1.3. Objectives of the national plantation strategy for Bhutan 2010

The NPS 2010 has the following eight (8) objectives:

1. Protect, rehabilitate and manage critical and degraded watersheds within Government reserved forests as well as on private land,
2. Make full use of the productive capacity of degraded lands by planting economic species,
3. Increase timber resources from plantations to fulfill increasing industrial demands as well as local demands, with potential to generate employment,
4. Protect farms and strengthen the livelihoods of farmers through community and private forestry programs for both commercial and domestic use of forest products,
5. Contribute to biodiversity conservation by supplying needs from planted forests, thus reducing pressure on natural forests,
6. Contribute to carbon sequestration by greening the country,
7. Develop and beautify landscapes and around institutions (e.g. schools, Dzongs, etc.) and establishment of recreational opportunities within municipalities,
8. Maintain a minimum of 60% of the country under forest cover at all times.

1.4. National plantation strategy for Bhutan 2010

The NPS 2010 has the following eleven (11) strategies, and accordingly there are sixty (60) strategic actions evaluated against the strategies (Annex 1).

1. Policy and legal framework,
2. Planning,
3. Sustainable funding mechanism,
4. Plantation methods and agencies,
5. People's participation,
6. Nursery development and management,
7. Silvicultural practices,
8. Research,
9. Institutional development,
10. Capacity building,
11. Monitoring and evaluation.

2. Evaluation objectives, methodologies and approaches

2.1. Objectives of the evaluation

The evaluation of the NPS 2010 for Bhutan is assigned to achieve the following objectives:

- To evaluate the implementation of the NPS for Bhutan 2010, and prepare evaluation report and,
- To come out with concise and key issues identified and conclude with some key recommendations that are very specific to new strategy development based on current scenario (political, policy, social and environmental context).

2.2. Design of evaluating the national plantation strategy 2010

A scientific inquiry method was designed and used to carry out the evaluation, while also drawing on the guidelines provided in the terms of reference (ToR) as well as the internationally accepted monitoring

and evaluation (M&E) policy to collect credible, reliable, and useful data. The information collection method in particular, a mixed method was used to allow for triangulation of information from different sources (publications, project reports, and interviews with key stakeholders). Key questions and sub-questions were developed to formulate the evaluation design matrix (Annex 1) to guide the overall methodologies in the context of the following parameters.

- Clarifying programme objectives and goals,
- Developing evaluation questions,
- Developing evaluation methods and approaches,
- Setting up a timeline for evaluation of activities.

The following mention evaluation criteria (Table 1) have been used to evaluate the NPS 2010:

Table 1. Description of the evaluation criteria for NPS 2010

Description of the evaluation criteria	
Criteria	Descriptions
Relevance	Extent to which the strategic interventions or actions are consistent with national and local policies and the needs of intended beneficiaries. Extent to which the initiative responds to priorities of forestry sector and target communities.
Effectiveness	Measure of the extent to which the strategic intended results (outputs or outcomes) have been achieved.
Efficiency	Measure of how economically resources or inputs (such as funds, expertise and time) are converted into results.
Sustainability	Extent to which the benefits of the strategic interventions will continue after external

	assistance ceases.
Results	What has changed in human development and people's wellbeing that are brought about by the strategies and interventions, directly or indirectly, intended or unintended.

2.3. Literature review

An approach taken for this is to review of all relevant strategy documents, existing policies, laws, rules and regulations related to past studies and secondary data in the context of plantation programme in Bhutan. The plantation strategy has been reviewed to understand the strategic vision, goals, programmes, activities, outputs, and background. The programme documents, management plans, actions, guidelines, M&E reports of the plantation programme were also reviewed. The publications from other related programmes like community-based plantation, institutional plantation, industries plantation, heritage plantation, and private plantation in private land has been referred. Also, the research papers and development documents from other countries, particularly with geographical similarity countries and relevant documents on success of plantation in the region has been reviewed and highlighted in the evaluation report.

Also, during the meeting with the SFED, the following organizations were identified for one to one consultation:

1. Chief Forestry Officers (CFOs) of all Functional Divisions,
2. National Environment Commission Secretariat (NECS),
3. Green Bhutan Corporation Limited (GBCL),
4. Bhutan Trust Fund for Environmental Conservation (BTFEC),
5. WWF-Bhutan (World Wildlife Fund),
6. Gross National Happiness Commission (GNHC),
7. Royal Society for Protection of Nature (RSPN),
8. Punatsangchhu Hydroelectric Project Authorities (PHPA),

9. Mangdechhu Hydroelectric Project Authority (MHPA),
10. Community forest (CF) plantation of the community forest management groups (CFMGs),
11. Local Government (LG) Officials.

2.4. Evaluation process for the national plantation strategy 2010

2.4.1. Defining the scope of assessment

In consultation with the Social Forestry and Extension Division (SFED), the scope of the assessment or the site selection had followed the following criteria.

- Five representative regions (East, West, North, South and Central),
- Characteristics of each plantation,
 - ✓ The quality of plantation;
 - ✓ Types of plantations (private/RGoB/CF/Industrial/NRDCL, etc);
 - ✓ The age or duration of plantations (1990s to current).

Based on the above criteria the following Dzongkhags had been identified for site visit (Table 2).

Table 2. Selection of Dzongkhags for field assessment

Dzongkhags and other agencies for site visit				
West/North	South	East	Central	Other Agencies
Wangdue	Samtse	Trashigang	Zhemgang	Tala/Gedu
Thimphu and Paro	Tsirang	Mongar	Trongsa	BBPL
				NRDCL/FMU

2.4.2. Focus group discussion

Following the desk review, focus group discussion was held involving relevant Government institutions, key informants, and experts from academia, research organizations and representatives of the local community members, the local Government (LG) members, relevant non-government organizations (NGO), the civil society groups, the forest users, private sector operators, and others. The focus group discussions were conducted to identify issues and challenges related to plantation programme, also to identify opportunities and new approaches for successful plantation.

The focus group discussions were conducted with the following:

- 1) The communities particularly with CFMGs who had done plantations in the CF area.
- 2) Owners of the private plantation, institution and industries who had done plantation, even with monks in monasteries.
- 3) Technical staff from forestry, GBCL, NRDCL, BBPL, etc.
- 4) The communities and non-wood forest product (NWFP) groups who had not done any plantations.

This process for conducting focus group discussions was also to link with major findings from the desk review and solicits input on key areas needing improvement as identified through the desk study. The outputs of the focus group discussions were cross-linked with quantitative data to make it more substantial and evident.

2.4.3. Key informant interviews

To fill in gaps in information and to obtain diverse perspectives, the interviews with a broad set of key informants knowledgeable about plantation forestry in the country were conducted. The perspectives from the key informant interviews were used to validate findings and to fill gaps particularly with regards to implementation of the plantation programme.

- 1) Interviewed women involved in the plantation activities to get in-depth information on women's involvement in plantation besides using the forest resources, particularly in rural areas,
- 2) Interviewed finance personnel of the Department of budget or accounts to get their perspectives on fund support for the plantation programme,
- 3) Interviewed local leaders to understand how the plantation programme is main-stream in the Gewog plans, ultimately in the Dzongkhag and national plan,
- 4) Interviewed forestry staff in the field to get knowledge about the plantation programme.

2.4.4. Validation workshop

The information obtained through above steps was validated during the two-day national level stakeholder workshop involving the stakeholders from regional and national level. The workshop provided the opportunity to further validate the findings, work together to identify strategies, strategic actions and more importantly to identify priority areas for strengthening and improving the plantation programme. The validation workshop was critical for building consensus on the findings and on the priority areas of work.

2.4.5. Final report

All findings and the inputs from the validation workshop have been used to finalize the evaluation report and formulate the new strategy document for plantation programme in Bhutan.

3. Result and discussions

3.1. An overview of the literature review

The plantation is one of the ways forward to maintain the constitutional requirement of maintaining a minimum of 60% forest coverage as well as to sequester carbon. The plantation programme started in 1947 in Bhutan. The plantations are carried out

in state reserved forest (SRF) land, private land, institutions and *Thromde* (municipality). An important benefit of plantation is to meet the current and future requirement of timber demand of the growing population as well as bring degraded and barren areas under forest. Besides bringing the Bhutan's forest under different sustainable management regimes, the plantation is a key activity of the management that rejuvenates degraded and barren areas or felled areas. Bhutan having over 71% under forest cover (FRMD, 2016) does not really mean that plantation is not required. The plantation is the only mechanism to recoup barren, degraded area and to recompense for the losses of forests through deforestation and forest degradation.

Though, a total of 59,251.64 acres of plantation was done till 2012, but 14,722.06 acres of plantation was not able traced on the ground mainly due to changes in land-use that occurred over the years (SFED, 2015). A total area of 4,338.06 acres of plantation was recorded failure and this was due to forest fire damages, change in land-use and poor maintenance due to inadequate budget support (SFED, 2015). Though, the forest area of Bhutan has been increased from 2.63 million hectares during 2000 to 2.65 million hectares in 2010 and 2.70 million hectares in 2015 (WMD, 2017). It does not necessary mean that there is no deforestation and forest degradation. There are several drivers mentioned in the report of drivers for deforestation and forest degradation in Bhutan which states that, an annual deforestation and loss of forest land is about 5,798 hectares (WMD, 2017). The drivers for annual loss of forest land are allotment of SRF land for various purposes, hydropower development, power transmission lines, construction of roads, mines and quarries, and conversion of forest land to agriculture (WMD, 2017). The loss of forest land is also accelerated by conversion of forest land for various purposes like cropland, grassland, settlement and other land-use types, and about 937.41 hectares of forest land has been converted in 2015 (NEC, 2017).

It is evident that, there are lose of forests for some purposes; therefore, the plantation is an eminent or just cannot forget to plan

and implement. The plantation is not only the way of providing needs in forest produce, not necessarily always the best. In many ways, the management of the natural forest will be a better solution. The plantation if properly managed and cared for, gives a considerably higher yield and can introduce desired species which are not present naturally but economically important. Of course, the success of the plantation will depend on a number of factors, not only silvicultural practices but also administrative such as appropriate budget support. The technical constraint is the ability of a species to grow well on the available sites. High risk of browsing by wildlife and domestic animals and forest fire damage are also some of the constraints but possible to overcome with some measures. The main problems and constraints were due to stringent regulations and lack of Government support to fund for planting and its maintenance after planting, as well as processing of long rotation tree species (FAO, 2012). Administrative and financial constraints are often difficult to overcome (Jackson, 1994).

In Bhutan, the plantations are usually carried out by different agencies, DoFPS plants in the SRF land, in private land by individual owners and CFMGs in the CFs (which also SRF but handed over to CFMG for management and use). In 2017, Green Bhutan Corporation Limited (GBCL) was established and took over all plantation activities in the country. The Natural Resource Development Corporation Limited (NRDCL) also does plantations in the operated forest areas usually in Forest Management Unit (FMU) which is called reforestation. The plantations in CFs were mainly done on cost sharing basis with CFMG members contributing labor, and materials cost funded by the Department. As of 2013, about 1,542.14 acres of plantation was done in CFs and no failed plantation sites were defined or reported during the field assessment (SFED, 2015). The plantation by industries particularly Bhutan Board Product Limited (BBPL) and Bhutan Carbide and Chemical Limited (BCCL) were found successful and no plantation sites were identified as missing or failed (SFED, 2015). The plantations were also carried in the area of institutions mainly for the purpose of education and creating awareness (SFED, 2015).

The plantation cannot be taken up unthinkingly of purpose, rather to open up thinking about the range of possibilities for a creative and socially sensitive approach to tree planting for a variety of purpose (FAO, 1991). The plantation requires good planning, using scientific tools that deals with both technical and socio-economic issues. Afforestation and reforestation activities enjoy high attention at the policy agenda as measures for carbon sequestration in order to mitigate climate change (IUCN, 2004). But the plantation programme needs comprehensive approach which should consider carbon sequestration, biodiversity conservation, soil protection, livelihood, as well as sustainable provision of raw materials for forest industries and other goods and services in a balanced way. However, the plantation programme in the past has suffered heavily due to minimal funding from the Royal Government of Bhutan (RGoB) for both plantation creation and maintenance. In order to fulfill the long-term policy goal and to ensure success of the plantation, a plough back mechanism has to be established where various agencies using the forest resources could allot some fund for reforestation programme. The hydropower projects, tourism sectors and other Industries are some of the beneficiaries and potential sources of fund to support plantation programme in the country.

3.2. Policy and legal framework

This strategy has policy and legal component to ensure plantation programme's long-term sustainability, and intended to create conducive environment to support the programme. The policy and legal frameworks are probably the most important element for any programme to succeed or be sustainable. Except for the Constitution of the Kingdom of Bhutan, most of the policy and legal instruments were formulated post NPS for Bhutan 2010. The legal basis for plantation stipulated to some degree by the Constitution is the need to maintain 60% forest cover for all times to come. Rest of the policy and legal instruments support and encourage carrying out of the plantation. The following are some of the key policy and legal instruments that supports the plantation programme.

- The Constitution of the Kingdom of Bhutan 2008,
- National Forest Policy 2011,
- Forest and Nature Conservation Rules and Regulations of Bhutan 2017,
- Norms and Standards for Nursery and Plantation 2016,
- Guidelines for Outsourcing of Plantation Creation and Maintenance Activities 2014,
- RNR Marketing Policy of Bhutan, 2018,
- National Strategy for Community Forestry 2019.
- Draft Climate Policy 2018,
- Draft REDD+ Strategy...,
- Nationally Determined Contribution, 2015,

Most of the strategic actions under policy and legal framework were implemented except revision of the plantation guidelines for industry, community, Dzongkhag and institution (Annex 1). The majority of the plantation programmes are supported by the Government funding which is an indicative of alignment to these policies and legislations.

3.3. Planning

There is still a general consensus among all the stakeholders that proper or systemic planning for the plantation and nursery development and management is a major issue. The six strategic actions envisaged under planning have been implemented (Annex 1) but the plantation programmes are still grappling with the following issues.

- Plantation activities are implemented on an ad-hoc manner,
- Limited budget impinges on various process of planning,
- Lack of manpower and poor plantation and nursery development and management capacity,
- There is limited land-use mapping and planning (identification of FMUs, CF and PAs),
- Lack of systematic long-term and short-term plantation plans (Gewog, Dzongkhag and National Level),

- No adequate financial support from the RGoB for plantation maintenance.

Thus, it seems that there are still challenges, weak application of the strategic actions, and when it comes to land-use planning, minimal consultation with communities, mostly ad-hoc site selection, not objective based plantation, no site preparation, high casualties in seedling transportation and lack of maintenance budget. The proper planning for nursery development and management by different stakeholders at different ecological zones is also lacking which leads to introduction of exotic and invasive species in the country (Annex 1).

3.4. Sustainable funding mechanism

For the 12th FYP, total area to be brought under habitat management is about 2000 hectares, avenue plantation, maintain existing plantation, climate change related plantation and bio-engineering will probably require a substantial amount of financial resources. However, the strategic actions, identification and establishment of funding mechanism under sustainable funding mechanism through various funding modalities have not really been tapped into (Annex 1). The sustainable funding for the plantation programme has always been an issue. There are few donors who supported the plantation programmes, the PHPA and MHPA have collaborated and supported in plantation programmes and other than that no substantial fund has been mobilized.

The strategic action, leasing-out barren and degraded land to industries, private entrepreneur and individuals under sustainable funding mechanism could not be implemented due to lack of valuable timber, lack of proper market, difficulty in value chain production for private industries when resources are available at subsidized rates in the rural areas (Annex 1). The Government, hydropower projects and some donor agencies supported establishment of the plantations, however, the main issue is the lack of budget support mainly for the maintenance after the creation of the plantations (Annex 1). Once planted, it has to be maintained for about 5 years till its well

established, otherwise, planted seedlings are vulnerable to be suppressed by weeds and damage by wild and domestic animals. The plantation in the sub-tropical region is always challenging to be maintained due to fast growth of weeds, however, if maintained, it is sure to grow successful.

There are major hydropower projects such as PHPA I, PHPA II, Tala (Chukha), Mangdechhu, Nekachhu and Kurichhu which funded the plantations. However, none of the projects actually supported fund for maintaining plantations from second year. The natural resource pricing committee (NRPC) does revise the rates for timber species. However, the revision has not influenced the plantation programme to support with sufficient fund for maintenance. Very limited numbers of degraded state reserved forest (SRF) lands were leased-out for the purpose of plantations.

3.5. Plantation methods and agencies

The plantation methods and agencies involved in plantation probably do not qualify as a strategy but rather it is more appropriate as implementation approach. This strategy basically identifies the agencies involved in carrying out the plantation activities and also various plantation methods. Nonetheless, all the agencies identified under strategy, plantation methods and agencies in the NPS for Bhutan 2010 are involved in plantation programme and also, they have adopted all the plantation methods prescribed in the strategy (Annex 1). Similarly, in the context of various types of plantations, patches of plantations are done at Divisions and Gewog levels for water source protection, compound beautification and ornamental plantations are also done during ceremonial and important occasions in patches without proper plans/designs based on availability of budget/resource. However, the DoFPS supports various agencies by supplying seedlings and give technical backstopping for plantation and landscaping.

Some of the strategic actions under plantation methods and agencies could not be implemented due to unprofitable business, lack of

market (leased-hold and industry plantations), lack of coordinating agencies (agro-forestry), and studies on natural regeneration status (Annex 1).

3.6. People's participation

An opportunity for establishing the plantations on barren and degraded areas using community and private participation is enormous. However, the following are some of the evaluation findings in the context of people's participation in the plantation and nursery development (Annex 1).

- People's participation is only found for the ceremonial plantations but as for the plantations in the CFs there are engagement of individual, institution and community. The involvement of communities and public is only during the plantation phase and never during the planning and maintenance stages.
- Establishment of GBCL for outsourcing plantation has been formulated but majority questions the effectiveness and efficiency of this modality. The need for GBCL to operate in more business model.
- BBPL and BCCL have their plantation programme and the plantation is based on an action plan for specific site and it is purely for commercial purposes.
- NRDC and hydropower projects have carried out plantations but in small scale in comparison to national level plantations.
- Could not educate local communities and institutions on the importance of plantations due to lack of fund.

3.7. Nursery development and management

Special attention must be paid to the establishment of well-functioning nurseries and caretaking of those nurseries in order to ensure the provision of high quality seedlings. "Small scale nursery owners can play a vital role in biodiversity conservation through providing seedlings of forest tree species, horticultural species, flower species

and medicinal plants to afforestation, reforestation, social forestry, agro-forestry, shelterbelt and home gardening.” (Md. Salim Azad, *et al* 2015). However, poor planning, lack of capacity, poor quality of seeds, low quality of saplings from the private nurseries are cited as issues and has direct implication to the plantation initiative and successful plantation with good survival rates (Annex 1). Although, most of the TFDs and other institutional partners have forest nursery, the establishment of the nursery in each ecological zone under Dzongkhags has not happened (Annex 1).

As there are sufficient saplings within Bhutan, procurement of saplings from outside the border has been cited as an issue (Annex 1). The saplings that come from outside the border are of poor quality as well (Annex 1). Moreover, it could transfer plant diseases and pest which could be very harmful and disastrous; therefore, proper quarantine is necessary (Annex 1).

3.8. Silvicultural practices

An application of silvicultural practices in all kind of the plantations is seen to be generally poor (Annex 1). The silvicultural treatments for managing the plantation depend upon its purpose and the species that are grown. The silvicultural options that pertain to planting season, weeding, cleaning, thinning are adopted but majority of them cited that there is lack of capacity and workers engaged in the plantation and nursery management are unskilled (Annex 1). However, all activities related to administering silvicultural practices are also contingent to funds and human resource availability. The strategic action, initiation of harvesting of mature plantation stands and development of replanting programme under silvicultural practices could not happen due to budget constraints and uneconomical species accelerated by wrong choices of species (Annex 1).

3.9. Research

Although, the research is needed to improve efficiency and effectiveness of the plantation and forest nursery programme, and it is extremely weak. None of the strategic actions under research and development (R&D) have been initiated due to lack of expertise and facilities to conduct detailed studies (Annex 1). There are no scientific plantation and nursery specific publications that showcase the impacts of plantation (socially, ecologically and economically). The few publications that are available are just records of plantations in different regions of the country.

There is no institutionalized R&D component for the plantation programme, no plantation research policy, protocols and methodologies. Also, there is lack of standardized data collection formats and approaches and even database management. One of the most important strategic components that need to be strengthened and improved is the research aspects related to the plantation programmes.

3.10. Institutional development

There is still limited staff in the SFED to support and monitor the plantation programme. The Dzongkhag Forestry Sector (DFS) had been merged with TFD and PA. The following have been reported during the evaluation (Annex 1).

- There is no plantation steering committee (PSC) as proposed in the strategy 2010,
- Most of the TFDs have plantation focal point but there is a need to institutionalize the plantation unit (need to give priority),
- Due to limited financial and human resources TFDs are not able to strengthen their plantation units. At the implementation level most of the staff works on the plantation, nursery and seed production but their specializations are not in these fields.

- There is no capacity and system for early warning system to monitor disease outbreak.

3.11. Capacity building

As the plantation and nursery programmes are plagued with limited budget, the capacity building has been very minimal or in some cases non-existent. Although, there are six strategic actions prescribed under the capacity building to look at the effectiveness of the existing plantation training programmes, identifying gaps and shortcoming, improving the plantation curriculum, conducting regular refreshers course to enhance the technical capacity (Annex 1). The technical capacity building through intensive out of country and in-country training programme is not happening due to low priority and lack of fund (Annex 1). However, to support capacity building programme for plantation and nursery, the exploring funding options has not been initiated to support plantation capacity building programme (Annex 1). The following are some of the outcomes of the evaluation of this strategy related to capacity building on plantation programme (Annex 1).

- There is need to regularly train and build the capacity of foresters who are in-charge of nursery, caretakers and the communities in plantation and nursery management, as it has not been happening in a consistent basis,
- Currently, there is limited financial resources allocated for capacity building in the plantation and nursery programmes,
- In the context of plantation curriculum in training institutes in Bhutan, there are needs to assess the theory vs. application of such courses,
- The human resources available for plantation and nursery programme are not sufficient.

3.12. Monitoring and evaluation

The M&E is happening at a very minimal, ad-hoc and inconsistent manner. There is no M&E system or plan/framework available for the

plantation and nursery programme. The current M&E practices are conducted by own forestry people which probably would create a biased view and sometimes issues are not reported accordingly (Annex 1). There is a need to institute a system where one example is that M&E should be done by outsider with specialty in plantation and nursery and according the M&E plan. Similarly, the plantation and nursery programmes are audited but the gap is that the auditors most of the time do not make physical verification of the plantation and nursery establishment, especially if the plantation sites are located far away (Annex 1). Also, at the national level the budget allocated for plantation and nursery establishment may be a substantial sum, when this total budget is divided into 20 Dzongkhags and Gewogs, the fund amount received by each entity is anywhere from Nu.50,000 to 100,000. Thus, it is very challenging to integrate M&E in the organization's activities.

However, the following are what has been collected during the evaluation consultation with all the relevant stakeholders (Annex 1).

- The M&Es are conducted by forestry staff and this to some extent creates biasness that reduces accountability among institutions/individual,
- The M&E is weak due to lack of proper system, financial resources and qualified manpower,
- Some of the plantation areas are scattered and small which do not warrant the effort and time required for the staff,
- There is a need to have a plantation M&E framework/guidelines system as at the moment it is non-existent,
- Monitoring forms are found to be complicated and it has been suggested if the DoFPS could simplify the forms,
- Records of the plantation are kept to some extent but there are no comprehensive records of species and research done.

3.13. Performance of SFED and the plantation programme

Based on the consultation with all the relevant stakeholders at national level and with the community, the majority of the respondent stated that SFED has been instrumental in affecting the growth in plantation programme. However, most of the stakeholders recommended to focusing on improving the quality of the programme in terms of monitoring and increasing the seedling survival rates in the field. In addition, there is lack of clear monitoring system in place. It was also pointed out that limited number of staff in the plantation section of the SFED is one factor. However, there is need of putting the whole system of monitoring of the plantation programme in place. Hence, focus on building the capacity of staff of the respective TFDs and PAs is critical to address limited number of staffs in the section of SFED and for long term sustainability and success of the programme. In addition, based on the ecological zones, successive monitoring of seedlings for five years is crucial to make the plantation programme successful.

So far, SFED has been trying to monitor plantations in entire country and report. This endeavor has become more tedious and tasking to the section and had led to nowhere except submission of plantation monitoring report of those completed ones to the Department. In response to failure of the plantation, no stringent action has been taken to curve down the responsibilities which needs to be streamlined and strengthen the programme.

The performance of the plantation programme is also evaluated based on evaluation criteria of relevancy, effectiveness, efficiency, sustainability, results or impacts. The following are the assessment under each criterion.

3.13.1. Relevance

The plantation programme is relevant in the Bhutan context. The programme contributes to maintaining of 60% forest cover for all times to come as enshrined in the Constitution of the Kingdom of

Bhutan. The programme is in line with the NFP of Bhutan 2011 to facilitate raising forestry accrue ecological, social and economic benefits. More than 21,700 hectares of plantation in barren and degraded forest land was done with tree seedlings since the start of the FYP (SFED, 2010). In the current (12th) FYP, the target projected is 2000 hectares. This programme was considered as the important priority programme of the Department in every FYP and has given emphasis and allocated budget to support the programme.

However, some of the strategies were not really a strategy (e.g. plantation agencies and methods) and some of the strategic actions may be too ambitious as they were never been implemented (Annex 1).

3.13.2. Effectiveness

Generally, the plantation programme gives the impression of less effective in fulfilling the intended objectives. As per the assessment of forest plantation in the country 2015, it confirms that existing established plantation on the ground is around 40,191 acres (SFED, 2015). About 14,722 acres of plantation areas were not able trace while doing ground truthing and reasons stated were plantation areas being cleared for security and washed out by flash floods (SFED, 2015). About an area of 4,338 acres of plantation was recorded failed due to forest fire; change of land use and due to inadequate budget allocation for maintenance of plantation (SFED, 2015). As stated in the assessment of forest plantation 2015, plantation programme can be made successful if provided adequate budget for maintenance at least for first 3 years, improve record keeping system of plantation and put plantation monitoring system in place with proper capacity building for staff. As per an assessment of forest plantation 2015, about 1,452 acres of plantations were carried out by CFMGs in the CFs and has been reported no failed plantation sites (SFED, 2015). Similarly, plantations carried out by BBPL were found more successful (SFED, 2015).

3.13.3. Efficiency

The plantations activities were carried based on norms and standard developed by the Department. So far, the norms and standards were revised twice in a decade after it was first developed in 2004. The rates in the norms and standards become inconsistent with market rates rather become redundant, particularly for fencing materials and labor charges because market is dynamic. So, the rates mentioned in the norms and standards become obsolete after one or two years. However, the plantation targets were somehow achieved on time and within the cost estimated as per the norms and standard. This could mean that the achievement of the plantation target is purposely achieved or achieved due to budget available on that particular year. In 2017, Government had established GBCL and has carried plantations in 2017, 2018 and 2019 with budget support from the Government. The GBCL has carried out and achieved physical target but it is yet to assess the success of plantations.

3.13.4. Sustainability

The plantation programme is financially supported solely by the Government; however, there are cases hydropower projects support establishment of the plantation as rehabilitation projects in river basin of that particular hydro-projects. However, irony of the plantation is that there is no fund for maintenance after the establishment of the plantations. The maintenance of plantation is inevitable after investment of huge fund for establishment. Most of the plantations were failed due to no fund leading to any maintenance after the establishment. It was stated in the assessment of forest plantation in the country 2015, that there is necessary to provide adequate budget for maintenance for first 2 to 3 years of the establishment (SFED, 2015).

4. Issues and opportunities

There are certain pertinent issues in plantation and nursery programmes;

- Lack of constant budget support for forest plantations, particularly for maintenance after establishment,
- Organizational development of RCSC has supported only three staff, which is not sufficient at all. Currently, there are two officials in SFED who are occupied more with technical sanctions for nursery and plantation. Any Divisions and Parks have to seek administrative and technical sanction from the Department before they carry out the plantation. Official of the plantation section of SFED does this work,
- No good tree stock in the private forest to promote or encourage commercial trade and where there is potential the market in the far-flung area for timber sale,
- As plantations in most areas are dependent on RGoB budget, the fund is not sufficient for maintenance (poor success),
- The provision of wage for labor (national wage vs. market wage),
- Weak R&D to promote plantation (policy, management, resource),
- Lack of capacity and skills in plantation management and nursery development,
- Some of the plantation sites succumb to forest fire and grazing (domestic and wild animals),
- Poor planning contributing to wrong site selection and sapling/seedlings,
- Difficulty in getting financial support solely for plantation programme from donors,
- The saplings supplied from the private nurseries are of poor quality (success rate),
- Purchasing of seedlings from across the borders is discouraging the nursery development within Dzongkhag, Gewogs,
- There is also no proper monitoring of exotic species coming into Bhutan,
- Poor participation from the Gewogs to identify plantation sites (interested in using areas for developmental purpose),

- Lack of cooperation within CFMG members and nursery to raise seedlings for plantation,
- Most of the nurseries are poorly maintained or do not have full time and trained caretaker,
- No M&E system or guidelines in place,
- Due to development activities some plantation areas are taken away,
- Private individuals are reluctant to sell at the fixed pricing policy,
- Difficult to integrate proper planning for plantation and nursery programmes due to lack of reliable source of fund and expertise to prepare at the Gewog and village level plans,
- Difficult in getting donor funding support for plantation and nursery programme *per se*,
- Difficult to recover the cost of plantation from forest produce as major chunk of produce are used in subsidized rural timber and there is very limited quantity of valuable timber species,
- Beautification and scenic areas fall in municipal, institutions, towns and school areas where they do not have proper plans and budget layout to carryout plantation and landscaping,
- DoFPS only monitor the plantations and nursery programme based on FMU plan. Thus, performance-based assessment/evaluation in practical sense is highly questionable.

5. Way forward recommendations

- The plantation programme has been carried out for decades and it is important to understand the ecological, social and economic impacts. Therefore, first and foremost thing is to carry out impact assessment. The research on plantation and its social, ecological and economic impacts should be carried out. This should support policy formulation, management decisions and resource mobilization.
- The research should be focused on continuously improving plantation and nursery as small scale nursery owners could

play a vital role in biodiversity conservation through providing seedlings of forest tree species, horticultural species, flower species and medicinal plants to afforestation, reforestation, social forestry, agro-forestry and home gardening.

- Map out all the degraded and barren areas in Bhutan and strategize plantation sites, focus small area plantation rather than huge area with limited financial resources.
- The M&E system should be in place.
- SFED should develop monitoring guidelines for plantation encompassing monitoring till the plantation is well established (till 5 years).
- Strengthen capacity of field staff to conduct monitoring of plantation and institute self-responsibilities and integrity.
- RGoB resources could be used for focused plantation by selecting few key Dzongkhags only (for example, is there really need to do plantation in all 20 Dzongkhags?).
- There is need to maintain plantation data to inform forest increment and growth.
- The fruit tree plantation may be encouraged in the areas where there are human wildlife conflicts (HWC) to make food available for wild animals. This may also need careful planning and research before launching the programme.
- After doing the impact assessment, mapping of degraded and barren areas, etc. a master plan may be important to project and feature clear road map of plantation. The shortage of fund for maintenance of plantation is critical and RGoB should provide a minimum of 5 years maintenance budget.
- The soil survey and analysis should also be part of plantation planning.
- Need to refrain from purchasing of seedlings from across the border and encourage nursery development within Dzongkhag, Gewogs and ensure the regulation of cost of seedlings.
- Need to provide financial support for the CFMGs for procurement of fencing materials and nursery establishment to encourage plantation.

6. Conclusion

The plantation programmes become viable options for sustainable management of forest resources, maintaining ecological balance, enhancing ecosystem services, sustaining the hydro-powers, tapping tourisms and opportunities for employment generation in the country. The plantation forestry is the key component for maintaining 60% of country's land under forest cover for all times to come as enshrine in the Constitution of the Kingdom of Bhutan. To achieve successful plantation programme in the country, doable and practical plantation guidelines, policy, rules and regulations are to be in place for enhancing the forest cover, rehabilitation of barren, poor and degraded forest areas, and to meet the demands for timber, fuel-wood, fodder, NWFPs and minerals.

Hence, the evaluation of the NPS 2010 was intended to find-out emerging issues on climate change, REDD+ programmes and carbon sequestration and incorporate recent changes in policies, rules and regulations in the new plantation strategy for Bhutan. The NPS 2010 has 8 objectives and 11 strategies with 60 strategic actions. All strategic actions under each strategy were evaluated (Annex 1) and found that, 42 strategic actions were implemented by different stakeholders and 18 actions were not implemented due to various reasons, challenges and gaps (Annex 1). However, some of the strategies were found to be not really a strategy (e.g. plantation agencies and methods) and some of the strategic actions were may be too ambitious as they were never been implemented by the stakeholders.

In a nutshell, the evaluation of the NPS 2010 for Bhutan was timely and it is highly recommended for revision and formulation of the new plantation strategy for Bhutan. The revision should incorporate all pertinent key issues identified in the evaluation report and develop the new plantation strategy based on current scenario to suite the current field conditions and serve as the main implementing document for Bhutan.

Other pertinent and important interventions recommended for immediate actions are:

1. To have plantation standard M&E guidelines to facilitate field staff and other stakeholders to properly monitor and evaluated the plantation programmes.
2. To have barren and degraded area mapped for effective planning and implementation of the plantation programmes in the country.
3. To conduct comprehensive impact assessment on different types of plantation on the environment, society, economy and culture.

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Annexure

Annex 1. Matrix for assessing implementation of the strategic actions

Matrix for assessing strategic action implementation of the strategies		
The National Plantation Strategy for Bhutan 2010		
1. Policy and Legal Framework		
<p>A comprehensive policy framework is required to increase the effectiveness of the plantation programme, and to maximize the economic, environmental and social benefits of plantations, particularly for rural communities.</p>		
Strategic Actions	Actions implemented	Challenges/Gaps
<p>1.1. Formulate enabling legal polices and regulations to support and encourage the plantation programme.</p>	<p>Formulation of NFP 2011, FNCRR of Bhutan 2017, RNR Marketing Policy of Bhutan 2018.</p>	<p>No good stock in the private forest.</p> <p>Registered private forest - not reached - private registered land. Removing the cover in private forest.</p>
<p>1.2. Pursue a comprehensive policy approach and codes of practices to support plantation development including the development of legislation covering the rights to plant, harvest, and market and export forest products.</p>	<p>Publication of technical sanction, Norms and Standards for Nursery and Plantation.</p> <p>Guidelines for outsourcing plantation creation and maintenance activities.</p>	<p>Need to look at the market in the far-flung area for timber sale.</p> <p>Composition of forest changes if wrong species are planted.</p> <p>Need to refrain purchasing of seedlings from across</p>

Matrix for assessing strategic action implementation of the strategies		
<p>1.3. Produce and implement a realistic forest product pricing policy aimed at encouraging individuals to create forest plantations on their private land as well as on SRF.</p>	<p>Existing timber pricing guidelines.</p> <p>All pricing policies are fixed by the Department and NRDC that applied to private individuals.</p>	<p>borders and encourage nursery development within Dzongkhag, Gewogs and regulate cost of seedlings.</p> <p>Need to provide financial support for CFMGs for procurement of fencing materials and nursery establishment to encourage plantation.</p>
<p>1.4. Revise the current plantation guidelines for Dzongkhags, community, institutions, industries etc.</p>		<p>Due to development activities some plantation areas are taken away.</p> <p>Private individuals are reluctant to sell at the fixed pricing policy.</p>
<p>2. Planning</p> <p>Raising quality plantations require proper planning. This includes overall land use planning, consultation with nearby communities, selection of species according to site conditions and setting clear objectives for the plantation, plus correct methods and times of planting. In addition, due consideration should be given to site preparation, seedling transportation, fencing and post plantation care.</p> <p>Maintenance activities like replacement of casualties, weeding, cleaning and fence repairing, are critical components of plantation management. Tending operations such as climber cutting and</p>		

Matrix for assessing strategic action implementation of the strategies

thinning are an integral part of silviculture treatment after the plantation is established, and these have to be incorporated in the plantation plan.

<p>2.1. Carry out overall land use planning at the Dzongkhag level & identify forest areas suitable for different land management objectives (e.g areas suitable for CF, FMUs, forest plantations for different purposes, protected areas, etc) in order to avoid overlap.</p>	<p>Identified plantation areas for various purposes (water source protection, landscaping, afforestation, re-afforestation, land management programmes). LFMPs and CFs established and Shape files overlaid on Dzongkhag map to identify suitable areas using ARC map and Google earth maps.</p>	<p>No proper site selection. Question, such as why the area is barren? Those factors are not assessed. Soil quality not tested. Need to have clear plantation objective. High transportation cost and less volume. The survival rates of plantation are very low and not able to carry out maintenance and refilling due to lack of maintenance budget.</p>
<p>2.2. Develop long-term and short-term national plantation plans based on detailed Dzongkhag plans that will form the basis of the Five Year and annual Government plans.</p>	<p>Identify and develop target areas for plantation within sector although no comprehensive Dzongkhag level plans for plantation is prepared.</p>	<p>Require comprehensive planning and budget to identify, survey, map and expertise for documenting in collaboration with Dzongkhag LRO's.</p>
<p>2.3. Develop village/Gewog wise criterion based plantation plans for</p>	<p>Collected information from Gewog and villages including CFs for</p>	

Matrix for assessing strategic action implementation of the strategies		
each Dzongkhag.	available barren areas for plantation purpose although there is no comprehensive plan.	Difficult to plan due to lack of reliable source of fund and expertise to prepare the Gewog and village level plans.
2.4. Include plantation activities as one of the core components of the National Land Management programme of MoA.	Carryout land management campaigns in collaboration with AG and Livestock sectors in problematic areas.	Private individuals not willing to establish nursery as the business is not profitable. Lack of budget, manpower and space for creation of nursery at different ecological zones.
2.5. Formulate plans and planning guidelines for the establishment and management of nurseries and plantations, considering different ecological zones, species composition and structures. In order to ensure the successful participation of nearby communities, proper species and site selection, proper plantation methods and timing are crucial: this also avoids mono-cultures	At least a nursery at division or Dzongkhag level is created to meet the local seedling demand but most failed due to unsustainable budget support. Native species are focus for plantation and done with mixed species.	Due to lack of nursery at different ecological zones leads to introduction of exotic and invasive species.

Matrix for assessing strategic action implementation of the strategies

and the introduction of exotic invasive species.		
2.6. Incorporate plantation maintenance activities in the overall plantation plan and ensure that financial resources are available for maintenance before establishing any plantation.	<p>Done few plantations but could not implement maintenance of plantation.</p> <p>Annually propose maintenance budget from Department based on the year of plantation and budget availability.</p> <p>Plantation maintenance activities are proposed within the 1st year of creation for maintenance. Annually maintenance budget is proposed but either it is slashed out or approved with limited budget.</p>	

Matrix for assessing strategic action implementation of the strategies

3. Sustainable Funding Mechanism

Bhutan is committed to maintain a minimum forest cover of 60% of its land area. With rapid population growth, infrastructure development, and increasing demand for timber, wood and non-wood forest products, this will be a challenging task in the years to come. Securing adequate funding for the plantation programme and consequently ensuring the reforestation of barren and degraded areas is critical. In the past, the plantation programme relied on the Government for funding and often this was insufficient. Other funding opportunities should be explored through PES, donor funding, etc.

<p>3.1. Identify and establish a sustainable funding mechanism for implementing the Plantation Strategy.</p> <p>- Developing potential plough-back mechanisms (payment for environmental services) if feasible (for example hydro-power, tourism and other industries are beneficiaries and could potentially pay for environment services).</p>	<p>Hydro-powers are required to do plantation, double the size of the project area. (FNCRR).</p> <p>Hydropower Environmental Management Plan has compensatory plantation.</p> <p>Implemented plantation activities based on the available fund from RGoB and other funding support.</p>	<p>Difficult to get donor funding.</p> <p>Lack of budget at division or Dzongkhag level for maintenance and have to propose annually.</p> <p>Funding mechanism should be established among communities, contractors, companies, industries and projects as PES.</p> <p>Certain amount of revenue from hydro-power, tourism and other industries should</p>
<p>- Preparing comprehensive budgets for plantation</p>	<p>Plantation is being created based on the available fund from donors,</p>	<p>be directly handed over to DoFPS/GBCL for afforestation/replantati</p>

Matrix for assessing strategic action implementation of the strategies		
<p>programmes that include financial resources not just for establishment but also maintenance of nurseries, silvicultural – Treatments and management of plantations, etc exploring possibilities of international donor funding, particularly those donors involved in biodiversity conservation, climate change (including carbon sequestration), poverty alleviation programs, etc.</p>	<p>projects and Government fund.</p> <p>Plantation on cost sharing among CFs and donors are initiated to reduce cost of plantation and build ownership of the plantations.</p>	<p>on program instead of depositing in Govt. Revenue.</p> <p>Due to uncertainty in the fund availability there is difficulty in preparing comprehensive plantation programme.</p> <p>It's difficult to get fund/donor unless there are flagships faunal or plant species of international interest.</p>
<p>3.2. Ensure that the full costs of plantations are recoverable from the sale of forest produce in order to justify the economic viability of investment. The price of timber should be revised from time to time to reflect the latest production costs and tree market</p>	<p>Revenue from royalty and transit of forest products are handed over to dept.</p> <p>NRDCL carries out most of harvesting in FMUs and developmental areas and carryout plantations based on plans.</p>	<p>Difficult to recover the cost of plantation from forest produce as major chunk of produce are used in subsidized rural timber and there is very limited quantity of valuable timber species.</p>

Matrix for assessing strategic action implementation of the strategies		
values.		
3.3. Lease barren and degraded forest land out to industries, private entrepreneurs and individuals to create plantations according to a proper plantation plan.		Lack of valuable timber, proper market and value chain production difficult for private industries to sustain plantation when resources are available at subsidized rate in rural areas.
4 (a). Plantation methods		
<p>In order to make the programme more efficient and to ensure cost effectiveness, plantation methods of the type proposed in the “Reforestation Strategy 1996” need to be re-implemented. The methods described in this document allow for flexibility along a continuum from low to high human interference. The idea is to choose the most ecologically, socially and economically appropriate reforestation method depending on the objective and site conditions.</p>		
4.1. Natural regeneration.		
4.2. Enrichment planting of existing forest.	Annually planned, and technical and administrative sanctions accorded from the Department	
4.3. Normal (standard) plantation.	Annually planned, and technical and administrative sanctions accorded from the Department	

Matrix for assessing strategic action implementation of the strategies		
4.4. Rehabilitation of critical watersheds.	Patches of plantations are done at Divisions or Gewog level for water source protection.	Except unplanned pocketed plantation in water source there is no detailed studies done on the water table and hydrological system to enhance water due to lack of expertise and budget.
4.5. Agro-forestry.		
4.6. Community Forest plantations.	Patches of plantations are done in CFs with financial support from few donors and projects.	Lack of fund for plantation and source of income in CFs to carryout plantation.
4.7. Leasehold plantations.		Unprofitable business due to lack of market hamper establishment of leasehold plantation
4.8. Urban plantations and recreation.	Supply seedlings and give technical backstopping for plantation and landscaping.	Lack of expertise and local nurseries for propagation of aesthetic plant species.
4.9. Landscape development/ scenic beautification.	Compound beautification and ornamental plantations done during ceremonial and important occasions in patches without proper	Beautification and scenic areas fall in municipal, institutions, towns and schools areas where they don't have proper plans and budget layout to carryout plantation and

Matrix for assessing strategic action implementation of the strategies		
	plans/designs based on availability of budget/resource.	landscaping. There is lack of coordination and authority in executing the activities without proper plans and budgeting.
4 (b). Plantation Agencies		
There is need to design plantation programmes in accordance with the capabilities of each organization. Different agencies can take up different types of plantation methods as described above.		
4.10. Plantation by TFDs and Dzonkhags.	Based on availability of empty species and budget only.	No consistency in fund and area availability and no fixed target.
4.11. Plantation by NRDCCL in FMUs or outside FMUs.	Plantations done by NRDCCL in harvested areas.	DoFPS only monitor the plantations based on FMU plan. Performance based assessment/evaluation in practical is questionable.
4.12. Plantation by industries.		
4.13. Plantation by individuals.	Patches of plantation done.	Lack of budget for maintenance. No specific plans and objectives.
4.14. Plantation by CFMG.	CFMG members are doing plantation.	Lack of cooperation within CFMG members and nursery to raise

Matrix for assessing strategic action implementation of the strategies		
	Plantations done in few CFs based on availability of budget, interest and space available.	seedlings for plantation. Lack of budget and space in the CFs.
4.15. Plantation by municipalities.	Provided technical backstopping and seedlings if they demand.	Lack of budget for seedling procurement and nursery at Dzongkhag level to meet the local demand especially ornamental plant species.
4.16. Plantation by schools and other institutions.	Supply of seedlings to the schools. Provided technical backstopping and seedlings if they demand.	Lack of budget for seedling procurement and nursery at Dzongkhag level to meet the local demand especially ornamental plant species.
5. People's participation		
The opportunity for establishing plantations on barren and degraded areas using community and private participation is enormous. Such a strategy will serve two purposes: greening the areas near habitation, and creating income generation for local people.		
5.1. Involve local communities in planning and implementing Government plantation programmes starting from identifying	Local communities are involved during implementation not in planning. Involve Tshogpas and elderly people in site selection	Due to the lack of budget for consultation/planning meeting with local communities.

Matrix for assessing strategic action implementation of the strategies		
plantation needs, and selecting sites and species. Identify and agree upon the benefits that communities can derive from their plantation (e.g. pole trees through thinning).	and get background history of the plantation site. Minimal involvement of communities as it is time consuming and lack of authenticated documentation in past.	
5.2. Outsource plantation activities, as a pilot scheme, to communities or individuals with detailed standard operating procedures (SOP) and agreements. Develop proper guidelines for outsourcing plantation activity to ensure quality of work.	GBCL should be doing all the plantations handed over to them and DoFPS should be monitoring. Lack of SOP and guidelines to process with this step.	Respective divisions do all the necessary arrangements like estimate preparation, site survey, financial arrangements and technical sanctions. However, GBCL takes the credits by just executing physical works.
5.3. Encourage wood-based industries (BBPL and BCCL) to involve communities in their plantation activities.	Maybe happening at a small scale and on ad-hoc basis.	

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<p>5.4. Educate local communities on the importance of plantations and the various benefits that could be derived from such ventures.</p>	<p>Creating awareness on importance of planting trees during Social Forestry Day celebration.</p> <p>Awareness campaigns done during meetings.</p>	<p>Not able to include all local communities and institutions due lack of fund.</p>
<p>6. Nursery development and management</p> <p>Special attention must be paid to the establishment of well-functioning nurseries and the caretaking of these nurseries in order to ensure the provision of high quality seedlings.</p>		
<p>6.1. Identify and calculate the demand from different agencies for seedlings and species to be raised in nurseries. Establish suppliers of good quality seeds, or collect these seeds from the natural forest.</p>	<p>There are nurseries but the seedling demand is not met.</p> <p>Lack of planning.</p> <p>Procure from Outside and poor-quality seedling.</p> <p>Plantations are time sensitive.</p> <p>No centralized nursery or shifting of these Central Nurseries (CN).</p> <p>GBCL developing</p>	<p>There are nurseries but the seedling demand is not met.</p> <p>Lack of planning.</p> <p>Procure from Outside and poor-quality seedling.</p> <p>Plantations are time sensitive.</p> <p>No centralized nursery or shifting of these CN.</p> <p>GBCL developing nursery based on</p>

Matrix for assessing strategic action implementation of the strategies

	nursery based on ecological zone.	ecological zone.
6.2. Identify the number of nurseries and their location in order to meet the demand as described above. Establish at least a nursery in each ecological zone under Dzongkhags, TFD/PA to fulfill the increasing demand for seedlings as more plantations are created.	<p>Need to initiate establishment of small nursery in TFD/PA to supply saplings during maintenance and refilling of plantation.</p> <p>Two Forest nurseries created for Sub-tropical zones.</p> <p>Small nursery are established at Range level but discontinued due to lack of space and maintenance budgets.</p>	<p>Low survival of plantation due to altitude differences.</p> <p>Conifer two times weeding (prescription is same) and broadleaf it is more than two time.</p> <p>Use locally available seed...no funding for collecting. Randomly collecting seed.</p> <p>Some of the seeds collected are diseased.</p> <p>Difficult to get appropriate seedlings during maintenance of plantation.</p>
6.3 Ensure a good mixture of species with economic, aesthetic, and /or ecological characteristics in each nursery, to fulfill the varied requirements of seedlings for different types of plantations.	<p>Lack of study and documentation of the species.</p> <p>Lack of space, seeds and expertise for propagation of different species.</p> <p>Huge cost of</p>	<p>Have a dedicated nursery institution.</p> <p>Nurseries in Bhutan are small in size.</p> <p>The species of nurseries are limited in variety.</p>

Matrix for assessing strategic action implementation of the strategies		
	production and limited market as its freely available across the border.	Lack of budget for maintenance of nursery and payments for the workers for seed collection, vehicles for transportation and tools procurement at division level.
6.4. Improve the existing nurseries by applying appropriate nursery techniques and practices for better quality seedlings, and employ and train caretakers to guard and maintain the nurseries.	Initiated by DFOs, Parks and FMUs. Maintaining the nurseries. Maintenance of existing nurseries done to meet the local demand only.	Seedlings produced are supplied for Social forestry day and institutions for free of cost which hampers cost of production.
6.5. Encourage and provide technical support to individuals and communities who are interested in establishing nurseries. Help them to explore market opportunities and to establish market linkages.	The DoFPs provides support to private individuals. Dzongkha provided financial support to private individuals.	Lack of expertise for propagation of different wild species. Lack of space, budget and vehicles in Divisions for nursery works. Shortage of skilled/trained manpower due to OD exercises. Lack of interest from public as its not profitable business. No marketing setup for

Matrix for assessing strategic action implementation of the strategies		
		forest nurseries like floriculture.
<p>7. Silvicultural practices</p> <p>The application of silvicultural practices in all kind of plantations is generally poor. Silvicultural treatments for managing the plantation depend upon its purpose and the species that grow there.</p>		
<p>7.1. Develop silvicultural management schemes (planting season, weeding, cleaning, climber cutting, thinning, pruning, harvesting etc) for different species and for different plantation purposes and ensure the strict application of these silvicultural practices in the field.</p>	<p>Forestry field manual for Bhutan: Silviculture and other forestry operations.</p>	<p>Lack of funding support and choice of species.</p> <p>Lack of skilled labours for the silvicultural activities.</p> <p>Higher cost of labour compared to wage rate prescribed in Norms.</p>
<p>7.2. Incorporate silvicultural practices, especially thinning, as an integral part of all plantation plans.</p>	<p>Carrying out pruning activities.</p>	
<p>7.3. Initiate harvesting of existing mature plantation stands and develop</p>		<p>Budget constraints. Most are uneconomical species due to wrong choice of</p>

Matrix for assessing strategic action implementation of the strategies		
replanting programmes.		plants.
7.4. Develop proper programmes for controlling pests and diseases in plantations and nurseries.	CFMG silvicultural guidelines.	Lack of fund. No specific strategies or management techniques applied/used as of now.
8. Research		
Research is needed to increase the effectiveness and efficiency of the plantation efforts.		
8.1. Studies that quantify the environmental services that plantations can provide (such as clean water, carbon sequestration, biodiversity and scenic beauty of landscapes) in order to have reliable data to enter PES schemes.	No research of this kind done or initiated.	Lack of expertise and facilities to carryout detailed study.
8.2. Collaboration with RNR-RCs to develop research into the following plantation aspects: - Species-site	These are not happening.	Lack of fund for research. No expertise or capabilities to carryout research.

Matrix for assessing strategic action implementation of the strategies

<p>matching studies.</p> <ul style="list-style-type: none"> - Identification of proper Seed Production Areas. - Seed processing, procurement, storage and testing. - Develop guidelines for silvicultural requirements and techniques for species used in plantations for different purposes (nursery practices, fertilization, out planting practices, tending operations, spacing and thinning, growth and yield etc). - Vegetative propagation methods (stems or root cuttings, layering, grafting, etc.). - Management and uses of multi-purpose tree resources (fodder, fuel wood, nitrogen-fixing, NWFPs including bamboos, etc). - Tree breeding (provenance 		<p>Lack of coordination among different sections having different mandates.</p>
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Matrix for assessing strategic action implementation of the strategies		
evaluation, progeny testing, control pollination, seed orchard, and vegetative propagation techniques).		
<p>8.3. Establish a Forest Seed Centre within RNR-RC for the following purposes:</p> <ul style="list-style-type: none"> - Carrying out research on various aspects of seeds, - Storage and supply of seeds, - Testing and grading of seeds prior to distribution to nurseries, - Establishing seed production areas/sample plots for important tree species, - Acting as a central clearing house for the export and import of seeds. 	Not initiated.	

Matrix for assessing strategic action implementation of the strategies

9. Institutional development

The implementation of the plantation programme will be diffused through various agencies. There are insufficient staff workings for the Plantation Programme in the Social Forestry Division. The Dzongkhags also have limited staffs available that are capable of implementing this strategy on their own.

<p>9.1. Establishing a Plantation Steering Committee of key stakeholders, who will be responsible for overall NPS implementation. This will include people from, for example, the Plantation Programme, FRDD, NRDC, the Watershed Management Division, the NWFP Programme, the private sector and research centers.</p>	<p>Plantation Steering Committee consisting of key stakeholders do not exist.</p>	<p>Lack of focus and priority due to lack of committee and separate functions</p>
<p>9.2. Creating a plantation unit in each Territorial Division and Dzongkhag for planting, monitoring and overseeing plantation activities.</p>	<p>Plantation Section is there in all Territorial Division but mostly manned by one individual. Social Forestry and Extension Section. Plantation and</p>	<p>Need separate section and budget for this purpose.</p>

Matrix for assessing strategic action implementation of the strategies		
	nursery done by SFES.	
9.3. Appointing staff specialized in nursery, plantation and seed production management at the implementation level (plantation units in the Dzongkhag and Territorial Divisions).	No specific training or staff appointment as such for this purpose.	Need to spearhead and mobilize staff for this section required.
9.4. Setting up and institutionalizing an early warning system to monitor disease outbreaks so that timely measures can be taken before large areas are damaged.	Not established.	No specialized team or officials in such field.
<p>10.Capacity building</p> <p>People with skills and expertise are a prerequisite for creating quality nurseries and plantations. Sound knowledge about the correct choice of species, basic nursery and plantation techniques and tending operations are essential for effective implementation of the plantation programme. In recent times, bio-engineering and landscaping activities have been emphasized, and these also require professional expertise.</p>		
10.1. Carrying out an assessment of the effectiveness of existing plantation training programmes and courses,	Updating the plantation records and journals as far as possible.	Train people in nursery management, tissue culture, Khasadrapchu Nursery important. 100,000 to produce 80k saplings. Out of

Matrix for assessing strategic action implementation of the strategies		
identifying gaps and shortcomings and implementing remedial actions, which could include the development of new training materials and training programmes.		100 only 50 survive. Bamboo plantation is the southern. Agro-forestry nursery. Grass plantation, banana. Dedicated nursery.
10.2. Improving the plantation curriculum in training institutes (UWICE, CNR, RDTIC) particularly in the areas of seed production and storage, nursery techniques, plantation establishment and management, participatory approaches and other needs	Not sure if there is match between theory and practical of plantation and nursery development and management.	Dzongkhag forestry removal caused the downfall of plantation. Need trained people in plantation and nursery management to teach. Capacity building of the teachers. Mismatch between work environment and specialization of staffs. Need training on nursery and plantation, so far no training has been conducted. Plantation management, nursery management.
10.3. Conducting regular refresher courses for territorial divisions and Dzongkhag staff related to plantation activities based on identified needs. Providing training and technical back	Few staffs attended the nursery mgt training in CNR through EUTCP funding.	No record in past and difficulty to trace past

Matrix for assessing strategic action implementation of the strategies

<p>stopping to other interested parties such as local communities, industries, private entrepreneurs and other individuals in order to enhance their capability and interest in re-forestation activities.</p>		<p>activities.</p> <p>No refresher courses for field staffs in after passing out from institutions and non-applicability of such knowledge in field.</p>
<p>10.4. Enhancing the technical capacity of the Plantation Programme through intensive out-of-country and in-country training programmes.</p>	<p>Lack of fund.</p> <p>Low priority.</p>	
<p>10.5. Strengthening the plantation programme so that it is capable of undertaking monitoring and evaluation, providing technical support to the field units, training field staff on nursery and plantation techniques, and in general, supporting</p>	<p>Limited budget, capacity and support.</p>	

Matrix for assessing strategic action implementation of the strategies		
the planning and management of nurseries and plantations.		
10.6. Exploring funding options to support this plantation capacity building programme.	Not initiated.	
11. Monitoring & Evaluation		
<p>Monitoring and evaluation are of the utmost importance to assess progress, to identify issues and lessons learnt in a timely manner and to adapt the plantation programme in order to increase its effectiveness and efficiency. To benefit most from monitoring and evaluation, it will be necessary to establish qualitative and quantitative benchmarks to measure progress. Measurement should focus on outputs and outcomes (for example the survival rate of seedlings after one year), and not inputs alone (e.g. number of seedlings/ areas planted).</p>		
<p>11.1. Developing a monitoring and evaluation system for this strategy, to includes:</p> <ul style="list-style-type: none"> - A database of key quantitative and qualitative variables to measure progress. - An ongoing monitoring and periodic evaluation. - An ongoing review of the NPS itself, 	M&E very weak.	<p>M&E are conducted by own forestry people. There are biased views and issues are not reported.</p> <p>The M and E has to be done by outsider with specialty in Plantation and Nursery expertise. This causes wastage of money.</p>

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including its ability to deliver the intended outcomes.		The Audits don't look at the physical aspects of plantation. They don't look at the outcome of the plantation. Physical, financial and performance of plantation.
11.2. Monitoring of plantations should not stop at the establishment stage of the plantation but continue for the entire rotation.	Monitoring only up to 5 th year after plantation.	
11.3. Requesting all agencies involved in plantation activities to maintain plantation records (according to a format developed by the plantation programme) and to provide the monitoring and evaluation data to the plantation cell within the Territorial Division.	Maintaining plantation records by TD. No system of keeping plantation record by other agencies.	Monitoring forms are complicated for the communities, if the Dept. could simplify the M & E form. Only periodic physical verification and monitoring are done at division level. Records of plantations are kept to some extent but there is no comprehensive record of species and research done.
11.4. Conducting periodical evaluations of plantations at the Dzongkhag and national level and providing detailed impact analysis to the Plantation Steering committee	Evaluations are on ad-hoc basis and not well planned.	

Matrix for assessing strategic action implementation of the strategies		
11.5. Conducting periodical evaluations of plantations at the Dzongkhag and national level and providing detailed impact analysis to the Plantation Steering committee.	Plantation reports are submitted to Department when required.	
11.6. Advising implementers of the plantation programme of the findings and lessons learned from the monitoring and evaluation process.		

Annex 2. Terms of reference for national consultancy services

TERMS OF REFERENCE (TOR) FOR NATIONAL CONSULTANT

Evaluation and Revision of National Plantation Strategy for Bhutan, 2010

1. Background

Bhutan is a small country located in the heart of the Himalayas. The geographical area of the country is 38,934 km² and the population is about 0.8 million (NSB, Bhutan at a Glance 2017). The country is mainly dominated by rich forest cover which constitutes to 71% of the geographical total area (NFI Report Vol. 1, 2016). The forest provides various goods and services and plays a crucial role for substantial contribution to Gross Domestic Product (GDP) in the country through hydropower generation. To manage forests sustainably, the Constitution of the Kingdom of Bhutan (Article 5) enshrines protection and conservation of forest resources and mandates to maintain minimum of 60% forest cover for all time.

Over the years, plantation forestry has been considered one of the major evolving practices to conserve and manage forests sustainably, landscaping, biodiversity conservation and ensuring the delivery of environmental services. To contribute to biodiversity conservation & management, carbon sequestration, rehabilitation of critical watersheds and strengthen social and economic benefits, the National Plantation Strategy (NPS) for Bhutan was developed and endorsed in 2010. With the implementation of this strategy, as of now about 25,644 hectares (about 63,367 acres) of forest land area has been brought under plantation and afforestation programmes. Nevertheless, after the endorsement of this strategy, substantial changes have taken place in the policies, rules and social & environmental context.

In line with the changes in policies, rules and regulations and rapid environmental climate change, the revision of NPS 2010 for Bhutan

is required to address plantation problems and constraints and improve upon and up-scale the plantation activities in the country. The revision is expected to have REDD+ programmes incorporated in it and exploration of more opportunities to different stakeholders' participation in achieving the targets for combating degradation.

This revised document (NPS) will suite the current field conditions and serve as the main implementing document to address technical, legal, environmental and on social and economic circumstances.

2. Objectives

Social Forestry and Extension Division (SFED) under Department of Forests and Park Services (DoFPS) is seeking a national consultant (Individual/ Individual through a firm) for the following works:

- i. Evaluation of the implementation of the National Plantation Strategy for Bhutan 2010, and prepare evaluation report. The report should be concise and should identify and highlight key issues and conclude recommendations that are very specific to new strategy development based on current scenario (political, policy, social and environmental context).
- ii. Revise the National Plantation Strategy for Bhutan 2010 and develop a new National Plantation Strategy for Bhutan. The revision should include:
 - (a) Lessons learnt from the implementation experiences to date and
 - (b) Reflection of emerging policy, rules, social issues and other opportunities to ensure that the plantation programmes are achievable, doable and reliable in today's scenario and in the context of climate change.

3. Specific assignments

Assignment 1

3.1. Evaluation of National Plantation Strategy for Bhutan, 2010

- i. Evaluate the implementation of the National Plantation Strategy for Bhutan 2010, and identify gaps and shortfalls. This task may require/need field visits and interaction with implementing stakeholders/agencies, field staff of forestry offices,
- ii. Prepare a preliminary draft evaluation report and present it to relevant stakeholders/agencies in workshops to validate overall information, but in particular focus on the key issues and recommendations which should be included and endorsed for incorporation into the revised plantation strategy.

Assignment 2

3.2. Revision of National Plantation Strategy for Bhutan

- i. Analyze existing forest plantation situation in Bhutan. Concisely, identify key issues associated with forest plantation programmes and should be reflected in the new national plantation strategy,
- ii. The revision and development of plantation strategy should be in line with REDD+ programmes,
- iii. Consult and conduct meetings with relevant stakeholders and make field visits (if necessary get organized with assistance of SFED).
- iv. Prepare a draft National Plantation Strategy for Bhutan and present it to the stakeholders/agencies,
- v. Finalize the strategy incorporating inputs from the workshop, and prepare a presentation for debriefing (to be organized by SFED in collaboration with the Watershed Management Division).

4. Eligibility criteria

The EOI (Expression of Interest) will be evaluated and shortlisted based on following criteria:

- i. Must have Master's Degree in Forestry/Environment/Climate Change or related field of forestry,
- ii. Good working experiences in the related fields and with Government institutions/organizations,
- iii. Sound experience in conducting stakeholder consultation meetings, workshops and work independently,
- iv. Sound experience in legal frameworks, policies, planning, reviewing and delivery of quality report in time.

5. Proposal to be submitted

Eligible and interested Bhutanese Individuals/ Individual through firms are invited to submit EOI with technical and financial proposals. The Individuals/ Individual through firms should submit all relevant documents supporting qualification, experience and competence to carry out both the assigned tasks. The Eoi should be submitted to SFED under DoFPS no later than 10.00 am on 18thDecember, 2018 and will be opened on the same day at 10.30 am.

6. Selection process

- i. Since evaluation is required to revise the National Plantation Strategy for Bhutan 2010; SFED invites EOI for two tasks together,
- ii. Consultant meeting the required criteria will be evaluated by the committee of SFED, and individual selected to be employed (by the Borrower) shall be the most experienced, best qualified and shall be fully capable of carrying out the assignments,
- iii. Preference will be given to individual/individual through firm who had similar works carried out in the past (attach document if any),

- iv. Relevant working experiences in regional/international organizations/institutions will have an added value,
- v. The Borrower shall negotiate a contract with the selected consultant after reaching agreement on satisfactory terms and conditions of the contract, including reasonable fees and other,
- vi. If negotiations on financial proposal fail with the first selected consultant, the next in line will be called for negotiations,
- vii. The proposal will have to respond to the TOR and be consistent with the procedures set out in the World Bank's Consultant Guidelines.

7. Duration and schedule of payment

The duration of work is divided into two parts as per the tasks mentioned above but one contract will be signed since both the tasks are closely linked/related to each other.

7.1. Evaluation of National Plantation Strategy for Bhutan 2010

- i. The work will have to be completed within 45 working days including field visits,
- ii. Upon signature of contracts; 10% of total amount quoted for this task will be released to the consultant,
- iii. Upon acceptance/ approval of the draft evaluation report; 40% of total amount will be released to the consultant,
- iv. Upon acceptance/approval of final evaluation report by SFED; 50% of remaining amount will be released to the consultant.

7.2. Revision of National Plantation Strategy for Bhutan 2010

- i. The work will have to be completed within 30 working days including field visits,
- ii. Upon signature of contracts; 10% of total amount quoted for this task will be released to the consultant,
- iii. Upon acceptance/ approval of a first draft strategy report; 40% of total quoted amount will be released to the consultant,

- iv. Upon acceptance/approval of final strategy report by SFED; 50% of remaining quoted amount will be released to the consultant.

8. Reporting approach of the consultant

The consultant will report directly to the Chief Forestry Officer of SFED and initiate discussions related to assigned tasks and outline problems and constraints contributing to the assignments. The consultant shall be stationed at SFED and work closely with Chief Forestry Officer or focal officer till the assignments are submitted and accepted by the host agency (SFED).

9. Deliverables

- i. Final ***Evaluation Report of National Plantation Strategy for Bhutan, 2010*** and
- ii. Final new Document on ***National Plantation Strategy for Bhutan***.

10. Support services

- i. SFED will depute a counterpart (focal officer) to the consultant (if required),
- ii. SFED will organize workshops including de-briefing (as and when necessary) with different stakeholders in close consultation with the consultant, and the consultant will facilitate the workshops,
- iii. SFED will arrange travel as and when necessary.

Annex 3. List of people consulted during the evaluation of the strategy from February 2019 to May 2019

Sl. No	Name	Designation	Organization
1	Phento Tshering	Director	NECS
2.	Kinley Tshering	Chief Forestry Officer	FPED, DoFPS
3	Dr. Pema Wangda	Executive Director	BFL
4	D.S. Rai	Chief Executive Officer	GBCL
5	Tashi Jamtsho	Director	WWF-Bhutan
6	Kinley Tenzin (PhD)	Executive Director	RSPN
7	Ugyen Lhendup	CPO	BTFEC
8	Kunzang Choden (PhD)	Program Manager	BFL
9	Kinga Wangdi	Program Manager	Bhutan Foundation
10	Sigyel Dema	Chief Forestry Officer	WMD, DoFPs
11	Tashi Peljor	Manager	FRD, NRDCL
12	Nima Dolma	Environment Officer	FRD, NRDCL
13	Tashi Norbu Waiba	Sr. Forest Officer	FRMD, DoFP
14	Lhab Tshering	Forest Officer	FRMD, DoFPs
15	Jamtsho	Forest Ranger	Lhuntshi Range
16	Ugyen Dechen	Forest Officer	Trashigang Division
17	Thinley Wangdi	Chief Forestry Officer	Samtse Division
18	Chitra Giri	Sr. Forest Officer	Samtse Division
19	K.B. Giri	Sr. Forest Officer	Samtse Division
20	Tashi Tshering	Sr. Forest Ranger	Samtse Division
21	Kaka Dorji	Forest Ranger	Samtse Division
22	Tenzin Jamtsho	Sr. FR. I	Samtse Division

Sl. No	Name	Designation	Organization
23	Dawa Tshering	Sr. FR. III	Dophuchen Range
24	Rin Dorji	Sr. FR. III	Norbugang Range
25	Phurba Dukpa	Sr. FR. III	Samtse Division
26	Golong Tshering	General Manager	BCCL
27	D.B. Gurung	General Manager	BBPL
28	Jigme Dorji	Chief Forestry Officer	Zhemgang Division
29	Tashi Dhendup	Sr. Forest Ranger	Zhemgang Division
30	Tashi Tobgay	Chief Forestry Officer	JSWNP, Trongsa
31	Sithar Wangdi	Sr. Forest Officer	SFED, DoFPs
32	T.B. Rai	Sr. FR I	SFED, DoFPs
33	K.J. Tempheh	Chief Forestry Officer	SFED, DoFPs
34	Palden Ongmo	Program Officer	Tarayana
35	Dimple Thapa	Chief Forestry Officer	Tsirang Division
36	K.N. Ghimerey	Dy. Chief Forestry Officer	Tsirang Division
37	Phub Dhendup	Chief Forestry Officer	Sarpang Division
38	Sonam Dorji	Sr. FR I	Sarpang Division
39	Yeshi Yangdon	Sr. FR II	Sarpang Division
40	Karma Gyamtsho	Sr. FR. II	Sarpang Division
41	Lhapchu Tshering	Sr. FR. II	Sarpang Division
42	Manoj Bomzan	Sr. FR. II	Sarpang Division

Sl. No	Name	Designation	Organization
43	Pema Rinchen	Sr. FR. II	Sarpang Division
44	Phuntsho Namgay	Forest Officer	Wangdue Division
45	Dorji	Sr. FR. II	Wangdue Division
46	Sonam Tobgay	Sr. Forest Officer	Wangdue Division
47	Gyeltshen Dukpa	Chief Forestry Officer	Thimphu Division
48	Kezang Yangden	Dy. Chief Forestry Officer	FRMD, DoFPs

