**Background Information**

Preservation of environment is one of the four pillars of Gross National Happiness, the development philosophy of Bhutan. The protection and preservation of fragile mountain ecosystems and its natural forests is clearly enunciated in the Constitution of the Kingdom of Bhutan. It provides that *every Bhutanese is a trustee of the natural resources and environment in the country and it is the fundamental duty of every citizen to contribute to its protection*. The wisdom transcending from the profound provision of the Constitution has a wide ranging impact on the developmental policy formulated by the government. It also beckons the Royal Audit Authority, the Supreme Audit Institution in Bhutan to play an effective oversight role and call upon every citizen of the country to uphold the sacred responsibility of protecting and conserving the environment.

However, indiscriminate utilization of natural resources comes as fundamental cost to development in every nation, posing menace to very existence of plant, animal and human life. Responding to these emerging risks to environment, increasing mitigation efforts and other have been initiated by the government. In the process, funds allocated for environmental programmes have also been increasing. Therefore, it calls for more focused efforts in the area of environment audit by the Royal Audit Authority [RAA]. Such proactive oversight role of the RAA through effective evaluation of governments’ efforts in conservation and protection of the environment would go a long way in reducing threats to our environment. Environmental audit, therefore, is an important tool available to the auditors in this regard. Results of such audits not only inform the stakeholders about the adequacy of governments’ efforts, but also aid the government in playing a more effective role in protection and conservation.

In order to contribute to the nation’s efforts on environment protection and conservation the RAA has been in continuous process to strengthen its environmental audit functions by introducing environmental audit into its mainstream audit, developing environmental audit guidelines, taking up full-fledged environmental audit on regular basis and integrating the Sustainable Development Goals into its audits.

Of all the activities mentioned, this paper will focus on the “Environmental Audit on Timber Harvesting in Bhutan” conducted in 2014.

**Importance of the audit topic- Environment Audit on Timber Harvesting in Bhutan**

The Kingdom of Bhutan has always placed its environmental conservation efforts ahead of all socio-economic developments. The importance of such efforts are well resounded through numerous national policy. According to the Constitution of the Kingdom of Bhutan, 60% of the total land area of the country should be reserved as forest cover for all times to come.

On the other hand, because of economic development of the country there is immense pressure on environment conservation. Government organizations and private individuals have become increasingly dependent on timber for constructions and infrastructure development. Therefore, the pressure on sustainable utilization of forests has been growing over the years. Nevertheless, today with the experiences of the world, we know that economic growth can complement environmental conservation with sound policies and effective implementations strategies in place.

As such drawing on the important and strong provision of the Constitution, the RAA planned to examine whether the harvesting operations in the country are aligned to such Constitutional mandate.

**Audit Objectives**

The audit is conducted with following two specific objectives:

1. To evaluate the effectiveness of plans and regulations in sustaining the forest resources in Forest Management Units and Working Schemes; and
2. To determine whether the timber harvesting operation is undertaken in a sustainable manner, giving due consideration to the environment and ecosystem.

**Audit Methodology**

AUDIT MANDATE, OBJECTIVE, SCOPE, CRITERIA & METHODOLOGY

The audit team adopted various methodologies to obtain and gather information, analyze data gathered and draw conclusions.

* Carried out stakeholder analysis.
* Interviewed officials at various levels from different relevant organizations and common people too.
* Reviewed the literatures, policy documents and studies carried out by individuals and professional bodies to garner insights and information.
* Reviewed agency documentation.
* Consulted experts from the audited entities.
* Visited timber harvesting sites for physical observation.
* Used Geographical Positioning System and Geographical Information System software to collect and analyze map data and to identify the areas of timber harvesting and the protected areas.

**Result of the audit**

**Audit Findings**

1. Blue pine (Pinus Wallichiana) is dominant and demonstrates fast colonization mostly in mixed conifer forest and slightly in fir forest. Thus, reliable knowledge of forest succession is crucial for successfully designing management strategies leading towards desired future forest states.
2. The condition of most fir (Abies densa) forests in Bhutan is unfavorable and most available stocks in Forest Management Units were matured, diseased or in dying stage and, it was noticed that there is often no or only little regeneration of fir.
3. Limited understanding of regeneration dynamics of broadleaved forests brings considerable doubts regarding the best silvicultural systems. The survival status of natural regeneration in the forest management units is far from satisfactory where the floral diversity is more complex and the grazing problem is rampant.
4. Directional tree felling techniques were not applied or executed in the field by field workers. Directional tree felling is vital for felling the trees in desired direction to maximize volume of commercially viable timber and minimize threats to fellow workers and opening of unplanned forest canopy.
5. While protected areas like national parks, nature reserves, and wildlife sanctuaries intend to protect important ecosystems, the Forest Management Units are designated areas for timber harvesting. It is apparent that these contradictory tasks can’t occur in same areas or places. However, the audit noted intersection of Forest Management Units areas with protected areas. Similarly, community forests areas also intersect with Forest Management Units areas.
6. There were inadequacies in Forest Management Plans such as preparation of plans by individual planners rather than involving a team or collective efforts, and lack of tentative schedule of management activities.
7. Impact Assessment on flora & fauna or forest eco-system was not carried out. The timber harvest operation is likely to alter the quantity, quality, and distribution of flora & fauna habitat.
8. Mutual understanding on standards, criteria and benchmarks on coupe clearance requirements between the Department of Forest and Park Services and the Natural Resources Development Corporation Limited was generally lacking.
9. The monitoring & evaluation forms prescribed in the Forest Management Code of Bhutan were not fully maintained which may provide necessary basis and information for future planning and decision makings.
10. Violations of some of the National Environment Commission’s terms and conditions were noted during the field visits. The clearance letter clearly instructed that non-compliance to the terms & conditions shall result in revocation of the clearance. However, violations noted by the audit did not result in revocation of the clearances. This indicates inadequate monitoring by the National Environment Commission.
11. Occupational Health and Safety (OHS) measures were not adequately implemented in most of the harvesting sites visited by the audit team. The audit witnessed several incidences of workers handling unsafe activities like harvesting, logging & transportation without basic safety gears.

**Audit Recommendations**

1. Based on well researched forest succession trends, the Department of Forest and Park Services needs to fit in appropriate prescriptions to guide tree species composition and maintaining healthy and native tree species composition.
2. Robust management prescription should be provided to ensure successful regeneration or rebirth of fir (Abies densa) forests after harvest.
3. Monitoring by the Department of Forest and Park Services in harvest operations needs to be strengthened. The monitoring & evaluation forms prescribed in the Forest Management Code of Bhutan should be fully maintained and documented. Monitoring on compliances to clearance terms & conditions should be ensured by the National Environment Commission.
4. Vigorous regeneration strategies, treatments and planning needs to be prescribed for broadleaved forests particularly in cases where regenerations were not effective.
5. The issue of intersection or overlapping of Forest Management Units areas with protected areas and community forests should be sorted out with appropriate authority.
6. Preparation of forest management plans by individual planner should be discouraged. Plans should be prepared through involvement of a team or collective efforts and should include tentative schedule of harvest, regeneration and other crucial management activities.
7. Occupational Health and Safety (OHS) measures should be implemented and use of safety gears in field should be supervised and monitored.
8. Mutual understanding on standards, criteria and benchmarks on coupe clearance requirements between the Department of Forest and Park Services and the Natural Resources Development Corporation Limited should be established.
9. Post-Impact Assessments of few pre-selected major harvesting activities with immense foreseen threats to the environment and ecology should be carried out.

**Audit impact**

* Research carried out for Fir regeneration and result of the research included in revised Forest Management Code and Forest Management Plans.
* Instituted a system of carrying out plantation survival assessment in FMUs on annual basis
* Sorted out the overlapping of FMUs and Community forest boundary by excluding the existing community forest out of FMUs and there is clear instructions developed to avoid overlapping in future.
* To ensure uniform system of issuing coupe clearance in all FMUs, the department has developed a set of guidelines for field implementation.
* Strict monitoring, evaluation and reporting system instituted at all levels of functions for timber harvesting.
* A requirement on measures of Occupational Health and Safety has been added in the contract documents for logging contractors.

**Experiences and Challenges**

**Experiences**

This audit provided a platform to make use of the Environmental Audit Guidelines developed in 2013 because of the audit being first environment audit after the introduction of the environmental audit guidelines. This in turn helped in providing comments and suggestions on the guidelines.

The auditors reported the need to enhance technical capacities of the auditors in field of natural resource development to conduct such specialized audit. As such, a need to have a provision to hire experts and also recruit auditors from multi-disciplinary were realized. Nevertheless, the auditors had an immense experience of learning from experts of the audited entities.

The other good opportunity from this audit was that the auditors were trained in use of geographical positioning system and geographical information system in auditing aspects. Which the auditors could use wherever relevant in their future audits too.

**Challenges**

The audit team lacked competence on the subject matter of the audit, as a result had difficulty in understanding the technical terms and also the concepts. The confidence level of the auditor in providing recommendations to the audited entities was low as the audited entities had experts working on the subject matter. Moreover, the audit team had been learning from the audited entities through questions and interactions.

The auditors reported that the audit team was unable to access the core areas in the Forest Management Units it had hoped to visit due to the remote nature of the locations.

The audit team faced difficulty in gathering documentary evidences as there was no centralized system of documentation.