ROYAL GOVERNMENT OF BHUTAN

MINISTRY OF AGRICULTURE AND FOREST

DEPARTMENT OF FORESTS AND PARK SERVICES

FOREST PLANTATION IMAPCT ASSESSMENT REPORT MARCH 2022

Social Forestry and Extension Division

Department of Forests and Park Services

THIMPHU

Royal Government of Bhutan
Ministry of Agriculture and Forests
Department of Forests and Park Services

FOREWORD

The plantation in Bhutan dates back to 1947, and with the start of the first Five Year Plan in 1961, the then Department of Forests initiated measures for conserving the forest resources and exploitation of forestry products for the socio-economic benefit of the country. The National Forest Policy (1974) supported prescribing the long-term national goals and objectives to forest conservation and ensuring maintain 60% forest cover all the time to come. The forest plantation played a crucial role in sustainable management of forest, maintaining sound ecological balance and substantial contribution to environmental conservation as enshrined in the Constitution of the Kingdom of Bhutan. However, with increasing population and numerous developmental activities, the pressure on the forest resource is tremendously increasing which indeed is one of the leading factors accelerating the rate of forest degradation and deforestation. In such a scenario, the forest plantation is the only direct means to recoup and mitigate the impact of climate change and forest degradation.

In collaboration with different stakeholders, the Department of Forests and Park Services have carried out plantation for 49,391.11 Acres as of June, 2021. Until now, the forest plantation was for afforestation, reforestation, social forestry day celebration, industrial plantation, habitat enrichment and community forest plantation.

The different organizations, both private and government and other Non-Governmental Organizations executed numerous forestry plantations for decades. However, there is no assessment of the socio-economic and environmental impacts from the forestry plantation done until now. Therefore, the assessment on environmental, social, cultural, and economic impact from forestry plantations was critical to provide the Department to relook and plan the approaches to make the plantation more successful and impactful.

These initiatives assessing the impacts of Plantation by Social Forestry and Extension Division is a virtuous work, which would contribute to long term planning and implementation of plantation program. Plantation program is not only important to contribute to maintain minimum 60 percent of forest cover as enshrined in the Constitution of Kingdom of Bhutan but also to sustain the ecological system and bring socio-economic benefits to the people of Bhutan.

The Social Forestry and Extension Division under the Department of Forests and Park Services has conducted a comprehensive impact assessment of different types of plantations on environmental, social, economic, cultural aspects and produced **"Plantation Impact Assessment Report"** for Bhutan, 2020 with the fund support from REDD+ program under Watershed Management Division (WMD).

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TABLE OF CONTENTS

ACRONYM

CIAT	The International Center for Tropical Agriculture
CFMGs	Community Forest Management Groups
DoFPS	Department of Forests and Park Services
FMUs	Forest Management Units
FMUI	Forest Management Unit In-charge
FNCA	Forest Nature Conservation Act
FNCRRB	Forest Nature Conservation Rules and Regulations of Bhutan
GBCL	Green Bhutan Corporation Limited
IAR	Impact Assessment Report
LFMPs	Local Forest Management Planning
MPs	Management Plans
NEC	National Environmental Commission
NWFPMMG	Non-wood Forest Product Management and Marketing Groups
NRDCL	Natural Resources Development Corporation Limited
NPSB	National Plantation Strategy for Bhutan
NSCF	National Strategy for Community Forestry
POs	Park Offices
RNRSAPA	Renewable Natural Resources Sector Adaptation Plan of Action
SFED	Social Forestry and Extension Division
TDs	Territorial Divisions
WMD	Watershed Management Division

EXECUTIVE SUMMARY

The country has invested a considerable finance and labour in the forest plantation since 1951. So far, in the absence of evaluation of its cultural, social, economic, and environmental impacts, its perceived negative impact overshadowed the positive impact. Hence, this assessment has been commissioned to evaluate its cultural, social, economic, and environmental impacts.

This assessment was carried out employing a combination of methodologies. The desk review and analysis of secondary information formed the main methodology. Discussions with stakeholders, field visits, and validation workshop were employed as supplementary methodologies.

The first forest policy of 1974, which has been replaced by the forest policy of 2011, provided the policy direction for the forest plantation. The policy implementation has been regulated by the Forest Act of 1969 superseded by the Forest and Nature Conservation Act of 1995. The latter is being legislated by the Forest and Nature Conservation Rules and Regulations of Bhutan 2000, revised to 2003 and 2006 and the latest generation of 2017.

The Norms and Standards of Forest Nursery and Plantation, the first version of which was adopted in 1992- then revised in 2000, 2008, 2016 and 2019 - continues to guide the forest plantation field work.

The organizational arrangement for the planning and execution of the forest plantation work has witnessed a series of changes. For about five decades, since 1951 the then Department of Forest executed the forest plantation program. In 1992 the reforestation of the Forest Management Units (FMUs) has been shifted to the Natural Resources Development Corporation Limited (NRDCL) since 1993. In 2000 Afforestation Plantation was decentralized to the Dzongkhag Forestry Sector and re-centralized in 2015. After the re-centralization, the Park Offices (POs) and Territorial Divisions (TDs) carried out the forest plantation work till 2016. Then in 2017 Green Bhutan Corporation (GBCL), a state-owned corporation, was set up and mandated to execute the creation and maintenance of the forest plantation work. Since early 2000 the forest plantation in the Community Forests is being executed by the Community Forest Management Groups (CFMGs). The forest-based industries continue to execute the Industrial Plantation program since 1991. The educational institutions continue to carry out social forestry plantation since 1985.

Classification of the forest plantation by forest types: Of the total existing forest plantation, 46.73% fall in the Subtropical Forest; 26.08% in the Cool Broad-leaved Forest; 14.61% in the Chir Pine Forest; and 11.45% in the Blue Pine Forest. The extent of forest plantation created in the other forest types is negligible.

The status of the forest plantation: This assessment reports the status of the forest plantation in two categories: the ones raised outside the Forest Management Units (FMUs) from 1951 to 2012 and the other reforestation in the FMUs from 1993 to 2017. On the former, the extent forest area planted add up to 54,782.38 acres. Of this, 4,338.06 acres have failed completely, while 14,722.06 acres could not be traced on the ground. By this account, it works out that only 35,722.26 acres of the forest plantation exists on the ground as 2012. However, the average

survival rate of the 35,722.26 acres is 57.96%. It means only 20,705.29 acres have survived, while the remaining 42.04%, corresponding to 15,016.98 acres, bear no plantation. At this rate, out of the 54,782.38 acres planted, only 20,705.29 acres comprises forest plantation, while the forest plantation over the 62.20% of the total area planted, which corresponds to 34,077.09 acres have failed. In gist, only 37.80% of the total area planted, which corresponds to 20,705.29 acres, bears forest plantation. The low rate of success is, inter alia, attributed principally to the following:

- ✓ Lack of adequate fund for plantation maintenance
- ✓ Natural calamities such as landslides, flash floods and forest fires
- ✓ Plantation area allotment to development activities
- ✓ Weak monitoring
- ✓ Poor seedling quality
- ✓ Harsh climatic conditions

On the reforestation, the total forest area harvested in the FUMs is to be restocked either through natural regeneration or artificial planting. From 1993 to 2017, the forest area harvested amounts to 23,457.73 acres. An analysis of the evaluation reports of the FMUs confirmed that 1126.04 acres have been artificially planted during the period. However, the analysis could conclude, across all FMUs, the extent of artificial planting and the survival rates of reforestation as well as naturally regenerated area and the survival rates of the regeneration because of incomplete information. The weak compliance to the management prescription and compliance enforcement, and inadequate institutional set up form the main impediment to the success.

Social impact: The forest plantation has led to building a socioeconomic connection between urban economic groups - industrial, hydro power sector, housing, infrastructure sector, etc. and the forest ecosystem which traditionally supported the rural livelihoods. As a result, it has catalyzed the formation of a social transaction system among the forest bureaucracy, corporate and industrial sectors, and the traditional social groups such as grazing and farming communities. However, while four of the thirteen indigenous arts and crafts are founded on the non-timber forest resources, the forest plantation is yet to induct the indigenous artisan/craft groups and the Non-wood Forest Products Management and Marketing Groups (NWFPMMGs).

The forest plantation is timber-biased and serves the interests of the urban economic groups more. For instance, it lacks the objective to serve the interests of the traditional social groups. The Department of Forests and Park Services (DoFPS) and the forest-based industries execute the forest plantation in a bureaucratic fashion. While the rights of the traditional groups are not denied per se, the existing institutional mechanism it uses does not lend a level playing field to them to exercise their rights. Consequently, a recurring social conflict persists between the traditional social groups (mainly grazing group) and the urban economic groups, mainly DoFPS, corporation and forest-based industries. Besides, the latent social conflict with other traditional groups is likely to surface as and when the scarcity the non-wood forest resources intensify.

A lasting positive social impact of the forest plantation has resulted from the mainstreaming of forest plantation into the community forests. This initiative has led to the creation of a grassroots social platform and process for deepening the collective and participatory responsibility of the grassroots community-constituted community forest management groups (CFMGs) in the management of community forest plantation.

Cultural impact: The plantation has resulted in the creation and application of a wealth of silvicultural knowledge, techniques, and practices within the DoFPS, corporations and forest-based industries. Some of those knowledge, techniques and practices have been diffused to the rural enterprises such as private forest nurseries and owners of private forest plantation. Through social forestry, it has also led to promoting a 'green culture' within the student and faculty communities but the silvicultural knowledge on the non-timber species is found to be lacking behind.

The lack of focus non-timber forest resources in the forest plantation constitutes a cultural shortsightedness. The indigenous medicine, traditional arts and crafts, home remedies, wild edibles, fodder culture, etc., all of which center on the non-timber forest products, hold priceless cultural value. The informal norms and the undocumented indigenous knowledge that uphold those cultures face a silent erosion and possibility of eventual demise.

Now, the forest plantation bears relatively a more serious cultural clash with the grazing. The existing institutional norms, founded on the principal of command-and-control principle, fail to secure the participation of the grazing group. As a result, the grazing group views that the forest plantation does not address the grazing rights, while the material reward emanating from the forest plantation is of not benefit grazing. The grazing-group's apathy and alienation towards the forest plantation are recurring problems. It is also worth to noting that cultural clashes with other groups mentioned in the preceding paragraph will grow more intense as the negative impact of the forest plantation on them escalates.

Climate smartness: To restate, around 31.27% of the forest plantation are monoculture; 20.83% has two species and 23.77% has three species; 17.07% has four species; 4.51% five species; and 1.71% six species. Monoculture of species such as Cupressus is ubiquitous, planted in almost all forest types because of its survival hardiness. The weed and bamboo infestation in the reforestation is reported to be increasing which is likely to worsen with the climate change. The forest plantation is also reported to suffer from a grave grazing pressure. Besides, the maintenance and protection of the forest plantation against socio-economic and bio-physical hazards are absent. Similarly, silvicultural management of the forest plantation is yet to see the light of day. All these shortcomings would escalate climate vulnerability and predispose the forest plantation to a severe climate change impact.

The problems impacting the forest plantation ranges from weak planning, inadequate institutional setting, poor application of silvicultural knowledge, weak compliance to and compliance enforcement of the management standards, social conflict, cultural clashes, shortage of funds, weak evaluation, weak accountability fixing, lack of collaborative governance, weak/lack of conflict resolution and technical capacity gaps. A conscious campaign to counteract these problems needs to be launched.

An Assessment of Economic, Environmental, Social and Cultural Impacts of the Forest Plantation

1.0 RATIONALE FOR FOREST PLANTATION IMPACT ASSESSMENT

The forest plantation in the country started since 1947 and in the last 72 years different types of forest plantations - afforestation, reforestation, social forestry plantation, industrial plantation, avenue plantation, and enrichment plantation – were created. As of 2020, about 48,778 acres (excluding social forestry plantation) has been brought under the forest plantation costing huge sum of money.

The forest plantation restores tree cover over the degraded and barren forests. It entails an immense economic, environmental, social, and cultural benefits. However, not all stories about it are good. At times, it faces economic criticism for incurring huge investment, involving huge opportunity cost, and resulting sub-optional economic rate of return. In environmental terms, it receives criticism for promoting monoculture, altering the structure of the natural forests, incurring negative effect on biodiversity, and vitiating the habitat value. Socially, they are criticized for an adverse impact on human health and culturally for undermining the cultures upholding traditional livelihoods system.

A considerable financial resources and labour have been invested in plantations in the country. However, their cultural, social, economic, and environmental impacts have never been evaluated. In the absence of this evaluation, the plantations continue to suffer the undue perceived criticism about their negative impacts. Given this context, an assessment of their cultural, social, economic, and environmental impacts has been commissioned with the objectives stated below.

2.0 THE OBJECTIVES AND TASKS

The plantations have been established in the country over a period of six decades. An assessment of their environmental, social, cultural, and economic impacts and climate resilience has been commissioned captioned as the Impact Assessment of Forest Plantations in the framework given below.

2.1 The Objectives

The main objective was to assess economic, environmental, social, and cultural impacts of the forest plantation. The objective was to be achieved through main and specific tasks mentioned below.

2.1.1 Main Tasks

Task 1: Environmental impact: Assess the impact of the forest plantation on biodiversity, ecosystem, ecology, climate change, soil conservation, water sources, water catchment, air quality and wildlife.

Task 2: Social impact: Assess the impact of the forest plantation on livelihoods, poverty reduction, disaster reduction, reduction of human wildlife conflict and agricultural crop depredation, employment generation, awareness and education, community vitality and human health.

Task 3: Economic impacts: Assess the economic impact on community and individual income, revenue generation, and contribution to Gross Domestic Product (GDP).

Task 4: **Cultural impacts:** aesthetic values and memorial planting.

2.1.2 SPECIFIC TASKS

(i) Analysis of the entire existing forest plantation situation in Bhutan and identification of key issues associated with the forest plantation program.

(ii) Cost benefit analysis of the forest plantation across different climatic and ecological regions.

(iii) Identification of the most effective type of forest plantation (region wise) among different types of plantations carried out in the country, and highlighting of the most viable options (different species ecological region wise) in the context of climate change for undertaking future plantation.

(iv) Analysis of the emerging policy, rules, social issues and other weakness and opportunities to make the plantation program achievable, doable, and reliable in today's scenario.

(v) Analysis of land use change and conflict of interest in land user rights in the various plantation sites, lessons learned from the implementation experiences of the forest plantation program to date, and emerging issues and possible solutions to the problems.

(vi) Consultation and conducting meetings with relevant stakeholders and make field visit (if necessary get organized with assistance of Social Forestry and Extension Division (SFED);

(vii) Preparation of a draft Plantation Impact Assessment Report (IAR) for Bhutan and present it to the stakeholders/agencies; and

(viii) Finalize the IAR incorporating the inputs from the workshop (to be organized by SFED in collaboration with other Functional Divisions).

3.0 ASSESSMENT METHODOLOGY

The methodology applied comprised the following:

- ❑ Desk review and analysis of secondary information
- ❑ Discussion with stakeholders
- ❑ Field visit, and
- ❑ Validation workshop

3.1 DESK REVIEW OF SECONDARY INFORMATION

3.1.1 Policy and policy implementation documents

The documents on forest plantation policy, strategies, guidelines, standard and norms were analyzed, and their summaries were synthesized. Then the documents on policy implementation were grouped as:

- 1951-2000 forest plantation (carried out the then Department of Forests).
- Post 2000 afforestation plantation (carried out by Dzonkhag Forestry Program).

- Post-2000 community and enrichment plantation (carried out by local communities);
- Enrichment plantation (carried out by POs and TDs).
- Post-1992 reforestation plantation carried out by NRDCL in the FMUs.
- Industrial forest plantation (done by forest-based industries).
- Community forest plantation [done by Community Forest Management Groups (CFMG)], and
- Social forestry (done by schools and other institutions).

3.1.2 Classification of forest plantations by forest types

The vegetation classification by Grierson and Long (1983) was adopted to classify the forest plantation by forest types. Then the forest plantation data of the report titled An Assessment of Forest Plantation in the Country 2015 was analyzed. The parcels of the forest plantation (except reforestation) raised by different agencies mentioned in the section 3.1.1 was examined for their species composition and placed under the relevant forest type as per the vegetation classification of Gierson and Long (1983).

3.1.3 Assessment of the status of the reforestation in the Forest Management Units

The forest areas harvested as per the prescriptions of the MPs of the FMUs were assessed. Then against the area harvested, acreage of naturally regenerated and artificially planted were determined for the FMUs in the conifer forest, while planted areas were assessed for the FMUs of the broadleaved forests. The mid-term and final evaluation reports on the implementation of the MPs were reviewed and findings on the status of reforestation, both naturally regenerated and artificially planted, were synthesized, including the status of forest nursery and quality of seedlings and plantation.

3.1.4 Assessment of economic, environmental, social, and cultural impacts of the plantation

Assessment of economic impact: For this, the report titled An Assessment of Forest Plantation in the Country 2015 was analyzed focusing on the total area planted, area of the plantations that could-not-be located, area of the failed forest plantations, and the areas corresponding to the survival and non-survival rates of the surviving forest plantation. The unit cost of forest plantation was used based on the norms and standards of 2004 to estimate the financial value of the surviving forest plantation.

Assessment of environmental impact: In the absence of the required information in the report (An Assessment of Forest Plantation in the Country 2015) and other sources, environmental impact assessment was based on the review of research and peer-reviewed journal articles; the articles on different aspects – biodiversity, nutrient recycling, hydrology functions, soil formation, climate change, habitat value, etc.- were reviewed and the findings were used to imply the environmental impact of the forest plantation.

Assessment of social and cultural impact: As for the environmental impact assessment section, social impact assessment had to be based on theoretical knowledge about social groups, social organizations, collective action, collaborative governance, participatory management, etc. Similarly, the scope of assessment of cultural impact was broadened by taking the word

'culture' to mean "the values, beliefs, behavior, and material objects that together form a people's way of life" (Macionis, 2005).

Assessment of climate resilience of the forest plantation: The potential impact of climate change on the forest ecosystem was synthesized from research articles. Then species composition of each parcel of the forest plantation by forest types was analyzed and the result used to imply the vulnerability of the forest plantation to the climate change.

3.2 DISCUSSIONS WITH STAKEHOLDERS

Discussions were held with the stakeholders to seek clarity on the information and documents used for this work as well as on the issues related to the status of capacity and organizational set up for the forest plantation planning, implementation, implementation arrangement, and monitoring and evaluation.

3.3 FIELD VISIT

Field visits were made - two reforestation sites in two FMUs and two sites on normal afforestation and rehabilitation plantation respectively – to check the status of reforestation as well as examine whether the physical status of the afforestation mentioned in the plantation record matched the survival rates mentioned in the plantation record.

3.4 VALIDATION WORKSHOP

A workshop was organized for the national and sub-national stakeholders to review and validate the Impact Assessment Report (IAR).

3.5 LIMITATIONS OF THE ASSESSMENT

Limited representatives of the data used: The data in the report - An Assessment of Forest Plantation in the Country (2015) - were collected through a combination of Random and Systematic Sampling; 3 sample plots of 15 meter by 15 meter were used to determine the average survival rate of each of the forest plantation, even for large size plantation measuring more than 100 acres. The low sampling intensity used to collect the data for the report formed a limitation for this assessment.

Qualitative nature of the impact assessment: Generally, there was lack of quantitative data as result of which the impact assessment is of qualitative nature.

Lack of information and incomplete assessment: The lack of information on the income generated by the forest plantation to the community and individual, national revenue generated and contribution to the Gross Domestic Product (GDP) made the economic impact incomplete in those terms. For the same reason, assessment of social impact could not summarize the impact of the forest plantation on the rural livelihoods, poverty reduction, disaster reduction, human-wildlife conflict reduction, agricultural crop depredation, employment generation, community vitality and human health.

Limitation in the classification of the plantation by forest types: The data used for the assessment lacked information on the altitudes of each parcel of plantation. Therefore, species were used to group them into forest types.

Exclusion of 2013-2019 plantation data: The survival rates of different parcels of the forest plantations were assessed for the plantations raised between 1951 and 2012. So, this assessment excludes the forest plantation raised between 2013 and 2019.

4.0 FINDINGS AND RESULTS

Among the forestry operations, as stated in the rationale for this assessment, the forest plantation incurs a huge capital investment. Hence, it is pertinent to seek the cultural, social, economic, and environmental impacts of the investment. The following sections elucidate the forest plantation policy and policy implementation; the status of the forest plantation by forest types; the status of reforestation in the FMUs; and the social, cultural, environmental, and economic impacts of the forest plantation. Climate smartness of the forest plantation and the weaknesses and opportunities associated with the forest plantation policy and policy implementation, and social, cultural, environmental, and economic impacts of the forest plantation are also presented.

4.1 PLANTATION POLICY AND LEGAL FRAMEWORK

The advent of the forest plantation in 1947 predates the establishment of forestry unit which happened in 1952. With the start of the first Five Year Plan in 1961 the then Department of Forests was set up under the Ministry of Trade and Industry; then put under the Ministry of Agriculture in 1985. From 1961 to 1974 Five Year Development Plans lent the required policy directives to the forest plantation.

The enactment of the National Forest Policy 1974 institutionalized sustainable forest management. It was founded on the principle of balancing the productive and protection functions of the forest. The policy mandated replenishing of the forest stock reduced by the natural process of attrition and utilization. It also mandated the improvement of the growing stock of the inferior and degraded forests, planting up of barren forest lands and regeneration of the harvested forests. In other words, it stipulated that afforestation and reforestation be employed to offset the forest lost through natural decay and utilization; restock degraded forests; and restore forest vegetation on the barren forest lands.

The Plantation and Nursery Norms and Standards were formulated, update regularly (the latest being 2020 version) and applied to guide the forest plantation field operation.

In 2000, through an administrative order, the then Ministry of Agriculture classified plantation into Afforestation Plantation, Reforestation Plantation, Industrial Plantation, Enrichment

Plantation and Community Plantation. The order segregated the Afforestation Plantation into Normal Plantation and Rehabilitation Plantation.

The order defined the Normal Plantation as planting of suitable forest plant species in the degraded forest areas in the proximity of the rural settlements. The Rehabilitation Plantation was defined to mean creating plantation in the eroded, landslide-ridden, fire burnt and mined forest areas. The Reforestation Plantation meant reforesting/replanting the timber-harvested forest areas in the FMUs. The order formalized the forest plantation practice of the FMUs which was in vogue since the advent of the FMU practice since 1992. The Afforestation and Reforestation Plantations were envisaged to render environmental protection as well as productive economic benefits. The order decentralized the implementation of the Afforestation Plantation to the Dzongkhag Forestry Sector.

The Industrial Plantation, as defined in the order, is to be understood as plantation raised on forest areas leased to the forest-based industries, by the forest-based industries for securing the sustained supply of raw materials for the industries. The Enrichment Plantation is to be taken as planting of valuable species for biodiversity enrichment of the forest with less than 25% crown cover. The Community Plantation is meant to create forest plantation on the government forest and the forest lands close to villages over which local communities held traditional use rights.

The National Forest Policy (NPF) 2011 superseded the NPF of 1974. It reiterates the policy imperatives enshrined in the NPF 1974. It brings to bear greater emphasis on the rehabilitation and restoration of degraded forests, natural regeneration of harvested forests, and artificial regeneration of harvested forests. It expanded the scope to add a new stipulation for compensatory plantation to offset the loss of forest cover to land use change entailed by hydropower projects, power transmission lines and so on. It also recognizes the importance of participatory forestry, contribution of forests to sustainable rural livelihoods and poverty alleviation, importance of forests for water resources and hydropower and forests for forest-based industries.

To regulate forestry operations, including the forest plantation, the Forest Act 1969 was enacted which was superseded by the Forest Nature Conservation Act (FNCA) 1995. The FNCA (1995) is being enforced through the Forest and Nature Conservation Rules and Regulations of Bhutan (FNCRRB) (2003). The FNCRRB (2003) was replaced by FNCRRB 2006 which in turn got replaced by the FNCRRB (2017).

Taking cognizance of the importance of participatory forestry, the government introduced social forestry in 1979. The community forest plantation became a mainstream forestry program since early 2000s. The National Strategy for Community Forestry (NSCF) [2010], which has been revised in 2019, was employed to strategize community forestry development.

4.2 POLICY IMPLEMENTATION ARRANGEMENT AND IMPLEMENTATION

The first plantation was raised in 1947 by the Civil Administration (SFED, 2015). From 1951 till 1979 the plantation program constituted reforesting the harvested forest areas confined exclusively to the sub-tropical forest. It spread into other forest types only in the early 1980s.

Planned forestry development, including plantation, took root after the launching of the first Five Year Plan in 1961. Forest areas to be harvested were grouped into 'coupes' which were put to bidding. The winning bidders harvested the 'coupes' and the harvested areas were reforested by the state forest agency. However, the bidding-based system of harvesting undermined the principle of sustainable forest management and proved detrimental to the forest ecosystem as the bidders were driven by the profit motive. To circumvent the problem, the first scientific forest management plan was formulated and implemented in 1965 (FRMD website).

To rectify the problem associated with the bidding-based harvesting system, a Logging Division was created in the then Department of Forests in 1979. Besides being mandated with the scientific timber harvesting, the Division was intended to make funds available for the reforestation of the harvested forest areas. However, counter to the intention, being a state-funded program, the funds for the reforestation did not materialize. To secure financial autonomy for improved and efficient timber harvesting and securing funds for reforestation, it was corporatized to Bhutan Logging Corporation (BLC) in 1984; rechristened as Forest Development Corporation Limited (FDCL) in 1996; and took the current name - Natural Resource Development Corporation Limited (NRDCL) - in 2007. It now enjoys financial autonomy and funds reforestation work in the FMUs.

The then Department of Forest also implemented a six-year afforestation project in some parts of Samtse, Chukha and Sarpang districts from 1984 to 1990 under a lending program (International Development Association (IDA) Credit 1460) of the World Bank.

In 1989, the Afforestation Division (now turned into the plantation program within the Social Forestry and Extension Division - SFED) was established within the fledgling Department of Forests. Lending the required impetus to its decentralization policy, the government decentralized forestry extension program, comprising of private and community forestry, to the Dzongkhag Forestry Sector in 1993.

To advance sustainable forest management practice, after experimenting the system of scientific management in parcels of forests for about six years, since 1986, the FMU system was institutionalized countrywide in 1992. Under this system, scientific forest management plans are formulated and implemented. To balance and sustain the productive and protective functions of the forest ecosystem, this system necessitates successful regeneration – either through natural regeneration or artificial planting - of timber-harvested forest areas in the FMUs. NRDCL, besides its mandate for harvesting and marketing of timber resources from the FMUs, has the mandate for taking operational measures for ensuring natural regeneration in the harvested conifer forest as well as carrying out artificial regeneration in such forest where natural regeneration has failed. It is also required to reforest the timber-harvested forest areas in the FMUs of the broadleaved forest through artificial regeneration.

In 2000, the then Ministry of Agriculture devolved the implementation of the Afforestation Plantation to the Dzongkhag administration and delegated the task to the Dzongkhag Forest Sector. In the order it was implicit that the NRDCL would continue to implement the Reforestation Plantation in the FMUs, while the Enrichment Plantation and Community Plantation will be the mandate of the then Department of Forests, with Territorial Divisions (TDs) and Park Offices (POs) as its implementing agencies. The forest-based industries, which started to carry out industrial plantation, were to continue carrying out the Industrial Plantation.

Then in the 9th Five Year Plan (2002-2007) Local Forest Management Planning (LFMP) system has been started and got mainstreamed in the 10th Five Year Plan. The FLMP System also involves sustainable harvesting and regeneration of timber and non-timber forest resources, forest plantation included, outside the FMUs.

In 2015, resulting from an Organizational Development Exercise of the government, the decentralized forestry program – private forestry, community forestry and afforestation program - have been re-centralized with TDS and POs of the Department of Forest and Park Services (DoFPS).

In addition, the DoFPS also implemented School Social Forestry Program since 1985 and the Community Forestry Program since the early 2000s, both of which involve creation of forest plantations. As of now, an analysis of the existing data of the total area of 2.70 million hectares the plantation measuring 19,647 hectares account for 0.72% forest area (SFED 2015). At this rate, the average of forest area planted annually in the last six decades works out to be about 1,185.45 acres while the estimated annual rate of forest loss through deforestation and land use change is about 14,321 acres (WMD 2017).

In 2017, the government created Green Bhutan Corporation Limited (GBCL) and mandated it for the forest plantation creation. However, whether it is also mandated for the reforestation work of the FMUs is not clear. The DoFPS has handed over its part of the forest plantation creation and maintenance to GBCL.

4.3 FOREST TYPES OF THE COUNTRY

The country's altitude gradation ranges from 150 meter to over 6000 meter endowing it with the sub-tropical, temperate, and alpine climate. The forests in the country have come into existence because of complex bio-physical and social interactions. While the vegetation of the country has not received a detailed systematic study, Grierson and Long (1983) has roughly classified the country's forest as stated in Table 1. Some consider Mixed Conifer, Hemlock, and Spruce, which occur between the Blue Pine and Fir forests, as another forest type (Roder and Frei 2013).

Table 1: Classification of forests in Bhutan

Sl. No	Forest types	Altitude (m)
1	Subtropical Forest	200-1000 (-1200)
2	Warm Broad-leaved Forest	1000-2000 (-2300)
3	Chir Pine Forest	900-1800 (2000)
4	Cool Broad-leaved Forest	2000-2900
5	Evergreen Oak Forest	1800-2000 (-2600)
6	Blue Pine Forest	2100 – 3000 (-3100)
7	Spruce Forest	2700 – 3100 (-3200)
8	Hemlock Forest	2800 – 3100 (-3300)
9	Fir Forest	3100 – 3300 (-3800)
10	Juniper/Rhododendron scrub	(3700-4200)
11	Dry alpine scrub	(4000-4600)

4.4 FOREST PLANTATION BY FOREST TYPES

This section provides a summary of the forest plantations established by the then Department of Forest from 1951 to 2000; the Afforestation Plantation established by Dzongkhag Forests between 2000 and 2012; the Industrial Plantation and Community Forest Plantation. There is no clarity on the Enrichment Plantation and the Community Plantation. However, for this assessment, the forest plantation established by Park Offices have been assumed to be the Enrichment Plantation. The results are summarized in the Table 2, refer Annexes I to VIII for the detail. The status of FMU reforestation plantation is summarized in Table 3.

Table 2: Forest Plantations by Forest Types

Sl.#	Forest Types	Area (Ac)	Average Survival Percent	Average Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)	% Share
1	Subtropical Forest	16,693.08	58.18	41.82	9,711.39	6,981.70	46.73
2	Cool Broad-leaved Forest	9,316.48	66.94	33.06	6,236.49	3,079.99	26.08
3	Warm Broad-leaved Forest	125.85	62.36	37.34	78.48	47.37	0.35
4	Chir Pine Forest	5,219.11	69.18	30.82	3,610.40	1,608.71	14.61
5	Blue Pine Forest	4,091.65	23.70	76.30	969.63	3,122.02	11.45
6	Mixed Conifer	54.10	7.74	92.26	4.19	49.91	0.15
7	Fir Forest	181.34	39.48	60.52	71.59	109.75	0.51
8	Juniper Forest	40.65	56.87	43.13	23.12	17.53	0.11

	Sub-total	**35,722.26**	**57.96**	**42.04**	**20,705.29**	**15,016.98**	**100.00**
9	Failed plantation	**4,338.06**	**0.00**	**0.00**	**0.00**	**0.00**	
10	Not-traceable plantation	**14,722.06**	**0.00**	**0.00**	**0.00**	**0.00**	
	Total	**54,782.38**			**20,705.26**	**15,016.98**	

An analysis of secondary data on the forest plantation concludes that out of 54,782.38 acres planted between 1951 and 2012, about 4,338.06 acres have failed completely, while 14,722.06 acres could not be traced physically on the ground. Therefore, 34.79% (19,060.12/54,782.38) of the total plantation could be considered as failed. Of the total planted, only 35,722.26 acres - created under earlier (prior to 1992) reforestation plantation, industrial plantation and post-2000 afforestation plantation have survived. The average survival rate of the surviving plantation is 57.96%, meaning 42.04% did not survive. It turns out that 46.73% of the forest plantations were established in the Subtropical Forest, followed by 26.08% in the Cool Broad-leaved Forest, 14.61% in the Chir Pine Forest and 11.45% in the Blue Pine Forest. The extent of the forest plantation created in the other forest types is negligible.

4.5 STATUS OF FMU REFORESTATION

Since 1993, the FMUs have been managed under scientific MPs. While the primary objective is sustainable production and supply of timber for urban and rural consumers through sustainable forest management, the FMUs are also mandated to manage the non-timber forest resources and the protective functions of forests. From the standpoint of sustainable timber production, the forests cut along the cable line corridors and in the patch, openings are to be reforested through natural regeneration supplemented by artificial planting. In the broad-leaved forests, artificial planting is the prescribed silvicultural method of regeneration. The MPs prescribe a mandatory three-yearly evaluation of natural regeneration until the regeneration is established with 70% survival rate, the first one beginning at the end of the third year after harvesting; artificial planting is to be done where natural regeneration has failed.

Table 3, synthesized from Annex IX, gives an overview of the status of reforestation in the FMUs. It may be noted that Table 3 does not reflect the FMUs which have the MPs, but not implemented, as well as the ones where the MP implementation does exceed three years.

Table 3: Status of Reforestation in FMU

Sl. No.	Name of FMU	Management Plan Cycle	Area Cut (Ac)	Area Reforested (Ac)	Survival Percent	Non-survival Percent
1	Dawathang	Cycle I, II: 2000 – 2021	3038.36	79.04	No info	
2	Karshong	Cycle I, II: 1994 - 2019	736.15	0.00	"	
3	Rodungla	Cycle I: 2013 – 2023	841.78	0.00	"	
4	Lingmethang	Cycle I, II: 1998 – 2018	1742.58	0.00	"	
5	Korilla	Cycle I, II, III: 1993 – 2026	925.20	308.75	"	

6	Rongmenchu	Cycle I: 2007 – 2017	478.96	93.31	0.00	
7	Haa East	Cycle I, II: 2004- 2026	42.63	0.00	"	
8	Sellela	Cycle I, II: 1998 – 2020	1474.10	0.00	"	
9	Lon Chhu	Cycle I: 2010-2019	363.09	0.00	"	
10	Dzonglela	Cycle I, II, III: 1992 – 2022	4707.89	175.95	"	
11	Betikha	Cycle I, II: 2006 – 2026	352.17	0.00	"	
12	Chamgang	Cylce I, II, III: 1993 – 2027	790.54	89.13	43.77	
13	Gidakom	Cylce I, II, III: 1992 – 2022	2525.07	0.00	"	
14	Khalilg-Kharungla	Cycle I: 1996 – 2005	671.43	95.53	"	
15	Dongdechu	Cycle I, II: 2001 – 2024	634.42	109.10	"	
16	Khotokha	Cycle I, II, III: 1984 – 2019	1626.52	0.00	"	
17	Gogona	Cycle I, II: 2005 – 2025	845.35	0.00	"	
18	Wangdigang	Cycle I, II: 1993 – 2015	696.58	167.26	"	
19	Chendebji	Cycle I, II: 1996 – 2017	964.91	7.97	"	
		Total	**23,457.73**	**1126.04**		

As of now, there are 21 FMUs operational - six in Cool Broad-leaved Forest, one in Warm Broad-leaved Forest, twelve in Mixed Conifer, one in Chir Pine with Cool Broad-leaved Forests and one with Mixed Conifer mixed with the Cool Broad-leaved Forests.

The FMUs are managed under ten-year MPs. The MPs are to be implemented through annual operational plans, making, if necessary, adjustments to the area to be cut and regenerated. The implementation results are to be evaluated twice - once mid-way during the implementation of the MPs and the final evaluation at the end of the implementation period – based on the targets set for different management objectives and including reforestation.

The annually cut forest area would differ from the target prescribed in the MP. The forest area to be regenerated changes correspondingly. The mid-term and the final evaluations of the MP implementation have been institutionalized. However, for some FMUs reports were not available. For the ones the reports are available, the evaluation reports lack information about the magnitude of the forest area cut, the area naturally regenerated and the survival rate, and the cut forest area planted artificially and the survival rate of the plantation. Therefore, for all FMUs, no conclusion could be drawn on the magnitude of cut forest area naturally regenerated and artificially planted as well as the survival rates of naturally regenerated and artificially planted regeneration.

4.6 ECONOMIC IMPACT OF THE FOREST PLANTATION

Forest management strives to sustain the ecosystem services of the forest ecosystem for economic wellbeing. The objective of the investment in the forest plantation is to perpetuate the forest ecosystem services. Therefore, logically to assess the economic impact of plantation, aspects - (a) provisioning services; (b) regulating services; (c) cultural services; and (d) supporting services (MEA, 2005) – of the forest ecosystem services need to be measured and their financial worth assessed, which is by no means an easy task. For this assignment, it would have been technically possible to assess, as part of the assessment of the economic impact, the financial value of the timber stock of the forest plantation. However, this also turned impossible for lack of inventory data on the timber stock.

Table 2 elucidates the status of forest plantations created in the country by the DoFPS, NRDCL and forest- based industries. Between 1951 and 2012 a total 54,782.38 acres have been planted, with an annual average of 898.07 acres. However, 4,338.06 acres have failed completely, while the surveys carried out in 2012 could not trace 14,722.06 acres on the ground. A total area of 35,722.26 acres have been located on the ground in 2012 of which the average survival rate works out to be 57.96% which corresponds to 20,705.29 acres. In other words, 42.04%, which corresponds to 15,016.98 acres, are devoid of trees. In summary, of the total planted area of 54,782.38 acres, 34,077.30 acres (62.20%) has not borne the expected result. Only 20,705.29 acres (37.80%) have resulted in successful forest plantation.

Further, Table 3 points out that across the FMUs, in for 24 years since 1993 till 2017, the prescribed total equivalent cut area is around 23,457.73 acres. This assessment could only conclude that 1126.04 acres have been reforested artificially. There is lack of complete and systematic data on the extent of artificially or naturally regenerated across the FMUs. Assuming that 57.96% of the cut area was reforested artificially, only 652.65 acres would have been reforested. The MPs require that the cut area to be reforested with 70% survival rate. It means out of out of 23,457.73 acres, 16,420.41 acres ought to have reforestation out of which, by this account, only 652.65 acres (3.97% of the target) appear to have been reforested.

By this account, a total of 57,034.46 acres (54,782.38 acres outside FMUs 1126.04 in the FMUs) of forest plantation has been created between 1951 and 2017. Using Nu.8700 as the unit cost of forest plantation creation of 2004, the total investment works out be Nu.496.20 million. It is not clear how much of this investment has benefited the rural economy though it is true that rural labor gets hired for the forest plantation field work.

Conceptually, the actual economic worth of the 57,034.46 acres of the forest plantation would be equal to the financial worth of timber of the forest plantation and the provisioning, regulating, cultural and supporting ecosystem services they provide. Accounting that the creation of 57,034.36 acres of the forest cost Nu.496.20 million, the financial value of timber alone of 57,034.46 acres of the forest plantation would far exceed Nu. 496.20 million. The economic value would be far higher if the total ecosystem services of the forest plantation is considered.

This analysis indicates that in the last 66 years (1951 to 2012 and 1993 to 2017 of FMUs), on an average, about 864.16 acres (57,034.46/66) have been planted annually. The figure in the

Table 3 indicates that in the FMUs alone the annual rate of cutting corresponds to about 977.41 acres. For the same time period, the figure would be enormously higher if the forests cut for timber and fuel wood as well as harvesting of non-wood forest products in the forests outside the FMUs, forests degraded by grazing and damaged by forest fire are to be taken into account.

Invariably, the forest plantation is timber-centered. This bias, besides running counter to the principle of sustainable forest management, is set to incur a ruinous effect on the rural economy and livelihoods which have an inherent dependence on the n on-timber forest products. In the long term, it can also have a tangible negative impact on the non-timber-supported indigenous medicine enterprise and a host of other non-timber-based enterprises.

4.7 ENVIRONMENTAL IMPACT OF THE FOREST PLANTATION

The forest ecosystem, as other ecosystems, has productive and protective values to the humans (Odium, 1971). The Millennium Ecosystem Assessment (MEA, 2005) classifies ‘ecosystem services’ into ‘provisioning’, ‘regulating’, ‘cultural’ and ‘supporting’ services of ecosystems. The maintenance of the structure, processes and functions of ecosystems is vital for sustaining their services.

Forest holds a central position in the terrestrial ecosystem. Over the years, as elsewhere, in Bhutan too, the subsistence agricultural economy is transiting to the market-based economy escalating economic pressure on the forest ecosystem. Urbanization and infrastructure development has already escalated the commercial as well as diverse use of forest. The open grazing and non-timber utilization persists in increasing the rates of deforestation and forest degradation, the annual rate of deforestation is estimated to be around 0.20% amounting to 5,798 hectares of forest lost (WMD, 2017). Against this backdrop, any square inch of forest land that has been brought under the forest plantation has served to offset deforestation and forest degradation, increase forest carbon sequestration, and improve forest carbon stock conservation and mitigate climate change.

Ecologically, the plantation constitutes the principal mode of restoring the structure, processes and functions of forest ecosystem impaired by deforestation and forest degradation linked with the economic use of forests. Structurally, the forest plantations have served to restore the vegetation subsystem and trophic structure on the deforested forest or degraded forest areas (Odium, 1971). The restoration of vegetation contributes to reviving the ecological processes, energy flow, nutrient recycling, water cycling and hydrological regulation, air and water purification and so on and sustaining their production and protective functions. However, elsewhere the negative environmental impact of large-scale monocultures of non-native species fuels raging debates (Carrere and Lohmann, 1996).

The forest plantations also restore soil subsystem of forest ecosystem. They contribute floral organic matter and catalyze to restore subterranean life system and the saprotrophic food chain which is vital for soil formation and nutrient recycling in the forest ecosystem. The vegetation also ameliorates the habitat of soil microorganisms by shielding from the elemental forces.

Part of the forest plantation's regulating ecosystem services pertains to their roles in regulating the flow and maintaining the quality of freshwater. The vegetative cover of the forest plantations absorbs the force of torrential downpours, prevents dislodgement of soil, reduces soil erosion, and minimizes landslides, and lessens pollution and hazards to wetlands, freshwater and freshwater aquatic ecosystem. The vegetative cover and floral organic matter of the soil increases resident time of soil water, regulates infiltration, delays peak discharge time, regulates flood, and improve the lean season discharge. The vegetation also shields the soil from exposing to direct solar radiation, minimizing soil temperature and evaporation loss of soil water.

The vegetation subsystem of the forest ecosystem form habitat for many highly mobile animals such as birds, mammals and flying insects which termed as 'permeants' (Shelford, 1935). Life histories of many permeants are adapted to different strata forest vegetation (Odium 1971). Therefore, the forest plantations, besides restoring the trophic structure and functions, also bring about habitat restoration of the permeants. Though the habitat value of natural forests is more suitable for native species, plenty of evidence confirms that the forest plantations can be a valuable habitat, including for the threatened and vulnerable species (Eckehard, et. al. 2008).

The economic function of the forest ecosystem is weighted as more valuable than its environmental function (Odium 1971; Andreas et al, 2017). Therefore, forest plantation is structured to serve the economic interest more than the environmental interest bringing about a change in the forest ecosystem structure. In view of management efficiency and higher economic returns, large scale monoculture of fast-growing species is given preference which not only leads to creating the type of forest plantation which not only holds low environmental value, but entails blighting effect on the natural and native ecosystem structure, processes and functions. Melvin et al. (1999), for instance, state that monoculture have high water consumption, increase acidification, and hold low diversity of wildlife. On the other hand, Berner et al. (2010), state that the forest plantations - if raised on degraded lands, not in natural ecosystem, using indigenous not exotic species- are likely to increase biodiversity.

The forest plantation in the country has been raised with the objective of rehabilitating degraded forests, including water catchment areas, and reforesting forests harvested for timber. The result of the analysis of secondary data on the matter indicates that economic consideration and survival-hardiness have influenced the choice of species planted under the reforestation of the forest harvested prior to 1990s and rehabilitation plantation in general. For example, planting of Cupressus species in all the forest types where planting has occurred is evidence of survival-hardiness that influenced in the choice of species. On the other hand, in the forest plantation in all the forest types, economically significant timber species dominate.

The analysis of the database on the forest plantation, refer Table 2 above, concludes that about 54,782.38 acres have been planted between 1951 and 2012, out of which only 20,705.29 acres corresponding to 37.80%. The remaining 34,077.09 acres which corresponds to 62.20% has failed. As a result, a host of forest ecosystem services in terms of restoration of soil and water conservation, forest ecosystem integrity improvement, biodiversity conservation, yield regulation and purification of freshwater, carbon fixation and conservation, habitat improvement for wildlife etc. has not materialized.

The reforestation of the FMUs is critical for sustaining ecological integrity of forest ecosystem in the FMUs, besides the sustained supply of timber. The combined prescribed harvesting target of all the FMUs since the 1994 till date stand at 23,457.73 acres cut equivalent area, refer Table 3. The analysis of the data and information on the FMU management and evaluation of the implementation of the FMU MPs could not conclude the total area reforested across the FMUs through natural and artificial regeneration, including the survival rate of the regeneration. The impact of reforestation on the structure of forest ecosystem remains to be elucidated as and when the information and data improve.

4.8 SOCIAL IMPACT OF THE FOREST PLANTATION

The livelihoods of rural social groups such as sedentary and migrant grazing communities, community forest groups, rural indigenous crafts group and rural bucolic communities are ineluctably linked to the forest ecosystem. The traditional rural livelihoods depend on non-timber edibles for food security, herbs for home remedies, non-timber plants for cash income, etc. On the other hand, the advent of modernization has led to building a socio-economic connection between urban economic groups - industrial, hydropower sector, housing, infrastructure sector, etc. - and the forest ecosystem. The forest plantation program has catalyzed the formation of a social system which enable the state's forest bureaucracy, corporate and industrial sectors, and other social groups to organize their social transactions, shape their behaviors, define their functions and obligations, build solidarity and mobilize collective actions for the forest plantation program. However, while four of the thirteen indigenous arts and crafts are founded on the non-timber forest resources, the result of the analysis of the existing forest plantation data bears out that the forest plantation is yet to induct social groups such as indigenous artisan and craft groups and segments of rural communities whose livelihoods are supported by non-timber forest products.

The grazing group - comprised of resident communities, seasonal migrant community, and institutional herders - holds legal rights to use the forest areas put under the forest plantations - afforestation, reforestation, and industrial plantations – for grazing. The forest plantation, almost invariably, raises plant species of timber and industrial values. For the forest plantation to succeed temporary exclusion of grazing in the plantation areas is prescribed, without putting in place a workable alternative arrangement for grazing. As a result, recurring social conflicts between the grazing group and the state forestry agency and between the grazing group and the industries persists. While the social conflict related to the grazing has surfaced clearly, latent conflict that remain between the forest plantation and other groups, such as all users of non-timber forest products, would also surface as the non-timber forest resources grow scarcer with time.

The forest plantation – reforestation, afforestation, and industrial plantations - are designed and executed by the state's forestry agency and the industries in a bureaucratic fashion. The stakeholder of farming and grazing groups does not appears to receive the necessary attention even though, in general, the forest law grants them legal rights to use forest products for their livelihoods in the forest or forest areas converted to the forest plantation. Under the current system, some of the members of the groups get hired as laborers for the forest plantation work, but the system does not oblige itself to legitimize them as stakeholders even though the forest plantation has consequences on their livelihoods and rights and vice versa. In the final analysis,

this system runs counter to the principle of co-management which holds the stakeholders to exercise their rights together along with the fulfillment of their obligations. The current system does not deny the rights to the group, but also has no arrangement to hold the group accountable for the non-fulfillment of their obligations. Perhaps, the existing level of failure that plague the forest plantation is partially attributable to this inherent weakness in this institutional system.

Notably, a positive social impact of the forest plantation has ensued from the recent mainstreaming of the forest plantation into the community forestry which is a widespread non-state grassroots forestry institution. This initiative has set off a social process of deepening the responsibility of the grassroots community-constituted forest management groups in the community forest plantation and sustainable forest management. The evaluation report on the National Plantation Strategy for Bhutan (NPSB) 2010 states that the forest plantations in the community forests recorded higher level of success. However, this review confirmed that the survival percentage of forest plantations raised in the community forests is 56.75%, while the average success percent of other type of forest plantation is 57.96%. The forest plantation taken up in schools and religious institutions under social forestry continues to create gender-inclusive 'green' institutional, student and spiritual societies across the country.

4.9 CULTURAL IMPACT OF THE FOREST PLANTATION

Culture is to be understood as, "the values, beliefs, behavior, and material objects that together form a people's way of life" (Macionis, 2005). The forest plantations as a cultural undertaking involves different interest holders. The forest areas where the forest plantations have been or being raised have multiple property or use rights holders. The state's forestry establishment, leased-use-rights-holding forest industries, grazing group and non-timber-forest-product user groups of the local communities and non-timber-based forest enterprises are the main social groups. These groups hold their respective values, beliefs and behavior which hold significance for defining the objectives, shaping the structure of forest plantations and building the norms for the management of forest plantations.

In the current practice, the objectives and the structure of afforestation/reforestation plantations assign higher value to the timber than other products. Similarly, the industrial forest plantations value the species of industrial value. There are numerous sedentary and migrant grazing groups who hold grazing rights over the forest areas converted to the forest plantations. Similarly, across the country, the local communities depend on the forest areas put under the forest plantations for non-timber forest products for food and cash income. As of now, across the country, over 140 Non-wood Forest Product Management and Marketing Groups (NFPMMG) exists. Over 100 small and medium enterprises, both rural and urban, are founded on the non-timber forest products. The non-timber forest products hold priceless value to the indigenous medicine. However, these interest groups or their interests hold no influence on the objective and structure of the forest plantations. Therefore, the forest plantations, in principle, renders an insidious cultural impact on the grazing, non-timber-based rural livelihoods, indigenous medicine and the non-timber-based enterprises.

The secondary information on the afforestation and reforestation plantations confirms a cultural clash between the grazing and the forest plantations. The grazing group views that the forest plantations do not address their grazing rights, but the material reward emanating from the forest plantations does not benefit them. Therefore, state-and-industry-designed institutional norms of the forest plantations fail to secure compliance of the grazing group. As a result, grazing persists as a chronic cause of damage to the forest plantations. It can be argued that the institutional norms, being founded on the command-and-control principle, fester grazing-group's apathy and alienation towards the forest plantations. Perhaps the non-compliance symbolizes a grazing-and-forest-plantation cultural clash.

The exclusion of non-timber forest resources from the forest plantations constitutes cultural shortsightedness. The indigenous medicine, traditional arts and crafts, home remedies, wild edibles, fodder culture, etc., all of which center on the non-timber forest products, hold priceless cultural value. The informal norms and the indigenous knowledge that uphold those culture face a silent erosion which can eventually lead to their demise.

The forest plantations employ ideas and technologies to recreate forest ecosystem services in the degraded and harvested forests. For this purpose, a body of silvicultural knowledge has been created for both natural and artificial regeneration. The arts, techniques, skills and capacity of seed selection and collection, forest nursery creation, seedling production and artificial planting have been built within the state and the industrial forestry establishments. This body of silvicultural knowledge also embodies forest plantation policy, forest plantation development strategy, forest plantation norms and standards, arts and techniques for natural regeneration and forest plantation management. The knowledge and technologies are being diffused to the small-scale community-based forest nurseries and among the rural populations who partake in the establishment of forest plantations. However, the body of silvicultural knowledge on the non-timber species suffer a total lack as the timber-oriented forest plantations neglect their cultural importance.

4.10 CLIMATE SMARTNESS OF THE FOREST PLANTATION

The main characteristics of climate change will be slow and progressive rise in mean temperatures, change in precipitation and increase in the frequency of intensity of extreme events (Tompkins and Adger 2004). The climate change is predicted to cause erratic rainfall, storms, flood, seal level rise, failure of rains, droughts, transformation of ecosystems, etc. All these events will escalate the exposure of the forest plantations to risks and sensitivity.

For Bhutan, the International Center for Tropical Agriculture [CIAT] (2017) projects that annual mean temperature will increase by 1.4^0C by 2030, 2.0^0C by 2050 and 2.2^0C by 2070. Tsering et al. (2010) analyzed surface air temperature data of Bhutan for the period 1985 to 2002 and concluded a non-monsoon season warming trend of about 0.5°C. The same authors project that the surface air temperatures will gradually decrease from the west towards the east; surface warming will be more pronounced during the pre-monsoon than the monsoon season; and the inner valleys will experience higher temperature increase than in the northern and southern parts of the country. The summer mean temperature and winter mean temperature

show steady increase (NEC, 2011). The Renewable Natural Resources Sector Adaptation Plan of Action (RNR SAPA, 2016) states that simulations of both HadCM3Q0 and ECHAM5 models show air temperature increase of 3.5^0C by 2069.

In terms of change in rainfall, CIAT (2017) projects an average increase in precipitation of 3.8% by 2030, 7.4% by 2050 and 9.8% by 2070. The models – ECHAM5 and HadCM3Q0 – show increase of 600 mm and 500 mm respectively for the period 1980 to 2069 (RNR SAPA, 2016). The north-east and south-west parts of Bhutan are likely to experience 20-30% decrease in winter precipitation by 2050 (Tsering et al. 2010). Climate models predict progressive and steady increase in the monsoon precipitation (NEC, 2011). The rainfall fluctuations will be random with no systematic change detectable on either annual or monthly scale, which is in coherence with a recent analysis of rainfall data from 2000 to 2009 across four eco-floristic zones of Bhutan showing annual fluctuations within regions without any detectable trend (Tsering, 2003).

For snow cover, snowfall pattern and frost, Chettri et al. (2010), based on the analysis of snow covers from Landsat MSS images taken from 1973 to 1979 and Landsat ETM+ images from 1999 to 2000, indicate a decrease in snow cover in the eastern Himalayas by 24.6 percent. While Bhutan lacks systematic record of data and observation on snow cover and snowfall, residents of snowfall areas experience changes in the frequency and pattern of snowfall (RNR SAPA, 2016). An analysis of data for Lunana estimated retreat rates for Debris cover glacier and Debris free glaciers at 35m/year and 9m/year respectively between 2003 and 2008 (NEC, 2011).

The International Union of Forest Research Organizations (IUFRO) in 2009 assessed the impact of climate change on the forest ecosystems against the global emission scenarios of the Intergovernmental Panel on Climate Change (IPCC) – unavoidable, stable, growth and fast growth scenarios. Unavoidable means the minimum emission; unstable scenario understood as the concentration of greenhouse gases to near a new balance by 2100; and growth and fast growth scenarios connote business-as-usual emissions. The assessment of the project climate change under most scenarios change the distribution of forest types and trees in all biomes. It also forecasts that all forest ecosystems will have problem in adapting to the impact of climate change and forest ecosystem services will change significantly, more so in the forests with less moisture, semi-arid and arid climates.

The assessment states that under the unavoidable and stable scenarios, the rate of biomass production in wet and temperature-constrained climates will remain unchanged or increase. Under all scenarios the productivity of temperate forests close to the poles is likely to increase, while in those close to the tropics would decrease. High atmospheric concentration of CO_2 is expected to have fertility effect and increase productivity of subtropical forests. Under growth scenario droughts are predicted to grow more intense and recurring in subtropical forests which in turn is likely to increase occurrence forest fire as well as make the forest susceptible to pathogens and pests. The biodiversity hotspots of subtropical forest are likely to face increased risks under all scenarios. The rise of temperature by $2\text{-}3^0$C above pre-industrial level would expose vascular plants and higher animals to high risk of extinction (IPCC, 2002).

In the mountains, Grabherr et al. (1994) state that 0.5^0C temperature rise for every 100m altitude could theoretically cause shift in altitudinal band of vegetation by 8 to 10m per decade. For the Eastern Himalayas, the altitudinal shift is estimated to be 20 to 80m (Tsering et al. 2010). The altitudinal shift is likely to displace some endemic flora and fauna. Besides, the risk of losing the endemic species is expected to grow with climate change. Many plants are likely to undergo change in their phenology. The forests also face an increased risk of invasive species.

An ecosystem functions through a structure which has been acquired through an evolutionary interactive of process of physical and biological, which includes humans, factors. The forest plantations constitute a cultural interaction of humans with the forest ecosystem which has the potential to alter the structure of the forest ecosystem. The climate hardiness of the forest plantations will depend on their structure as to what sort of configuration and species diversity they possess. To understand the vulnerability of the forest plantations in every forest type to the climate change, it is inevitable to assess how the structure of forest plantations, in terms of configuration and species diversity, stand in contrast with their natural counterparts.

Table 4 summarizes the structure of the major forest plantations in terms of number of species planted in each type of the forest plantations and their average survival rates. On an average, almost a third (31.27%) of the forest plantations are monoculture, planted in all forest types, of Teak, Cupressus, Cryptomeria, Gmelina, Chir pine and Blue pine species. The forest plantations that have two species averages to 20.83%, and 23.77% and 17.07% of the forest plantations have three and four species respectively. 1.71% has 6 species. Their average survival rates are: Subtropical Forest Plantation – 58.18%; Cool Broad-leaved Forest Plantation 66.94; Chir Pine Forest Plantation – 69.18 and Blue Pine Forest Plantation – 23.70%.

Table 4: Percentage of the Forest Plantations by Number of Species

Plantation Type	**Percentage of Forest Plantations by Number of Species**						**Average Survival Percent**
	1 Species	**2 Species**	**3 Species**	**4 Species**	**5 Species**	**6 Species**	
Subtropical Forest Plantation	23.94	21.12	16.90	22.53	8.80	3.50	58.18
Cool Broad-leaved Forest Plantation	20.70	20.51	25.12	21.02	9.23	3.33	66.94
Chir Pine Forest Plantation	56.36	23.63	13.33	6.66	0.02	-	69.18
Blue Pine Forest Plantation	24.09	18.07	39.75	18.07	0.02	-	23.70
Average Percentage	**31.27**	**20.83**	**23.77**	**17.07**	**4.51**	**1.71**	

The analysis of the forest plantation by forest types to determine climate smartness did not result in the identification and selection of the most viable option vis-à-vis climate change. In most forest types, the number species planted is up to three. The 1.71% of forest plantation which has up to six species are confined to the sub-tropical forest type.

As regards the reforestation of the FMUs, acreage of forest area cut across the FMUs during the period is presented in Table 3. All available mid-term and final evaluation reports of the FMUs commonly report bamboo and weed infestation in most the FMUs of the Broad-leaved Forests, besides weed infestation and grazing problems in the conifer FMUs.

To project the impact of climate change on the forest plantations let us assume that growth scenario prevails. Under that scenario the predicted intense and recurring drought is likely to impact on the forest plantation in the subtropical forest and Chir pine forest together with increased occurrence of forest fire. The projected increase in pest and pathogen outbreaks and wind throws are likely to impact the monocultures in the forest plantation across all types of forests. Given the limited number of species planted in the forest plantation of all forest types, their climate adaptability and resilience are likely to be low. The persisting poor status of reforestation in the FMUs of the broad-leaved forests is likely to predispose the FMUs to structural changes with the possibility of weeds and light-demanding species overtaking. Similarly, if the slack in terms of preparation of ground for ensuring timely natural regeneration and the poor status of artificial planting persist, the climate change is likely to accelerate the process of bamboo and weed infestation in the conifer forest FMUs.

5.0 WEAKNESS AND OPPORTUNITIES

The following section analyzes the weakness that affect the forest plantation and the opportunities to overcome the weakness.

5.1 FOREST PLANTATION POLICY AND STRATEGY

5.1.1 Lack of strategy for balancing forest plantation objectives

The forest policy recognizes the grazing rights and bona fide use rights of local communities over the non-timber forest produce in the forest areas put under the enrichment plantation, normal afforestation, rehabilitation plantation, reforestation, industrial plantation, and community forest plantation. In addition, while the typical structure of forest ecosystem is characterized by a mix of wood and non-wood plant species, there is no strategy to bind the forest plantation to replicate the typical structure of forest ecosystem. As a result, the rights of the local communities remain unaddressed, and the environmental objective remain compromised. Therefore, a conscious strategy is needed to overcome this limitation and ensure that the objectives of the forest plantation address the interests of different social groups of local communities that depend on the non-timber resources for their livelihoods. The objectives

also need to be improved to address the problem of monoculture and improve the composition and number of species planted.

5.1.2 Revision of the Guidelines for Implementation of Afforestation Programme (2000)

The implementation of the normal afforestation and rehabilitation plantation, stipulated in the Guidelines, has been re-centralized to the Department of Forests and Park Services (DoFPS). The community plantation has ceased to exist after making the Community Forestry a mainstream forestry program. This assessment learned that operationalization of the enrichment plantation remained inactivated so far for lack of data on the forests with crown cover of less than 10%. Further, a difficulty persists in making a distinction between the rehabilitation plantation and normal afforestation. Since 2017, the government has mandated GBCL for the execution of the afforestation work. In view of all these constraints and changes, the Guidelines needs revision to reflect the changes and current situation related to the forest plantation.

5.1.3 Lack of strategy for balancing harvesting and planting

The cornerstone of the forest policy, both of 1974 and 2011, is to uphold sustainable forest management for which the policy mandates the maintaining the balance between the harvesting of timber and non-timber forest resources with planting. There is no strategy for ensuring the compliance to this policy requirement. Therefore, an opportunity exists to adopt a strategy to institutionalize the compliance to this policy requirement.

5.2 FOREST PLANTATION PLANNING AND IMPLEMENTATION

The forest plantation has a huge importance for the maintenance of the forests for ecosystem services. For a country whose economy is based on the biomass, ecotourism and hydropower, forest plantation holds an extra importance in sustaining the forest ecosystem services. The following are the issues and opportunities under the forest plantation program planning.

5.2.1 Lack of long-term planning

According to SFED (2019) a general agreement prevails among the stakeholders of the forest plantation that there is a lack of rationalized long-term national level planning of forest plantation program because of which formulation of short-term Dzongkhag/Division and Gewog/Range level forest plantation plans has remained impossible. As a result, an ad hoc implementation of nursery and planting operations - including building of management and technical capacities, organizational set up and staffing - continues; most of these have-been-and-being-established forest plantation lacked/lack conscientious planning and clear objectives. However, an effort to identify, assess and prioritize potential areas for forest plantation is currently underway. Therefore, there is an opportunity to expand the scope of the ongoing work to carry mapping of the potential areas by forest types; segregating and excluding alpine ecosystem and other ecotones such as wetland/marshes and other areas of unique

ecological characteristics; formulation of a strategic plan depicting the potential areas of forest plantation countrywide and by forest types; and preparing a divisional level, forest type wise, Dzongkhag wise plan for all types of forest plantations categorized in the Guidelines for Implementation of Afforestation Programme (2000).

5.2.2 Improvement of operational planning of forest plantation plan

An unsystematic operational planning persists to beset the forest plantation. There is a general lack of data on bio-physical and socio-economic attributes of the areas to be planted. This shortcoming entails a difficulty in species selection and timely planning and production of suitable seedlings for the designated planting sites, often resulting in forest plantation failure. Therefore, there is an opportunity to perform geographic and socio-economic analyses and strengthen operational planning of forest plantation based on the biophysical and socio-economic attributes of areas to be planted.

5.3 FOREST NURSERY MANAGEMENT

A silviculturally designed and managed nursery is of critical importance for the success and the quality of the forest plantations. Such a nursery involves application of range of good practices which encompass site selection; site clearing and laying out the beds; building nursery structure; selection of seed trees; seed collection, treatment and storage; preparation of soil mixture for germination beds and poly pots; seed germination; manuring and irrigation; weed and disease control; potting the seedling; heat and cold management; pruning of tap root to develop a stronger and compact root system, hardening off the seedlings prior to field planting, etc.

5.3.1 Lack of forest seed bank and germplasm

Good quality seeds collected from elite seed trees is paramount to the good quality seedlings and successful forest plantation. Nevertheless, there is a total lack of seed bank and germplasm of forest trees. In the absence of securing good quality seed, the use of diseased seeds for forest nursery reportedly affects the quality of seedlings (SFED, 2010). Therefore, there is an opportunity for establishing a seed bank and initiating a germplasm of forest trees at the National Biodiversity Center.

5.3.2 Poor application of the Norms and Standards for Nursery and Plantation

In the past, forest nurseries were established and managed by the DoFPS (TDS and POs), corporate entities (NRDCL) and forest-based industries as well as private nurseries. The FMU evaluation reports point out the poor state of forest nurseries in the FMUs. Similarly, the private and the departmentally operated nurseries were characterized by poor management (SFED, 2019). In general, forest nurseries are affected by lack of proper planning and seed selection, use of whatever seeds available including diseased ones, meeting the seedling demand through

import of poor-quality seedlings, raising limited number of species, poor state of logistic support, and non-profitability of nursery enterprise discouraging private investment (SFED, 2019). This assessment learnt that some of the private nurseries in the south imported seedlings and supplied to the departmental plantations. The Norms and Standards of Nursery and Plantation (the latest being the one revised and adopted in 2020) have existed for so long. However, it has not had the intended effect of the development of forest nurseries. Of late, GBCL is in the process of redesigning its forest nursery infrastructure and development. NRDCL continues with its mandate of reforesting the FMUs and several private forest nurseries continue to operate. Therefore, there is an opportunity to step up enforcement compliance improve the forest nursery culture in keeping with the Norms and Standard of Nursery and Plantation (2020).

5.3.3 Implication of GBCL on private nurseries

The GBCL has found that small nurseries are not cost-effective. Therefore, its new strategy is to do away with the small nurseries and keep a few large ones, located in the areas suitable for producing species for all forest types and designed to meet its requirement. However, this shift would limit the scope for the private nurseries to perpetuate their enterprise. Therefore, there is a need to explore the possibility of linking the existing private nurseries with GBCL's operations, including its operation beyond the forestry focus.

5.3.4 GBCL and corporate social responsibility

The GBCL is the final phase of assuming the mandate of implementation of the forest plantation work. However, since the forest plantation involves social responsibility of free seedling support to social forestry, cost-sharing venture with community forest plantation, supply of free seedlings to private forestry, etc. For this reason, while some of the forest nurseries have been handed already, handing over of forest nurseries to it by the DoFPS has been scheduled to take place in a phased manner since it is not clear if GBCL will assume the social responsibility. Therefore, policy decision on this matter needs to be taken so that the decision whether to hand over the remaining forest nurseries to GBCL can be dealt accordingly.

5.4 FOREST PLANTATION MANAGEMENT

After the planting, the forest plantation involves maintenance at least for five years and the management thereafter till they are harvested. The following are the weakness and opportunities related to the maintenance and management of the forest plantation.

5.4.1 Lack of plantation maintenance

Once planted, the forest plantation requires constant nurturing, care, and protection for at least five years and subsequently they need to receive silvicultural treatment to improve their quality. While the nurturing concerns casualty replacement, mortality reduction, weeding, control of pest, eliminating infestation by invasive plants, etc. the protection works ranges from fence

repairing, protection from grazing, forest fires, encroachment, etc. Invariably, so far, post-planting care, protection and silvicultural treatment are found to be lacking in terms of adequate funding incurring a high mortality, entailing poor quality forest plantation, and reducing their effectiveness in fulfilling their economic, environmental, social, and cultural impacts. Therefore, the forest plantation maintenance needs to be programmed and institutionalized sustainable funding mechanism.

5.4.2 Lack of forest plantation management

Once established, the forest plantation requires silvicultural treatment encompassing thinning, pruning, debranching, climber cutting, harvesting and shaping the desired stand structure and quality to optimize their social, cultural, environmental and economic objectives. Also, they require protection from the pests and pathogens, forest fires, encroachment, and illegal activities. However, until now, the forest plantation continues to lack silvicultural treatment and programmed protection from the pests and pathogens, control encroachment and other illegal activities. Therefore, an opportunity exists to program and institutionalize the forest plantation management.

Forest lands are leased for industries for raising plantations for industrial purpose. However, there is a lack of system to carry out compliance monitoring of the industrial plantations. In recent times, cases of the industries deviating the use of the leased forest lands from the purpose contractually permitted has surfaced. There is also no practice of evaluating the performance of the industrial plantation. There is, thus, an opportunity to institutionalize a system of carrying out compliance monitoring of the lease conditions as well as evaluation of the impact of the industrial plantation.

5.4.3 Limited plantation evaluation

As of now, evaluation of the forest plantation outcomes is not mandatory, but given the importance of investment made in it the evaluation efforts are being put in somehow. Actually, as the staffing does not match the workload, the evaluation efforts have remained inadequate. Therefore, an opportunity exists to make the evaluation mandatory, strengthen staffing, improve accountability enforcement, and improve the outcome of the forest plantation.

In the current system, the mandate of the forest plantation evaluation remains with SFED. With just two staff, who also are also tasked with the other functions of the forest plantation, the workload of evaluating the plantation country-wide has remained humanly impossible for them to perform. As result, only limited scale of the forest plantation could be evaluated. Therefore, there is an opportunity to reform organizational set up, mandate and implementation arrangement to bring bout improvement as suggested under the section 6.5.4.

5.5 PLANTATION PROGRAM IMPLEMENTATION ARRANGEMENT

The organizations involved in the forest plantation include NRDCL, GBCL, forest-based industries, institutions, communities and DoFPS. The following are the weakness related to the forest plantation program implementation arrangement.

5.5.1 Lack of legally binding covenant for reforestation

In the conifer forests, the prescriptions of the MPs of FMUs require NRDCL to prepare the ground for natural regeneration right after harvesting operation and obtain 'coupe clearance' for the Forest Management Unit In-charge (FMUI) of the DoFPS. In the third year from the preparation of the ground for the natural regeneration, the office of the FMUI must carry out regeneration surveys. In case the 70% of the harvested area is not covered with the natural regeneration, then the FMUI must inform the concerned Divisional Manager of the NRDL to carry out artificial planting. In the broadleaved forests, NRDCL is required to reforest the harvested area with artificial planting. However, there are cases of NRDCL not carrying out the ground preparation for natural regeneration, delaying artificial regeneration work, failing to establish artificial plantation with the required quality and survival rate, using of poor-quality seedlings, resorting to improper planting practices, resorting to the poor protection and maintenance work and so on. Therefore, many of the FMU evaluation reports describe the status of reforestation in the FMUs as poor. As of now, these lapses remain unaddressed because there is no legally binding covenant for the DoFPS and the NDRCL to conduct their contractual transaction objectively and avoid lapses. Hence, this institutional flaw needs to be rectified so that the two organizations can exercise their respective legal rights and fulfill their responsibilities in a legally binding manner.

5.5.2 Poor accountability-fixing system in reforestation

The evaluation reports of FMUs report instances of the FMUI issuing the 'coupe clearance' without NRDCL preparing the ground for natural regeneration; the cases of the office of the FMUI not carrying out the regeneration surveys has also been reported. However, there is no practice of holding the concerned offices accountable for the lapses. The lapses are attributed to the shortage of staff, lack of mobility facilities and inadequate office equipment. Therefore, there is an opportunity to improve the compliance enforcement through stepping up necessary support.

5.5.3 Institutionalizing the forest plantation function of GBCL.

The transfer of the mandate of planting and maintenance forest plantation from DoFPS to GBCL has been affected through an agreement between the two organizations. However, the agreement does not cover reforestation of FMUs. Hence, whether the government order on the formation of GBCL includes reforestation needs ascertaining. In case the order is not explicit a decision needs to be sought from an appropriate authority since it has an implication on the organizational set up, staffing, and nursery infrastructure and logistic planning of GBCL.

As the basis and modality of GBCL's engagement, an agreement has been signed between DoFPS and GBCL. The agreement states, "The DoFPS shall provide budget for creation of new plantations on an annual basis and maintenance of the planted sites for five subsequent years as per the Five-Year Plan target based on the approved annual budget from the Ministry of Finance." Such a modality has limitation in enabling for GBCL to carry advance planning of nursery operation, nursery infrastructure, planting work, logistics, staffing and capacity building which would have affect its efficiency and effectiveness. Therefore, to make it enabling for GBCL, there is a scope for DoFPS to identify, in keeping with the Five-Year Plan target, prospective planting areas by forest types at least for five years and secure funding commitment from potential sources well in advance and formalize this arrangement through an agreement with GBCL.

5.5.4 Streamlining of forest plantation mandate implementation.

The mandate of forest nursery, plantation creation and plantation maintenance has been shifted to GBCL. This change entails a need to review and streamline the mandates of the TDs/POs and Social Forestry and Extension Division (SFED). In principle, the mandates of SFED and TDs/POs should be complementary, not duplicating. Rationally, SFED could be mandated with national level functional mandates and TDs/POs with sub-national level operational mandates. Therefore, the mandate of SFED could encompass long-term strategic planning, synthesizing Five Year Plan priorities, fund mobilization from development partners, securing funds from the government and other sources, production of silvicultural knowledge products on nurseries and plantation management, institutionalizing private and industrial plantations, technical support to TDs/POs on plantation evaluation, building/strengthening plantation evaluation system, updating the norms and standards of plantation and nursery, consolidating and archiving national level plantation data, etc.

On the other hand, the mandate of TDs /POs could include continuing to support GBCL in formulating annual plantation and nursery operational plans, and supervision and monitoring of operational plan implementation by GBCL. The existing forest plantation program lacks compliance monitoring of the industrial plantation. Overall, the record keeping, including plantation journal, at the TDs/POs is poor. Therefore, institutionalized mandate of TDs/POs could be expanded to bring about improvement. With the shift of operational mandate related to the forest plantation creation and maintenance from TDs/POs to GBCL, it would not only be rational, but cost-effective and efficient management wise, to decentralize the evaluation of the forest plantation results to TDs/POs with the role of SFED limited to validating the result if necessary. Also, it would be more efficient to decentralize the forest plantation technical sanctioning authority to TDs/POs (only if TDs/POs can be disassociated from the existing system of formulating annual plantation and nursery operational plans jointly with GBCL). Further, contingent upon funding, there is a need to institutionalize the forest plantation management as a regular program of TDs/POs.

5.6 CAPACITY AND FOREST PLANTATION

Capacity requirement for forest plantation spans from nursery management techniques, plantation creation, plantation maintenance, and silvicultural management of plantation,

research support and forestry education curriculum. The weakness and opportunities associated with the forest plantation are as under.

5.6.1 Weak nursery management capacity

The good practices on forest nursery as discussed under the forest nursery management section do not receive full application because of weak capacity. The staff strength approved by the organizational development exercise related to the forest plantation has rendered impossible to have a technical staff dedicated solely for nursery work. As a result, most of the forest nurseries are poorly managed and do not even have trained full-time caretakers (SFED 2010). Since the plantation mandate has been transferred to GBCL, there is a need for GBCL to institutionalize forest nursery management based on the good practices through proper staffing and capacity building.

5.6.2 Lack of experience in long-term forest plantation planning

Generally, forestry professionals possess theoretical knowledge about the long-term forest plantation planning. However, as of now there is a lack of experience in the long-term forest plantation planning. Therefore, there is an opportunity for enabling them to acquire experience by institutionalizing a long-term planning as suggested in the section 6.2.1.

5.6.3 Lack of experience in plantation management

The forestry professionals are trained in the silviculture of forest plantation management. But, so far, as the forest plantation management has not become a mainstream forestry program, there is a lack of experience in the application of silviculture to the forest plantation management. Therefore, an opportunity exists to build the required experience by institutionalizing the forest plantation management.

5.6.4 Weak capacity for collaborative governance and conflict resolution

The forest plantation program has an implication on a wide range of stakeholders, ranging from institutions and rural communities holding grazing rights, rural non-timber-resource dependent household artisans, and non-timber-using local communities. The forest plantation also has an implication on the non-timber-based urban enterprises. Since each one these groups have its own culture to manage their economic and social interests, the forest plantation has an implication on their culture. For instance, if forest plantations do not address the interest of the household artisans, potentially, the culture of the household artisan would experience a gradual erosion and result in its eventual demise. Concurrently, the persistent use of the forest plantation areas by these stakeholder groups entails a round-the-clock social and economic conflict with the DoFPS and forest-based industries incurring a damage to the forest plantation. While this being the case, the current state of forest plantation management is confronted with an inadequate technical capacity and institutional arrangement to address the interests of the different groups through collaborative governance and co-management. Therefore, there is an

opportunity to improve the technical capacities and skills (in social mobilization, conflict resolution, partnership building, negotiation and collaborative governance, social communication, etc.) as well as institutional capacities for collaborative governance and co-management for planning, implementation, and management of the forest plantation program to minimize the implications on those stakeholders and vice-versa.

5.6.5 Improvement of forestry curriculum

The current forestry curriculum bear deficiencies in the areas imparting hands-on training of students in nursery techniques and management. The deficiency also includes a weakness in equipping the students with theoretical knowledge in social mobilization, conflict resolution, partnership building, negotiation skills, and collaborative governance, social communication, co-management and institutional design for collaborative governance and co-management, etc. Hence, the existing curriculum needs to be updated to make up for the deficiencies.

5.6.6 Under-staffing

The forest policy mandates the requirement to restock whatever harvested. However, the organizational status and staffing accorded to it is not in commensurate with this mandate. As of now, the responsibility of forest plantation is handled by a Section within SFED staffed with just two mid-level technical staff. Similarly, in each of the TD/POs, the Plantation Section is handled by one technical staff. Countrywide, there are 24 technical staff assigned to the forest plantation work. Therefore, the staffing needs to be reviewed and adjusted in view of the ideas suggested in the sections 5.5.4 above and 5.8.4 below.

5.7 FUNDING FOREST PLANTATION

The weakness and opportunities related to funding of the forest plantation program comprise as follows.

5.7.1 Discrepancy in balancing harvesting and planting

To restate, the successive forest policies have accorded great importance to restocking the harvested forests through forest plantation. However, as mentioned above, a rationalized strategy to balance the harvesting with planting is yet to be adopted. In the absence of such a strategy, while a perception prevails that huge investment is being made in the forest plantation, the status of harvesting viz-a-viz planting remains unknown. Nevertheless, this assessment indicates that the scale of

planting fall behind even weighted against the quantum of harvesting occurring in the FMUs alone. It may be noted that, while the figure is not available, doubtlessly, the quantum of harvesting in the forest outside the FMUs will far exceed the quantum of harvested in the FMUs. Therefore, the discrepancy needs to be assessed and necessary steps needs to be taken to resolve it.

5.7.2 Inadequate/lack of funding for maintenance

The plantation maintenance, as stated above already, involves expenses for fencing, weeding, disease and pathogen care, protection from fire, encroachment, and grazing. While the budget is usually allocated for plantation maintenance in the first year, the budget remains inadequate for putting up quality fence, carrying out the number of weeding as required, and expending for an adequate protection from grazing, fire, and encroachment. Further, once planted, the standard practice the world over involves forest plantation maintenance for at least five years. However, in the current situation, no budget is allocated for the forest plantation maintenance after the first year. Indeed, the prevailing forest plantation failures and the low survival rates of the forest plantation are largely attributable to the lack of budget for the forest plantation maintenance. Hence, the current fund allocation needs to be reviewed and funding of forest plantation maintenance needs to be mainstreamed to realize the intended social, cultural, economic, and environmental benefits of the forest plantation.

5.7.3 Lack of funding for forest plantation management

As any investment program, once fully established, the forest plantation also requires silvicultural management. However, now, budget is not allocated for this. As a result, the forest plantation management does not yet constitute a formal mandate of the DoFPS. In the absence of management, there is no arrangement to safeguard the investment and ensure the best return to it. In fact, forest plantation management has the potential for self-financing because, as part of the silvicultural management, certain products can be harvested to improve the quality of the forest plantation. Therefore, there is an opportunity to institutionalize the forest plantation management and mainstream scientific plantation forestry in the country.

5.7.4 Funding inadequacy and uncertainty

As mentioned in the section 6.2.1 rationalized strategic plan for guiding the mobilization of funds for the forest plantation is lacking. Usually, funds for the forest plantation are allocated against the Five-Year Plan targets. However, operational planning does not occur according to the allocation as the actual funds available often turn out to be less than the allocated amount. Sometimes, to meet the targets, funds have to be sourced on an ad hoc basis from different development partners supporting the area-based development projects, including funds for compensatory plantation from hydropower development projects. This ad hoc situation hinders the systematic and timely planning of forest plantation work. At the same time, as already mentioned, while the success of the forest plantation require maintenance for five years and management thereafter, for both these operations funds, as stated above, are largely unavailable. On the other hand, a provision that exists in the draft Hydropower Policy 2020 for availing “Royalty Energy” is yet to materialize. Therefore, there is an opportunity to formulate a fund sourcing strategy for the forest plantation based on the rationalized strategic plan mentioned above and improve funding, to deal with both certainty and adequacy.

5.8 FMU REFORESTATION

The MPs of FMUs view reforestation of cut forest areas as paramount to the sustainable harvesting of timber in the FMUs. However, reforestation is fraught with the problems as follows.

5.8.1 Lapses in the reforestation of conifer forest FMUs

The management prescriptions make regeneration of the harvested areas in FMUs mandatory. To re-emphasize, the conifer FMUs are to be regenerated naturally supplemented by artificial planting if the natural regeneration fails or the survival rate is less than 70%. The management prescription dictates that the sites be cleared of lops and tops and readied for natural regeneration by NRDCL after the harvesting operation and only after the work is completed the FMUO has to issue the 'coup clearance certificate' to NRDCL. However, the cases of NRDCL not carrying out the site clearance work and FMUO issuing the 'coup clearance certificate' without fulfilling this obligation have been reported.

Where the sites have been cleared, the management prescription requires the FMUO to carry out natural regeneration surveys at every three-year interval, the first one to be done towards the end of the third year after the harvesting. In case the survival rate of natural regeneration is less than 70% at the end of the first survey, the FMUO is required to notify the concerned NRDCL Divisional Manager to carry out artificial planting and establish the plantation successfully, with 70% survival rate. The FMUO can take over, after the maintenance period expires, the reforestation only if the regeneration has been successfully established with 70% survival rate. However, cases of natural regeneration surveys not being done has been reported in the FMU evaluation reports.

The MP implementation evaluation reports do not capture a targeted, systematic and critical evaluation of how natural regeneration surveys have been done, of what frequency, result, and successfully established reforestation taken over. Thus, the information on the naturally regenerated, natural regeneration supplemented with artificial planting is not available against the forest area harvested in the FMUs.

Therefore, all these flaws need to be addressed through management interventions, improved evaluation, strict enforcement of management obligations and accountability fixing.

5.8.2 Lapses in the reforestation of broadleaved forest FMUs

The prescribed silvicultural system for the broadleaved forest is cutting and artificial planting. The MP implementation evaluation reports describe about NRDCL planting the harvested forest areas. However, as in the case of conifer forest FMUs, the reports lack a targeted, systematic, and critical evaluation of the reforestation in the broadleaved forest FMUs too. As a result, the evaluation reports do not provide a clear picture of the actual area planted and the

survival rates of reforestation. Therefore, this shortcoming needs to be counteracted appropriately.

5.8.3 Poor record keeping

The MPs of the FMUs mandate the FMUOs to maintain a structured (cable lines and cut patches), systematic and detailed records on the actual area harvested and based on the regeneration surveys, record the status of naturally regenerated and artificially planted forest areas. However, the evaluation reports repeatedly point out poor record keeping as a recurring problem. This function is very critical for sustainable management of the FMUs which needs to be addressed on a priority basis.

5.8.4 Poor nursery and reforestation management

The evaluation reports also repeatedly point out poor nursery management leading to production of poor-quality planting materials. The reports also point out improper planting. NRDCL's non-compliance to the management prescriptions for budgetary reason resulting in poor maintenance of plantation, uncontrolled weed infestation of natural regeneration and artificial plantation, poor grazing management, poor conflict resolution, improper fencing, inadequate nursery infrastructure and poor nursery culture, etc. constitute the main constraints for the successful reforestation. The situation is compounded by the weakness in the compliance enforcement by the FMUOs attributed to under-staffing, inadequate office automation facilities, inadequate mobility support, lack of plantation management, and lack of accountability fixing culture.

5.9 ECONOMIC IMPACT OF FOREST PLANTATION

The following are the weakness and opportunities related to the economic impact of plantation.

5.9.1 Economic inefficiency of the forest plantation

As discussed in a preceding section, so far, it is evident that the low survival rates of plantation has incurred great economic loss. Of the total plantation raised from 1951 to 2012, only 37.80% has resulted in plantation, while the success or failure status of the reforestation is not clear. The low survival rates have been attributed largely to the lack/inadequacy budget for plantation maintenance and management. Since the forest plantation has to withstand a host of complex demographic, social, economic, physical and edaphic forces, maintenance at least for five years is inevitable. On the other hand, realizing the productivity potential of the forest plantation requires the forest plantation to be subjected to the silvicultural management. Therefore, the opportunity to improve the economic efficiency of the forest plantation needs to be seized by expending on its maintenance and silvicultural management.

5.9.2 Lack of information on the harvested plantation

Many of the old forest plantations have been harvested and utilized already. However, for the reason mentioned in the section 6.6.3, because of the lack of mainstreaming of the forest plantation management, no data has been maintained on the timber and non-timber resource harvested and the accrued economic benefit. Hence, to avoid such problems, henceforth, there is an opportunity to fund and institutionalize the forest plantation management.

5.9.3 Lack of credible data on reforestation

The FMUs required to maintain a systematic data on the natural regeneration and artificial planting. However, this requirement is not fulfilled because of which credible data on the status of reforestation in the FMUs are yet to become available. Hence, necessary management interventions need to be taken to fulfill this mandatory requirement.

5.9.4 Lack of inventory of the forest plantation

The last national forest inventory has not covered the forest plantation. As of now, while the oldest of plantations exceeds six decades, there is no data on their timber stock of the forest plantation making the assessment of their timber value impossible. Therefore, it is imperative that its inventory be done, and quantitative economic impact be assessed, including the reforestation.

5.10 ENVIRONMENTAL IMPACT OF FOREST PLANTATION

The following are the weaknesses and opportunities linked with the environmental impact of the forest plantation.

5.10.1 Vulnerability to climate change

The data on the structure of the forest plantation, refer Table 4, establishes that the forest plantation has altered the structure of the natural forests and reduced floral diversity: about 21% of the forest plantations is monoculture; 28.83% has two species; 44% have a combination of three species; 17% with 4 species; 4.51% have 5 species and 1.71% 6 species. The size of many individual forest plantations is less than 5 acres. The small size, monoculture and limited number of species predispose the forest plantation to a severe negative climate change impact. Hence, there is a scope to avoid monoculture, improve the structure of the forest plantation by increasing the number of species, avoid creating miniscule forest plantation and improve the structure of the forest plantation to strengthen climate resilience or reduce climate vulnerability.

5.10.2 Reduction in biodiversity

From the data presented in the Table 4, it can be deduced that the past forest plantation has entailed reduction in biodiversity. Maximum portion (44%) of the plantation has 3 species followed by 21% monoculture. The portion of the plantation with more than 4 species is about a quarter of the total. Therefore, there is an opportunity to enhance the biodiversity value of the plantation through revision and enforcement of the existing Norms and Standard of Nursery and Plantation.

5.10.3 Altering Forest ecosystem structure.

In the forest plantation, a high incidence of monoculture, limited number of species planted, ubiquitous promotion of survival-hardy exotic species such as Cupressus and weed infestation of the failed forest plantation are entailing alteration to the forest ecosystem structure. Similarly, the available information suggests that the status of regeneration in the FMUs suffer the onslaught of grazing and weed and bamboo infestation. The climate change is likely to exacerbate the weed infestation and gradual reduction and loss of timber species. Therefore, there is an opportunity to improve the design of the forest plantation and management interventions to avoid the problem of forest ecosystem structure alteration.

5.10.4 Lack of knowledge on the environmental implications of the forest plantation

The body of knowledge and information on the environmental implications of the forest plantation is found very weak. Therefore, a system of generating the information through research and building the body of knowledge needs to be improved.

5.11 SOCIAL IMPACT OF THE FOREST PLANTATION

The summary of weaknesses and opportunities related to the social impact of forest plantation is as below.

5.11.1 Socially weak plantation objective

The livelihoods of the local communities, non-timber-based enterprises, NWFPMMGs and non-timber-based indigenous arts and craft groups have an inevitable dependence on forest resources. Thus, putting any parcel of forest under the forest plantation has actual and potential implications to different social groups. The most acutely affected group is the resident and migrant grazing groups, while the effect on the enterprise-based groups appears less significant since they can access non-plantation forest areas. But, the objective of the forest plantation, whether of the ones done by the state forestry agency or forest-based industries, is timber-centered or wood-centered which stands at cross purposes with the need of other groups. Therefore, this drawback needs to be addressed and balance be struck through proper planning, instituting participatory definition of the objective of the forest plantation, necessary revision in the Norms and Standards of Nursery and Plantation, etc.

5.11.2 Persistence of social conflict

The forestry agency and forest-based industries/corporation hold almost exclusive say in the definition of objectives of the forest plantation and the design of the institutions for the forest plantation management. Other social groups have no influence over the objectives of the forest plantation and the design of the institutions employed regulate the forest plantation. So, invariably the forest plantation entails a persistent social conflict. The social conflict is very acute with the grazing group. Therefore, an opportunity exists for conflict resolution through instituting participatory planning, collaborative governance, co-management, institutional reforms, necessary capacity strengthening, etc.

5.11.3 Inadequate information on social implications of the forest plantation

The information and body of knowledge on the social impact of the forest plantation is totally lacking. Therefore, a system of generating the information and building the body of knowledge needs to be operationalized.

5.12 CULTURAL IMPACT OF THE FOREST PLANTATION

The weakness and opportunities associated with the cultural impacts of the forest plantation are as below.

5.12.1 Cultural weakness of the forest plantation

The local communities, non-timber-based enterprises, NWFPMMGs and non-timber-based indigenous arts and craft groups employ their “values, beliefs and behavior” (Macionis, 2005) to access the non-timber forest resources to eke out a living. Therefore, putting any parcel of forests under the forest plantation holds implications on the culture of the different social groups. The forest plantation, being timber-and-industrial-wood focused, suffer from an inherent flaw of designing and implementing a culturally balanced program. Thus, there is a need to turn the forest plantation into a culturally balanced undertaking.

5.12.2 Cultural clash and dilution

Grazing which underpins the livestock production culture of rural communities already suffers from an intense cultural clash with the forest plantation. On the other hand, latent cultural clashes simmer between the forest plantation and the non-timber-based cultures which ought to surface once those cultural groups begin to experience limiting access to the non-timber forest products. So, certainly, it would not be premature to devise a rationalized inclusive institutional arrangement to uphold the coexistence of these different cultures vis-à-vis the forest plantation. There is an opportunity for the state forest agency and the forest-based

industries to build partnership cultures for implementing the forest plantation policy; for instance, (a) where feasible, leasing forest areas for the non-wood-based enterprises for their raw material; (b) institutionalizing planting of non-wood forest products by the NWFPMMGs; mainstreaming the non-wood forest produce in the community forests, etc.

5.12.3 Inadequate information on social implications of plantations

The information and body of knowledge on the cultural impact of the forest plantation is totally lacking. Therefore, a system of generating the information and building the body of knowledge needs to be operationalized.

6.0 LACK OF RESEARCH

This assessment is a pointer to the fact that advent of modernization and market-based economy usher in new interest groups to the forest plantation leading to escalation of social conflict, cultural clash and governance challenges and management complexity. Seeking solutions to such problems call for investment in research and analysis. However, while the challenges of tackling the problems facing the forest plantation is already on the rise, the research in the forest plantation is yet to receive policy and operational attention. Thus, there is an opportunity to promote research support, whatsoever, in addressing the challenges.

7. CONCLUSION

Growth conserves energy while decay dissipates it. The forest policy has enshrined the principle of balancing the growth and decay of the forest stock. Balancing the decay and growth necessitates matching the forest resource harvested with planting. But this assessment shows that the current level of the forest plantation is far short of achieving this policy objective. This gap, indeed, needs to be reduced to realize the objective of the country's forest policy and prevent eventual ramification of the negative impact into other vital economic sectors such as hydropower, ecotourism, non-timber-based cottage industries, indigenous medicines and rural economy.

The success and effectiveness of the forest plantation in the country are blighted by a host of deficiencies. It included lack of clear strategy to direct national forest plantation programs as well as to balance timber harvesting with restocking. There is also no strategy to balance environmental, social, cultural, and economic objectives of the forest plantation. As a result, *ad hoc* planning and implementation of forest plantation program prevails. The existing records show that the timber harvesting far exceeds the quantum of planting. Environmentally, majority of individual patches of forest plantation harbor monoculture. Socially, forest plantation conflicts with grazing rights of local communities. Culturally, being a state-driven program, it undermines the participation of the rural communities in the design of the forest plantation program. Economically, forest plantation is timber-centric and undermines development of non-timber resources that are crucial for rural livelihood and non-timber based industrial needs.

The average survival rate of forest plantation remains at about 57.96, against the required limit of 70%, because of a combination of causes. Combined with the lack of proper planning, other deficiencies include poor forest nursery culture, low quality of planting stock, poor supply of planting stock, last-ditch procurement of planting stock from *ad hoc* sources (including importing from across the border in the southern region), poor planting practice, improper fencing and protection from open grazing by the cattle and poor maintenance of plantation. The older forest plantations are deprived of tending operations. The other detriments include inadequate staffing and weak technical capacity for strategic planning, plan execution, nursery management and research support. Therefore, there is a necessity to alleviate the deficiencies by reviewing and improving financing for the forest plantation program as well as improving the planning, plan implementation, monitoring and evaluation of the forest plantation program, including research support.

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ANNEX I: SUBTROPICAL FOREST PLANTATION

Forest Type: Subtropical Forest

Dzongkha: Dagana

Divison : Dagana

Range: Lhamoizingkha

Sl. #	Gewog	Location	Area	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Lhamoizingkha	Kalikhola	28.70	1940s-	Sal, Teak, Khair, Simal, Panisaj, Gmelina	50	50	14.35	14.35
2	Lhamoizingkha	Majhigaon	163.80	1962	Sal, Teak, Khair, Simal, Panisaj, Sissoo	70	30	114.66	49.14
3	Lhamoizingkha	Beletar	81.20	1970	Sal, Teak, Khair, Simal, Panisaj	60	40	48.72	32.48
4	Lhamoizingkha	Beletar	6.30	1970	Sal, Teak, Simal	70	30	4.41	1.89
5	Lhamoizingkha	Sanpang	8.10	1970	Teak	70	30	5.67	2.43
6	Lhamoizingkha	Tintaley	6.30	1970	Sal, Teak, Khair, Pakhasaj, Rani-champ, Chukrasia	70	30	4.41	1.89
7	Lhamoizingkha	Suntalabari	71.10	1970	"	70	30	49.77	21.33
8	Lhamoizingkha	Sipsooni	34.20	1970	Sal, Teak, Rani-champ	60	40	20.52	13.68
9	Lhamoizingkha	Chateng	51.60	1970	Teak, Panisaj, Sal, Gmelina	50	50	25.8	25.8
10	Lhamoizingkha	Lamchey	81.90	1970	Teak, Panisaj, Sal, Simal, Champ	60	40	49.14	32.76
11	Lhamoizingkha	Khurul	1.60	1970	Teak	50	50	0.8	0.8

13	Deorali	Kanikhola	10.10	1974	Teak, Panisaj, Gmelina, Simal, Sal	50	50	5.05	5.05
14	Deorali	Balabas	19.3	1974	"	50	50	9.65	9.65
12	Deorali	Dakaltar	34.10	1975	Teak, Panisaj, Gmelina, Pakhasaj	50	50	17.05	17.05
	Total		**598.30**					**370.00**	**228.30**

Forest Type: Sub-tropical Forest

Dzongkhag: Dagana

Division: Dagana

Range: Dagana

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Tshangkha	Babethang	12.50	1995	Teak, Gmelina	55	45	6.88	5.63
2	Tshangkha	Sunkosh	12.50	1996	Teak, Gmelina	55	45	6.88	5.63
3	Tshangkha	Sunkosh	5.00	1997	Teak	40	60	2.00	3.00
		Total	**30.00**					**15.75**	**14.25**

Forest Type: Sub-tropical Forest

Dzongkhag: Chukha

Division: Gedu

Range: Phuntsholing

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Phuntsholing	Phuntsholing	5.00	1951	Teak, Gokul	60	40	3.00	2.00
2	Sampheling	Bhalujhora	6.50	1958	Teak, Maina	50	50	3.25	3.25
3	Phuntsholing	Jogikhola	10.00	1963	Teak, Lampathe	55	45	5.50	4.50
4	Phuntsholing	Jogikhola	10.00	1965	Teak, Lampathe	58	42	5.80	4.20
5	Sampheling	Bhalujhora	25.00	1966	Gokul	10	90	2.50	22.50
6	Sampheling	Bhalujhora	25.00	1967	Simal, Teak, Miana	40	60	10.00	15.00
7	Phuntsholing	Jogikhola	5.00	1967	Teak	45	55	2.25	2.75
8	Sampheling	Bhalujhora	25.00	1968	Teak	55	45	13.75	11.25
9	Phuntsholing	Jogikhola	30.00	1969	Teak	70	30	21.00	9.00
10	Phuntsholing	Phuntsholing	50.00	1969	Teak, Champ, Gokul,Siris, Simal, Maina	85	15	42.50	7.50
11	Phuntsholing	Phuntsholing (Above peafowl farm)	50.00	1969	Teak, Eucalyptus	80	20	40.00	10.00
12	Sampheling	Pana	4.00	1969	Teak, Gokul	30	70	1.20	2.80
13	Phuntsholing	Jogikhola	85.00	1970	Teak	62	38	52.70	32.30
14	Phuntsholing	Phuntsholing	30.00	1970	Teak, Champ, Panisaj, Siris, Maina	70	30	21.00	9.00

15	Phuntsholing	Phuntsholing	30.00	1971	Teak, Champ	55	45	16.50	13.50
16	Phuntsholing	Phuntsholing	20.00	1972	Sal,Teak, Panisaj	80	20	16.00	4.00
17	Sampheling	Pana	6.20	1972	Teak,Gokul	58	42	3.60	2.60
		Sub-total	**416.70**					**260.55**	**156.15**

Conitinued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
18	Phuntsholing	Kharbandi	48.00	1972	Teak, Gokul	30	70	14.40	33.60
19	Phuntsholing	Phuntsholing - above court	5.00	1975	Teak	80	20	4.00	1.00
20	Sampheling	Pana	30.00	1976	Teak, Gokul, Panisaj, Lampatey	60	40	18.00	12.00
21	Sampheling	Bhalujora	2.00	1977	Teak, Champ, Chukrasia, Mandana	65	35	1.30	0.70
22	Phuntsholing	Jogikhola	17.00	1979	Teak	45	55	7.65	9.35
23	Phuntsholing	Phuntsholing	5.00	1979	Khamari, Gokul, Lampatey	80	20	4.00	1.00

24	Phuntsholing	Kharbandi	6.00	1980	Teak, Simal, Siris, Panisaj, Chukrasia	50	50	3.00	3.00
25	Phuntsholing	Phuntsholing (Old Hospital)	10.00	1983	Teak, Sal, Champ	55	45	5.50	4.50
26	Sampheling	Mewakhola	2.00	1989	Champ, Lampatey, Khair, Gokul	50	50	1.00	1.00
27	Phuntsholing	Sorchen - water tank	50.08	1990	Lampatey, Chukrasia, Champ, Panisaj	60	40	30.05	20.03
28	Phuntsholing	Sorchen - water tank	39.94	1991	Lampatey, Chukrasia, Champ, Panisaj	60	40	23.96	15.98
		Sub-total	**215.02**					**112.86**	**102.16**
		Total	**631.72**					**373.41**	**258.31**
		Failed Plantation	456.29						456.29
		Grand Total	**1088.01**					**373.41**	**714.60**

Forest Type: Sub-tropical Forest

Dzongkhag: Chukha

Division: Gedu

Range: Phuntsholing

Agency: Chukha Dzongkhag

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Sampheling	Malabsey	15.00	2011	Teak, Chukrasia, Lampatey	50	50	7.50	7.50
2	Phuntsholing	Majuwa	2.47	2011	Teak, Champ, Chukraisa, Bamboo	70	30	1.73	0.74
3	Sampheling	Khalingkholcha	20.00	2012	Teak, Champ, Chukrasia, Lampatey	70	30	14.00	6.00
4	Phuntsholing	RNR Center	0.25	2012	Cupressus	90	10	0.23	0.03
5	Phuntsholing	Serina	6.17	2013	Teak, Champ, Chukrasia	70	30	4.32	1.85
		Total	**43.89**					**27.77**	**16.12**

Forest Type: Sub-tropical Forest

Dzongkhag: Haa

Division: Paro

Range: Sombey

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Acre)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Gakiling	Sibchithang	9.13	2010	Teak, Sissoo, Gmelina, Khair	80	20	7.30	1.83
	Total		**9.13**					**7.30**	**1.83**

Forest Type: Sub-tropical Forest

Dzongkhag: Samdrup Jongkhar

Division: Samdrup Jongkhar

Range: Jomotshangkha

Sl.#	Geowg	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Langchenphu	Khowrang	200.00	1960	Teak, Champ	40	60	80.00	120.00
2	Langchenphu	Khowrang	5.00	1962	Teak, Dalbargia	40	60	2.00	3.00
3	Langchenphu	Khowrang	22.00	1963	Teak. Gmelina	40	60	8.80	13.20
4	Langchenphu	Daifam-Jampani	30.00	1966	Teak	50	50	15.00	15.00
5	Langchenphu	Daifam-Jampani	8.00	1968	Teak, Gmelina	50	50	4.00	4.00
6	Langchenphu	Khowrang	10.00	1969	Teak	50	50	5.00	5.00
7	Langchenphu	Khowrang	30.00	1973	Teak, Bonsom	40	60	12.00	18.00
8	Langchenphu	Daifam-Jampani	50.00	1973	Teak, Dalbergia	50	50	25.00	25.00
9	Langchenphu	Khowrang	20.00	1974	Teak	50	50	10.00	10.00
10	Langchenphu	Daifam-Jampani	30.00	1974	Teak, Gmelina	50	50	15.00	15.00
11	Langchenphu	Daifam-Jampani	38.00	1975	Teak	50	50	19.00	19.00
12	Langchenphu	Khowrang-Betholey	40.00	1976	Teak	50	50	20.00	20.00
13	Langchenphu	Khowrang-Betholey	15.00	1977	Teak,Hollock,Lali, Gmelina	40	60	6.00	9.00

14	Langchenphu	Daifam-Jampani	8.00	1979	Teak, Lali	70	30	5.60	2.40
15	Langchenphu	Khowrang-Betholey	45.00	1979	Teak, Gmelina	40	60	18.00	27.00
16	Langchenphu	Daifam-Jampani	12.00	1989	Teak	50	50	6.00	6.00
17	Langchenphu	Daifam-Jampani	37.60	1999	Teak, Champ	60	40	22.56	15.04
18	Langchenphu	Sorangay Tar	5.62	2002	Teak, Champ, Gmelina	40	60	2.25	3.37
19	Langchenphu	Sorangay Tar	5.62	2002	Teak, Hollock, Gmelina	50	50	2.81	2.81
20	Langchenphu	Sorangay Tar	21.15	2009	"	50	50	10.58	10.58
21	Langchenphu	Sorangay Tar	21.15	2012	"	70	30	14.81	6.35
22	Langchenphu	Daifam-Jampani	10.00	2012	Teak, Champ	50	50	5.00	5.00
		Sub-total	**664.14**					**309.40**	**354.74**
		Failed Plantation	28.35						28.35
		Total	**692.49**					**309.40**	**383.09**

Forest Type: Sub-tropical Forest

Dzongkhag: Samdrup Jongkhar

Division: Samdrup Jongkhar

Range: Samdrupcholing

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)

1	Samrang	Samrang	80.00	1978	Teak	40	60	32.00	48.00
2	Samrang	Satpokhari	50.00	1978	Teak	35	65	17.50	32.50
3	Samrang	Satpokhari	100.00	1983	Teak	35	65	35.00	65.00
4	Samrang	Kalanadi	35.00	1985	Teak, Gmelina Dalbergia,	35	65	12.25	22.75
5	Samrang	Samrang	50.00	1986	Panisaj, Teak Bonsum, Gmelina	40	60	20.00	30.00
6	Samrang	Samrang	10.00	1988	Teak, Gmelina	40	60	4.00	6.00
7	Phuntshothang	Okhaldunga	12.50	1997	Teak	35	65	4.38	8.13
8	Phuntshothang	Kubinday	6.17	2008	Teak, Gmelina	80	20	4.94	1.23
9	Phuntshothang	Belam Shara	7.78	2009	Teak, Gmelina	80	20	6.22	1.56
10	Phuntshothang	Ganggatey	12.35	2009	Teak, Gmelina	80	20	9.88	2.47
11	Phuntshothang	Dungkarlung	12.35	2012	Teak	80	20	9.88	2.47
		Total	**376.20**					**156.05**	**220.11**

Forest Type: Sub-tropical Forest

Dzongkhag: Samdrup Jongkhar

Division : Samdrup Jongkhar

Range: Samdrupjongkhar

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)

1	Deothang	DFO - Office	10.00	1961	Teak	45	55	4.50	5.50
2	Deothang	Motanga	10.00	1961	Teak	25	75	2.50	7.50
3	Deothang	Deothang-Guest House	4.00	1977	Teak	70	30	2.80	1.20
4	Deothang	Deothang	3.00	1980	Teak	45	55	1.35	1.65
5	Deothang	Pinchinang	12.50	1984	Teak	35	65	4.38	8.13
6	Deothang	Deothang-Hospital	37.50	1997	Teak	40	60	15.00	22.50
7	Deothang	Deothang: Above Hospital	37.50	1997	Teak	50	50	18.75	18.75
8	Deothang	Deothang- above crematorium	25.00	1998	Teak	30	70	7.50	17.50
9	Deothang	Deothang:above gypsum	25.00	1999	Teak	35	65	8.75	16.25
		Sub-total	**164.50**					**65.53**	**98.98**
		Failed Plantation	20.00						20.00
		Total	**184.50**					**65.53**	**118.98**

Forest Type: Sub-tropical Forest

Dzongkhag: Samdrup Jongkhar

Division: Samdrup Jongkhar

Agency: Dzongkhag Forest

Sl.No.	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Phuntshothang	Bauney	13.58	2004	Teak, Gmelina	95	5	12.90	0.68
2	Phuntshothang	Bauney	35.69	2005	Teak, Gmelina, Lali	95	5	33.91	1.78

3	Phuntshothang	Molangyee	24.70	2006	Teak, Gmelina	75	25	18.53	6.18
4	Phuntshothang	Malangaytar	25.07	2008	Teak, Gmelina, Champ	65	35	16.30	8.77
5	Phuntshothang	Sukuni	18.57	2009	Teak, Champ	65	35	12.07	6.50
6	Phuntshothang	Rangyuni/ Sukuni	25.00	2010	Teak , Champ	80	20	20.00	5.00
7	Phuntshothang	Bhawani/ Devithan	2.48	2011	Teak	60	40	1.49	0.99
9	Phuntshothang	Dungkarling	2.00	2011	Teak, Champ	70	30	1.40	0.60
8	Phuntshothang	Phuntshothang	2.00	2012	Bamboo, Banana	75	25	1.50	0.50
1	Deothang	Ompori	2.47	2004	Teak	60	40	1.48	0.99
2	Deothang	Mongpawoong	2.47	2004	Chirpine	75	25	1.85	0.62
3	Deothang	Mongpawoong	6.66	2005	Cupressus	75	25	5.00	1.67
1	Pemathang	Warrangkhola	16.00	2007	Teak, Bonsum, Lali, Champ	65	35	10.40	5.60
2	Pemathang	Kharbandi, Dungkarling	24.71	2011	Teak, Champ	85	15	21.00	3.71
3	Pemathang	Dungkarling	25.00	2011	Teak, Champ	75	25	18.75	6.25
5	Pemathang	Chirtsotsa	25.00	2012	Bamboo	90	10	22.50	2.50
1	Lauri	Ramjar Goenpa	2.47	2004	Chir Pine	60	40	1.48	0.99
2	Lauri	Dungmanma	4.10	2010	Champ, Cupressus	80	20	3.28	0.82
		Sub-total	**257.97**					**203.83**	**54.14**

Sl.No.	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Samrang	Samrang	2.00	2012	Bamboo	65	35	1.30	0.70
1	Serthi	Serthi	2.00	2012	Bamboo	75	25	1.50	0.50
1	Langchenphu	Failed Plantation	6.66	2005	-	0	100	0.00	6.66
1	Martshala	Lamtang Rotpari	2.47	2004	Cupressus	85	15	2.10	0.37
2	Martshala	Martshala	2.96	2005	Cupressus	85	15	2.52	0.44
1	Gomdar	Brongshing	24.70	2010	Champ	50	50	12.35	12.35
2	Gomdar	Lishing woog	3.20	2011	Banana	60	40	1.92	1.28
1	Wangphu	Yorongri	2.47	2011	Bamboo	50	50	1.24	1.24
	"	Failed Plantation	9.88	2010	-	0	100	0.00	9.88
		Sub-tropical	**56.34**					**22.92**	**33.42**
		Total	**314.31**					**226.75**	**87.56**

Forest Type: Sub-tropical Forest

Dzongkhag: Samdrup Jongkhar

Division: Samdrup Jongkhar

Agency: Dzongkhag Forest

Sl.#.	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)

1	Phuntshothang	Bauney	13.58	2004	Teak, Gmelina	95	5	12.90	0.68
2	Phuntshothang	Bauney	35.69	2005	Teak, Gmelina, Lali	95	5	33.91	1.78
3	Phuntshothang	Molangyee	24.70	2006	Teak, Gmelina	75	25	18.53	6.18
4	Phuntshothang	Malangaytar	25.07	2008	Teak, Gmelina, Champ	65	35	16.30	8.77
5	Phuntshothang	Sukuni	18.57	2009	Teak, Champ	65	35	12.07	6.50
6	Phuntshothang	Rangyuni /Sukuni	25.00	2010	Teak , Champ	80	20	20.00	5.00
7	Phuntshothang	Bhawani /Devithan	2.48	2011	Teak	60	40	1.49	0.99
9	Phuntshothang	Dungkarling	2.00	2011	Teak, Champ	70	30	1.40	0.60
8	Phuntshothang	Phuntshothang	2.00	2012	Bamboo, Banana	75	25	1.50	0.50
		Total	**149.1**					**118.09**	**31.00**
1	Deothang	Ompori	2.47	2004	Teak	60	40	1.48	0.99
2	Deothang	Mongpawoong	2.47	2004	Chir Pine	75	25	1.85	0.62
3	Deothang	Mongpawoong	6.66	2005	Cupressus	75	25	5.00	1.67
		Total	**11.60**					**8.33**	**3.27**

Sl.#.	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Pemathang	Warrangkhola	16.00	2007	Teak, Bonsum, Lali, Champ	65	35	10.40	5.60
2	Pemathang	Kharbandi	24.71	2011	Teak, Champ	85	15	21.00	3.71
3	Pemathang	Dungkarling	25.00	2011	Teak, Champ	75	25	18.75	6.25
5	Pemathang	Chirtsotsa	25.00	2012	Bamboo	90	10	22.50	2.50
		Total	**90.71**					**72.65**	**18.06**
1	Lauri	Ramjar Goenpa	2.47	2004	Chir Pine	60	40	1.48	0.99
2	Lauri	Dungmanma	4.10	2010	Champ, Cupressus	80	20	3.28	0.82
		Total	**6.57**					**4.76**	**1.81**
1	Gomdar	Brongshing	24.70	2010	Champ	50	50	12.35	12.35
2	Gomdar	Lishing woog	3.20	2011	Banana	60	40	1.92	1.28
		Total	**27.90**					**14.27**	**13.63**
1	Wangphu	Yorongri	2.47	2011	Bamboo	50	50	1.24	1.24
		Sub-total	**2.47**					**1.24**	**1.24**
		Failed Plantation	9.88	2010	-	0	100	0.00	9.88
		Total	**12.35**					**1.24**	**11.12**
1	Samrang	Samrang	2.00	2012	Bamboo	65	35	1.30	0.70

		Total	**2.00**					**1.30**	**0.70**
1	Serthi	Serthi	2.00	2012	Bamboo	75	25	1.50	0.50
		Total	**2.00**					**1.50**	**0.50**
1	Langchenphu	Failed Plantation	6.66	2005	-	0	100	0.00	6.66
		Total	**6.66**					**0.00**	**6.66**
1	Martshala	Lamtang Rotpari	2.47	2004	Cupressus	85	15	2.10	0.37
2	Martshala	Martshala	2.96	2005	Cupressus	85	15	2.52	0.44
		Total	**5.43**					**4.62**	**0.81**

Forest Type: Subtropical Forest

Dzongkhag: Samdrup Jongkhar

Division: Samdrup Jongkhar

Range: Samdrupcholing

Agency: Bhutan Calcium Carbide Limited

Sl. #.	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Phuntshothang	Malangaytar	29.65	1991	Teak, Cassia, C. cititora	75	25	22.24	7.41
2	Phuntshothang	Malangaytar	148.63	1992	Teak, C. cititora	70	30	104.04	44.59
3	Phuntshothang	Malangaytar	370.65	1994	Teak, C. cititora	75	25	277.99	92.66

4	Phuntshothang	Malangaytar	247.10	1995	Teak, C. cititora	65	35	160.62	86.49
5	Phuntshothang	Malangaytar	247.10	1996	Teak, C. cititora	90	10	222.39	24.71
	Total		**1043.13**					**787.27**	**255.86**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Norbugang

Agency: Bhutan Board Particle Limited

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Norbugang	Nangladang	55.11	1995	Eucalyptus, Albizia, Lueciania, Ailanthus, Melia, Bombax	50	50	27.56	27.56
2	Norbugang	Nangladang	38.53	1996	Anthocephalus, Acrocarpus, Gmelina	46	54	17.72	20.81
3	Norbugang	Nangladang	90.90	1997	Alnus, Eucalyptus, Macaranga, Evodia, Anthocephalus, Bombax, Duabanga, Melia, Tetrameles	46	54	41.81	49.09

4	Norbugang	Nangladang	121.00	1998	Alnus, Eucalyptues, Macaranga, Evodia, Anthocephalus, Bombax, Duabanga	59	41	71.39	49.61
5	Norbugang	Nangladang	136.25	1999	Alnus, Macaranga, Evodia, Bombax, Anthocephalus, Duabanga	55	45	74.94	61.31
		Sub-total	**441.79**					**233.42**	**208.37**

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
6	Norbugang	Nangladang	7.53	2000	Alnus, Macaranga, Evodia, Albizia, Duabanga	61	39	4.59	2.94
7	Ugyentse	Bhotekharga	29.54	2001	Alnus, Macaranga, Evodia, Bombax, Anthocephalus, Duabanga	63	37	18.61	10.93
8	Ugyentse	Thotrey	55.22	2001	"	80	20	44.18	11.04
9	Ugyentse	Thotrey	68.37	2002	Alnus, Macaranga, Evodia, Cryptomeria, Cupressus, Anthocephalus	62	38	42.39	25.98
10	Ugyentse	Namseling	129.95	2006	Alnus, Macaranga, Evodia, Albizia, Erythrina, Bombax, Acrocarpus	95	5	123.45	6.50
		Sub-total	**290.61**					**233.22**	**57.39**

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
11	Sangnagcholing	Namseling	259.39	2007	Alnus, Macaranga, Evodia, Albizia,	99	1	256.80	2.59

					Erythrina, Bombax, Melia				
12	Sangnagcholing	Namseling	263.23	2008	"	91	9	239.54	23.69
13	Sangnagcholing	Namseling	316.90	2009	Alnus, Macaranga,Evodia, Albizia, Erythrina, Cryptomeria, Cupressus	69	31	218.66	98.24
14	Yoeseltse	Lamitar	10.08	2009	Alnus, Erythrina, Macaranga	100	0	10.08	0.00
15	Yoeseltse	Lamitar	100.00	2010	Alnus, Albizia, Macaranga, Erythrina, Bombax	100	0	100.00	0.00
16	Yoeseltse	Lamitar	132.92	2011	"	91	9	120.96	11.96
		Sub-total	**1082.52**					**946.03**	**136.49**
		Total	**1814.92**					**1412.68**	**402.24**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Samtse

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**

1	Samtse	Jogidara /Buduni	20.00	1956	Gokul, Kadam, Mixed Hardwood	80	20	16.00	4.00
2	Samtse	Samtse Range Compound	2.30	1956	Champ, Lagerstromia	70	30	1.61	0.69
3	Samtse	Samtse- Below RBA Compund	0.20	1956	Teak	65	35	0.13	0.07
4	Samtse	Salbandi	22.60	1956	Sal, Champ	70	30	15.82	6.78
5	Samtse	Daragaon (Below Dratshng)	13.70	1956	Teak	90	10	12.33	1.37
6	Samtse	Below Division Office	7.70	1956	Champ	65	35	5.01	2.70
7	Samtse	Davithan (below Hindu temple)	2.40	1956	Sal, Champ	70	30	1.68	0.72
8	Samtse	Gairidara (above Gurung basti)	24.00	1956	Sal, Champ, Teak	60	40	14.40	9.60
9	Samtse	Jogidara/ Buduni	20.00	1956	Gokul, Kadam, Mixed Hardwood	80	20	16.00	4.00
10	Phuntshothang	Pugli	33.60	1956	Champ, Teak	70	30	23.52	10.08
11	Samtse	Above Mechetar	141.00	1960	Teak, Sal, Mixed Hardwood	65	35	91.65	49.35
12	Samtse	Allay	12.00	1960	Champ,Panisaj, Chukrasia	65	35	7.80	4.20
13	Samtse	Buduney/ Gonpadra	51.40	1960	Teak, Sal, Champ, Mixed Hardwood	90	10	46.26	5.14
		Sub-total	**350.90**					**252.21**	**98.70**

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
14	Phuntshothang	Andheri Plantation	120.30	1970	Teak, Sal, Mixed Hardwood	70	30	84.21	36.09
15	Phuntshothang	Lahatar Plantation	83.80	1970	Teak,Sal, Mixed Hardwood	65	35	54.47	29.33
16	Phuntshothang	Uttaray Plantation	2.30	1970	Teak, Mixed Hardwood	30	70	0.69	1.61
17	Phuntshothan	Sangla	24.90	1970	Teak, Mixed Hardwood	70	30	17.43	7.47
18	Samtse	Damdum Khair	52.10	1991	Khair	60	40	31.26	20.84
19	Samtse	Chamurchi-below highway	2.90	1991	Khair	70	30	2.03	0.87
20	Samtse	Chamurchi-below highway	2.50	1991	Khair	65	35	1.63	0.88
21	Samtse	Chamurchi-Above highway	5.10	1991	Khair	65	35	3.32	1.79
22	Samtse	Chamurchi -Above highway	11.30	1991	Khair	70	30	7.91	3.39
23	Samtse	Dongkhola	10.80	2010	Teak, Mixed Hardwood	65	35	7.02	3.78
24	Tading	Jenchu	2.60	2012	Panisaj, Teak, Chukrasia, Mixed Hardwood	25	75	0.65	1.95

		Sub-total	**318.60**					**210.61**	**107.99**
		Failed Plantation	**22.60**						**22.60**
		Total	**692.10**					**462.82**	**229.29**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Norbugang

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Ugyentse	Rambagar 2	5.10	1960	Teak, Champ, Lampatay, Panisaj, Mixed Hardwood	70	30	3.57	1.53
2	Ugyentse	Rambagar 3	14.40	1960	Teak, Champ, Lampatay, Panisaj, Mixed Hardwood	70	30	10.08	4.32
3	Ugyentse	Near Kado	30.90	1960	Teak, Champ, Lampatay, Panisaj, Mixed Hardwood	65	35	20.09	10.82

4	Ugyentse	Bijanbari	61.40	1960	Teak, Champ, Lampatay, Panisaj, Mixed Hardwood	65	35	39.91	21.49
5	Namgaycholing	Gangatay	188.80	1960	Teak, Champ, Lagerstromia, Chukrasia, Mixed Hardwood	70	30	132.16	56.64
6	Yoeseltse	Ghumaoney	71.80	1960	Sal, Champ, Lampatay, Teak	80	20	57.44	14.36
7	Norbugang	Chaitay dara	4.94	2006	Lampatay, Gmelina, Lagerstromia, Chukrasia	35	65	1.73	3.21
		Sub-total	**377.34**					**264.97**	**112.37**

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
8	Norbugang	Hathkhola	5.00	2007	Lampatay, Gmelina, Lagerstromia, Chukrasia	45	55	2.25	2.75
9	Norbugang	Kalikhola	4.94	2007	Lampatay, Gmelina, Lagerstromia, Chukrasia	35	65	1.73	3.21

10	Norbugang	Tinpowa	20.10	2008	Chukrasia, Gmelina, Toona, Mixed Hardwood	45	55	9.05	11.06
11	Norbugang	Tintry	31.70	2008	Teak, Champ, Lampatay, Panisaj, Mixed Hardwood	45	55	14.27	17.44
12	Norbugang	Jilkey Dunga	7.70	2010	Champ, Gmelina, Chukrasia, Panisaj	45	55	3.47	4.24
13	Namgaycholing	Jitti	16.09	2012	Gmelina, Chukrasia, Lagerstromia, Panisaj, Khair	40	60	6.44	9.65
14	Namgaycholing	Hangay/Jitti	12.35	2013	Bamboo	45	55	5.56	6.79
15	Namgaycholing	Namgaycholing	2.47	2013	Bamboo	50	50	1.24	1.24
		Sub-total	**100.35**					**43.98**	**56.37**
		Total	**477.69**					**308.96**	**168.73**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Tashicholing

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Ttrees (Ac)**

1	Tashicholing	Sajsbotay/Punjuli	529.20	1955	Teak, Sal, Champ, Mixed Hardwood	75	25	396.90	132.30
2	Pemaling	**Gangatay 2**	10.5	1960	Teak, Champ, Lagerstromia, Chukrasia, Mixed Hardwood	60	40	6.30	4.20
3	Tashicholing	Gola	1.40	1979	Champ, Mandaney, Khamari, Lagerstromia	50	50	0.70	0.70
4	Tendruk	Kuching	4.94	2013	Schima, MHW	40	60	1.98	2.96
		Total	**546.04**					**405.88**	**140.16**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Dophuchen

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area with trees**	**Area without trees**
1	Dophugchen	Lumlakha Dogap	8.24	2012	Chukrasia, Panisaj, Bamboo, Cupressus	25	75	6.18	2.06
		Total	**8.24**					**6.18**	**2.06**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Norbugang

Agency: Natural Resources Development Corporation Limited

Sl.#	Gewog	Location	Year of Creation	Area (Ac)	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Norbugang	Chengmari	2006	8.30	Dedrocalamus stictus, Dedeocalamus hemoltoni	73	27	6.059	2.24
2	Sangnagcoling	Jitti	2007	17.10	Sal, Teak, Champ, Sissoo, Panisaj, Chukrasi, Gmelina	26	74	4.45	12.65
3	Samtse	Jogidhara	2007	41.12	Dedrocalamus strictus, Dedeocalamus hemoltoni	49	51	20.15	20.97
4	Norbugang	Dhappar	2012	16.90	Dedrocalamus stictus, Dedeocalamus hemoltoni, bambusa nutons	77	23	13.01	3.89
	Total			**83.42**				**43.67**	**39.75**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Tashicholing

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Tashocholing	Golacop	2.47	2005	Lampatey, Panisaj, Bottle Brush	30	70	0.74	1.73
2	Tashocholing	Devithan, Hangay	1.41	2010	Champ. Lampatey, Gmelina, Chukrasia, Panisaj	50	50	0.71	0.71
3	Tashocholing	Devithan, Chabju	2.00	2010	"	54	46	1.08	0.92
4	Tashocholing	Garaykholsa	2.00	2010	"	60	40	1.20	0.80
5	Tashocholing	Tititay Botey, Chebju	1.00	2010	"	55	45	0.55	0.45
6	Tashocholing	Devithan, Pakhagaon	1.00	2010	"	61	39	0.61	0.39
7	Tashocholing	Katawalkholsa	0.50	2010	"	44	56	0.22	0.28
8	Tashocholing	Singaraykhop Pakhagaon	1.00	2010	"	45	55	0.45	0.55
9	Tashocholing	RNR-EC	1.00	2012	Cupressus, Cryptomeria, Bottle Brush, Silver Oak, Tanki	80	20	0.80	0.20
10	Tashocholing	Girigaon - Water Source	2.50	2013	Mixed Hard Wood	85	15	2.13	0.38
11	Tashocholing	Jogidara - Water Source	2.50	2013	"	90	10	2.25	0.25

		Sub-total	**17.38**					**10.73**	**6.65**
		Failed Plantation	24.77						24.77
		Total	**42.15**					**10.73**	**31.42**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Tashicholing and Norbugang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Pemaling	Chesopani	1.24	2009	Champ, Lampatey, Panisaj, Chukrasia	66	34	0.82	0.42
2	Pemaling	Hatikharka	1.24	2009	"	30	70	0.37	0.87
3	Pemaling	Upper Talay	0.8	2011	"	45	55	0.36	0.44
4	Pemaling	Gairekharka	2.50	2012	"	55	45	1.38	1.13
5	Pemaling	RNR-EC	0.26	2012	Aurocaria, Thuja, Silver Oak, Cryptomeria	78	22	0.20	0.06
		Sub-total	**6.04**					**3.13**	**2.91**
		Failed Plantation	5.48						5.48
		Total	**11.52**					**3.13**	**8.39**
1	Namgaycholing	RNR-EC	0.30	2012	"	70	30	0.21	0.09

		Sub-total	**0.30**					**0.21**	**0.09**
		Failed Plantation	2.66						2.66
		Total	**2.96**					**0.21**	**2.75**
1	Yoeseltse	Singaydara	0.80	2007	Chukrasia, Terminalia, Duabanga, Sapindus	60	40	0.48	0.32
2	Yoeseltse	Sonamkharka Water Source	1.50	2008	"	25	75	0.38	1.13
3	Yoeseltse	Kataray, Recreational	0.40	2009	"	65	35	0.26	0.14
4	Yoeseltse	Kinzingling	2.47	2009	"	50	50	1.24	1.24
5	Yoeseltse	Tsakaling	0.75	2010	Chukarasia, Champ	55	45	0.41	0.34
6	Yoeseltse	Sheti	2.00	2011	Mixed Hard Wood	50	50	1.00	1.00
7	Yoeseltse	Sheti	4.50	2011	Bamboo	30	70	1.35	3.15
8	Yoeseltse	Sheti	2.50	2013	Mixed Hard Wood	55	45	1.38	1.13
		Sub-total	**14.92**					**6.49**	**8.43**
		Failed Plantation	6.85						6.85
		Total	**21.77**					**6.49**	**15.28**

Forest Type: Sub-tropical Forest

Dzongkhag: Samtse

Division: Samtse

Range: Samtse

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Samtse	Town, Recreation	1.00	2006	Chukrasia, Lagerstromia, Ashoka	40	60	0.40	0.60
2	Samtse	Guest House	0.80	2006	Ashoka, Thuja, Hedge	70	30	0.56	0.24
3	Samtse	Budhuney & Lamatar Water Source	3.60	2010	Bara, Sindur, Chukrasia, Siris	30	70	1.08	2.52
4	Samtse	Lamitar - Kharipakha Watershed	4.94	2011	Champ, Gmelina, Chukrasia, Panisaj, Lampatey, Lagerstromia	70	30	3.46	1.48
5	Samtse	Lamitar - Water Source	3.74	2013	Mixed Hard Wood	85	15	3.18	0.56
		Sub-total	**14.08**					**8.68**	**5.40**
		Failed Plantation	94.72						94.72
		Total	**108.80**					**8.68**	**100.12**

Forest Type: Sub-tropical Forest

Division: Samtse

Range: Norbugang and Samtse

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Ugyentse	Thakuridara	1.73	2005	Panisaj	60	40	1.04	0.69
2	Ugyentse	Botaykharka	1.24	2006	Lagerstromia, Gokul, Simal, Panisaj	55	45	0.68	0.56
3	Ugyentse	Semsaray Water Source	1.72	2007	Mixed Hard Wood	45	55	0.77	0.95
4	Ugyentse	Ngatshang	2.96	2008	Panisaj, Retha, Lampatey, Champ	65	35	1.92	1.04
5	Ugyentse	Aampkhola	4.94	2009	Sal, Panisaj, Chukrasia, Champ	30	70	1.48	3.46
6	Ugyentse	Botaykharka Kado Water Source	1.00	2011	Chukrasia, Panisaj	15	85	0.15	0.85
7	Ugyentse	Ngatshang (Kuchidaina)	2.47	2012	Panisaj, Chukrasia, Teak, Champ	90	10	2.22	0.25
8	Ugyentse	RNR-EC	0.30	2012	Ornamental Species	80	20	0.24	0.06
		Total	**16.36**					**8.51**	**7.85**
1	Tading	Ramtey Water Source	0.86	2007	Mixed Hard Wood	35	65	0.30	0.56
2	Tading	Devithan Water Source	1.00	2010	Mixed Hard Wood	50	50	0.50	0.50
3	Tading	Kadokhop Water Source	2.47	2011	Mixed Hard Wood	65	35	1.61	0.86
4	Tading	Thunuwa	2.47	2012	Bambusa nutans	68	32	1.68	0.79
5	Tading	Lower Panbari	2.47	2012	Bambusa nutans	70	30	1.73	0.74
6	Tading	Alanghi Pakha Water Source	1.00	2012	Mixed Hard Wood	50	50	0.50	0.50

7	Tading	Cheb Cheb Water Source	1.00	2012	Mixed Hard Wood	40	60	0.40	0.60
8	Tading	Khaltay Water Source	1.00	2012	Mixed Hard Wood	40	60	0.40	0.60
9	Tading	Subedhar Khop Water Source	1.00	2012	Mixed Hard Wood	35	65	0.35	0.65
		Sub-total	**13.27**					**7.47**	**5.80**
		Failed Plantation	2.00						2.00
		Total	**15.27**					**7.47**	**7.80**

Forest Type: Sub-tropical Forest

Division: Samtse

Range: Tashicholing

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Tendruk	Devithan	3.80	2004	Mixed Hard Wood	40	60	1.52	2.28
2	Tendruk	Dorina	3.10	2007	Champ, Walnut, Siris, Panisaj, Lampatey, Lagerstromia	34	66	1.05	2.05
3	Tendruk	Pakpay	3.70	2007	Champ,Panisaj, Lampatry, Lagerstromia	43	57	1.59	2.11
4	Tendruk	Khendong	2.47	2010	Champ, Chukrasia, Lampatay	55	45	1.36	1.11

5	Tendruk	Kuchin	1.60	2012	Lagerstromia, Gokul, Panisaj	60	40	0.96	0.64
6	Tendruk	Bhalukhop	1.60	2012	Lagerstromia, Gokul, Panisaj	68	32	1.09	0.51
7	Tendruk	BHU Compound	0.20	2012	Bluepine, Cupressus, Aurocaria	70	30	0.14	0.06
		Sub-total	**16.47**					**7.71**	**8.76**
		Failed Plantation	6.17						6.17
		Total	**22.64**					**7.71**	**14.93**

Continued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Norgaygang	Majua	2.00	2012	Lagerstromia, Gokul, Panisaj	60	40	1.20	0.80
2	Norgaygang	Assamtsa	2.00	2012	"	55	45	1.10	0.90
3	Norgaygang	Beteni	1.00	2012	"	70	30	0.70	0.30
4	Norgaygang	Geog Office Compound	0.20	2012	Bluepine, Cupressus, Aurocaria	67	33	0.13	0.07
		Sub-total	**5.20**					**3.13**	**2.07**
		Failed Plantation	2.47						2.47

		Total	**7.67**					**3.13**	**4.54**
1	Norbugang	Kirney	4.94	2009	Mixed Hard Wood	75	25	3.71	1.24
2	Norbugang	Kothidara Extension	0.70	2009	"	60	40	0.42	0.28
3	Norbugang	Gairegaon	0.50	2012	"	50	50	0.25	0.25
4	Norbugang	Tshongdukha	0.50	2012	Ornamental	40	60	0.20	0.30
		Sub-total	**6.64**					**4.58**	**2.07**
		Failed Plantation	2.50						2.50
		Total	**9.14**					**4.58**	**4.57**

Forest Type: Sub-tropical Forest

Dzongkhag: Sarpang

Division: Sarpang

Range: Sarpang

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Gakiling	Hilley (B)	20.00	1953	Sal, Simal, Champ, Sissoo, Panisaj	80	20	16.00	4.00
2	Gakiling	Hilley (A)	13.30	1953	"	80	20	10.64	2.66
3	Senge	Senge Hatikhor	10.00	1956	Simal, Sal, Teak, Panisaj, Mixed Hardwood	60	40	6.00	4.00

4	Shompangkha	Majitar	125.02	1956	Sal, Panisaj, Champ, Gmelina	65	35	81.26	43.76
5	Dekiling	Dholpani	270.00	1959	Sal, Tooni, Panisaj, Bumsum, Champ, Teak, Simal	35	65	94.50	175.50
6	Senge	Suntaley	11.00	1962	Sal	60	40	6.60	4.40
7	Gakiling	Malbasey (A)	10.00	1962	Teak	80	20	8.00	2.00
8	Gakiling	Malbasey (B)	10.00	1962	Lagerstromia, Panisaj	50	50	5.00	5.00
		Sub-total	**469.32**					**228.00**	**241.32**

Continued….

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
9	Gakiling	Malbasey (C)	10.00	1962	Panisaj, Mandhaney	50	50	5.00	5.00
10	Shompangkha	Pakhey	85.00	1962	Teak, Sal, Champ, Schima, Panisaj, Gmelina,	65	35	55.25	29.75
11	Senge	Chaurey	11.00	1975	Simal, Panisaj, Lagerstromia	35	65	3.85	7.15
12	Shompangkha	Kharkhola	217.45	1986	Gmelina, Chukrasia, Panisaj, Sirish, Mandhaney	65	35	141.34	76.11

13	Shompangkha	Shompangkha	219.45	1986	Gmelina, Sal, Albizia, Casia, Melia, Chukrasia, Sirish, Panisaj, Mandhaney	55	45	120.70	98.75
14	Dekiling	Bildara	145.79	1995	Gmelina, Chukrasia, Panisaj, Sirish, Mandhaney	38	62	55.40	90.39
15	Dekiling	Dholkhola	182.85		"	40	60	73.14	109.71
		Sub-total	**871.54**					**454.68**	**416.86**
		Total	**1340.86**					**682.68**	**658.18**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Range: Gelegphu

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Gelephu	Gelehu -below AWP	123.40	1947	Champ, Panisaj, Sal, Lampatey, Simal	75	25	92.55	30.85
2	Gelephu	Behind workshop	30.00	1956	"	45	55	13.50	16.50
3	Samteling	Paitha	207.67	1960	Panisaj, Lampatry, Chukrasia, Mandaney	75	25	155.75	51.92

4	Samteling	Bhur	35.00	1961	Sal, Champ	70	30	24.50	10.50
5	Gelephu	Aipoli	647.10	1962	Champ, Sal, Panisaj, Lampatey, Kadam, Gmelina, Simal	75	25	485.33	161.78
6	Gelephu	Near Range Office	50.00	1968	Teak, Champ, Panisaj	75	25	37.50	12.50
7	Gelephu	Gelephu	60.00	1968	Teak, Panisaj, Lagerstromia	75	25	45.00	15.00
8	Gelephu	Lodrai	10.00	1968	Teak	70	30	7.00	3.00
9	Gelephu	Near Petrol Pump	98.73	1969	Teak, Champ, Gmelina, Simal, Panisaj	60	40	59.24	39.49
10	Samteling	Bhur Khola	10.00	1973	Gmelina, Lampatry, Simal, Gokul, Khair	60	40	6.00	4.00
11	Samteling	Juruwa Shetey	20.00	1981	Gmelina, Siris, Simal	70	30	14.00	6.00
		Sub-total	**1291.90**					**940.37**	**351.53**

Continued….

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
12	Sershong	Sershong	383.00	1985	Gmelina, Siris,Chukrasia, Mandaney	65	35	248.95	134.05

13	Sershong	Tashiphu	716.59	1986	Gmelina, Pakhasaj, Chuckrasia, Siris, Mandhaney	75	25	537.44	179.15
14	Sershong	Thewar	365.71	1986	Gmelina, Siris, Chukrasia, Mandhaney	55	45	201.14	164.57
15	Gelephu	Moukhola	317.00	1987	Khair, Sissoo, Chukrasia, Lampatey, Siris, Simal	70	30	221.90	95.10
16	Samteling	Juruwa Shetey	773.42	1988	Gmelina, Chakrasia, Siris, Panisaj, Simal	65	35	502.72	270.70
17	Gelegphu	Roadside	123.55	1988	Chukrasia, Panisaj, Siris, Lagerstromia	60	40	74.13	49.42
18	Samteling	Samteling (B)	17.29	1989	Gmelina, Chukrasia, Mandhaney, Siris	70	30	12.10	5.19
19	Gelephu	Lodrai (Upper RBA Wing)	76.60	1989	Chukrasia, Panisaj, Gmelina	65	35	49.79	26.81
20	Samteling	Samteling (A)	150.73	1989	Gmelina, Chukrasia, Panisaj, Champ, Siris, Simal	65	35	97.97	52.76
21	Sershong	Pemaling	101.31	1989	Gmelina, Pakhasaj, Chukrasia, Mandhaney	65	35	65.85	35.46
22	Samteling	Dechenpelri (A)	20.00	1989	Gmelina, Siris, Simal, Mandhaney	65	35	13.00	7.00
23	Gelephu	Tankey Basti	85.00	1994	Champ, Panisaj, Simal	50	50	42.50	42.50
24	Samteling	Lampatiholsi	12.35	2012	Champ	35	65	4.32	8.03
25	Samteling	Dechenpelri (B)	7.41	2013	Champ, Gmelina, Simal	50	50	3.71	3.71

		Sub-total	**3149.96**					**2075.53**	**1074.43**
		Total	**4441.86**					**3015.90**	**1425.96**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Samtenling	Gup's Office	0.51	2011	Chandan, Dilonex	85	15	0.43	0.08
		Sub-total	**0.51**					**0.43**	**0.08**
		Failed Plantation	24.50						24.5
		Total	**25.01**					**0.43**	**24.58**
1	Jigmicholing	Samkhara	5.00	2005	Champ, Schima, Ficus	75	25	3.75	1.25
2	Jigmicholing	Below Lhakhang	2.00	2008	Cupressus	60	40	1.2	0.80
3	Jigmicholing	Jantikhola	5.00	2010	Champ, Lagerstromia	75	25	3.75	1.25
4	Jigmicholing	Sirangaon	1.00	2011	Cupressus, Tooni	65	35	0.65	0.35
		Sub-total	**13.00**					**9.35**	**3.65**
		Failed Plantation	5.00						5.00
		Total	**18.00**					**9.35**	**8.65**

1	Gelephu	Lodarai, Moukhola	30.60	2008	Khair, Sissoo, Bamboo	40	60	12.24	18.36
2	Gelephu	Puran Tappu	32.90	2010	"	35	65	11.52	21.385
3	Gelephu	Pelrithang	0.60	2011	Champ, Gmelina, Chandhen	50	50	0.3	0.30
4	Gelephu	Chihhan Tappu	2.50	2012	Khair, Sissoo, Bamboo	21	79	0.525	1.975
		Sub-total	**66.60**					**24.58**	**42.02**
		Failed Plantation	30.00						30.00
		Total	**96.60**					**24.58**	**72.02**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Gakidling	Ranibagan	2.50	2007	Gmelina	50	50	1.25	1.25
2	Gakidling	Bistey	5.00	2011	Lagerstromia, Delonex, Ficus	30	70	1.5	3.5
3	Gakidling	Gangatey	2.72	2011	Lagerstromia, Ficus	50	50	1.36	1.36
4	Gakidling	Ranibagan	0.50	2011	Chandan, Champ	70	30	0.35	0.15

5	Gakidling	Lharing	1.00	2012	Champ, Kadam, Khair, Lagerstromia	25	75	0.25	0.75
		Sub-total	**11.72**					**4.71**	**7.01**
		Failed Plantation	4.75						4.75
		Total	**16.47**					**4.71**	**11.76**
1	Dekiling	Yangchenphu	7.00	2010	Champ, Bamboo	50	50	3.50	3.50
2	Dekiling	Dundureykholsi	7.00	2010	Bamboo, Khair	50	50	3.50	3.50
3	Dekiling	Dekiling	0.50	2011	Chandan, Champ, Ficus	40	60	0.20	0.30
4	Dekiling	Gurungkholsi	2.00	2012	Champ. Lagerstromia	50	50	1.00	1.00
5	Dekiling	Lower Chokorling	1.00	2012	Lagerstromia, Champ	50	50	0.50	0.50
		Sub-total	**17.50**					**8.70**	**8.80**
		Failed Plantation	12.00						12.00
		Total	**29.50**					**8.70**	**20.80**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**

1	Shompangkha	Sarpang Tar	23.00	2002	Gmelina, Lampatey, Sal	60	40	13.80	9.20
2	Shompangkha	Tinjurey	7.00	2005	Khair, Siris, Sissoo, Bamboo	40	60	2.80	4.20
3	Shompangkha	Near Royal Guest House	1.50	2008	Bamboo	70	30	1.05	0.45
4	Shompangkha	Kencholing	7.00	2008	Gmelina, Saj, Lagerstromia	70	30	4.90	2.10
5	Shompangkha	Chamlingkhola	20.00	2009	Champ, Teak, Saj	35	65	7.00	13.00
6	Shompangkha	Kamikhola	1.00	2009	Teak, Lampatry, Champ, Bamboo	80	20	0.80	0.20
7	Shompangkha	Dhitalkholchi	1.00	2009	Gmelina, Saj, Lagerstromia	50	50	0.50	0.50
8	Shompangkha	Manbir Phakey	14.00	2010	Teak, Gmelina, Champ, Bamboo	40	60	5.60	8.40
9	Shompangkha	Char	14.00	2011	Cham, Teak, Lampatey, Bamboo	50	50	7.00	7.00
10	Shompangkha	Akhowkhola	0.60	2011	Gmelina, Silver Oak, Asoori, Champ, Chandan	70	30	0.42	0.18
11	Shompangkha	Kamikhola	0.70	2011	Champ, Lagerstromia	50	50	0.35	0.35
		Sub-total	**89.80**					**44.22**	**45.58**
		Failed Plantation	2.50						2.50
		Total	**92.30**					**44.22**	**48.08**

	Singhe	Sisty	5.00	2010	Teak, Champ, Chandan, Gmelina	40	60	2.00	3.00
		Total	**5.00**					**2.00**	**3.00**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Sershong	Norbuling	5.00	2005	Teak, Gmelina, Champ	50	50	2.50	2.50
2	Sershong	Tashiphu	6.50	2004	Teak, Lagerstromia, Gmelina	40	60	2.60	3.90
3	Sershong	Barshong	4.50	2011	Champ, Lagerstromia, Bamboo	50	50	2.25	2.25
4	Sershong	Norbuling	2.50	2011	"	30	70	0.75	1.75
5	Sershong	Gusp's Office	0.20	2011	Ashoka, Champ, Changdan	65	35	0.13	0.07
6	Sershong	Pangkhar	7.00	2012	Champ. Lagerstromia, Bamboo	50	50	3.50	3.50
		Sub-total	**25.70**					**11.73**	**13.97**
		Failed Plantation	9.00						9.00

		Total	**34.70**					**11.73**	**22.97**
1	Chuzergang	Pangzur	11.00	2001	Teak, Gmelina, Champ, Bamboo	25	75	2.75	8.25
2	Chuzergang	Namgayuling	4.00	2007	Teak, Gmelina	40	60	1.6	2.4
3	Chuzergang	Chasker	0.20	2011	Chandan, Gmelina, Lagerstromia	50	50	0.1	0.1
	Total		**15.20**					**4.45**	**10.75**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Chudzom	Barchuthang	2.50	2011	Lagerstromia, Champ, Gmelina	50	50	1.25	1.25
2	Chuzom	Below Pankey Bazar	0.20	2011	Cupressus	50	50	0.1	0.1
3		Lower Ashney	7.00	2012	Cupressus	80	20	5.6	1.4
	Total		**9.70**					**6.95**	**2.75**

1	Umling	Pematsholng	5.00	2011	Champ, Teak, Gmelina, Lagerstromia	55	45	2.75	2.25
2	Umling	Rejuk	0.23	2011	Sandlewood, Ashoka, Champ, Aguri	65.00	35	0.15	0.08
3	Umling	Tashithaang	0.60	2012	Lagerstromia, Melia, Chandan, Bamboo	65	35	0.39	0.21
		Sub-total	**5.83**					**3.29**	**2.54**
		Failed Plantation	2.00						2.00
		Total	**7.83**					**3.29**	**4.54**
1	Tarithang	Dorjitse	5.00	2011	Champ, Chandan, Bamboo, Delonex	50	50	2.50	2.50
2	Tarithang	Drshingzor	0.16	2011	Champ, Chandan, Pipal, Aguri	20	80	0.03	0.13
3	Tarithang	Tarithang B	1.00	2012	Champ	70	30	0.70	0.30
4	Tarithang	Tshicholing	2.50	2012	Lagerstromia, Chandan	75	25	1.88	0.63
		Total	**8.66**					**5.11**	**3.55**

Forest Type: Subtropical Forest

Dzongkhag: Zhemgang

Division: Zhemgang

Ranges: Panbang

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**

1	Panbang	Nishoka Bridge	1.5	1980	Agar	60	40	0.9	0.6
		Total	**1.5**					**0.9**	**0.6**

Forest Type: Sub-tropical Forest

Dzongkhag: Zhemgang

Division: Zhemgang

Ranges:

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Phangkhar	Above School	0.50	2003	Bhaunia	70	30	0.35	0.15
2	Phangkhar	Pantang	1.00	2006	Gmelina, Others	70	30	0.70	0.30
3	Phangkhar	Pantang (Royal Wedding)	0.50	2011	Champ, Delonex	70	30	0.35	0.15
1	Nangla	Yundang	2.00	2004	Khair	80	20	1.60	0.40
2	Nangla	Rebati	2.00	2004	Khair	100	0	2.00	0.00
3	Nangla	Below Dungkhag Office	1.00	2005	Teak	100	0	1.00	0.00
4	Nangla	Galabi (Near Dungkhag Office)	0.50	2011	Agur, Champ, Ashoka	70	30	0.35	0.15
5	Nangla	Above PCO	1.50	2012	Bamboo	60	40	0.90	0.60
6	Nangla	Above Marangdutt Village	2.00	2012	Bamboo	60	40	1.20	0.80
1	Goshing	Lamtang	1.00	2007	Melia	100	0	1.00	0.00

2	Goshing	Lingmapong	0.50	2011	Champ, Cupressus	100	0	0.50	0.00
3	Goshing	Lechibi	2.47	2012	Champ	80	20	1.98	0.49
1	Bjoka	Dordola	2.47	2010	Phoebe, Duabanga	40	60	0.99	1.48
2	Bjoka	Tsarimgang	4.00	2011	Bamboo (Yula)	70	30	2.80	1.20
3	Bjoka	Limbi Chorten	0.50	2011	Ashoka, Agur, Schima, Cassia, Phoebe	60	40	0.30	0.20
		Total	**21.94**					**16.01**	**5.93**

Forest Type: Sub-tropical Forest

Division: Samtse

Range: Tashicholing

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Sangnagcholing	Upper Ghatia Watershed	1.00	2008	Mixed Hardwood Species	25	75	0.25	0.75
2	Sangnagcholing	Chargarey	2.47	2011	"	15	85	0.37	2.10
3	Sangnagcholing	Tintalay Water Source	2.47	2011	"	55	45	1.36	1.11
4	Sangnagcholing	Sahakari	4.90	2012	Bambusa nutans	43	57	2.11	2.79
5	Sangnagcholing	Suraksia	4.90	2012	"	45	55	2.21	2.70

6	Sangnagcholing	Gewog Office Compund	0.50	2012	Mixed Hardwood Species	25	75	0.13	0.38
7	Sangnagcholing	Namseling Water Source	2.47	2012	"	30	70	0.74	1.73
8	Sangnagcholing	Upper Ghatia Water Source	2.47	2012	"	50	50	1.24	1.24
	Sangnagcholing	**Sub-total**	**21.18**					**8.39**	**12.79**
	Sangnagcholing	Failed Plantation	2.47						2.47
		Total	**23.65**					**8.39**	**15.26**

Forest Type: Sub-tropical Forest

Division: Samtse

Range: Tashicholing

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Phuntshopelri	Ashineykhola (Sangley)	5.24	2008	Rithra, Gmelina, Chukrasia, Lampatey, Langerstromia, Lasunay	50	50	2.62	2.62
2	Phuntshopelri	Geshing Gaon	2.47	2009	Rithra, Gmelina, Chukrasia, Lampatey, Langerstromia, Panisaj	40	60	0.99	1.48

3	Phuntshopelri	Malabaseydara	2.47	2011	Chukrasia, Lampatey, Panisaj, Simal, Lagerstromia, Lansuney	40	60	0.99	1.48
4	Phuntshopelri	RNR-EC	0.50	2012	Aurocaria, Cryptomeria	50	50	0.25	0.25
		Total	**10.68**					**4.85**	**5.83**
1	Dophuchen	Failed Plantation	2.73						2.73
		Total	**13.41**					**4.85**	**8.56**

Dzongkhag: Samtse

Division: Samtse

Range: Duphugchen

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Denchukha	Relukha	1.00	2009	Bottle Brush, Champ, Lampatey, Chukrasia, Panisaj	50	50	0.50	0.50
2	Denchukha	Tarigaon	2.47	2009	Champ, Panisaj, Pakhasaj, Lagerstromia, Chukrasia	80	20	1.98	0.49
3	Denchukha	Pungthra	2.47	2010	Champ, Chukrasia, Gmelina	55	45	1.36	1.11

4	Denchukha	Setekha-Bhalukhola	2.47	2011	Champ, Chukrasia, Panisaj, Lagerstromia	62	38	1.53	0.94
5	Denchukha	Gup's Office	0.20	2012	Bluepine, Cupressus, Aurocaria, Cryptomeria	57	43	0.11	0.09
6	Denchukha	Denchukha, Water Source	1.00	2012	Champ, Chukrasia, Panisaj, Lagerstromia	80	20	0.80	0.20
7	Denchukha	Gabjee 'A' Waters Source	1.00	2012	"	84	16	0.84	0.16
8	Denchukha	Gabjee 'B' Waters Source	1.00	2012	"	83	17	0.83	0.17
		Sub-total	**11.61**					**7.95**	**3.66**
		Failed Plantation	11.14						11.14
		Total	**22.75**					**7.95**	**14.80**
1	Dungtoed	Jaringay	1.00	2009	Panisaj, Pakhasaj, Lagerstromia, Chukrasia	65	36	0.65	0.36
2	Dungtoed	Gup's Office	1.00	2012	Blue Pine, Cupressus, Aurocaria, Cryptomeria	60	40	0.60	0.40
		Sub-total	**2.00**					**1.25**	**0.75**
		Failed Plantation	2.48						2.48
		Total	**4.48**					**1.25**	**3.23**

Forest Type: Sub-tropical Forest

Dzongkhag: Sarpang

Division: Sarpang

Range: Sarpang

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Gakiling	Hilley (B)	20.00	1953	Sal, Simal, Champ, Sissoo, Panisaj	80	20	16.00	4.00
2	Gakiling	Hilley (A)	13.30	1953	"	80	20	10.64	2.66
3	Senge	Senge Hatikhor	10.00	1956	Simal, Sal, Teak, Panisaj, Mixed Hardwood	60	40	6.00	4.00
4	Shompangkha	Majitar	125.02	1956	Sal, Panisaj, Champ, Gmelina	65	35	81.26	43.76
5	Dekiling	Dholpani	270.00	1959	Sal, Tooni, Panisaj, Bumsum, Champ, Teak, Simal	35	65	94.50	175.50
6	Senge	Suntaley	11.00	1962	Sal	60	40	6.60	4.40
7	Gakiling	Malbasey (A)	10.00	1962	Teak	80	20	8.00	2.00
8	Gakiling	Malbasey (B)	10.00	1962	Lagerstromia, Panisaj	50	50	5.00	5.00
		Sub-total	**469.32**					**228.00**	**241.32**

Continued….

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
9	Gakiling	Malbasey (C)	10.00	1962	Panisaj, Mandhaney	50	50	5.00	5.00
10	Shompangkha	Pakhey	85.00	1962	Teak, Sal, Champ, Schima, Panisaj, Gmelina,	65	35	55.25	29.75
11	Senge	Chaurey	11.00	1975	Simal, Panisaj, Lagerstromia	35	65	3.85	7.15
12	Shompangkha	Kharkhola	217.45	1986	Gmelina, Chukrasia, Panisaj, Sirish, Mandhaney	65	35	141.34	76.11
13	Shompangkha	Shompangkha	219.45	1986	Gmelina, Sal, Albizia, Casia, Melia, Chukrasia, Sirish, Panisaj, Mandhaney	55	45	120.70	98.75
14	Dekiling	Bildara	145.79	1995	Gmelina, Chukrasia, Panisaj, Sirish, Mandhaney	38	62	55.40	90.39
15	Dekiling	Dholkhola	182.85		"	40	60	73.14	109.71
		Sub-total	**871.54**					**454.68**	**416.86**
		Total	**1340.86**					**682.68**	**658.18**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Range: Gelegphu

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Gelephu	Gelehu -below AWP	123.40	1947	Champ, Panisaj, Sal, Lampatey, Simal	75	25	92.55	30.85
2	Gelephu	Behind workshop	30.00	1956	"	45	55	13.50	16.50
3	Samteling	Paitha	207.67	1960	Panisaj, Lampatry, Chukrasia, Mandaney	75	25	155.75	51.92
4	Samteling	Bhur	35.00	1961	Sal, Champ	70	30	24.50	10.50
5	Gelephu	Aipoli	647.10	1962	Champ, Sal, Panisaj, Lampatey, Kadam, Gmelina, Simal	75	25	485.33	161.78
6	Gelephu	Near Range Office	50.00	1968	Teak, Champ, Panisaj	75	25	37.50	12.50
7	Gelephu	Gelephu	60.00	1968	Teak, Panisaj, Lagerstromia	75	25	45.00	15.00
8	Gelephu	Lodrai	10.00	1968	Teak	70	30	7.00	3.00
9	Gelephu	Near Petrol Pump	98.73	1969	Teak, Champ, Gmelina, Simal, Panisaj	60	40	59.24	39.49

10	Samteling	Bhur Khola	10.00	1973	Gmelina, Lampatry, Simal, Gokul, Khair	60	40	6.00	4.00
11	Samteling	Juruwa Shetey	20.00	1981	Gmelina, Siris, Simal	70	30	14.00	6.00
		Sub-total	**1291.90**					**940.37**	**351.53**

Continued….

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
12	Sershong	Sershong	383.00	1985	Gmelina, Siris,Chukrasia, Mandaney	65	35	248.95	134.05
13	Sershong	Tashiphu	716.59	1986	Gmelina, Pakhasaj, Chuckrasia, Siris, Mandhaney	75	25	537.44	179.15
14	Sershong	Thewar	365.71	1986	Gmelina, Siris, Chukrasia, Mandhaney	55	45	201.14	164.57
15	Gelephu	Moukhola	317.00	1987	Khair, Sissoo, Chukrasia, Lampatey, Siris, Simal	70	30	221.90	95.10
16	Samteling	Juruwa Shetey	773.42	1988	Gmelina, Chakrasia, Siris, Panisaj, Simal	65	35	502.72	270.70
17	Gelegphu	Roadside	123.55	1988	Chukrasia, Panisaj, Siris, Lagerstromia	60	40	74.13	49.42

18	Samteling	Samteling (B)	17.29	1989	Gmelina, Chukrasia, Mandhaney, Siris	70	30	12.10	5.19
19	Gelephu	Lodrai (Upper RBA Wing)	76.60	1989	Chukrasia, Panisaj, Gmelina	65	35	49.79	26.81
20	Samteling	Samteling (A)	150.73	1989	Gmelina, Chukrasia, Panisaj, Champ, Siris, Simal	65	35	97.97	52.76
21	Sershong	Pemaling	101.31	1989	Gmelina, Pakhasaj, Chukrasia, Mandhaney	65	35	65.85	35.46
22	Samteling	Dechenpelri (A)	20.00	1989	Gmelina, Siris, Simal, Mandhaney	65	35	13.00	7.00
23	Gelephu	Tankey Basti	85.00	1994	Champ, Panisaj, Simal	50	50	42.50	42.50
24	Samteling	Lampatiholsi	12.35	2012	Champ	35	65	4.32	8.03
25	Samteling	Dechenpelri (B)	7.41	2013	Champ, Gmelina, Simal	50	50	3.71	3.71
		Sub-total	**3149.96**					**2075.53**	**1074.43**
		Total	**4441.86**					**3015.90**	**1425.96**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forests

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Samtenling	Gup's Office	0.51	2011	Chandan, Dilonex	85	15	0.43	0.08
		Sub-total	**0.51**					**0.43**	**0.08**
		Failed Plantation	24.50						24.5
		Total	**25.01**					**0.43**	**24.58**
1	Jigmicholing	Samkhara	5.00	2005	Champ, Schima, Ficus	75	25	3.75	1.25
2	Jigmicholing	Below Lhakhang	2.00	2008	Cupressus	60	40	1.2	0.80
3	Jigmicholing	Jantikhola	5.00	2010	Champ, Lagerstromia	75	25	3.75	1.25
4	Jigmicholing	Sirangaon	1.00	2011	Cupressus, Tooni	65	35	0.65	0.35
		Sub-total	**13.00**					**9.35**	**3.65**
		Failed Plantation	5.00						5.00
		Total	**18.00**					**9.35**	**8.65**
1	Gelephu	Lodarai, Moukhola	30.60	2008	Khair, Sissoo, Bamboo	40	60	12.24	18.36
2	Gelephu	Puran Tappu	32.90	2010	"	35	65	11.52	21.385
3	Gelephu	Pelrithang	0.60	2011	Champ, Gmelina, Chandhen	50	50	0.3	0.30
4	Gelephu	Chihhan Tappu	2.50	2012	Khair, Sissoo, Bamboo	21	79	0.525	1.975
		Sub-total	**66.60**					**24.58**	**42.02**

		Failed Plantation	30.00						30.00
		Total	**96.60**					**24.58**	**72.02**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forests

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Gakidling	Ranibagan	2.50	2007	Gmelina	50	50	1.25	1.25
2	Gakidling	Bistey	5.00	2011	Lagerstromia, Delonex, Ficus	30	70	1.5	3.5
3	Gakidling	Gangatey	2.72	2011	Lagerstromia, Ficus	50	50	1.36	1.36
4	Gakidling	Ranibagan	0.50	2011	Chandan, Champ	70	30	0.35	0.15
5	Gakidling	Lharing	1.00	2012	Champ, Kadam, Khair, Lagerstromia	25	75	0.25	0.75
		Sub-total	**11.72**					**4.71**	**7.01**
		Failed Plantation	4.75						4.75
		Total	**16.47**					**4.71**	**11.76**
1	Dekiling	Yangchenphu	7.00	2010	Champ, Bamboo	50	50	3.50	3.50
2	Dekiling	Dundureykholsi	7.00	2010	Bamboo, Khair	50	50	3.50	3.50

3	Dekiling	Dekiling	0.50	2011	Chandan, Champ, Ficus	40	60	0.20	0.30
4	Dekiling	Gurungkholsi	2.00	2012	Champ. Lagerstromia	50	50	1.00	1.00
5	Dekiling	Lower Chokorling	1.00	2012	Lagerstromia, Champ	50	50	0.50	0.50
		Sub-total	**17.50**					**8.70**	**8.80**
		Failed Plantation	12.00						12.00
		Total	**29.50**					**8.70**	**20.80**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Shompangkha	Sarpang Tar	23.00	2002	Gmelina, Lampatey, Sal	60	40	13.80	9.20
2	Shompangkha	Tinjurey	7.00	2005	Khair, Siris, Sissoo, Bamboo	40	60	2.80	4.20
3	Shompangkha	Near Royal Guest House	1.50	2008	Bamboo	70	30	1.05	0.45
4	Shompangkha	Kencholing	7.00	2008	Gmelina, Saj, Lagerstromia	70	30	4.90	2.10

5	Shompangkha	Chamlingkhola	20.00	2009	Champ, Teak, Saj	35	65	7.00	13.00
6	Shompangkha	Kamikhola	1.00	2009	Teak, Lampatry, Champ, Bamboo	80	20	0.80	0.20
7	Shompangkha	Dhitalkholchi	1.00	2009	Gmelina, Saj, Lagerstromia	50	50	0.50	0.50
8	Shompangkha	Manbir Phakey	14.00	2010	Teak, Gmelina, Champ, Bamboo	40	60	5.60	8.40
9	Shompangkha	Char	14.00	2011	Cham, Teak, Lampatey, Bamboo	50	50	7.00	7.00
10	Shompangkha	Akhowkhola	0.60	2011	Gmelina, Silver Oak, Asoori, Champ, Chandan	70	30	0.42	0.18
11	Shompangkha	Kamikhola	0.70	2011	Champ, Lagerstromia	50	50	0.35	0.35
		Sub-total	**89.80**					**44.22**	**45.58**
		Failed Plantation	2.50						2.50
		Total	**92.30**					**44.22**	**48.08**
1	Singhe	Sisty	5.00	2010	Teak, Champ, Chandan, Gmelina	40	60	2.00	3.00
		Total	**5.00**					**2.00**	**3.00**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Sershong	Norbuling	5.00	2005	Teak, Gmelina, Champ	50	50	2.50	2.50
2	Sershong	Tashiphu	6.50	2004	Teak, Lagerstromia, Gmelina	40	60	2.60	3.90
3	Sershong	Barshong	4.50	2011	Champ, Lagerstromia, Bamboo	50	50	2.25	2.25
4	Sershong	Norbuling	2.50	2011	"	30	70	0.75	1.75
5	Sershong	Gusp's Office	0.20	2011	Ashoka, Champ, Changdan	65	35	0.13	0.07
6	Sershong	Pangkhar	7.00	2012	Champ. Lagerstromia, Bamboo	50	50	3.50	3.50
		Sub-total	**25.70**					**11.73**	**13.97**
		Failed Plantation	9.00						9.00
		Total	**34.70**					**11.73**	**22.97**
1	Chuzergang	Pangzur	11.00	2001	Teak, Gmelina, Champ, Bamboo	25	75	2.75	8.25
2	Chuzergang	Namgayuling	4.00	2007	Teak, Gmelina	40	60	1.6	2.4
3	Chuzergang	Chasker	0.20	2011	Chandan, Gmelina, Lagerstromia	50	50	0.1	0.1
	Total		**15.20**					**4.45**	**10.75**

Forest Type: Subtropical Forest

Dzongkhag: Sarpang

Divison : Sarpang

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Chudzom	Barchuthang	2.50	2011	Lagerstromia, Champ, Gmelina	50	50	1.25	1.25
2	Chuzom	Below Pankey Bazar	0.20	2011	Cupressus	50	50	0.1	0.1
3		Lower Ashney	7.00	2012	Cupressus	80	20	5.6	1.4
	Total		**9.70**					**6.95**	**2.75**
1	Umling	Pematsholng	5.00	2011	Champ, Teak, Gmelina, Lagerstromia	55	45	2.75	2.25
2	Umling	Rejuk	0.23	2011	Sandlewood, Ashoka, Champ, Aguri	65.00	35	0.15	0.08
3	Umling	Tashithaang	0.60	2012	Lagerstromia, Melia, Chandan, Bamboo	65	35	0.39	0.21
		Sub-total	**5.83**					**3.29**	**2.54**

		Failed Plantation	2.00						2.00
		Total	**7.83**					**3.29**	**4.54**
1	Tarithang	Dorjitse	5.00	2011	Champ, Chandan, Bamboo, Delonex	50	50	2.50	2.50
2	Tarithang	Drshingzor	0.16	2011	Champ, Chandan, Pipal, Aguri	20	80	0.03	0.13
3	Tarithang	Tarithang B	1.00	2012	Champ	70	30	0.70	0.30
4	Tarithang	Tshicholing	2.50	2012	Lagerstromia, Chandan	75	25	1.88	0.63
		Total	**8.66**					**5.11**	**3.55**

Forest Type: Subtropical Forest

Dzongkhag: Zhemgang

Division: Zhemgang

Ranges: Panbang

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Panbang	Nishoka Bridge	1.5	1980	Agar	60	40	0.9	0.6
		Total	**1.5**					**0.9**	**0.6**

Forest Type: Sub-tropical Forest

Dzongkhag: Zhemgang

Division: Zhemgang

Ranges:Zhemgang

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Phangkhar	Above School	0.50	2003	Bhaunia	70	30	0.35	0.15
2	Phangkhar	Pantang	1.00	2006	Gmelina, Others	70	30	0.70	0.30
3	Phangkhar	Pantang (Royal Wedding)	0.50	2011	Champ, Delonex	70	30	0.35	0.15
1	Nangla	Yundang	2.00	2004	Khair	80	20	1.60	0.40
2	Nangla	Rebati	2.00	2004	Khair	100	0	2.00	0.00
3	Nangla	Below Dungkhag Office	1.00	2005	Teak	100	0	1.00	0.00
4	Nangla	Galabi (Near Dungkhag Office)	0.50	2011	Agur, Champ, Ashoka	70	30	0.35	0.15
5	Nangla	Above PCO	1.50	2012	Bamboo	60	40	0.90	0.60
6	Nangla	Above Marangdutt Village	2.00	2012	Bamboo	60	40	1.20	0.80
1	Goshing	Lamtang	1.00	2007	Melia	100	0	1.00	0.00
2	Goshing	Lingmapong	0.50	2011	Champ, Cupressus	100	0	0.50	0.00
3	Goshing	Lechibi	2.47	2012	Champ	80	20	1.98	0.49
1	Bjoka	Dordola	2.47	2010	Phoebe, Duabanga	40	60	0.99	1.48
2	Bjoka	Tsarimgang	4.00	2011	Bamboo (Yula)	70	30	2.80	1.20

3	Bjoka	Limbi Chorten	0.50	2011	Ashoka, Agur, Schima, Cassia, Phoebe	60	40	0.30	0.20
		Total	**21.94**					**16.01**	**5.93**

Forest Type: Sub-tropical Forest

Dzongkhag: Zhemgang and Sarpang

Divison : Royal Manas National Park

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Year of Creation**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Nangla	Manas	0.50	1970	Teak	70	30	0.35	0.15
2	Trong	Chumpang	27.81	1993	Champ, Simal, Walnut	80	20	22.25	5.56
3	Trong	Tshanglajong	70.00	1996	Champ, Simal, Walnut	80	20	56.00	14.00
4	Tarithang	Taklai	93.59	1987	Gmelina, Chukrasia, Siris, Panisaj	40	60	37.44	56.15
5	Tarithang	Gobretar	224.86	1988		26	74	58.46	166.40
		Sub-total	**416.76**					**174.50**	**242.26**
		Failed Plantation	581.63						581.63
		Total	**998.39**					**174.50**	**823.89**

Forest Type: Sub-tropical Forest

Dzongkhag: Sarpang

Divison : Phibsoo Wildlife Sanctuary

Sl.#	Gewog	Location	Area	Year of Creation	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Senge	Monmaya Bagan	482.00	1960	Teak, Champ, Gmelina Sal	60	40	289.20	192.80
2	Senge	Kabrani	162.80	1963	Teak, Sal, Champ, Gmelina, Simal, Lagerstromia	60	40	97.68	65.12
3	Senge	Longtar	66.23	1973	Sal	60	40	39.74	26.49
4	Senge	Phibsoo	25.68	1974	Teak	65	35	16.69	8.99
		Sub-total	**736.71**					**443.31**	**293.40**
		Failed Plantation	163.00						163.00
		Total	**899.71**					**443.31**	**456.40**

ANNEX II: COOL BROAD-LEAVED FOREST PLANTATION

Forest Type: Warm Broad-leaved Forest

Dzongkhag: Dagana

Division: Dagana

Range: Dagana

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Kana	Donamkhaikaw	12.00	1993	Chir Pine, Cupressus	50	50	6.00	6.00
2	Kana	Donamkhaikaw	12.00	1994	Walnut, Champ, Cryptomeria, Cupressus	40	60	4.80	7.20
3	Kana	Donamkhaikaw	12.50	1998	Alnus, Cryptomeria, Cupressus, Buklandia	50	50	6.25	6.25
4	Kana	Donamkhaikaw	20.00	2000	Alnus, Walnut, Quercus, Cupressus	45	55	9.00	11.00
5	Kana	Darachu	25.00	2001	Cupressus, Cryptomeria, Champ	40	60	10.00	15.00
1	Tseza	Dzongsel	2.45	1999	Cupressus	50	50	1.23	1.23
2	Tseza	Kalizinkha	12.50	2012	Champ, Angarey, Cupressus	70	30	8.75	3.75
1	Gesarling	Deorali	7.50	2012	Cupressus	80	20	6.00	1.50
		Failed Plantation	12.44					0.00	12.44
		Total	**116.39**					**52.03**	**64.37**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Gedu

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Geling	Suntalakha	75.00	1976	Cupressus, Cryptomeria	85	15	63.75	11.25
2	Geling	Kamji (School)	30.00	1977	"	60	40	18.00	12.00
3	Geling	Kamji - below road	29.65	1985	Cryptomeria	65	35	19.27	10.38
4	Darla	Tala Road	118.00	1986	Cupressus, Cryptomeria	85	15	100.30	17.70
5	Bongo	Gedu Zero	3.00	1987	Cupressus, Cryptomeria	80	20	2.40	0.60
6	Phuntsholing	Choeyakha	177.84	1990	Cryptomeria, Alnus, Walnut, Pipli, Daphne	80	20	142.27	35.57
7	Phuntsholing	Choeyakha	147.82	1991	"	80	20	118.26	29.56
8	Bongo	Bongo Road	135.32	1991	Alnus, Pipli, Acer, Walnut, Macaranga	85	15	115.02	20.30
9	Bongo	Bongo Road	123.50	1992	Alnus, Pipli, Acer, Walnut, Cryptomeria	80	20	98.80	24.70

10	Phuntsholing	Choeyakha	124.83	1992	Alnus, Walnut, Cryptomeria, Champ	80	20	99.86	24.97
11	Phuntsholing	Choeyakha	87.66	1992	Alnus, Walnut, Cryptomeria, Champ, Pipli	85	15	74.51	13.15
12	Bongo	Bongo Road	12.35	1993	Alnus, Walnut, Acer	80	20	9.88	2.47
		Sub-total	**1064.97**					**862.33**	**202.64**

Continued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
13	Phuntsholing	Choeyakha	75.33	1993	Alnus, Macaranga, Evodia, Champ, Walnut, Cryptomeria	85	15	64.03	11.30
14	Geling	Gyemchu	236.32	1993	Alnus, Cryptomeria, Nyssia javonica, Evodia, Daphne	85	15	200.87	35.45
15	Bongo	Beri	74.10	1994	Cryptomeria, Nyssia javonica, Evodia	80	20	59.28	14.82
16	Bongo	Bongo Road	61.75	1994	Alnus, Cryptomeria, Betula, Evodia	85	15	52.49	9.26
17	Phuntsholing	Philling Dara	47.57	1994	Alnus, Cryptomeria, Betula, Evodia	80	20	38.06	9.51

18	Darla	Tala	112.13	1994	Alnus, Cryptomeria, Betula, Evodia	80	20	89.70	22.43
19	Bongo	Bongo	77.80	1995	Alnus, Cupressus, Acer, Macaranga, Daphne	80	20	62.24	15.56
20	Bongo	Bongo Road	74.80	1995	Alnus, Cryptomeria, Daphne, Champ	85	15	63.58	11.22
21	Bongo	Micro Road	54.34	1995	Cryptomeria, Alnus, Macaranga	75	25	40.76	13.59
22	Bongo	Micro Road	44.46	1995	Alnus, Cryptomeria, Daphne, Champ	80	20	35.57	8.89
23	Bongo	Beri Road	59.28	1996	Alnus, Evodia, Betula	75	25	44.46	14.82
24	Bongo	Beri Road	61.75	1996	"	75	25	46.31	15.44
		Sub-total	**979.63**					**797.35**	**182.28**

Continued….

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
25	Bongo	Micro Road	44.46	1996	Cryptomeria, Alnus, Macaranga	80	20	35.57	8.89
26	Bongo	Beri Road	83.98	1997	Cupressus, Acer, Cryptomeria, Walnut	80	20	67.18	16.80

27	Bongo	Bongo Road	41.99	1997	Alnus, Cupressus, Acer, Cryptomeria, Alnus	80	20	33.59	8.40
28	Bongo	Beri	37.05	1998	Walnut, Tite, Champ, Alnus, Daphne	75	25	27.79	9.26
29	Bongo	Beri Road	7.41	1999	Walnut, Cupressus, Cryptomeria	80	20	5.93	1.48
30	Darla	Namchading	12.35	2007	Michelia, Persea, Prunus, Walnut, Acer, Quercus, Pipli	80	20	9.88	2.47
31	Darla	Namchading	12.35	2009	"	75	25	9.26	3.09
32	Darla	Singhi (Elephant Habitat)	2.47	2010	Erythrina, Acer, Ficus, Michelia, Persea, Prunus	70	30	1.73	0.74
33	Darla	Deorali	7.41	2012	Michelia, Persea, Prunus, Walnut, Acer, Quercus, Pipli	70	30	5.19	2.22
34	Geling	Ganglakha	7.41	2012	Cupressus, Michelia, Acer, Exbucklandia, Prunus	70	30	5.19	2.22
		Sub-total	**256.88**					**201.31**	**55.58**
		Total	**2301.48**					**1860.98**	**440.50**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Phuntsholing

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Phuntsholing	Choeyakha	177.84	1990	Cryptomeria, Alnus, Walnut, Pipli, Daphne	80	20	142.272	35.57
2	Phuntsholing	Choeyakha	147.82	1991	Cryptomeria, Alnus, Walnut, Pipli, Daphne	80	20	118.256	29.56
3	Phuntsholing	Choeyakha	124.83	1992	Alnus, Walnut, Cryptomeria, Champ	80	20	99.864	24.97
4	Phuntsholing	Choeyakha	87.66	1992	Alnus, Walnut, Cryptomeria, Champ, Pipli	85	15	74.511	13.15
5	Phuntsholing	Philling Dara	47.57	1994	Alnus, Cryptomeria, Betula, Evodia	80	20	38.056	9.51
		Total	**585.72**					**472.95**	**112.76**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Tsimasham

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Bjabcho	Tsimalakha (below YDF Hall)	10.00	1986	Cryptomeria	90	10	9.00	1.00
2	Bjabcho	Tashi Gatshel	3.00	1986	Cryptomeria, Cupressus	85	15	2.55	0.45
3	Bjabcho	Old Dzong	2.90	1986	Cryptomeria	90	10	2.61	0.29
4	Bjabcho	RVL (Livestock)	1.00	1986	Cryptomeria, Cupressus,	90	10	0.90	0.10
5	Bjabcho	Rehab Center	1.50	1986	Cryptomeria, Cupressus	85	15	1.28	0.23
6	Bjabcho	Bunagu	5.80	1987	Cryptomeria, Cupressus	90	10	5.22	0.58
7	Bjabcho	Below Range Office	8.50	1999	Cryptomeria, Alnus, Cupressus, Walnut, Rhododendron, Blue Pine	90	10	7.65	0.85
8	Bjabcho	Wangkha Dam Road	0.52	2002	Cupressus	75	25	0.39	0.13
		Total	**33.22**					**29.60**	**3.63**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Dzongkhag Plantation

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Bjabcho	Aetogang 1	10.00	2005	Blue pine, Cupressus	90	10	9.00	1.00
2	Darla	Upper Pakey	1.70	2006	Cupressus	70	30	1.19	0.51
3	Bjabcho	Aetogang 2	8.00	2006	Blue pine, Cupressus	70	30	5.60	2.40
4	Bongo	Namchanding	8.25	2010	Champ, Walnut, Lalchandan, Kapasay, Symplocus	70	30	5.78	2.48
5	Bongo	Chalsilakha	12.00	2012	Cupressus	75	25	9.00	3.00
6	Bongo	Gedu	2.00	2012	Cupressus	100	0	2.00	0.00
7	Bjabcho	Behind Dzong	1.00	2012	Cupressus	100	0	1.00	0.00
8	Getana	RNR Center	0.25	2012	Cupressus	85	15	0.21	0.04
9	Chapcha	RNR Center	0.10	2012	Cupressus	90	10	0.09	0.01
10	Bjabcho	RNR Center	0.10	2012	Cupressus	80	20	0.08	0.02
		Sub-total	**43.40**					**33.95**	**9.45**

Continued

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)

11	Darla	RNR Center	0.15	2012	Cupressus	75	25	0.11	0.04
12	Bongo	RNR Center	0.20	2012	Cupressus	90	10	0.18	0.02
13	Darla	Katusay	5.00	2013	Teak, Champ, Cupressus, Erythrina	70	30	3.50	1.50
14	Bjabcho	Aetopang	14.83	2013	Blue pine, Cupressus, Oak, Walnut	75	25	11.12	3.71
15	Bjabcho	Dz Area	4.75	2013	Cupressus, Wild Cherry, Acer, Bemthamedia	70	30	3.33	1.43
16	Bongo	Sinchukha	15.00	2013	Cupressus, Champ, Aarupati	80	20	12.00	3.00
17	Bjabcho	Highway	4.80	2013	Cupressus, Oak, Blue pine	70	30	3.36	1.44
		Sub-total	**44.73**					**33.60**	**11.13**
		Total	**88.13**					**67.55**	**20.58**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Gedu

Agency: Bhutan Board Product Limited

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With	Area Without Trees (Ac)

								Trees (Ac)	
1	Darla	Tala Top	0.50	1994	Alnus, Crypomeria, Erythina, Salix	51	49	0.26	0.25
2		Tala Top	3.75	1995	"	62	38	2.33	1.43
3		Pakchina	42.84	996	Alnus, Eucalyptus, Crypteromeria, Macaranga	61	39	26.13	16.71
4		Barsa Top	8.80	1997	Alnus, Salix	45	55	3.96	4.84
5		Singi Top	11.80	1997	Alnus, Eucalyptus, Crypteromeria, Macaranga,Salix	50	50	5.90	5.90
6		Pakchina	34.37	1997	Anlus, Eucalyptus, Evodia, Poplus, Salix	43	57	14.78	19.59
7		Tala Lama Site	8.12	1998	Alnus, Eucalyptus, Poplus	58	42	4.71	3.41
8		Singi Top	15.10	1998	Alnus, Eucapyptus, Poplus	55	45	8.31	6.80
9	Geling	Choyakha	30.84	1998	Alnus, Eucaplyptus, Macaranga	55	45	16.96	13.88
10	Darla	Lalikharka	6.67	1998	Alnus, Eucalyptus, Evodia	48	52	3.20	3.47
11		Piplidara	26.02	1998	Alnus, Eucalyptus, Evodia, Poplus	60	40	15.61	10.41
12	Geling	Choyakha	53.70	1999	Alnus, Eucalyptus, Mancaranga	63	37	33.83	19.87

13	Geling	Fillingdara	15.66	1999	Alnus, Eucalyptus, Evodia, Macaranga	52	48	8.14	7.52
14	Geling	Gyemchu	6.93	1999	Alnus, Macaranga, Evodia, Poplus	50	50	3.47	3.47
		Sub-total	**265.10**					**147.58**	**117.52**

Continued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
15	Bongo	Dhap Top	8.90	1999	Alnus, Eucalyptus, Macaranga, Poplus	59	41	5.25	3.65
16	Geling	Choyakha	40.44	2000	Anlus, Macaranga, Evodia	55	45	22.24	18.20
17	Geling	Fillingdara	2.61	2000	"	60	40	1.57	1.04
18	Geling	Gyemchu	7.45	2000	Alnus, Macaranga, Evodia, Eucalyptus	42	58	3.13	4.32
19	Geling	Dhap Top	69.87	2000	Alnus, Macaranga, Evodia, Eucalyptus, Erythrina	57	43	39.83	30.04
20	Geling	Choyakha	31.70	2001	Alnus, Cryptomeria, Macaranga, Evodia	52	48	16.48	15.22
21	Geling	Gyemchu	9.02	2001	Alnus, Eucalyptus, Macaranga, Evodia	61	39	5.50	3.52

22	Geling	Dhap Top	47.56	2001	Alnus, Eucalyptus, Cryptomeria, Erythrina, Cupressus	68	32	32.34	15.22
23	Geling	Dhap Top	83.78	2002	Alnus, Cryptomeria, Macaranga, Erythrina, Cupressus	55	45	46.08	37.70
24	Geling	Dhap Top	35.91	2003	Alnus, Cryptomeria, Erythrina, Poplus, Salix	53	47	19.03	16.88
25	Darla	Rupang	99.80	2003	Alnus, Macaranga, Erythirna, Albizia, Litsea, Croton	100	0	99.80	0.00
26	Darla	Lama site	12.30	2004	Alnus, Cryptomeria, Evodia, Erythrina, Cupressus	66	34	8.12	4.18
27	Darla	Tala Top	14.70	2004	Alnus, Cryptomeria,Erythrina, Cupressus	70	30	10.29	4.41
		Sub-total	**464.04**					**309.66**	**154.38**

Continued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
28	Darla	Chudapang	29.60	2004	Alnus, Macaranga, Erythirna, Evodia, Albizia, Litsea	92	8	27.23	2.37

29	Bongo	Biri	8.32	2004	Alnus, Macaranga, Albizia, Croton	83	17	6.91	1.41
30	Bongo	Microwave Road	14.50	2004	Alnus, Erythrina	73	27	10.59	3.92
31	Bongo	Biri	99.00	2005	Alnus, Macaranga, Erythrina, Albizia, Litsea, Cropton	100	0	99.00	0.00
32	Bongo	Microwave Road	62.96	2005	Alnus, Cryptomeria, Erythrina	89	11	56.03	6.93
33	Bongo	"	82.57	2006	Alnus, Cryptomeria, Erythrina	90	10	74.31	8.26
34	Darla	Tala Forest Compund	6.00	2008	Alnus, Cryptomeria, Cupressus	99	1	5.94	0.06
35	Darla	Tala Lama Site	16.57	2009	Alnus, Erythrina	77	23	12.76	3.81
36	Geling	Gonglakha	30.30	2009	Alnus, Macaranga, Erythrina, Albizia, Croton	50	50	15.15	15.15
37	Sampheling	Pasakha	1.40	2009	Cryptomeria, Erythrina, Albizia, Luecina	94	6	1.32	0.08
38	Darla	Tala Lama Site	40.97	2010	Alnus, Cryptomeria, Macaranga, Erythrina	60	40	24.58	16.39
39	Geling	Gonglakha	161.02	2010	Alnus, Cryptomeria, Macaranga, Erythrina, Albizia, Croton	81	19	130.43	30.59
40	Darla	Tala Top	76.73	2011	Alnus, Macaranga, Erythrina, Albizia	57	43	43.74	32.99
		Sub-total	**629.94**					**507.98**	**121.96**

Continued…

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
41	Geling	Gonglakha	156.02	2011	Alnus, Erythrina, Albizia, Choerospondies exillaris	68	32	106.09	49.93
42	Darla	Singi Top	23.52	2011	Erythrina, Albizia, Prunus, Choerospondies exillaris, Ficus, Eleacarpus	42	58	9.88	13.64
43		Pakchina	1.65	2011	Erythrina, Albizia, Prunus, Choerospondies exillaris, Ficus	40	60	0.66	0.99
44		Lama site	1.46	2012	Alnus, Erythrina	74	26	1.08	0.38
45	Geling	Gonglakha	20.00	2012	Alnus, Albizia	86	14	17.20	2.80
46	Darla	Singi Top	16.53	2012	Erythrina, Albizia, Prunus, Choerospondies, Ficus	49	51	8.10	8.43
47		Pakchina	8.84	2012	"	45	55	3.98	4.86
48	Phuntsholing	Kungkha andTagona	111.78	20012	Alnus, Macaranga, Eryhthrina, Albizia, Choerospondies	63	37	70.42	41.36
		Sub-total	**339.80**					**217.41**	**122.39**

		Total	**1698.88**					**1182.63**	**516.25**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Agency: NRDCL

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Sampheling	Balujhora	8.90	2006	No spcecies given	80	20	7.12	1.78
	Sub-total		**8.90**					**7.12**	**1.78**
2	Bongo	Biri	19.77	2010	Champ, Kaula, Pipli, Prunus, Acer, Phamphal, Lal Chandan, Walnut, Taeshing, Alnus, Cryptomeria, Oak, Betula	79	21	15.62	4.15
3		Gedu	17.30	2011	Cupressus, Cryptomeria, Phamphal, Arupatry, Accer, Kimbu, Champ, Walnut, Tarshing, Bhadrasey, Pipli	72	28	12.46	4.84
		Sub-total	**37.07**					**28.07**	**9.00**

		Total	**45.97**					**35.19**	**10.78**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Gedu

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Geling	Suntalakha	75.00	1976	Cupressus, Cryptomeria	85	15	63.75	11.25
2	Geling	Kamji (School)	30.00	1977	"	60	40	18.00	12.00
3	Geling	Kamji - below road	29.65	1985	Cryptomeria	65	35	19.27	10.38
4	Darla	Tala Road	118.00	1986	Cupressus, Cryptomeria	85	15	100.30	17.70
5	Bongo	Gedu Zero	3.00	1987	Cupressus, Cryptomeria	80	20	2.40	0.60
6	Phuntsholing	Choeyakha	177.84	1990	Cryptomeria, Alnus, Walnut, Pipli, Daphne	80	20	142.27	35.57
7	Phuntsholing	Choeyakha	147.82	1991	"	80	20	118.26	29.56

8	Bongo	Bongo Road	135.32	1991	Alnus, Pipli, Acer, Walnut, Macaranga	85	15	115.02	20.30
9	Bongo	Bongo Road	123.50	1992	Alnus, Pipli, Acer, Walnut, Cryptomeria	80	20	98.80	24.70
10	Phuntsholing	Choeyakha	124.83	1992	Alnus, Walnut, Cryptomeria, Champ	80	20	99.86	24.97
11	Phuntsholing	Choeyakha	87.66	1992	Alnus, Walnut, Cryptomeria, Champ, Pipli	85	15	74.51	13.15
12	Bongo	Bongo Road	12.35	1993	Alnus, Walnut, Acer	80	20	9.88	2.47
		Sub-total	**1064.97**					**862.33**	**202.64**

Continued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
13	Phuntsholing	Choeyakha	75.33	1993	Alnus, Macaranga, Evodia, Champ, Walnut, Cryptomeria	85	15	64.03	11.30

14	Geling	Gyemchu	236.32	1993	Alnus, Cryptomeria, Nyssia javonica, Evodia, Daphne	85	15	200.87	35.45
15	Bongo	Beri	74.10	1994	Cryptomeria, Nyssia javonica, Evodia	80	20	59.28	14.82
16	Bongo	Bongo Road	61.75	1994	Alnus, Cryptomeria, Betula, Evodia	85	15	52.49	9.26
17	Phuntsholing	Philling Dara	47.57	1994	Alnus, Cryptomeria, Betula, Evodia	80	20	38.06	9.51
18	Darla	Tala	112.13	1994	Alnus, Cryptomeria, Betula, Evodia	80	20	89.70	22.43
19	Bongo	Bongo	77.80	1995	Alnus, Cupressus, Acer, Macaranga, Daphne	80	20	62.24	15.56
20	Bongo	Bongo Road	74.80	1995	Alnus, Cryptomeria, Daphne, Champ	85	15	63.58	11.22
21	Bongo	Micro Road	54.34	1995	Cryptomeria, Alnus, Macaranga	75	25	40.76	13.59
22	Bongo	Micro Road	44.46	1995	Alnus, Cryptomeria, Daphne, Champ	80	20	35.57	8.89

23	Bongo	Beri Road	59.28	1996	Alnus, Evodia, Betula	75	25	44.46	14.82
24	Bongo	Beri Road	61.75	1996	"	75	25	46.31	15.44
		Sub-total	**979.63**					**797.35**	**182.28**

Continued….

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
25	Bongo	Micro Road	44.46	1996	Cryptomeria, Alnus, Macaranga	80	20	35.57	8.89
26	Bongo	Beri Road	83.98	1997	Cupressus, Acer, Cryptomeria, Walnut	80	20	67.18	16.80
27	Bongo	Bongo Road	41.99	1997	Alnus, Cupressus, Acer, Cryptomeria, Alnus	80	20	33.59	8.40
28	Bongo	Beri	37.05	1998	Walnut, Tite, Champ, Alnus, Daphne	75	25	27.79	9.26
29	Bongo	Beri Road	7.41	1999	Walnut, Cupressus, Cryptomeria	80	20	5.93	1.48
30	Darla	Namchading	12.35	2007	Michelia, Persea, Prunus, Walnut, Acer, Quercus, Pipli	80	20	9.88	2.47
31	Darla	Namchading	12.35	2009	"	75	25	9.26	3.09

32	Darla	Singhi (Elephant Habitat)	2.47	2010	Erythrina, Acer, Ficus, Michelia, Persea, Prunus	70	30	1.73	0.74
33	Darla	Deorali	7.41	2012	Michelia, Persea, Prunus, Walnut, Acer, Quercus, Pipli	70	30	5.19	2.22
34	Geling	Ganglakha	7.41	2012	Cupressus, Michelia, Acer, Exbucklandia, Prunus	70	30	5.19	2.22
		Sub-total	**256.88**					**201.31**	**55.58**
		Total	**2301.48**					**1860.98**	**440.50**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Phuntsholing

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Phuntsholing	Choeyakha	177.84	1990	Cryptomeria, Alnus, Walnut, Pipli, Daphne	80	20	142.272	35.57
2	Phuntsholing	Choeyakha	147.82	1991	Cryptomeria, Alnus, Walnut, Pipli, Daphne	80	20	118.256	29.56

3	Phuntsholing	Choeyakha	124.83	1992	Alnus, Walnut, Cryptomeria, Champ	80	20	99.864	24.97
4	Phuntsholing	Choeyakha	87.66	1992	Alnus, Walnut, Cryptomeria, Champ, Pipli	85	15	74.511	13.15
5	Phuntsholing	Philling Dara	47.57	1994	Alnus, Cryptomeria, Betula, Evodia	80	20	38.056	9.51
		Total	**585.72**					**472.95**	**112.76**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Tsimasham

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Bjabcho	Tsimalakha (below YDF Hall)	10.00	1986	Cryptomeria	90	10	9.00	1.00
2	Bjabcho	Tashi Gatshel	3.00	1986	Cryptomeria, Cupressus	85	15	2.55	0.45
3	Bjabcho	Old Dzong	2.90	1986	Cryptomeria	90	10	2.61	0.29
4	Bjabcho	RVL (Livestock)	1.00	1986	Cryptomeria, Cupressus,	90	10	0.90	0.10
5	Bjabcho	Rehab Center	1.50	1986	Cryptomeria, Cupressus	85	15	1.28	0.23

6	Bjabcho	Bunagu	5.80	1987	Cryptomeria, Cupressus	90	10	5.22	0.58
7	Bjabcho	Below Range Office	8.50	1999	Cryptomeria, Alnus, Cupressus, Walnut, Rhododendron, Blue Pine	90	10	7.65	0.85
8	Bjabcho	Wangkha Dam Road	0.52	2002	Cupressus	75	25	0.39	0.13
		Total	**33.22**					**29.60**	**3.63**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Dzongkhag Plantation

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Bjabcho	Aetogang 1	10.00	2005	Blue pine, Cupressus	90	10	9.00	1.00
2	Darla	Upper Pakey	1.70	2006	Cupressus	70	30	1.19	0.51
3	Bjabcho	Aetogang 2	8.00	2006	Blue pine, Cupressus	70	30	5.60	2.40
4	Bongo	Namchanding	8.25	2010	Champ, Walnut, Lalchandan, Kapasay, Symplocus	70	30	5.78	2.48
5	Bongo	Chalsilakha	12.00	2012	Cupressus	75	25	9.00	3.00
6	Bongo	Gedu	2.00	2012	Cupressus	100	0	2.00	0.00
7	Bjabcho	Behind Dzong	1.00	2012	Cupressus	100	0	1.00	0.00

8	Getana	RNR Center	0.25	2012	Cupressus	85	15	0.21	0.04
9	Chapcha	RNR Center	0.10	2012	Cupressus	90	10	0.09	0.01
10	Bjabcho	RNR Center	0.10	2012	Cupressus	80	20	0.08	0.02
		Sub-total	**43.40**					**33.95**	**9.45**

Continued

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
11	Darla	RNR Center	0.15	2012	Cupressus	75	25	0.11	0.04
12	Bongo	RNR Center	0.20	2012	Cupressus	90	10	0.18	0.02
13	Darla	Katusay	5.00	2013	Teak, Champ, Cupressus, Erythrina	70	30	3.50	1.50
14	Bjabcho	Aetopang	14.83	2013	Blue pine, Cupressus, Oak, Walnut	75	25	11.12	3.71
15	Bjabcho	Dz. Area	4.75	2013	Cupressus, Wild Cherry, Acer, Bemthamedia	70	30	3.33	1.43
16	Bongo	Sinchukha	15.00	2013	Cupressus, Champ, Aarupati	80	20	12.00	3.00
17	Bjabcho	Highway	4.80	2013	Cupressus, Oak, Blue pine	70	30	3.36	1.44

		Sub-total	**44.73**					**33.60**	**11.13**
		Total	**88.13**					**67.55**	**20.58**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Range: Gedu

Agency: Bhutan Board Product Limited

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Darla	Tala Top	0.50	1994	Alnus, Crypomeria, Erythina, Salix	51	49	0.26	0.25
2		Tala Top	3.75	1995	"	62	38	2.33	1.43
3		Pakchina	42.84	996	Alnus, Eucalyptus, Crypteromeria, Macaranga	61	39	26.13	16.71
4		Barsa Top	8.80	1997	Alnus, Salix	45	55	3.96	4.84
5		Singi Top	11.80	1997	Alnus, Eucalyptus, Crypteromeria, Macaranga,Salix	50	50	5.90	5.90
6		Pakchina	34.37	1997	Anlus, Eucalyptus, Evodia, Poplus, Salix	43	57	14.78	19.59

7		Tala Lama Site	8.12	1998	Alnus, Eucalyptus, Poplus	58	42	4.71	3.41
8		Singi Top	15.10	1998	Alnus, Eucapyptus, Poplus	55	45	8.31	6.80
9	Geling	Choyakha	30.84	1998	Alnus, Eucaplyptus, Macaranga	55	45	16.96	13.88
10	Darla	Lalikharka	6.67	1998	Alnus, Eucalyptus, Evodia	48	52	3.20	3.47
11		Piplidara	26.02	1998	Alnus, Eucalyptus, Evodia, Poplus	60	40	15.61	10.41
12	Geling	Choyakha	53.70	1999	Alnus, Eucalyptus, Mancaranga	63	37	33.83	19.87
13	Geling	Fillingdara	15.66	1999	Alnus, Eucalyptus, Evodia, Macaranga	52	48	8.14	7.52
14	Geling	Gyemchu	6.93	1999	Alnus, Macaranga, Evodia, Poplus	50	50	3.47	3.47
		Sub-total	**265.10**					**147.58**	**117.52**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
15	Bongo	Dhap Top	8.90	1999	Alnus, Eucalyptus, Macaranga, Poplus	59	41	5.25	3.65

16	Geling	Choyakha	40.44	2000	Anlus, Macaranga, Evodia	55	45	22.24	18.20
17	Geling	Fillingdara	2.61	2000	"	60	40	1.57	1.04
18	Geling	Gyemchu	7.45	2000	Alnus, Macaranga, Evodia, Eucalyptus	42	58	3.13	4.32
19	Geling	Dhap Top	69.87	2000	Alnus, Macaranga, Evodia, Eucalyptus, Erythrina	57	43	39.83	30.04
20	Geling	Choyakha	31.70	2001	Alnus, Cryptomeria, Macaranga, Evodia	52	48	16.48	15.22
21	Geling	Gyemchu	9.02	2001	Alnus, Eucalyptus, Macaranga, Evodia	61	39	5.50	3.52
22	Geling	Dhap Top	47.56	2001	Alnus, Eucalyptus, Cryptomeria, Erythrina, Cupressus	68	32	32.34	15.22
23	Geling	Dhap Top	83.78	2002	Alnus, Cryptomeria, Macaranga, Erythrina, Cupressus	55	45	46.08	37.70
24	Geling	Dhap Top	35.91	2003	Alnus, Cryptomeria, Erythrina, Poplus, Salix	53	47	19.03	16.88
25	Darla	Rupang	99.80	2003	Alnus, Macaranga, Erythirna, Albizia, Litsea, Croton	100	0	99.80	0.00
26	Darla	Lama site	12.30	2004	Alnus, Cryptomeria, Evodia, Erythrina, Cupressus	66	34	8.12	4.18

27	Darla	Tala Top	14.70	2004	Alnus, Cryptomeria,Erythrina, Cupressus	70	30	10.29	4.41
		Sub-total	**464.04**					**309.66**	**154.38**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
28	Darla	Chudapang	29.60	2004	Alnus, Macaranga, Erythirna, Evodia, Albizia, Litsea	92	8	27.23	2.37
29	Bongo	Biri	8.32	2004	Alnus, Macaranga, Albizia, Croton	83	17	6.91	1.41
30	Bongo	Microwave Road	14.50	2004	Alnus, Erythrina	73	27	10.59	3.92
31	Bongo	Biri	99.00	2005	Alnus, Macaranga, Erythrina, Albizia, Litsea, Cropton	100	0	99.00	0.00
32	Bongo	Microwave Road	62.96	2005	Alnus, Cryptomeria, Erythrina	89	11	56.03	6.93
33	Bongo	"	82.57	2006	Alnus, Cryptomeria, Erythrina	90	10	74.31	8.26
34	Darla	Tala Forest Compund	6.00	2008	Alnus, Cryptomeria, Cupressus	99	1	5.94	0.06
35	Darla	Tala Lama Site	16.57	2009	Alnus, Erythrina	77	23	12.76	3.81

36	Geling	Gonglakha	30.30	2009	Alnus, Macaranga, Erythrina, Albizia, Croton	50	50	15.15	15.15
37	Sampheling	Pasakha	1.40	2009	Cryptomeria, Erythrina, Albizia, Luecina	94	6	1.32	0.08
38	Darla	Tala Lama Site	40.97	2010	Alnus, Cryptomeria, Macaranga, Erythrina	60	40	24.58	16.39
39	Geling	Gonglakha	161.02	2010	Alnus, Cryptomeria, Macaranga, Erythrina, Albizia, Croton	81	19	130.43	30.59
40	Darla	Tala Top	76.73	2011	Alnus, Macaranga, Erythrina, Albizia	57	43	43.74	32.99
		Sub-total	**629.94**					**507.98**	**121.96**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
41	Geling	Gonglakha	156.02	2011	Alnus, Erythrina, Albizia, Choerospondies exillaris	68	32	106.09	49.93

42	Darla	Singi Top	23.52	2011	Erythrina, Albizia, Prunus, Choerospondies exillaris, Ficus, Eleacarpus	42	58	9.88	13.64
43		Pakchina	1.65	2011	Erythrina, Albizia, Prunus, Choerospondies exillaris, Ficus	40	60	0.66	0.99
44		Lama site	1.46	2012	Alnus, Erythrina	74	26	1.08	0.38
45	Geling	Gonglakha	20.00	2012	Alnus, Albizia	86	14	17.20	2.80
46	Darla	Singi Top	16.53	2012	Erythrina, Albizia, Prunus, Choerospondies, Ficus	49	51	8.10	8.43
47		Pakchina	8.84	2012	"	45	55	3.98	4.86
48	Phuntsholing	Kungkha andTagona	111.78	20012	Alnus, Macaranga, Eryhthrina, Albizia, Choerospondies	63	37	70.42	41.36
		Sub-total	**339.80**					**217.41**	**122.39**
		Total	**1698.88**					**1182.63**	**516.25**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Chukha

Division: Gedu

Agency: NRDCL

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With**	**Area Without Trees (Ac)**

								Trees (Ac)	
1	Sampheling	Balujhora	8.90	2006	No spcecies given	80	20	7.12	1.78
	Sub-total		**8.90**					**7.12**	**1.78**
2	Bongo	Biri	19.77	2010	Champ, Kaula, Pipli, Prunus, Acer, Phamphal, Lal Chandan, Walnut, Taeshing, Alnus, Cryptomeria, Oak, Betula	79	21	15.62	4.15
3		Gedu	17.30	2011	Cupressus, Cryptomeria, Phamphal, Arupatry, Accer, Kimbu, Champ, Walnut, Tarshing, Bhadrasey, Pipli	72	28	12.46	4.84
		Sub-total	**37.07**					**28.07**	**9.00**
		Total	**45.97**					**35.19**	**10.78**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Mongar

Division: Mongar

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Chali	Mongarbrangsa	17.29	2010	Acer, Blue Pine, Champ, Pipli	40	60	6.92	10.37
2	Chali	Garwaling	1.00	2011	Cupressus	30	70	0.30	0.70
		Failed Plantation	11.00	2011				0.00	11.00
1	Tshakaling	Braphutongsa	6.00	2008	Nyssia, Oak	40	60	2.40	3.60
2	Tshakaling	Tormashong	2.00	2009	Walnut	50	50	1.00	1.00
3	Tshakaling	Tshakaling	2.00	2011	Nyssa, Oak	50	50	1.00	1.00
		Failed Plantation	9.00	2009-'10	Champ, Alnus, Walnut			0.00	9.00
1	Kengkhar	Oloki	3.00	2010	Chir Pine, Toona	40	60	1.20	1.80
2	Kengkhar	Sepnari	7.00	2011	Walnut, Chir Pine	50	50	3.50	3.50
3	Kengkhar	Seb	1.00	2011	Champ, Acer, Blue Pine, Walnut	65	35	0.65	0.35
4	Kengkhar	Dochuru	2.00	2011	Champ, Acer, Blue Pine, Pipli	84	16	1.68	0.32
5	Kengkhar	Dochuru	3.00	2012	Champ, Toona, Chirpine	42	58	1.26	1.74
6	Kenkahr	Failed Plantation	15.75					0.00	15.75
1	Silambi	Silambi Lhakhang	0.50	2011	Cupressus	75	25	0.38	0.13
2	Silambi	Failed Plantation	6.00	2007-'08	Walnut			0.00	6.00

1	Gongdue	Daksa Waters Source	6.50	2010	Walnut, Champ, Sapindus	40	60	2.60	3.90
2	Gongdue	Daksa Lhakhang	0.50	2011	Cupressus	50	50	0.25	0.25
3	Gongdue	Failed Plantation	4.94	2008				0.00	4.94
		Sub-total	**98.48**					**23.13**	**75.35**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Chaskhar	Verjima	1.50	2002	Pipli, Walnut, Cupressus	75	25	1.13	0.38
2	Chaskhar	Temdaza	13.50	2009	Champ, Walnut, Blue Pine, Pipli	35	65	4.73	8.78
3	Chaskhar	Kharnang	4.50	2010	"	40	60	1.80	2.70
4	Chaskhar	Kheshingra	12.00	2011	Ficus, Walnut, Napier, Thysanolaena	50	50	6.00	6.00
5	Chaskhar	Sanglemzor	2.00	2011	Vibernum	30	70	0.60	1.40
6	Chaskhar	Kadam Lhakhang	1.00	2011	Cupressus	70	30	0.70	0.30

1	Thangrong	Changshing Goenpa	12.50	2005	Walnut, Blue Pine, Pipli	55	45	6.88	5.63
2	Thangrong	Failed Plantation	6.67	2009				0.00	6.67
1	Tsamang	Banjar	1.24	2009	Walnut, Cupressus	60	40	0.74	0.50
2	Tsamang	Ganglapong	2.97	2010	Walnut, Acer	60	40	1.78	1.19
1	Balam	Yangbari	8.00	2009	Cupressus	21	79	1.68	6.32
2	Balam	Shajamu& Nampeybrangsa	12.00	2010	Acer, Champ, Pipli, Nyssia	60	40	7.20	4.80
3	Balam	Bakapahi	5.00	2011	Acer, Champ, Pipli	60	40	3.00	2.00
4		Failed Plantation	5.00					0.00	5.00
1	Sherimung	Serzhong	2.47	2010	Pipli, Goli, Walnut, Champ	60	40	1.48	0.99
2	Sherimung	Muhung	3.70	2011	Champ, Prunus, Walnut	50	50	1.85	1.85
3	Sherimung	Serzhong	1.00	2011	Cupressus	70	30	0.70	0.30
4	Sherimung	Failed Plantation	3.70	2007	Champ, Blue Pine, Pipli			0.00	3.70
		Sub-total	**98.75**					**40.26**	**58.49**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**

1	Saling	Jangdung	1.11	2006	Walnut, Bamboo	60	40	0.67	0.44
2	Saling	Mangling	1.98	2007	Walnut, Toona, Bonsum	65	35	1.29	0.69
3	Saling	Dobar	2.47	2009	Bamboo	70	30	1.73	0.74
4	Saling	Tsholing	2.47	2009	Bamboo	65	35	1.61	0.86
5	Saling	Tsanzabi	2.47	2010	Champ, Toona, Nyssa, Hobia	60	40	1.48	0.99
6	Saling	Gangjuk	2.47	2010	Bamboo	65	35	1.61	0.86
7	Saling	Broksar	3.70	2010	Walnut, Toona	60	40	2.22	1.48
8	Saling	Thridangbi	0.99	2011	Cupressus	70	30	0.69	0.30
1	Ngatshang	Jazubrangsa	11.25	2009	Walnut, Pipli, Acer, Nyssia	55	45	6.19	5.06
2	Ngatshang	Phanas	5.00	2010	Nyssia, Champ, Pipli	60	40	3.00	2.00
3	Ngatshang	Gangaygortab	17.00	2011	Nyssia, Champ, Pipli	70	30	11.90	5.10
4	Ngatshang	Karkhang	1.00	2011	Cupressus	98	2	0.98	0.02
5	Ngatshang	Failed Plantation	2.50	2012				0.00	2.50
1	Drametse	Gonrikokti	9.88	2005	Nyssia, Champ, Pipli	51	49	5.04	4.84
2	Drametse	Maningangrey	0.23	2005	Cupressus, Thuja	53	47	0.12	0.11
3	Drametse	Ani Choetenzangmo Drubchu	0.50	2005	Cupressu, Thuja, Pipli	60	40	0.30	0.20
4	Drametse	Geyri	1.00	2011	Cupressus, Champ, Pipli	40	60	0.40	0.60

5	Drametse	Failed Plantation	4.00	2010	Champ, Nyssia, Pipli			0.00	4.00
		Sub-total	**70.02**					**39.22**	**30.80**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Mongar	Chompa	32.00	2009	Acer, Champ, Pipli, Nyssia, Cupressus	65	35	20.80	11.20
2	Mongar	Shinari (kilikhar)	7.50	2009	Champ, Pipli, Cupressus, Nyssia	95	5	7.13	0.38
3	Mongar	Wangling	8.50	2009	Mixed Broadleaved species	98	2	8.33	0.17
4	Mongar	Bazor	1.00	2010	Cupressus, Sandalwodd	70	30	0.70	0.30
5	Mongar	Songthurpa	5.00	2010	Natural growth	90	10	4.50	0.50
6	Mongar	Redaza School	2.00	2010	Cupressus, Champ, Nyssia	65	35	1.30	0.70
7	Mongar	Phosrong	7.00	2011	Champ,Nyssia, Acer	50	50	3.50	3.50
8	Mongar	Menchu	3.00	2011	Pipli, Champ, Cupressus	70	30	2.10	0.90
9	Mongar	Kilikhar (Thripung)	7.41	2011	Natural growth	60	40	4.45	2.96

10	Mongar	Soitshong	5.00	2012	Pipli, Champ, Nyssia	55	45	2.75	2.25
1	Drepong	Karsang	3.75	2009	Walnut	70	30	2.63	1.13
2	Drepong	Dongphari	5.00	2010	Cupressus, Walnut, Champ, Nyssia	40	60	2.00	3.00
3	Drepong	Tsho	0.50	2011	Cupressus	99	1	0.50	0.01
4	Drepong	Soksokpa	49.42	2012	Pipli, Nyssia, Champ	50	50	24.71	24.71
5	Drepong	Tsho	27.00	2012	Pipli, Nyssia, Champ, Acer, Walnut	70	30	18.90	8.10
1	Narang	Balmochep	1.00	2011	Cupressus, Champ, Pipli	40	60	0.40	0.60
2	Narang	Failed Plantation	2.00	2010	Erythrina, Vetiver			0.00	2.00
		Sub-total	**167.08**					**104.68**	**62.40**
		Total	**434.33**					**207.29**	**227.04**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Pemagatshel

Division: Pemagatshel

Range: Pemagatshel

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)

1	Shumar	Tsangtseri	70.00	1980	Champ, Walnut, Chir Pine	60	40	42.00	28.00
2	Zobel	Kherigonpa	20.00	1981	Walnut, Champ	30	70	6.00	14.00
3	Shumar	Tsangtseri	10.00	1982	Walnut, Champ, Chir Pine, Cupressus	65	35	6.50	3.50
4	Shumar	Dzong-RBP Area	4.60	1982	Cupressus	65	35	2.99	1.61
5	Zobel	Mongling	10.00	1983	Walnut, Champ	35	65	3.50	6.50
6	Zobel	Jaiphu Pangthang	20.00	1984	Walnut, Blue Pine, Cupressus	45	55	9.00	11.00
7	Zobel	Kherigonpaa	25.00	1989	Champ, Cupressus	45	55	11.25	13.75
8	Zobel	Kherigonpaa	20.00	1990	Cryptomeria, Walnut, Cupressus	35	65	7.00	13.00
9	Zobel	Ani Gonpa	35.00	1996	"	60	40	21.00	14.00
10	Shumar	Above Guest House	4.00	1996	Cryptomeria, Walnut, Champ	40	60	1.60	2.40
11	Zobel	Yongla Goenpa	8.00	1996	Cryptomeria, Champ	35	65	2.80	5.20
12	Zobel	Jashar Goenpa	16.00	1996	Walnut, Cryptomeria	85	15	13.60	2.40
13	Zobel	Tshelingkhor	25.00	1997	Cryptomeria, Walnut, Acer	25	75	6.25	18.75
14	Zobel	Mongling	25.00	1997	"	25	75	6.25	18.75
15	Zobel	Dolepchen	10.25	2012	Champ, Cupressus, Pipli, Blue Pine, Terminalia	85	15	8.71	1.54

		Sub-total	**302.85**					**148.45**	**154.40**
		Failed Plantation	65.00						65.00
		Total	**367.85**					**148.45**	**219.40**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Pemagatshel

Division: Pemagatshel

Range: Pemagatshel, Nanglam

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Zobel	Shumarthung	12.50	2003	Walnut, Cupressus, Cryptomeria	90	10	11.25	1.25
2	Zobel	Mongling	25.00	2004	Walnut, Cupressus, Cryptomeria, Pipli, Chir Pine	95	5	23.75	1.25
3	Zobel	Shumarthung	25.00	2005	Cupressus, Cryptomeria, Pipli, Champ, Walnut, Oak	90	10	22.50	2.50

4	Zobel	Rashuri	7.40	2009	Cupressus, Cryptomeria, Pipli	83	17	6.14	1.26
5	Zobel	Bramla	14.80	2011	Cupressus, Cryptomeria, Walnut, Champ, Pipli	96	4	14.21	0.59
6	Zobel	Zobel	4.00	2011	Pipli, Champ, Walnut	80	20	3.20	0.80
7	Zobel	Bramlazore	14.80	2012	Cupressus	89	11	13.17	1.63
1	Shumar	Gamung	25.00	2006	Walnut, Cupressus, Cryptomeria, Pipli, Bamboo, Oak	90	10	22.50	2.50
2	Shumar	Gamung	25.00	2008	Cupressus, Cryptomeraia, Pipli, Champ, Walnut, Oak	93	7	23.25	1.75
3	Shumar	Gamung	2.00	2010	Pipli, Champ, Walnut	90	10	1.80	0.20
1	Dungmin	Dungmin	6.00	2009	Pipli, Champ, Walnut	89	11	5.34	0.66
1	Yurung	Yurung	6.00	2009	Pipli, Champ, Walnut	95	5	5.70	0.30
1	Chimong	Chimong	4.00	2011	Pipli, Champ, Walnut	25	75	1.00	3.00

1	Decheling	Decheling	4.00	2011	Pipli, Champ, Walnut	86	14	3.44	0.56
1	Chongshing	Labar	1.20	2012	Pipli, Champ, Walnut	75	25	0.90	0.30
	Royal Wedding Plantation		1.08	2011	Cupressus, Pipli, Champ, Walnut	95	5	1.03	0.05
		Total	**177.78**					**159.18**	**18.60**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
Water Catchment Plantation									
1	Chokhorling	Chokhorling	4.00	2011	Pipli, Champ, Walnut	0	0	0.00	0.00
2	Chongshing	Yomzore	4.90	2009	Pipli, Champ, Walnut	0	0	0.00	0.00
3	Chongshing	Guyum & Lanangzor	4.00	2010	Cupressus, Jatropha, Banana	0	0	0.00	0.00
4	Decheling	Kholomri	4.00	2010	Pipli, Champ, Walnut	0	0	0.00	0.00
5	Decheling	Resemo	4.90	2011	Pipli, Champ, Walnut	0	0	0.00	0.00
6	Khar	Khar	4.00	2011	Pipli, Champ, Walnut	0	0	0.00	0.00
7	Nanong	Nanong	4.00	2011	Pipli, Champ, Walnut	0	0	0.00	0.00
8	Shumar	Gonpung	2.00	2010	Pipli, Champ, Walnut	0	0	0.00	0.00
9	Shumar	Shumar	4.00	2011	Pipli, Champ, Walnut	0	0	0.00	0.00

10	Yurung	Yurung	4.00	2011	Pipli, Champ, Walnut	0	0	0.00	0.00
11	Zobel	Yonglagonpa	3.00	2010	Pipli, Champ, Walnut	0	0	0.00	0.00
		Total	**42.80**			**0**		**0.00**	**0.00**

Note: Survival rate not evaluated

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Trashigang

Division: Trashigang

Range: Trashigang,

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Kanglung	Yongphula (IMTRAT Compound)	3.50	1970	Cyrptomeria, Cupressus	95	5	3.33	0.18
2	Kanglung	Yongphula (8 chortens)	24.00	1974	"	97	3	23.28	0.72
3	Kanglung	Yongphula (Below airport)	60.00	1977	"	92	8	55.20	4.80
4	Kanglung	Yongphula (Above airport)	25.50	1996	Cryptomeria	89	11	22.70	2.81
5	Kanglung	Yongphula (above airport road)	37.50	1997	Cryptomeria	93	7	34.88	2.63

6	Kanglung	Yongphula (Above airport)	20.00	2009	Chir pine, Cryptomeria, Walnut, Cupressus	95	5	19.00	1.00
		Sub-total	**170.50**					**158.38**	**12.13**
1	Thrimshing	Bongzorjab	1.38	2007	Cupressus, Cryptomeria	50	50	0.69	0.69
		Sub-total	**1.38**					**0.69**	**0.69**
1	Khaling	Donphangma	20.00	1991	Cupressus, Cryptomeria	85	15	17.00	3.00
		Sub-total	**20.00**					**17.00**	**3.00**
1	Phongmey	Dungjuri	70.00	2009	Cupressus, Cryptomeria, Schima	60	40	42.00	28.00
2	Phongmey	Rashugonpa	25.00	2010	Walnut, Cupressus	60	40	15.00	10.00
3	Phongmey	Phedungap	25.00	2010	"	65	35	16.25	8.75
4	Phongmey	Phimsongjug	22.50	2011	Walnut, Schima, Cupressus	60	40	13.50	9.00
5	Phongmey	Demkhar	25.00	2011	Walnut, Cupressus, Leucaena	48	52	12.00	13.00
		Sub-total	**167.50**					**98.75**	**68.75**

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Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species		Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Lumang	Wamrong (Unit Office Compound)	8.00	1974	Cupressus		60	40	4.80	3.20
2	Lumang	Wamrong	20.00	1977	Cupressus		90	10	18.00	2.00
3	Lumang	Wamrong	10.00	1978	Cupressus, Chir pine		85	15	8.50	1.50
4	Lumang	Khosphu	21.00	1979	Cupressus		60	40	12.60	8.40
5	Lumang	Wamrong (behind office)	20.00	1979	Cryptomeria, Walnut, Cupressus		82	18	16.40	3.60
6	Lumang	Wamrong (near BPC office)	5.00	1981	Cupressus		80	20	4.00	1.00
7	Lumang	Tshozor (Range Office)	3.00	1983	Cupressus, Walnut, Champ		30	70	0.90	2.10
8	Lumang	Domri	25.00	1999	Chir pine, Acer, Cupressus		80	20	20.00	5.00
9	Lumang	Kheshing	4.94	2008	Cupressus, Bamboo, Acer, Pipli		65	35	3.21	1.73
		Sub-total	**116.94**						**88.41**	**28.53**
2	Radhi	Yudhri	55.00	1998	Cupressus, Bluepine, Champ, Walnut		35	65	19.25	35.75
3	Radhi	Yudhri	45.00	1999	"		30	70	13.50	31.50

4	Radhi	Khatey	28.70	1999	Cupressus, Blue Pine., Cryptomeria		30	70	8.61	20.09
5	Radhi	Khatey	15.00	2000	"		32	68	4.80	10.20
6	Radhi	Yudhri	85.00	2000	"		35	65	29.75	55.25
7	Radhi	Shobrangtak	15.00	2011	Walnut, Cupressus		50	50	7.50	7.50
		Sub-total	**243.70**						**83.41**	**160.29**
		Failed Plantation	4.94						0.00	4.94
		Sub-total	**4.94**						**0.00**	**4.94**
		Total	**724.96**						**446.64**	**278.32**

Forest Type: Cool Broad Leaved Forest

Dzongkhag: Trashigang

Division: Trashigang

Range:Trashigang

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
Normal Afforestation									
1	Bartsham	Mongling	27.00	2008	Blue Pine, Cryptomeria	60	40	16.20	10.80

2	Bartsham	Yenangla	5.00	2009	Walnut, Cryptomeria, Blue Pine	65	35	3.25	1.75
3	Bartsham	Durduryey	3.00	2010	Oak	95	5	2.85	0.15
4	Bartsham	Naktshang	4.00	2010	Cupressus, Cryptomeria, Blue Pine	80	20	3.20	0.80
5	Bartsham	Dzongthung	1.50	2012	Oak	45	55	0.68	0.83
6	Bartsham	Bargoan	1.50	2012	Blue Pine	55	45	0.83	0.68
7	Bartsham	Mongling	1.50	2012	Blue Pine	50	50	0.75	0.75
8	Bartsham	Nepophodrang	1.50	2012	Cupressus	45	55	0.68	0.83
9	Bartsham	Mukhar	1.50	2012	Acer	50	50	0.75	0.75
10	Bartsham	Mantsang	1.50	2012	Alnus	55	45	0.83	0.68
11	Bartsham	Majawoong	1.50	2012	Oak	45	55	0.68	0.83
		Sub-total	**49.50**					**30.68**	**18.83**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
Normal Afforestation									
1	Kanglung	Nakajab	20.00	2008	Cupressus, Cryptomeria	60	40	12.00	8.00
2	Kanglung	Nakajab	5.00	2009	"	65	35	3.25	1.75

3	Kanglung	Yongphupam	6.00	2009	Cryptomeria, Blue Pine	40	60	2.40	3.60
4	Kanglung	Yonphula	1.00	2010	Cupressus	80	20	0.80	0.20
Water Source Protection									
5	Kanglung	Kharsa	0.15	2010	Bamboo	25	75	0.04	0.11
6	Kanglung	Shangshungjuk	0.30	2010	Bamboo, Oak	40	60	0.12	0.18
7	Kanglung	Shangshungjuk 1	0.50	2010	Bamboo	60	40	0.30	0.20
8	Kanglung	Shangshungjuk 2	1.00	2010	Bamboo	55	45	0.55	0.45
9	Kanglung	Zangri	1.00	2010	Bamboo	52	48	0.52	0.48
10	Kanglung	Pamkhapey	1.00	2010	Bamboo, Oak	40	60	0.40	0.60
11	Kanglung	Pam Bainangra	0.50	2010	Bamboo	45	55	0.23	0.28
12	Kanglung	Yongphula	0.15	2010	Bamboo, Chir Pine	50	50	0.08	0.08
13	Kanglung	Jakardung	12.00	2010	Cupressus, Bamboo	60	40	7.20	4.80
14	Kanglung	Zangkhorlom	0.50	2010	Bamboo, Blue Pine	50	50	0.25	0.25
15	Kanglung	Bumpa	2.50	2012	Bamboo, Blue Pine	55	45	1.38	1.13
		Sub-total	**51.60**					**29.50**	**22.10**

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Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
Normal Afforestation									
1	Radhi	Urphu	53.00	2001	Walnut, Quercus	60	40	31.80	21.20
2	Radhi	Zhophabsa	74.00	2002	Walnut, Cupressus	60	40	44.40	29.60
3	Radhi	Dunggonpa	54.00	2003	Cupressus, Blue Pine	80	20	43.20	10.80
4	Radhi	Radhi Urphu	20.00	2004	Cupressus, Blue Pine	60	40	12.00	8.00
5	Radhi	Urphu Zhugthri	15.00	2007	Castanopsis, Nyssia, Prunus, Cupressus, Quercus	50	50	7.50	7.50
6	Radhi	Kolaphu	60.00	2008	"	40	60	24.00	36.00
7	Radhi	Shingphuensum	20.00	2010	Cupressus	45	55	9.00	11.00
8	Radhi	Radhi Lakhang	0.14	2010	Cupressus	0	100	0.00	0.14
9	Radhi	Nagtshang	0.50	2010	Cupressus, Blue Pine, Bamboo	40	60	0.20	0.30
		Sub-total	**296.64**					**172.10**	**124.54**
Normal Afforestation									
1	Uzorong	Cheya	37.00	2004	Cupressus, Alnus, Acer, Walnut, Pipli	50	50	18.50	18.50
2	Uzorong	RNR-EC	1.50	2010	Cupressus	60	40	0.90	0.60

3	Uzorong	Remongdrang	20.00	2010	Blune Pine, Schima	90	10	18.00	2.00
		Sub-total	**58.50**					**37.40**	**21.10**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
Normal Afforestation									
1	Khaling	Bephu	5.00	2001	Cupressus, Cryptomeria	35	65	1.75	3.25
2	Khaling	Jomodrang	25.00	2002	Cupressus, Walnut, Acer, Cryptomeria	35	65	8.75	16.25
3	Khaling	Gomchu	30.00	2007	Cupressus, Blue Pine	40	60	12.00	18.00
4	Khaling	Jomodrang	2.50	2008	Cupressus, Blue Pine, Cryptomeria	40	60	1.00	1.50
5	Khaling	Rashung	2.50	2009	Cupressus, Schima, Cryptomeria	50	50	1.25	1.25
6	Khaling	Gomchu	1.20	2010	Cupressus, Cryptomeria	50	50	0.60	0.60
7	Khaling	Gomchu	6.00	2011	Cupressus, Walnut, Cryptomeria	80	20	4.80	1.20
8	Khaling	Bephu	6.00	2011	Chir Pine	55	45	3.30	2.70
		Sub-total	**78.20**					**33.45**	**44.75**

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Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
Normal Afforestation									
1	Yangnyer	Tholong Panthang	25.00	1998	Cupressus, Cryptomeria, Bluepine	85	15	21.25	3.75
2	Yangnyer	Shitula	25.00	2004	Cupressus	70	30	17.50	7.50
3	Yangnyer	Naydo	12.00	2006	Walnut, Cupressus, Bluepine	70	30	8.40	3.60
4	Yangnyer	Khorkhang	15.00	2006	Cupressus, Blue Pine	75	25	11.25	3.75
5	Yangnyer	Namtsangtso	20.00	2007	Walnut, Cupressus, Bluepine, Cryptomeria	55	45	11.00	9.00
6	Yangnyer	Kheri	6.00	2008	Blue Pine, Cryptomeria, Walnut, Bamboo	50	50	3.00	3.00
7	Yangnyer	Yangnyer	7.00	2008	"	40	60	2.80	4.20
8	Yangnyer	Kheri	5.00	2009	Walnut, Cryptomeria, Chir Pine	60	40	3.00	2.00

9	Yangnyer	Shokang	1.20	2009	Walnut, Blue Pine, Chirpine	45	55	0.54	0.66
10	Yangnyer	Tholong Panthang	6.00	2009	Cupressus, Blue Pine, Cryptomeria	95	5	5.70	0.30
11	Yangnyer	Daliphangma	1.00	2010	Cupressus	80	20	0.80	0.20
12	Yangnyer	Tholong Panthang	5.00	2012	Cupressus, Cryptomeria, Blue Pine	90	10	4.50	0.50
		Sub-total	**128.20**					**89.74**	**38.46**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
Water Source Protection									
1	Kangpara	Kangpara	4.00	2007	Schima, Oak, Cupressus	70	30	2.80	1.20
2	Kangpara	Pedong	6.00	2008	Bamboo	70	30	4.20	1.80
3	Kangpara	Khortshormani	0.14	2010	Cupressus	90	10	0.13	0.01
		Sub-total	**10.14**					**7.13**	**3.01**
1	Thrimshing	Bongzorjab	2.50	2008	Alnus, Cupressus, Cryptomeria	85	15	2.13	0.38

2	Thrimshing	Thrimshing	5.00	2008	Schima, Oak, Cupressus, Blue Pine	70	30	3.50	1.50
3	Thrimshing	Phungshing	2.50	2009	Bamboo	80	20	2.00	0.50
4	Thrimshing	Raynangna	5.00	2009	Fencing	80	20	4.00	1.00
5	Thrimshing	Yemkhar	2.50	2009	Fencing	75	25	1.88	0.63
6	Thrimshing	Kharshingyee	12.00	2009	Bamboo, Oak	75	25	9.00	3.00
7	Thrimshing	Bongzorjab	5.00	2009	Blue Pine, Cupressus	70	30	3.50	1.50
8	Thrimshing	Tsangpo	4.00	2009	Blue Pine, Schima, Cupressus, Quercus	85	15	3.40	0.60
9	Thrimshing	Ramchongma	4.00	2009	Cryptomeria	80	20	3.20	0.80
Normal Afforestation									
10	Thrimshing	Sako	2.50	2009	Blue Pine, Schima, Cupressus	80	20	2.00	0.50
11	Thrimshing	RNR-EC	1.50	2010	Cupressus	65	35	0.98	0.53
		Sub-total	**46.50**					**35.58**	**10.93**

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Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**

Water Source Protection									
1	Lumang	Shingpori/Moshi	2.50	2007	Alnus, Schima	30	70	0.75	1.75
2	Lumang	Kosphu/Mochu	2.50	2008	Alnus, Ficus, Mixed Broadleaved	60	40	1.50	1.00
3	Lumang	Thrumnang Tshogonpa	62.00	2008	Cryptomeria, Cupressus, Bamboo	60	40	37.20	24.80
4	Lumang	Tshogonpa	4.00	2009	Schima, Cryptomeria	60	40	2.40	1.60
5	Lumang	Demri/Shopheri	6.00	2009	Alnus, Schima	40	60	2.40	3.60
6	Lumang	Mochu/ Chongmashing	6.00	2009	Alnus, Schima, Ficus	30	70	1.80	4.20
7	Lumang	Kotsorong	62.00	2009	Walnut, Cupressus, Bamboo	50	50	31.00	31.00
8	Lumang	Mochema	25.00	2010	Cryptomeria, Walnut, Cupressus	60	40	15.00	10.00
9	Lumang	Sheri/Kheshing	2.50	2010	Alnus, Schima, Ficus	30	70	0.75	1.75
10	Lumang	Lungshingri/Bemri	5.00	2010	Alnus, Schima	35	65	1.75	3.25
11	Lumang	Wangphuri	2.50	2010	Alnus, Schima	40	60	1.00	1.50
12	Lumang	Mukazor/Moshi	0.16	2010	Cupressus	60	40	0.10	0.06
13	Lumang	Menthong/ Pangthang	50.00	2011	Cupressus, Cryptomeria	60	40	30.00	20.00

14	Lumang	Labri/Dungmanma	2.5	2011	Alnus, Schima, Ficus	35	65	0.88	1.63
15	Lumang	Gangtong	2.50	2011	Alnus, Schima, Ficus	40	60	1.00	1.50
16	Lumang	Mochema	10.00	2012	Cryptomeria, Cupressus	50	50	5.00	5.00
		Sub-total	**245.16**					**132.52**	**112.64**

Continued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
Water Source Protection									
1	Phongmey	Yabrang	9.00	2007	Walnut	60	40	5.40	3.60
2	Phongmey	Dorshing	2.50	2008	Oak, Bamboo	45	55	1.13	1.38
3	Phongmey	Dungjuri	20.00	2010	Bamboo, Cupressus, Willow, Napier	50	50	10.00	10.00
4	Phongmey	RNR-EC	0.14	2011	Cupressus	80	20	0.11	0.03
5	Phongmey	Phunzor, Momkhar	5.00	2012	Cupressus	80	20	4.00	1.00
		Sub-total	**36.64**					**20.64**	**16.00**

1	Shongphu	Chaling Tshephu	27.00	2004	Cupressus, Cryptomeria, Acer, Walnut, Blue Pine	60	40	16.20	10.80
2	Shongphu	Chaling Abibusso	7.00	2005	Cupressus, Cryptomeria, Acer, walnut, Blue Pine	60	40	4.20	2.80
3	Shongphu	Chaling Tsemrong	7.00	2005	"	70	30	4.90	2.10
4	Shongphu	Chaling Laptsrong	5.00	2005	"	75	25	3.75	1.25
5	Shongphu	Chaling	15.00	2006	Cupressus, Cryptomeria, Acer Walnut, Blue Pine, Quercus	65	35	9.75	5.25
6	Shongphu	No place	2.50	2008	Fencing	65	35	1.63	0.88
7	Shongphu	Yobinang Mangchaling	11.00	2009	Cupressus, Acer, Alnus,Walnut, Blue Pine, Quercus	70	30	7.70	3.30
8	Shongphu	Chaling	20.00	2010	Cupressus, Acer, Alnus,Walnut, Blue Pine, Quercus	70	30	14.00	6.00
9	Shongphu	Changmey	1.00	2010	Cupressus	75	25	0.75	0.25
		Sub-total	**95.50**					**62.88**	**32.63**
		Total	**1096.58**					**651.60**	**444.98**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Trashi Yangtse

Division: Trashigang

Range: Yangtse and Doksum

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Toetsho	Manam Chema	9.88	2005	Cryptomeria, Chir Pine	43	57	4.25	5.63
2	Toetsho	Zodari	1.11	2009	Schima, Rhus paniculata, Ficus, Macaranga denticulata	37	63	0.41	0.70
1	Yangtse	Dz.Compund	15.40	2009	Cupressus, Cryptomeria, Blue Pine, Prunus ceresoides	96	4	14.78	0.62
2		Above Dz. Store	2.60	2011	Cupressus, Cryptomeria, Blue Pine, Pipli	54	46	1.40	1.20
		Sub-total	**28.99**					**20.85**	**8.14**
		Failed Plantation	4.50					0.00	4.50
		Sub-total	**4.50**					**0.00**	**4.50**

		Total	**33.49**					**20.85**	**12.64**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Trongsa

Division: Zhemgang

Range: Trongsa

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1		Menjejangsa	20.00	1981	Chir Pine, Cupressus, Walnut	65	35	13.00	7.00
2	Nubi	Willingpang	25.00	1989	Blue Pine	100	0	25.00	0.00
3	Drakten	Endocholing	25.00	1993	Blue Pine	50	50	12.50	12.50
4	Drakteng	Refee	25.00	1995	Cupressus, Walnut	55	45	13.75	11.25
5	Nubi	Tshengaypang	24.71	2011	Cupressus, Walnut, Blue Pine	21	79	5.19	19.52
		Total	**119.71**					**69.44**	**50.27**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Trongsa

Division: Zhemgang

Range: Trongsa

Agency: Dzongkhag

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Drakteng	Wangthangjaling	7.50	2001	Alnus, Erythrina, Cupressus	40	60	3.00	4.50
2	Drakteng	Narbangchu	13.00	2004	Alnus, Cupressus	75	25	9.75	3.25
3	Drakteng	Phapawa (K.rabten)	7.40	2005	Cupressus, Blue Pine	60	40	4.44	2.96
4	Drakteng	Narnbang	5.00	2005	Cupressus,	90	10	4.50	0.50
5	Drakteng	Korilapang (K.rapten)	7.41	2005	Cupressus, Blue Pine, Alnus, Erythrina	65	35	4.82	2.59
6	Drakteng	Churaneypa	15.00	2007	Cupresssus, Chir Pine, Bamboo, Alnus	60	40	9.00	6.00
7	Drakteng	Kuengarabpten (Anim Dratshang)	5.00	2008	Alnus, Erythrina, Ficus, Cupressus	70	30	3.50	1.50
8	Drakteng	Chakarzu	1.24	2010	Champ, Cupressus, Alnus, Bamboo	50	50	0.62	0.62
9	Drakteng	RNR-EC	0.50	2011	Cupressus, Champ	80	20	0.40	0.10
1	Nubi	Threupang	2.00	2005	Rhododendron, Bamboo, Hemlock	90	10	1.80	0.20
2	Nubi	Dorji Goenpa	19.76	2010	Cupressus, Blue Pine	80	20	15.81	3.95
3	Nubi	Willing	7.93	2010	Blue Pine, Cupressus, Oak	80	20	6.34	1.59
4	Nubi	Takshawom	8.65	2011	Cupressus	80	20	6.92	1.73

5	Nubi	Phuntshopelri	4.00	2011	Cupressus	93	7	3.72	0.28
6	Nubi	Duthroejab	0.50	2011	Cupressus	70	30	0.35	0.15
7	Nubi	Dorji Goenpa	0.50	2011	Cupressus	50	50	0.25	0.25
1	Langthel	Jangbi	0.50	2010	Erythrina, Alnus	20	80	0.10	0.40
2	Langthel	RNR-EC	0.50	2011	Mixed Broadleaved	80	20	0.40	0.10
1	Tangsibji	Chendibji	50.00	2004	Blue Pine, Cupressus	68	32	34.00	16.00
2	Tangsibji	Tshangkha	0.59	2011	Cupressus, Champ	65	35	0.38	0.21
3	Tangsibji	Tshangkha	10.00	2012	Cupresssus	90	10	9.00	1.00
4	Tangsibji	Tashiling	2.50	2012	Cupressus, Blue Pine	80	20	2.00	0.50
		Failed Plantation	46.22					0.00	46.22
		Total	**215.70**					**121.10**	**94.60**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Tsirang

Division: Tsirang

Range: Tsirang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**

1	Kilkhorthang	Royal Guest House	5.00	2001	Cryptomeria, Cupressus, Champ, Siver Oak, Bottle Brush	70	30	3.50	1.50
2	Kilkhorthang	Upper Bokrey	5.00	2001	Cryptomeria, Cupressus, Champ, Siver Oak, Golden excelsa	30	70	1.50	3.50
3	Kilkhorthang	Mithunpakha	5.00	2001	Champ, Silver Oak	70	30	3.50	1.50
4	Kilkhorthang	Behind Old Dzong	13.00	2005	Champ, Silver Oak, Goldeneye excelsa, Exbucklandia	70	30	9.10	3.90
5	Kilkhorthang	Daragaon B	1.80	2008	Cryptomeria, Tooni, Champ, Walnut	25	75	0.45	1.35
6	Kilkhorthang	Royal Wedding Plantation	0.25	2011	Champ, Cupressus, Bottlebrush, Phoeba altenuata	95	5	0.24	0.01
1	Rangthangling	Khabari Dangra	5.00	2001	Champ, Silver Oak	80	20	4.00	1.00
1	Tsholingkhar	Pokhari Dangra	4.00	2001	Champ, Silver Oak, Rambi	30	70	1.20	2.80
1	Patshaling	Mauri Dangra	12.45	2003	Champ, Silver Oak, Goldeneye excelsa, Exbucklandia, Q. griffthii	70	30	8.72	3.74
1	Doonglagang	Khirithang	1.86	2007	Champ, Cupressus, Cryptomeria, Terminalia tomentosa	50	50	0.93	0.93

		Failed Plantation	18.60					0.00	18.60
		Total	**71.96**					**33.13**	**38.83**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Punakha

Division: Wangdi

Range: Lobesa

Sl.#	**Gewog**	**Location**	**Area (Acre)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Toebesa	Phetserilum 1	7.00	1975	Cupressus	85	15	5.95	1.05
2	Toebesa	Phetserilum 2	5.00	1975	Cupressus	85	15	4.25	0.75
3	Toebesa	Mesigang 1	5.40	1976	Cupressus	80	20	4.32	1.08
4	Toebesa	Mesigang 2	8.00	1976	Cupressus	80	20	6.40	1.60
5	Toebesa	Mesigang 3	7.00	1976	Cupressus	80	20	5.60	1.40
6	Toebesa	Menchuna (above PWD)	3.50	1977	Cupressus	85	15	2.98	0.53
7	Toebesa	Menchuna (above nursery)	9.86	1978	Cupressus, Walnut	90	10	8.87	0.99
8	Toebesa	Lamperi	70.00	1984	Cupressus, Blue Pine	50	50	35.00	35.00
		Total	**115.76**					**73.37**	**42.39**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Wangdiphodrang

Division: Wangdi

Range: Wangdi

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Nahi	Pegang CRWP	0.20	2011	Cupressus	70	30	0.14	0.06
1	Sephu	Chazam CRWP	0.20	2011	Cupressus	60	40	0.12	0.08
1	Dangchu	Nobding	29.94	1996	Cupressus	85	15	25.45	4.49
2	Dangchu	Tangra CRWP	0.20	2011	Cupressus	95	5	0.19	0.01
		Total	**30.54**					**25.90**	**4.64**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Zhemgang

Division: Zhemgang

Ranges: Zhemgang

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)

1	Trong	Dungbi (Chukormani II)	80.48	1973	Cupressus, Walnut, Cryptomeria, Chorespondias axillaries	100	0	80.48	0.00
2	Trong		0.68	1973	Cryptomeria, Pipli, Deodar	60	40	0.41	0.27
3	Trong		13.21	1974	Cupressus, Cryptomeria, Pipli	100	0	13.21	0.00
4	Trong	Chacharma	10.00	1974	Cupressus, Cryptomeria, Pipli, Deodar	100	0	10.00	0.00
5	Trong	Chukormani I	5.00	1975	Cupressus, Walnut, Cryptomeria, Chorespondias axillaries	95	5	4.75	0.25
6	Trong	ZHSS I Plantation	1.62	1986	Cupressus, Walnut, Cryptomeria, Chorespondias axillaries, Deodar	100	0	1.62	0.00
7	Trong	ZHSS II Plantation	3.91	1986	Cupressus, Cryptomeria, Deodar, Chir Pine	100	0	3.91	0.00
8	Trong	Dzong Plantation	1.50	1987	Cryptomeria, Deodar	100	0	1.50	0.00
9	Trong	Wamtakpa	1.65	1999	Cupressus, Cryptomeria, Walnut	80	20	1.32	0.33
10	Trong	Dakpai	5.00	2008	Champ, Cupressus, Walnut, Bamboo	35	65	1.75	3.25
11	Trong	Drangmaleng, Dakpai	4.00	2009	Cupressus, Walnut, Champ, Toona	100	0	4.00	0.00

12	Trong	Dungbi, Barpong	4.94	2011	Walnut, Champ, Cupressus, Toona, Benthamedia	75	25	3.71	1.24
13	Trong	Tali	4.54	2011	Champ, Toona, Cupressus, Walnut	65	35	2.95	1.59
14	Bardo??	Bardo	2.50	2012	Cupressus, Walnut, Melia	90	10	2.25	0.25
		Failed Plantation	98.84					0.00	98.84
		Total	**237.87**					**131.85**	**106.02**

Forest Type: Cool Broad-leaved Forest

Dzongkhag: Zhemgang

Division: Zhemgang

Ranges: Khomsher

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Bardo	Khomshar	2.00	2012	Bamboo	60	40	1.20	0.80
2	Bardo	Gup's Office	0.50	2011	Cupressus, Walnut	70	30	0.35	0.15
1	Nangkor	Buli	0.50	2011	Cupressus, Toona	100	0	0.50	0.00
1	Shingkhar	Nimshong (Phuntshothang)	2.00	2001	Cupressus	100	0	2.00	0.00
2	Shingkhar	RNR Compound	0.5	2011	Walnut, Cupressus	50	50	0.25	0.25

1	Trong	Berti	7.00	2008	Bamboo	70	30	4.90	2.10
2	Trong	Around Dzong	0.50	2010	Bamboo	70	30	0.35	0.15
3	Trong	Guest House	1.00	2011	Benthamedai	100	0	1.00	0.00
4	Trong	Tingtibi(Near Gup's Office)	0.50	2011	Cupressus	100	0	0.50	0.00
5	Trong	Trong Lhakhang	2.35	2011	Cuppressus, Toona	53	47	1.25	1.10
		Failed Plantation	9.67					0.00	9.67
		Total	**26.52**					**12.30**	**14.22**

ANNEX III: WARM BROAD-LEAVED FOREST

Forest Type: Warm Broad-leaved Forest

Dzongkhag: Dagana

Division: Dagana

Range: Dagana

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Kana	Okana	1.00	2004	Salix, Musa spp.	75	25	0.75	0.25
2	Kana	Omitshawa	0.50	2009	Champ	70	30	0.35	0.15
3	Kana	Kanakha	1.00	2009	Cupressus	80	20	0.80	0.20
1	Tshendagang	Sherpalakha-Norbuzingkha	7.50	2007	Cupressus corenyana	80	20	6.00	1.50

2	Tshendagang	Norbuzingkha	7.50	2008	Cupressus corenyana	85	15	6.38	1.13
1	Drujegang	Patala	3.00	2009	Bamboo, Ficus, Silver Oak	95	5	2.85	0.15
2	Drujegang	Drujegang	3.00	2009	Percea fructifera, Ficus, Silver Oak	95	5	2.85	0.15
3	Drujegang	RNR Campus	0.25	2011	Cupressus	50	50	0.13	0.13
1	Karmaling	Karmaling CPS	0.25	2011	Teak, Phoebe altnuata, Gmelina	60	40	0.15	0.10
1	Goshi	Sherpalakha II	6.18	2011	Champ, Phobe altnuata	25	75	1.55	4.64
2	Goshi	RNR Campus	0.25	2011	Cupressus corenyana	45	55	0.11	0.14
1	Tseza	Dzongsel	0.50	2011	Cupressus corenyana	80	20	0.40	0.10
1	Khebesa	RNR Campus	0.25	2011	Cupressus	100	0	0.25	0.00
1	Tshankha	RNR Campus	0.25	2011	Cupressus	85	15	0.21	0.04
1	Gaserling	Peling Dara	7.50	2009	Cupressus, Champ	60	40	4.50	3.00
2	Gaserling	Tashithang	7.50	2010	Cupressus, Champ	80	20	6.00	1.50
3	Gaserling	Phuensumgang	7.50	2011	Cupressus, Champ	80	20	6.00	1.50
1	Trashiding	Trashiding LSS	0.25	2011	Cupressus, Silver Oak, Fruit Trees	75	25	0.19	0.06
2	Trashiding	Namchala	1.25	2012	Silver Oak, Champ	80	20	1.00	0.25
1	Dorona	Nimtola	1.25	2011	Silver Oak, Champ	60	40	0.75	0.50
2	Dorona	Nimtola RNR	0.25	2011	Cupressus corenyana	85	15	0.21	0.04
1	Larjab	Gup's Office	0.25	2011	Cupressus corenyana	80	20	0.20	0.05
		Failed Plantation	2.90					0.00	2.90

		Total	**60.08**					**41.62**	**18.46**

Forest Type: Warm Broad-leaved Forest

Dzongkhag: Zhemgang

Division: Jigme Singye Wangchuk National Park

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Trong	Rhodum	25.00	1993	Champ, Walnut, Bombax, Gmelina	90	10	22.50	2.50
		Total	**25.00**					**22.50**	**2.50**

Forest Type: Warm Broad-leaved Forest

Dzongkhag: Lhuenste

Division: Mongar

Range: Lhuentse

Agency: Dzongkhag

Sl.#	**Gewog**	**Location**	**Area (Acre)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Kurtoed	Jasabi	2.50	2010	Sapindus	25	75	0.63	1.88
		Total	**2.50**					**0.63**	**1.88**

ANNEX IV: CHIR PINE PLANTATION

Forest Type: Chir Pine Forest

Dzongkhag: Mongar

Division: Mongar

Range: Lhuentse

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Gangzur	Below Dzong	7.41	1985	Cupressus, Eucalyptus	50	50	3.71	3.71
2	Gangzur	Tongkangla	4.94	1997	Cupressus, Chir pine	40	60	1.98	2.96
3	Gangzur	Gangzur	49.40	2000	Chir Pine, Melia, Lucaenia	60	40	29.64	19.76
		Sub-total	**61.75**					**35.32**	**26.43**
1	Menbi	Thinly Pang	49.40	1985	Chir Pine, Eucalyptus, Melia	55	45	27.17	22.23
2	Menbi	Jabin	49.40	1999	"	40	60	19.76	29.64
3	Menbi	Ngunmaling	50.00	2001	Chir Pine	55	45	27.50	22.50
		Sub-total	**148.80**					**74.43**	**74.37**
1	Minje	Karchangma	12.35	1994	Chir Pine, Melia, Eucalyptus	30	70	3.71	8.65
2	Minje	Below Gup's Office	20.00	1996	Chir Pine,Melia	40	60	8.00	12.00

3	Minje	Churchurla	4.06	2002	Chir Pine	70	30	2.84	1.22
		Failed Plantation	4.06					0.00	4.06
		Sub-total	**40.47**					**14.55**	**25.92**
		Total	**251.02**			**49.51**	**50.49**	**124.30**	**126.72**

Forest Type: Chir Pine Forest

Dzongkhag: Lhuenste

Division: Mongar

Range: Lhuentse

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Minjay	Churchurla	125.00	2002	Chir Pine	45	55	56.25	68.75
2	Minjay	Minjay	75.00	2004	Chir Pine	40	60	30.00	45.00
3	Minjay	Mijay	3.00	2007	Chir Pine	40	60	1.20	1.80
4	Minjay	Wangshing	0.30	2011	Cupressus	50	50	0.15	0.15
5	Minjay	Near RNR-EC	2.47	2012	Chir Pine	55	45	1.36	1.11
6	Minjay	Failed Plantation	3.00	2011				0.00	3.00
		Sub-total	**208.77**					**88.96**	**119.81**
1	Gangzur	Dzong Area	14.00	2006	Chir Pine, Sapindas, Silver Oak	45	55	6.30	7.70
2	Gangzur	Dzong Area	7.41	2007	"	40	60	2.96	4.45

3	Gangzur	Dzong Campus	2.47	2009	Chir Pine, Silver Oak	45	55	1.11	1.36
4	Gangzur	Lekpagang	5.40	2010	Cupressus	40	60	2.16	3.24
5	Gangzur	Gangzur (Near DVH)	0.30	2011	Cupressus	60	40	0.18	0.12
6	Gangzur	Lekpachu	7.60	2011	Cupressus	60	40	4.56	3.04
7	Gangzur	Thimyul Monk School	5.10	2012	Chirpine, Cupressus	60	40	3.06	2.04
8	Gangzur	Failed Plantation	7.00	2010	Agave			0.00	7.00
		Sub-total	**49.28**					**20.34**	**28.94**
1	Medtsho	Above Old LEC	0.30	2011	Cupressus	60	40	0.18	0.12
		Sub-total							
1	Jaray	Zangkhar	0.30	2011	Cupressus	70	30	0.21	0.09
1	Kurtoed	Dungkar - near Nagtsahng	1.60	2012	Cupressus	45	55	0.72	0.88
		Sub-total	**1.90**					**0.93**	**0.97**

Continued…

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Menbi	Ngunmaling	3.00	2009	Chir Pine	50	50	1.50	1.50
2	Menbi	Merguling	22.23	2009	Chir Pine	50	50	11.12	11.12
3	Menbi	Ngunmaling	5.00	2010	Chir Pine	50	50	2.50	2.50
4	Menbi	Takila	0.30	2011	Cupressus	55	45	0.17	0.14

5	Menbi	Lower Thinley Pang	11.50	2012	Chir Pine	30	70	3.45	8.05
6	Menbi	Failed Plantation	11.04	2011	Banana + Bamboo				11.04
		Sub-total	**53.07**					**18.73**	**34.34**
1	Tsenkhar	Sisinyelsa	4.00	2010	Chir Pine, Sapindas, Silver Oak	30	70	1.20	2.80
2	Tsenkhar	Domkhar	0.30	2011	Cupressus	70	30	0.21	0.09
3	Tsenkhar	Nganagang	13.50	2012	Chir Pine	40	60	5.40	8.10
		Sub-total	**17.80**					**6.81**	**10.99**
1	Khoma	Khoma Duthroe	4.00	2010	Cupressus	60	40	2.40	1.60
2	Khoma	Khoma	4.00	2010	Chir Pine, Sapindas, Silver Oak	40	60	1.60	2.40
3	Khoma	Khoma Zam	2.47	2012	Cupressus	65	35	1.61	0.86
4	Khoma	Failed Plantation	2.47	2009	Cupressus			0.00	2.47
		Sub-total	**12.94**					**5.61**	**7.33**
		Total	**343.76**			**41.12**	**58.88**	**141.37**	**202.39**

Forest Type: Chir Pine

Dzongkhag: Mongar

Division: Mongar

Range: Mongar

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Chaskhar	Rajair	60.69	2000	Chir Pine, Eucalyptus	25	75	15.17	45.52
	Land Management								
2	Chaskhar	Khobshingra	6.53	2008	Bamboo, Thysolenia, Vibernum	25	75	1.63	4.90
3	Chaskhar	Khomas	5.68	2010	Bamboo, Thysolenia, Vibernum	25	75	1.42	4.26
		Sub-total	**72.9**					**18.23**	**54.68**
1	Drametse	Gortshalo	50.00	1976	Chir Pine	50	50	25.00	25.00
2	Drametse	Gortshalo	40.00	1984	Chir Pine	30	70	12.00	28.00
3	Drametse	Waichur	25.00	1995	Chir Pine	30	70	7.50	17.50
4	Drametse	Refridang	74.10	1996	Chir Pine	45	55	33.35	40.76
5	Drametse	Khoyop I	49.40	1997	Chir Pine	35	65	17.29	32.11
6		Khoyop II	49.40	1998	Chir Pine	35	65	17.29	32.11
7	Drametse	Sherichu	9.41	1999	Chir Pine, Eucalyptus	25	75	2.35	7.06
8	Drametse	Vergima	49.42	2009	Chir Pine	25	75	12.36	37.07
		Failed Plantation	75.00					0.00	75.00
		Total	**421.73**					**127.13**	**294.60**

Forest Type: Chir Pine Forest

Dzongkhag: Mongar

Division: Mongar

Ranges: Mongar

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Tsamang	Gangtong	1.48	2007	Chir Pine	60	40	0.89	0.59
2	Tsamang	Jangshingnelsa	2.47	2009	Bamboo	60	40	1.48	0.99
3	Tsamang	Tsamang CPS	0.49	2011	Delonex, Jacaranda, Benthamedia, Lagerstromia	25	75	0.12	0.37
		Sub-total	**4.44**					**2.49**	**1.95**
1	Thanrong	Dekulung	5.00	2010	Chir Pine	40	60	2.00	3.00
2	Thanrong	Failed Plantation	31.50					0.00	31.50
		Sub-total	**36.50**					**2.00**	**34.50**
1	Jurmey	Bilam	5.00	2005	Chir Pine	25	75	1.25	3.75
2	Jurmey	Bilam Panthang	1.00	2011	Chir Pine, Bhomeria, Banana	40	60	0.40	0.60
3	Jurmey	Bilam	0.50	2012	"	55	45	0.28	0.23

		Failed Plantation	21.75	2007-10				0.00	21.75
1	Kengkhar	Failed Plantation	8.00	2005-09				0.00	8.00
		Sub-total	**36.25**					**1.93**	**34.33**
		Total	**77.19**			**8.32**	**91.68**	**6.42**	**70.77**

Forest Type: Chir Pine Forest

Dzongkhag: Punakha

Division: Wangdue

Range: Punakha

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Chubu	Gyoendrap Lhakhang	4.37	1997	Cupressus	90	10	3.93	0.44
2	Chubu	Thangzona	2.50	2003	Cupressus	75	25	1.88	0.63
3	Chubu	Punagom (old PDRP Camp)	10.50	2004	Silver Oak, Delonex, Acacia, Jacaranda	90	10	9.45	1.05
4	Chubu	Below Dzong (Phochu-Mochu Confluence)	3.27	2007	Melia, Delonex, Jacaranda, Cassia, Bottlebrush,	90	10	2.94	0.33

					Syzigium, Willow, Citrus				
5	Chubu	Sewla	0.03	2008	Cupressus	70	30	0.02	0.01
6	Chubu	Bali	0.15	2009		70	30	0.11	0.05
7	Chubu	Jiligang	12.35	2010	Cupressus, Acacia, Jacaranda, Albizia	70	30	8.65	3.71
8	Chubu	Legshe Jungne Shedra	9.88	2011	Cupressus	80	20	7.90	1.98
9	Chubu	Tempakha Water Source	0.20	2011	Mixed Species	60	40	0.12	0.08
10	Chubu	Rechina	0.26	2011	Mixed Species	60	40	0.16	0.10
11	Chubu	Bali Lhakhang	0.70	2011	Mixed Species	60	40	0.42	0.28
12	Chubu	Geog Center	1.00	2011	Mixed Species	60	40	0.60	0.40
1	Guma	Upper Zomlingthang	5.00	1990	Chir Pine	60	40	3.00	2.00
2	Guma	Gamakha (Above Khuru)	1.50	1994	Cupressus	60	40	0.90	0.60
3	Guma	Chorten Kangnyim	0.30	2002	Cupressus	60	40	0.18	0.12
4	Guma	Lower Zomlingthang	3.20	2008	Jacaranda, Cupressus, Casia, Oak	60	40	1.92	1.28
1	Kabjee	Tongshuna ECR	0.70	2011	Bottlebrush, Cupressus, Cassia	90	10	0.63	0.07

		Total	**55.91**			**76.55**	**23.45**	**42.80**	**13.11**

Forest Type: Chir Pine Forest

Dzongkhag: Trashigang

Division: Trashigang

Range: Trashigang

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Samkhar	Kheri	15.00	1984	Chir pine	65	35	9.75	5.25
2	Samkhar	Phomgshing	5.00	2010	Chir pine, Cupressus, Melia	50	50	2.50	2.50
1	Radhi	Buna Road	60.00	1974	Chir pine, Cupressus	65	35	39.00	21.00
1	Bidung	Tshongwongtot	37.50	2011	Walnut, Leucaena	60	40	22.50	15.00
2	Bidung	Retshangpak	22.50	2012	Walnut, Cupressus, Leucaena, Bombax	80	20	18.00	4.50
1	Yangneer	Ritshalu 1	60.00	1988	Chir pine	90	10	54.00	6.00
2	Yangneer	Ritshalu 2	6.00	1989	Cupressus, Walnut	85	15	5.10	0.90
3	Yangneer	Ritshalu 3	62.00	1990	Chir pine	92	8	57.04	4.96
4	Yangneer	Ritshalu 4	60.00	1994	Chir pine	90	10	54.00	6.00
5	Yangneer	Ritshalu 5	25.00	1996	Chir pine	91	9	22.75	2.25

6	Yangneer	Ritshalu 6	37.50	1997	Chir pine	87	13	32.63	4.88
7	Yangneer	Ritshalu (Above PWD Camp)	5.00	2009	Chir pine, Melia, Eucalyptus, Blue pine, Silver Oak, Bottlebrush	70	30	3.50	1.50
		Failed Plantation	60.00					0.00	60.00
		Total	**455.50**			**70.42**	**29.58**	**320.77**	**134.74**

Forest Type: Chir Pine Forest

Dzongkhag: Trashigang

Division: Trashigang

Range: Trashigang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Samkhar	Yoezerongpek	25.00	2002	Chir Pine	50	50	12.50	12.50
2	Samkhar	Godhi	12.00	2002	Cupressus, Cryptomeria	40	60	4.80	7.20
3	Samkhar	Lungtenzampa	37.00	2005	Chir Pine, Cryptomeria, Cupressus	25	75	9.25	27.75
4	Samkhar	Bikhar	1.00	2010	Cupressus	70	30	0.70	0.30
5	Samkhar	Yenangbrangsa	2.50	2012	Bamboo	80	20	2.00	0.50

		Sub-total	**77.50**					**29.25**	**48.25**
1	Bidung	Saling	2.50	2008	Bamboo, Cupressus, Walnut	65	35	1.63	0.88
2	Bidung	Saling	20.00	2010	Chir Pine, Cryptomeria	65	35	13.00	7.00
3	Bidung	Above RNR EC	0.15	2010	Cupressus	80	20	0.12	0.03
		Sub-total	**22.65**					**14.75**	**7.91**
		Total	**100.15**			**43.93**	**56.07**	**44.00**	**56.15**

Forest Type: Chir Pine Forest

Dzongkhag: Trashi Yangtse

Division: Trashigang

Range: Yangtse

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Khamdang	Tshenkharla	3.50	1970	Chir pine, Blue Pine, Eucalyptus, Cupressus	55	45	1.93	1.58
2	Khamdang	Zangdopelri	10.00	1977	Cupressus, Bluepine	70	30	7.00	3.00
3	Khamdang	Zangdopelri	7.00	1979	"	50	50	3.50	3.50
4	Khamdang	Razongjuk	25.00	1983	Chir Pine, Eucalyptus	40	60	10.00	15.00

		Sub-total	**45.50**					**22.43**	**23.08**
		Failed Plantation	5.70	1980	Chir Pine, Eucalyptus			0.00	5.70
		Sub-total	**5.70**					**0.00**	**5.70**
1	Doksum	Doksum (RO Compund)	2.78	1985	Chir Pine, Melia, Eucalyptus	50	50	1.39	1.39
2	Doksum	Radzong	10.00	1994	Chir pine, Melia	40	60	4.00	6.00
3	Doksum	Doksum (below road)	10.00	1997	Chir Pine, Melia	50	50	5.00	5.00
		Sub-total	**22.78**					**10.39**	**12.39**
		Failed Plantation	10.00	-	Eucalyptus, Chir Pine			0.00	10.00
		Sub-total	**10.00**					**0.00**	**10.00**
1	Tongzang	Zawang/Tshopo	15.00	1995	Chirpine, Melia, Eucalyptus	46	54	6.90	8.10
		Sub-total	**15.00**					**6.90**	**8.10**

Forest Type: Chir Pine Forest

Dzongkhag: Wangduephodrang

Division: Wangdue

Range: Wangdue

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area Wth Trees (Ac)**	**Area Without Trees (Ac)**

1	Thedtsho	Above RBA MTC	4.00	1973	Chir Pine	100	0	4.00	0.00
2	Thedtsho	Above RBA MTC	200.00	1974	"	100	0	200.00	0.00
3	Thedtsho	Rinchengang	76.57	1976	"	100	0	76.57	0.00
4	Thedtsho	Matalungchu	100.00	1976	"	100	0	100.00	0.00
5	Thedtsho	Bajosamthang	210.83	1990	"	100	0	210.83	0.00
6	Thedtsho	Rinchengang	5.31	1990	"	100	0	5.31	0.00
7	Thedtsho	Bajolhakhang	76.57	1991	"	70	30	53.60	22.97
8	Thedtsho	Dzong Area	38.66	1992	Cupressus, Chir Pine	80	20	30.93	7.73
9	Thedtsho	Above RBA MTC	12.35	1993	Chir Pine	100	0	12.35	0.00
10	Thedtsho	Dolay Pekha	25.00	1999	Chir Pine, Melia	100	0	25.00	0.00
1	Phangyul	Phangyulgang	250.00	1976	Chir Pine	100	0	250.00	0.00
2	Phangyul	Chuzomsa	1.00	1976	Cupressus	100	0	1.00	0.00
3	Phangyul	Phangyulgang	240.00	1977	Chir Pine	100	0	240.00	0.00
4	Phangyul	Rabuna	25.00	1988	"	100	0	25.00	0.00
5	Phangyul	Phangyul	195.00	1991	"	100	0	195.00	0.00
1	Gasetshogom	Masipokto	15.78	1990	"	100	0	15.78	0.00
2	Gasetshogom	Doegobacho	73.43	1990	Chir Pine, Cupressus	100	0	73.43	0.00
3	Gasetshogom	Khempajichu	52.97	1990	"	95	5	50.32	2.65
1	Nobding	Akilu	29.40	1996	Cupressus	85	15	24.99	4.41
1	Nysho	Samtengang	305.00	1991	"	100	0	305.00	0.00
1	Rubesa	Rebjaphu	207.00	1989	"	75	25	155.25	51.75

2	Rubesa	Nyzergang	5.00	1995	Chir Pine, Dononea, Robinia	65	35	3.25	1.75
3	Rubesa	Nyzergang	12.50	1998	Melia, Dononea, Cupressus	55	45	6.88	5.63
	Rubesa	Doroa 1	12.35	2012	Cupressus, Chir Pine, Syzygium, Cassia	75	25	9.26	3.09
		Total	**2173.72**			**95.40**	**4.60**	**2073.75**	**99.97**

Forest Type: Chir Pine Forest

Dzongkhag: Wangduephodrang

Division: Wangdue

Range: Lobesa and Punakha

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Barp	Division Office	0.37	1991	Cupressus	80	20	0.30	0.07
2	Barp	Chimithangkha I	12.35	2010	Chir Pine, Syzigium	70	30	8.65	3.71
3	Barp	Chimithangkha II	12.35	2011	"	65	35	8.03	4.32
4	Barp	Wolakha	24.90	2011	"	30	70	7.47	17.43

1	Chubu	Near Phochhu	24.00	1974	Eucalyptus	0	0	0.00	0.00
2	Chubu	Thanzongkha	25.70	1976	Eucalyptus, Cupressus	40	60	10.28	15.42
3	Chubu	Pkha Archery Ground	3.70	1987		0	0	0.00	0.00
4	Chubu	Pkha Archery Ground	4.86	1988	Sissoo, Khair, Cuppressus, Simal	80	20	3.888	0.972
5	Chubu	Dzong Area	20.82	1996	Eucalyptus	0	0	0.00	0.00
1	Limbukha	Above Jimthang	100.00	1989	Chir Pine	60	40	60	40
1	Guma	Zomlingthang	5.00	1990	Chir Pine, Cupressus	60	40	3	2
2	Guma	Wolakha Satsham	12.35	2011	Cupressus, Jamuna, Jacaranda	74	26	9.139	3.211
		Failed Plantation	31.25					0.00	31.25
		Total	**277.65**					**110.75**	**118.38**

Forest Type: Chir Pine Forest

Dzongkhag: Wangduephodrang

Division: Wangdue

Range: Wangdue

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Gasetshogom	Masepoto	89.38	1990	Chir Pine, Cupressus	100	0	89.38	0.00
2	Gasetshogom	Doegobacho	157.33	1990	Chir Pine, Cupressus	100	0	157.33	0.00
3	Gasetshogom	Hechuluma	37.05	2005	Oak, Schima, Blue Pine	90	10	33.35	3.71
4	Gasetshogom	Sharipangkha	3.56	2011	Cupressus	90	10	3.20	0.36
5	Gasetshogom	CRWP	0.20	2011	Cupressus	98	2	0.20	0.00
6	Gasetshogom	Wasina CRWP	0.20	2011	Cupressus	50	50	0.10	0.10
1	Rubesa	Rubesa	37.05	2002	Chir Pine	55	45	20.38	16.67
2	Rubesa	Kuchuthangka	5.00	2010	Melia, Oak, Jacaranda, Cupressus	75	25	3.75	1.25
3	Rubesa	Nyzergang	3.00	2011	Cupressus	90	10	2.70	0.30
4	Rubesa	Rubesa GC CRWP	0.20	2011	Cupressus	95	5	0.19	0.01
1	Nyisho	Geog Center	0.20	2011	Cupressus	80	20	0.16	0.04
1	Bjena	Geog Center	0.20	2011	Cupressus	98	2	0.20	0.00
1	Phangyul	Chungserkha	17.29	2005	Cupressus, Chir Pine, Oak	100	0	17.29	0.00
2	Phangyul	Chundu Goenpa	13.63	2011	Cupressus	100	0	13.63	0.00
3	Phangyul	Hampekha	1.00	2010	Cupressus	100	0	1.00	0.00

4	Phangyul	Geog Center	0.20	2011	Cupressus	60	40	0.12	0.08
5	Phangyul	Rabuna	17.29	2011	Cupressus	40	60	6.92	10.37
6	Phangyul	Chundu Goenpa	8.22	2012	Cupressus	100	0	8.22	0.00
1	Kazhi	Chenena CRWP	0.20	2011	Cupressus	70	30	0.14	0.06
1	Athang	Dogaphu CRWP	0.20	2011	Cupressus	60	40	0.12	0.08
1	Thedtsho	Laptsakha	37.50	2004	Chir Pine	100	0	37.50	0.00
2	Thedtsho	CRWP - Above Tencholing Palace	0.20	2011	Cupressus, Callistemon, Jacaranda	100	0	0.20	0.00
		Failed Plantation	35.18					0.00	35.18
		Total	**464.28**			**85.30**	**14.70**	**396.06**	**68.22**

ANNEX V: BLUE PINE PLANTATION

Forest Type: Blue Pine Forest

Dzongkhag: Bumthang

Division: Buthang

Range: Chamkhar

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Chokhor	Kukurbithang	17.00	1986	Blue Pine	83	17	14.11	2.89
2	Chokhor	Toktok Zampa	17.00	1995	Blue Pine	72	28	12.24	4.76
3	Chokhor	Kukurbithang	1.97	1999	Cupressus, Blue Pine	47	53	0.93	1.04
	Total		**35.97**					**27.28**	**8.69**

Forest Type: Blue Pine Forest

Dzongkhag: Bumthang

Division: Buthang

Range: Chamkhar

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Chokhor	Below Jakar	3.42	1984	Blue Pine, Cupressus	65	35	2.223	1.197
2	Chokhor	Dzong Compound	6.62	1984	Blue Pine, Cupressus	65	35	4.30	2.32
3	Chokhor	5 sites, not named	0.84	2011	Euonumus tingens	65	35	0.55	0.29
	Total		**10.88**					**7.07**	**3.81**

Forest Type: Blue Pine Forest

Dzongkhag: Chukha

Division: Gedu

Range:Tshimasham

Agency: THPA

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Chapcha	Chuzom	12.00	2009	Blue Pine, Cupressus, Melia, Quercus	62	38	4.56	7.44
2	Chapcha	Chuzom	17.00	2010	Blue Pine, Cupressus, Melia, Quercus, Benthamedia	54	46	7.82	9.18
3	Chapcha	Sisi Lumpa	17.00	2011	Blue Pine, Cupressus, Melia, Quercus, Benthamedia, Robinia	50	50	8.50	8.50
4	Chapcha	Chuzom (RBP Camp)	19.76	2012	"	45		10.87	8.89
		Total	**65.76**					**31.75**	**34.01**

Forest Type: Blue Pine

Dzongkhag: Haa

Division: Paro

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Katsho	Above Ingo Bridge	12.20	2002	Cupressus, Spruce, Blue Pine	80	20	9.76	2.44
2	Katsho	Above BOD	16.06	2003	"	30	70	4.82	11.24
3	Katsho	Imtrat Bridge	21.34	2008	"	60	40	12.80	8.54

1	Esue	Bjalo/Bangayna	30.50	2003	"	90	10	27.45	3.05
2	Esue	Ramgang	18.30	2004	"	90	10	16.47	1.83
3	Esue	Kempailo - Patch 1&2	51.39	2010	"	60	40	30.83	20.56
1	Samar	Latokha	24.40	2004	"	70	30	17.08	7.32
1	Bjee	Pangphu/Taglung	18.30	2006	"	80	20	14.64	3.66
2	Bjee	Jamgoen/Taglung	7.31	2006	"	55	45	4.02	3.29
		Failed Plantation	292.04					0.00	292.04
		Total	**491.84**					**137.88**	**353.96**

Forest Type: Blue Pine Forest

Dzongkhag: Paro

Division: Paro

Range: Paro

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Hungrel	Zuri	60.00	1977	Blue Pine, Cupressus, Walnut, Bakania	51	49	30.60	29.4

1	Wangchang	Airfield	46.00	1987	Blue Pine, Cupressus, Walnut, Bakania	70	30	32.20	13.80
2	Wangchang	Airfield	12.22	1988	Blue Pine, Cupressus, Walnut, Bakania	69	31	8.43	3.79
1	Dogar	Tamchu Lhakhang	16.25	2008	Chir Pine, Blue Ppine, Quercus	40	60	6.50	9.75
2	Dogar	Thingshipang kha	16.25	2010	Chir Pine, Blue Pine, Quercus, Cupressus	64	36	10.40	5.85
1	Tsento	Tsashey	16.25	2008	Chir Pine, Blue Pine, Quercus	62	38	10.08	6.18
		Failed Plantation	560.00					0.00	560.00
		Total	**726.97**					**98.21**	**628.76**

Forest Type: Bluepine

Dzongkhag: Paro

Division: Paro

Range: Paro

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Wangchang	Chang Nangka	3.00	2002	Cupressus, Melia	25	75	0.75	2.25

2	Wangchang	Gangkha	1.00	2004	Oak, Blue Pine, Melia	25	75	0.25	0.75
3	Wangchang	Gorina	3.50	2010	Cupressus	50	50	1.75	1.75
4	Wangchang	Nymizampa	1.20	2011	Bottlebrush, Blue Pine, Cupressus, Willow	50	50	0.60	0.60
1	Dogar	Zapchakha	1.00	2003	Blue Pine, Cupressus, Chir Pine, Melia	25	75	0.25	0.75
2	Dogar	Dokarpo Wula	1.00	2003	Bottlebrush, Blue Pine, Chir Pine, Oak	40	60	0.40	0.60
3	Dogar	Aringkha Wogma	1.70	2003	Melia, Bottlebrush, Cupressus	30	70	0.51	1.19
4	Dogar	Yabjee	1.50	2003	Melia, Cupressus	25	75	0.38	1.13
5	Dogar	Near Gup's Office	50.00	2008	Blue Pine, Cupressus, Chir Pine, Melia	25	75	12.50	37.50
6	Dogar	Issuna Park	6.38	2008	Blue Pine, Chir Pine, Melia, Poplus	80	20	5.10	1.28
1	Lungnyi	Woochu School Ground	1.50	2004	Oak, Cupressus, Blue Pine, Melia, Willow	35	65	0.53	0.98
2	Lungyni	Dagaygang	5.00	2005	Blue Pine, Oak, Cupressus	35	65	1.75	3.25
		Sub-total	**76.78**					**24.76**	**52.02**

Continued…

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Shapa	Phumarbu I & II	1.80	2003	Oak, Bottlebrush, Melia, Robina, Chir Pine, Cupressus, Blue Pine	76	24	1.37	0.43
2	Shapa	Olathangkha	0.30	2003	Deodar, Cupressus, Blue Pine	80	20	0.24	0.06
3	Shapa	Olathangkha (below Shaba school)	4.00	2003	Cupressus, Melia, Robinia	90	10	3.60	0.40
4	Shapa	Choeten Sabu	0.80	2003	Cupressus, Melia, Robinia	60	40	0.48	0.32
5	Shapa	Jankana Sima I	1.00	2003	Melia, Blue Pine, Cupressus	60	40	0.60	0.40
6	Shapa	Jamtetshekha	2.06	2004	Melia, Cupressus	60	40	1.24	0.82
1	Doteng	Patsho Juka	2.00	2003	Blue Pine, Willow	75	25	1.50	0.50
2	Doteng	Neywoma	18.00	2004	Cupressus, Blue Pine	80	20	14.40	3.60
3	Doteng	Lhakhang Sabu	12.00	2010	Cupressus	40	60	4.80	7.20
1	Hungrel	Below Ta Dzong	5.00	2003	Cupressus	50	50	2.50	2.50
1	Lamgong	Tshendona Bacho II	6.00	2004	Blue Pine, Cupressus, Willow	35	65	2.10	3.90
2	Lamgong	Tshendona	6.00	2004	Cupressus, Blue Pine, Oak, Bottlebrush	45	55	2.70	3.30

		Failed Plantation	136.64					0.00	136.64
		Sub-total	**195.60**					**35.52**	**160.08**
		Total	**272.38**					**60.29**	**212.09**

Forest Type: Blue Pine Forest

Dzongkhag: Thimphu

Division: Thimphu

Range: Thimphu and Khasadrapchu

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Mewang	Above Chuzom Choeten	20.00	1980	Blue Pine, Chir Pine, Cupressus	65	35	13.00	7.00
2	Mewang	Opposite Khasadrapchu Town	49.40	1985	Blue Pine	70	30	34.58	14.82
3	Mewang	Left of Tshaphu Village	49.40	1987	Blue Pine, Cupressus	21	79	10.37	39.03
4	Mewang	Near Jamdo Village	49.42	1987	Blue Pine, Robinia	30	70	14.83	34.59
5	Mewang	Above Chamdo Village	20.00	1987	Blue Pine	40	60	8.00	12.00
6	Mewang	Chuzom	247.10	1987	Blue Pine, Cupressus,	20	80	49.42	197.68

					Melia, Robinia				
7	Mewang	Above Khasadrapchu Range Office	221.70	1990	Blue Pine, Chir Pine, Cupressus	45	55	99.77	121.94
8	Mewang	Kharipji	75.00	1991	Blue Pine	22	78	16.50	58.50
9	Mewang	Above Danglo Village	74.10	1993	Blue Pine	22	78	16.30	57.80
10	Mewang	Above Danglo Village	37.05	1994	Blue Pine	25	75	9.26	27.79
11	Mewang	Danglo (Below Tshew Gang Lhakhang)	30.00	1994	Blue Pine	21	79	6.30	23.70
12	Mewang	Khasadrapchu	6.17	2009	Blue Pine, Oak, Melia, Robinia	30	70	1.85	4.32
13	Mewang	Tshalumarphay	43.24	2009	Blue Pine, Oak, Melia, Robinia	80	20	34.59	8.65
14	Mewang	Shongchuphakha	30.50	2010	Oak, Dogwood, Melia, Robinia, Acacia	40	60	12.20	18.30
1	South Thimthrom	Kawan Zangsa	8.00	1986	Cupressus, Blue P:ine, Walnut, Melia	60	40	4.80	3.20

2	South Thimthrom	Kawan Zangsa	5.00	1990	Blue Pine	55	45	2.75	2.25
		Sub-total	**966.08**					**334.52**	**631.56**

Continued…

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	North Thimthrom	Decehenphodrang	12.00	1986	Cupressus, Blue Pine, Walnut, Melia	50	50	6.00	6.00
2	North Thimthrom	Khangkulo	2.11	1993	Cupressus	30	70	0.63	1.48
3	North Thimthrom	Zelukha	19.76	1993	Blue Pine	30	70	5.93	13.83
4	North Thimthrom	Langjuphakha	9.88	1994	Blue Pine	40	60	3.95	5.93
5	North Thimthrom	Above SAARC Building	4.18	1994	Cupressus	30	70	1.25	2.93
6	North Thimthrom	Zelukha	10.00	1994	Blue Pine	22	78	2.20	7.80
7	North Thimthrom	Zelukha	25.00	1995	Blue Pine	30	70	7.50	17.50

8	North Thimthrom	Samteling	50.00	1996	Blue Pine	35	65	17.50	32.50
9	North Thimthrom	Below Sangay Gang	5.00	1999	Blue Pine, Acer, Cupressus	50	50	2.50	2.50
10	North Thimthrom	Khang Kulo	5.00	1999	Blue Pine, Acer, Cupressus	50	50	2.50	2.50
11	North Thimthrom	Khang Kulo	15.00	1999	Blue Pine, Acer, Cupressus	50	50	7.50	7.50
12	North Thimthrom	Chang Zamtog (Above the road to Kuenselphodrang)	10.00	1999	Blue Pine, Cupressus	40	60	4.00	6.00
13	North Thimthrom	Samteling	15.00	2000	Blue Pine, Cupressus	30	70	4.50	10.50
14	North Thimthrom	Wangditse (Below Lhakhang)	15.00	2000	Blue Pine, Cupresssus	40	60	6.00	9.00
15	North Thimthrom	Taba Chuzom	15.00	2000	Blue Pine, Cupressus	60	40	9.00	6.00
		Failed Plantation	897.84						897.84
		Sub-total	**1110.77**					**80.97**	**1029.80**
			2076.85					**415.49**	**1661.36**

Forest Type: Blue Pine Forest

Dzongkhag: Thimphu

Division: Thimphu

Range: Thimphu and Khasadrapchu

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Mewang	Above Chuzom Choeten	20.00	1980	Blue Pine, Chir Pine, Cupressus	65	35	13.00	7.00
2	Mewang	Opposite Khasadrapchu Town	49.40	1985	Blue Pine	70	30	34.58	14.82
3	Mewang	Left of Tshaphu Village	49.40	1987	Blue Pine, Cupressus	21	79	10.37	39.03
4	Mewang	Near Jamdo Village	49.42	1987	Blue Pine, Robinia	30	70	14.83	34.59
5	Mewang	Above Chamdo Village	20.00	1987	Blue Pine	40	60	8.00	12.00
6	Mewang	Chuzom	247.10	1987	Blue Pine, Cupressus, Melia, Robinia	20	80	49.42	197.68
7	Mewang	Above Khasadrapchu Range Office	221.70	1990	Blue Pine, Chir Pine, Cupressus	45	55	99.77	121.94
8	Mewang	Kharipji	75.00	1991	Blue Pine	22	78	16.50	58.50
9	Mewang	Above Danglo Village	74.10	1993	Blue Pine	22	78	16.30	57.80
10	Mewang	Above Danglo Village	37.05	1994	Blue Pine	25	75	9.26	27.79

11	Mewang	Danglo (Below Tshew Gang Lhakhang)	30.00	1994	Blue Pine	21	79	6.30	23.70
12	Mewang	Khasadrapchu	6.17	2009	Blue Pine, Oak, Melia, Robinia	30	70	1.85	4.32
13	Mewang	Tshalumarphay	43.24	2009	Blue Pine, Oak, Melia, Robinia	80	20	34.59	8.65
14	Mewang	Shongchuphakha	30.50	2010	Oak, Dogwood, Melia, Robinia, Acacia	40	60	12.20	18.30
1	South Thimthrom	Kawan Zangsa	8.00	1986	Cupressus, Blue P:ine, Walnut, Melia	60	40	4.80	3.20
2	South Thimthrom	Kawan Zangsa	5.00	1990	Blue Pine	55	45	2.75	2.25
		Sub-total	**966.08**					**334.52**	**631.56**

Continued…

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	North Thimthrom	Decehenphodrang	12.00	1986	Cupressus, Blue Pine, Walnut, Melia	50	50	6.00	6.00
2	North Thimthrom	Khangkulo	2.11	1993	Cupressus	30	70	0.63	1.48

3	North Thimthrom	Zelukha	19.76	1993	Blue Pine	30	70	5.93	13.83
4	North Thimthrom	Langjuphakha	9.88	1994	Blue Pine	40	60	3.95	5.93
5	North Thimthrom	Above SAARC Building	4.18	1994	Cupressus	30	70	1.25	2.93
6	North Thimthrom	Zelukha	10.00	1994	Blue Pine	22	78	2.20	7.80
7	North Thimthrom	Zelukha	25.00	1995	Blue Pine	30	70	7.50	17.50
8	North Thimthrom	Samteling	50.00	1996	Blue Pine	35	65	17.50	32.50
9	North Thimthrom	Below Sangay Gang	5.00	1999	Blue Pine, Acer, Cupressus	50	50	2.50	2.50
10	North Thimthrom	Khang Kulo	5.00	1999	Blue Pine, Acer, Cupressus	50	50	2.50	2.50
11	North Thimthrom	Khang Kulo	15.00	1999	Blue Pine, Acer, Cupressus	50	50	7.50	7.50
12	North Thimthrom	Chang Zamtog (Above the road to Kuenselphodrang)	10.00	1999	Blue Pine, Cupressus	40	60	4.00	6.00
13	North Thimthrom	Samteling	15.00	2000	Blue Pine, Cupressus	30	70	4.50	10.50

14	North Thimthrom	Wangditse (Below Lhakhang)	15.00	2000	Blue Pine, Cupresssus	40	60	6.00	9.00
15	North Thimthrom	Taba Chuzom	15.00	2000	Blue Pine, Cupressus	60	40	9.00	6.00
		Failed Plantation	897.84						897.84
		Sub-total	**1110.77**					**80.97**	**1029.80**
			2076.85					**415.49**	**1661.36**

Forest Type: Blue Pine

Dzongkhag: Thimphu

Division: Thimphu

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Mewang	Darlokha	24.70	2003	Mixed	80	20	19.76	4.94
1	Kawang	Langjophakha	12.35	2005	Oak, Cupressus	80	20	9.88	2.47
2	Kawang	Tango Drubkhang	49.40	2011	Bluepine, Oak, Cupressus	50	50	24.70	24.70
1	Chang	Tandin Ney	49.40	2006	Blue Pine, Oak, Cupressus	40	60	19.76	29.64
1	Geney	Chigi Goenpa	12.35	2010	Cupressus	70	30	8.65	3.71

2	Geney	Geneykha RNR Center	0.49	2011	Blue Pine, Oak, Dogwood	40	60	0.20	0.29
1	Thimthrom	Samteling	2.47	2011	Blue Pine, Oak, Dogwood, Cupressus	90	10	2.22	0.25
2	Thimthrom	Above Changangkha Temple	37.05	2011	Blue Pine, Oak, Dogwood, Cupressus, Melia	85	15	31.49	5.56
3	Thimthrom	Changangkha Lhakhang	37.05	2013	Blue Pine, Oak, Dogwood, Melia	85	15	31.49	5.56
1	Dagala	Chamgang RNR Center	0.49	2011	Blue Pine, Oak, Dogwood	25	75	0.12	0.37
2	Dagala	Talakha Goenpa	0.98	2011	Blue Pine, Oak. Cupressus	80	20	0.78	0.20
		Failed Plantation	109.91					0.00	109.91
			336.64					**149.06**	**187.58**

Forest Type: Blue Pine

Dzongkhag: Wangdiphodrang

Division: Wangdue

Range: Nobding

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**

1	Phobjikha	Ngelung Drejiling, Kingathang	35.80	2005	Cupressus, Spruce, Juniper, Blue Pine, Larch	80	20	28.64	7.16
2	Gangteng	Geylingkha	40.78	2007	Cupressus, Juniper, Blue Pine, Larch, Fir	78	22	31.81	8.97
		Total	**76.58**					**60.45**	**16.13**

ANNEX VI: MIXED CONIFER PLANTATION

Forest Type: Mixed Conifer Forest

Dzongkhag: Trashigang

Division: Sakteng Wildlife Sanctuary

Sl. #	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Sakteng	Murbeejug	1.00	2006	Alnus, Bamboo	97	3	0.97	0.03
2	Sakteng	Nangsara	1.00	2008	Cupressus, Blue Pine	39	61	0.39	0.61
3	Sakteng	Nazor/Thakthri	2.50	2011	Blue Pine, Cupressus, Walnut	65	35	1.63	0.88
4	Sakteng	Sermelong	2.00	2011	Blue Pine, Juniper, Hemlock, Walnut	60	40	1.20	0.80
5	Sakteng	Dak Wom	2.00	2011	Cupressus, Blue Pine			0.00	0.00
		Failed Plantation	45.60					0.00	45.60
		Total	**54.10**					**4.19**	**47.92**

ANNEX VII: FIR PLANTATION

Forest Type: Fir Forest

Dzongkhag: Gasa

Division: Wangdue

Range: Gasa

Agency: Dzongkhag Forest

Sl.#	Gewog	Location	Area (Ac)	Creation Year	Species	Survival Percent	Non-survival Percent	Area With Trees (Ac)	Area Without Trees (Ac)
1	Laya	Laya Dachapsa	0.40	2005	Fir, Juniper	30	70	0.12	0.28
2	Laya	Above Nelu (beside Chongra)	34.58	2007	Juniper, Fir	50	50	17.29	17.29
3	Laya	Chongra, Labji, Sangythen	51.87	2007	Juniper, Fir, Spruce, Larch	30	70	15.56	36.31
4	Laya	Above Jangchub Lhakhang	2.70	2007	Fir, Spruce	40	60	1.08	1.62
5	Laya	Above Toko	0.98	2007	Fir, Spruce	50	50	0.49	0.49
6	Laya	Lungo Chu)	4.94	2008	Fir, Spruce, Juniper, Larch	50	50	2.47	2.47
7	Laya	Lungo	7.41	2008	"	50	50	3.71	3.71
8	Laya	Lungo	7.41	2008	"	50	50	3.71	3.71
9	Laya	Lungo - Panowom	39.52	2010	"	50	50	19.76	19.76
10	Laya	Laya - Chongara	14.82	2011	"	50	50	7.41	7.41
		Failed Plantation	16.71					0.00	16.71

		Total	**181.34**			**39.48**	**60.52**	**71.59**	**109.75**

ANNEX VIII: JUNIPER PLANTATION

Forest Type: Juniper Forest

Dzongkhag: Trashigang

Division: Trashigang

Range: Trashigang

Agency: Dzongkhag Forest

Sl.#	**Gewog**	**Location**	**Area (Ac)**	**Creation Year**	**Species**	**Survival Percent**	**Non-survival Percent**	**Area With Trees (Ac)**	**Area Without Trees (Ac)**
1	Merak	Merak	2.50	2008	Juniper, Rhododendron	50	50	1.25	1.25
2	Merak	Merak RNR EC	0.15	2010	Juniper, Rhododendron	30	70	0.05	0.11
3	Merak	Merak	5.00	2012	Juniper, Rhododendron	65	35	3.25	1.75
		Sub-total	**7.65**					**4.55**	**3.11**
1	Sakteng	Borangmang	2.50	2008	Juniper, Rhododendron	90	10	2.25	0.25
2	Sakteng	Thrakthri	6.00	2009	Bambu, Alnus, Rhododendon	60	40	3.60	2.40

3	Sakteng	Pharmeylok	5.00	2009	Juniper, Bamboo, Rhododendron	45	55	2.25	2.75
4	Sakteng	Pusa	5.00	2010	Juniper, Bamboo	75	25	3.75	1.25
5	Sakteng	Pharmeylok	2.50	2010	Rhododendron, Bamboo	45	55	1.13	1.38
	Rehabilitation Plantation								
7	Sakteng	Pusa	7.00	2011	Juniper, Bamboo, Rhododendron	30	70	2.10	4.90
	Water Resource Protection								
8		Borangmang	5.00	2012	Juniper, Bamboo	70	30	3.50	1.50
		Sub-total	**33.00**					**18.58**	**14.43**
		Total	**40.65**					**23.12**	**17.53**

ANNEXURE - IX: STATUS OF AFFORESTATION IN FMUS

Status of Reforestation in FMUs under Bumthang Division

Sl. No.	Name of FMU	Management Plan Cycle	Area Cut (Ac)	Area Reforested	Survival Percent	Non-survival Percent
		Cycle I: 2000 - 2010	1955.87	79.04	Not evaluated	
		Mixed Conifer	810.41	61.75	0	
		Fir	210.69	17.29	0	
		Blue Pine	932.18			
		Cycle II: 2011 - 2021				
1	Dawathang, Bumthang	Mixed Conifer Comm)	525.37	No info	No info	No info
		Blue Pine (Comm)	227.24	"	"	"
		Fir (Comm)	52.61	"	"	"
		Mixed Conifer (Local Use))	132.89	"	"	"
		Blue Pine (Local Use)	107.45	"	"	"
		Mixed Conifer (Comm+ Local Use)	39.52	"	"	"
		Cycle I: 1994 - 2004	**370.50**	"	"	"
		Blue Pine	197.69	"	"	"
		Hemlock	123.50	"	"	"
2	Karshong	Mixed Conifer	49.40	"	"	"
		Cycle II: 2009 - 2019	**365.56**			
		Blue Pine	205.01	"	"	"
		Mixed Conifer	160.55	"	"	"
3	Rodungla	**Cycle I: 2013 - 2023**				
		Mixed Conifer	527.84	"	"	"
		Blue Pine	163.27	"	"	"
		Fir	150.67	"	"	"

Status of Reforestation in FMUs Gedu Division

Sl. No	Name of FMU	Management Plan Cycle	Cut Area (Ac)	Area Reforested	Survival Percent	Non-survival Percent
4	Metakha	**Cycle I: 2007 - 2016**				
		Not operated				
		Cycle II: 2018 - 2027				
		Mixed Broadleaved (C)	880.85	No info for 2018 and 2019		
		Mixed Broadleaved (R)	125.97	"		
			1006.82			

Status of Reforestation in FMUs under Mongar Division

Sl.No.	Name of FMU	Management Plan Cycle	Cut Area (Ac)	Area Planted	Survival Percent	Non-survival Percent
5	Lingemethng	**Cycle I: 1998 - 2007**				
		Chir Pine	296.40	No info		
		Hardwood	494.00	"		
		Cycle II: 2008 - 2018		184.19		
		Chir Pine (Com)	92.87	No info		
		Chir Pine (SocL)	28.16	"		
		Hardwood (Com)	663.44	"		
		Hardwood (SocL))	167.71	"		
			952.18			
		Cycle III:2019 - 2029	To be exluded			
		Broadleaved	965.03	??		
		Chir Pine	377.91	??		
6	Korilla	**Cycle I: 1993 - 2002**				

		Hardwood	358.00	308.75	No info	No info
		not mentioned				
		Cycle II:2006 - 2016	57.89	56.81	No info	No info
		Broadleaved (C)	57.89	56.81		
		Cycle III:2016 - 2026				
		Broadleaved	509.31	No info	No info	No info
7	Rongmenchu	**Cycle I: 2007 - 2017**				
		Broadleaved	157.06	93.31	0	100
		Cycle II:2018 - 2027				
		Broadleaved	321.90	No info	No info	No info

Status of Reforestation in FMUs under Paro Division

Sl.No.	Name of FMU	Management Plan Cycle	Cut Area (Ac)	Area Planted	Survival Percent	Non-survival Percent
8	Haa East	**Cycle I: 2004-2014**				
		Blue Pine	42.63	0.00	0	100
		Mixed Conifer				
		Fir				
		Cycle II: 2016 - 2026				
		Blue Pine	No cutting	No info	No info	No info
		Mixed Conifer	"	"	"	"
		Fir	"	"	"	"
9	Sellela	**Cycle I: 1998 - 2008**	963.30			
		Fir				
		Hemlock				
		Spruce				

		Blue Pine				
		Hardwood				
		Cycle II: 2011 - 2020	**523.15**	No info	No info	No info
		Mixed Conifer (Com)	396.19	"	"	"
		Blue Pine (Com)	56.07	"	"	"
		Fir	10.37	"	"	"
		Mixed Conifer (Local)	33.10	"	"	"
		Blue Pine (Local)	15.07	"	"	"
		Cycle I: 2010-2019				
	Lon Chhu	Mixed Conifer	232.18	No info	No info	No info
		Blue Pine	34.58	"	"	"
		Fir	96.33	"	"	"

Status of Reforestation in FMUs under Paro Division

Sl.No.	Name of FMU	Management Plan Cycle	Cut Area (Ac)	Area Planted	Survival Percent	Non-survival Percent
10	Dzonglela	**Cycle I: 1992 - 2002**				
		Production Forests	1837.50	88.15	No info	No info
		Cycle II: 2002 - 2012		87.80		
		Blue Pine	1022.33	No info	No info	No info
		Mixed Conifer	672.58		"	"
		Fir	164.01		"	"
		Hardwood	41.74		"	"
		Cycle III: 2012 - 2022?	(2012-2012)			
		Mixed Conifer	463.87	No info	No info	No info
		Blue Pine	472.51	"	"	"
		Fir	33.35	"	"	"

		Need MP (2012-2012)				
11	Betikha	**Cycle I: 2006 - 2016**	**84.17**	No info	No info	No info
		Mixed Conifer		"	"	"
		Fir		"	"	"
		Blue Pine		"	"	"
		Cycle II: 2016 - 2026				
		Mixed Conifer	202.79	MTR		
		Fir	65.21	MTR		

Status of Reforestation in FMUs under Thimphu Division

Sl.No.	Name of FMU	Management Plan Cycle	Cut Area (Ac)	Area Planted	Survival Percent	Non-survival Percent
12	Chamgang	**Cylce I: 1993 - 2002**	**716.30**			
		Conifer	568.10	52.36	No info	No info
		Harwood	148.20	No info	"	"
		Cycle II: 2003 - 2013				
		Conifer	74.24	36.77	0	100
	Plan needed	Hardwood				
	Plan needed	**Cycle III: 2017 - 2027?**				
		Conifer	0.00			
		Hardwood	0.00			
13	Gidakom	**Cylce I: 1992 - 2002**				
		Degraded Forests	370.50	No info	No info	No info
		Blue Pine	494.00	"	"	"
		Mixed Conifer	222.30	"	"	"
		Fir	148.20	"	"	"
		Cycle II: 2002 - 2012				
		Blue Pine	370.50	No info	No info	No info
		Hardwood	52.86	"	"	"
		Mixed Conifer	236.87	"	"	"
		Fir	114.36	"	"	"

		Cycle III: 2012 - 2022				
		Blue Pine	163.51	No info	No info	No info
		Mixed Conifer	227.98	"	"	"
		Fir	38.53	"	"	"
		Hardwood	1.73	"	"	"
		Local Use	83.73	"	"	"

Status of Reforestation in FMUs Trashigang Division

Sl.No.	**Name of FMU**	**Management Plan Cycle**	**Cut Area (Ac)**	**Area Planted (Ac)**	**Survival Percent**	**Non-survival Percent**
14	Khalilg_Kharungla	**Cylce I: 1996 - 2005**				
		Hardwood	552.54	67.83	No info	No info
		Cycle II: 2009 - 2019				
		Hardwood	111.89	27.76	No info	No info
		Cycle I: 2001 - 2011				
		Hardwood	241.20	109.10	No info	No info
	Dongdechu					
		Cycle II: 2014 - 2024				
15		Broadleaved (com)	214.64	No info	No info	No info
		Conifer (com)	84.23	"	"	"
		Broadleaved (rural)	94.35	"	"	"

Status of Reforestation in FMUs under Wangdue Division

Sl.No.	**Name of FMU**	**Management Plan Cycle**	**Cut Area (Ac)**	**Area Planted**	**Survival Percent**	**Non-survival Percent**
16	Khotokha	**Cycle I: 1984 - 1994**	No MP	No info	No info	No info
		Blue Pine	"	"	"	"
		Hemlock	"	"	"	"
		Mixed Conifer	"	"	"	"
		MC-BL	"	"	"	"
		Fir	"	"	"	"

		Local Use	"	"	"	"
		Cycle II: 1998 - 2008				
		Blue Pine	523.64	No info	No info	No info
		Hemlock	195.13	"	"	"
		Mixed Conifer	118.56	"	"	"
		Mixed Conifer - Hardwood	12.35	"	"	"
		Cycle III: 2009 - 2019				
		Blue Pine	392.26	No info	No info	No info
		Hemlock	101.02	"	"	"
		Mixed Conifer	41.74	"	"	"
		MC-BL	23.47	"	"	"
		Fir	47.67	"	"	"
		Local Use	170.68	"	"	"
		Cycle I: 2005 - 2015				
		Mixed Conifer (Com)	330.85	0.00	0	100
17	Gogona	Mixed Conifer (Local+Comm)				
		Mixed Conifer (Local Use)				
		Cycle II: 2015 - 2025				
		Mixed Conifer (Com)	415.45	"	"	"
		Mixed Conifer (Local Use)	99.05	"	"	"

Status of Reforestation in FMUs under Zhemgang Division

Sl.No.	Name of FMU	Management Plan Cycle	Cut Area (Ac)	Area Planted	Survival Percent	Non-survival Percent
18	Wangdigang	**Cycle I: 1993 - 2002**				
		Broadleaved Forest	385.32	74.10	No info	No info
		Cycle II: 2005 - 2015				

		Broadleaved (Com)	93.16	93.16	0.00	100
		Cycle III: 2017 - 2026				
		Broadleaved Forest (Local Use)	218.10	"	"	"
19	Chendebji	**Cycle I: 1996 - 2006**		12.35		
		Hemlock	495.48	"	"	"
		Hardwood	124.98	"	"	"
		Cycle II: 2007 - 2017		7.97	No info	
		Mixed Conifer	128.44		"	"
		Fir	14.82	"	"	"
		Blue Pine	71.63	"	"	"
		Mixed Broadleaved	143.26	"	"	"
		Local Use	96.33	"	"	"
		Cycle III: 2018 - 2027				
		Blue Pine	150.42	No info	No info	No info
		Mixed Conifer	413.23	"	"	"
		Mixed Broadleaved	281.33	"	"	"
		Fir	18.77	"	"	"