

Royal Audit Authority



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# ENVIRONMENTAL AUDIT GUIDELINES

JULY 2019

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## *Vision*

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**“A credible Supreme Audit Institution that promotes value for money and good governance in public operations and contributes towards achieving the societal aspirations of Gross National Happiness”.**

## *Mission*

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**“RAA is an independent constitutional body which contributes to accountability, transparency, and effective service delivery. In the service of Tsa-Wa-Sum (the King, Country and People), we audit without fear, favour, or prejudice and provide timely, reliable, and quality audit services to assist effective decision making in the public sector”.**



## Foreword

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This guideline is framed based on authority vested by Chapter 4, Section 60 of the Audit Act 2018 which empowers the RAA to frame rules and regulations, policy, procedures and guidelines as may be required for effectively carrying out its functions, duties and responsibilities. The Guideline provides only minimum guidance in environment auditing. Therefore, the Guideline should not be used as rigidly prescriptive, and users should exercise professional judgment, intellectual skepticism and reasoning in application of this guideline.

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. The Constitution mandates to protect the environment and ensure sustainable development. As mandated in the Constitution, Bhutan needs to maintain 60 percent forest cover at all times. It also 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 range impact on the developmental policy formulated by the government. It also beckons the Royal Audit Authority (RAA) 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.

The human activities are causing environmental concerns. Responding to emerging risks to environment, increasing mitigation efforts have been initiated by the government. In the process, funds allocated for environmental programmes and development activities have also been increasing. Therefore, environmental auditing can intervene by providing assistance to government agencies in proper decision-making to facilitate the sustainable use of natural resources. The RAA can play a major role in overseeing that the government's programmes achieve their intended results with minimal harms to environment through sustainable use of the natural resources. Environmental audit, therefore, is an important tool to provide constructive recommendations to government agencies in ensuring adequate protection and conservation of our environment.

Environmental audit in the public sector has potential to contribute to sustainable development goals although environmental audits can be challenged in developing countries where economic development is often preferred over the environment. The RAA with funding assistance from UNDP developed tailor-made Environmental Audit Guidelines in the year 2013 to help the RAA overcome the challenges and constraints faced in environment audit. The audit guidelines and manuals alone were not adequate, the RAA felt a need for applicable standards of auditing. According, the RAA adopted the International Standards of Supreme Audit Institutions (ISSAIs) in January 2017. The adoption of ISSAIs and the changing dynamics and practices in field of

environmental auditing necessitated revision of existing Guideline. The Guideline is revised in conformity to the principles and provisions of the ISSAIs and recently evolved international best practices. The Guideline aims to assist the auditors of the RAA in ensuring compliance to the standards and maintaining uniformity and consistencies of approaches to enhance quality, credibility and professionalism.

Finally, the RAA would like to sincerely acknowledge the financial assistance provided by the Bhutan Trust Fund for Environment Conservation (BTFEC), Bhutan for funding the revision of the Environmental Audit Guideline.

July 2019



**(Tshering Kezang)**  
**Auditor General of Bhutan**

## **Preface to Second Edition**

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The Royal Audit Authority announced the introduction of the environment audit as its mainstream audit activity in the tenth Annual Audit Conference held in July 2007. Since the inception of Environmental Audit in 2007, the RAA had conducted several environmental audits covering a variety of issues including national forest inventory and management, watershed management, waste management, industrial pollution, water supply and sanitation, Multilateral Environmental Agreements, drinking water, mining operations, timber harvesting, park management etc. During its evolution phase, the RAA faced several challenges in conducting environmental audits and accordingly the first environmental audit guidelines was published in 2013 to fill the gaps experienced over the period.

This second edition of the Guideline is framed to reinforce, improve and integrate International Standards of Supreme Audit Institutions (ISSAIs), recently progressed best practices and the changing precept and the practice of Environmental Audit. The Guideline is tailored to suit the current practices of environmental auditing in the context of performance, compliance and financial audits.

The Guideline has been broadly outlined under three parts. **Part I** contains fundamental information on environmental audit and environment related concepts and materials. This part provides information about the guideline and environmental auditing, concepts, environmental issues and mitigation measures, environmental legislations and Multilateral Environmental Agreements. **Part II** contains guidance on audit process – planning, conducting, reporting, and follow-up of environmental audits. The guidance on audit process is given concisely with more emphasis on environmental audit than general audit process. **Part III** provides specific audit guidance on thematic issues like Air Pollution, Water Pollution, Waste Management, Disaster Management, Biodiversity, Land Degradation, Hydropower, Forests, Performance of Government Programmes, Timber Harvesting, Multilateral Environmental Agreements, and Mining.

The Guideline provides only the minimum guidance in conducting Environmental Audit, and it has to be referred or used collectively with the Performance Audit Guidelines, Compliance Audit Manual, Financial Audit Manual and other Instructions and Standards of the RAA.

There is no blueprint approach to environmental auditing, rather it involves effecting varied forms of queries and scrutinies within the acceptable procedures and standards to steadily advance towards predetermined objectives to facilitate the sustainable use of natural resources. Environmental auditing is a skill-oriented task and it requires thorough understanding of environmental issues, legislations and environment related terms and concepts. The Guideline is intended to serve as a resourceful document to equip the auditors with fundamental understanding of the subject matters.

The RAA being the member of the International Organisation of Supreme Audit Institutions (INTOSAI) since 1985 and INTOSAI Working Group on Environmental Auditing (WGEA) from October 2011. The INTOSAI WGEA has been providing assistance in Environmental Auditing field to its member countries and has published several guiding documents on the principles and procedures of the audit. This Guideline derives substantial support from the publications of INTOSAI WGEA, Asian Organization of Supreme Audit Institutions (ASOSAI) and other SAIs.

## ACRONYM

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AAC	:	Annual Allowable Cut
ASOSAI	:	Asian Organisation of Supreme Audit Institutions
BEA	:	Bhutan Electricity Authority
BLC	:	Bhutan Logging Corporation
BPC	:	Bhutan Power Corporation
BT FEC	:	Bhutan Trust Fund for Environment Conservation
CBD	:	Convention on Biological Diversity
CF	:	Community Forest
CFC	:	Chlorofluorocarbon
CITIES	:	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	:	Conference of the Parties
CSR	:	Corporate social responsibility
DCCL	:	Dungsam Cement Corporation Limited
DDM	:	Department of Disaster Management (DDM)
DGPC	:	Druk of Green Power Corporation
DHI	:	Druk Holding and Investment
DM	:	Disaster Management
DoFPS	:	Department of Forest & Park Services
DoHPS	:	Department of Hydropower and Power Systems
DRE	:	Department of Renewable Energy
DRP	:	Detailed Project Report
EA	:	Environmental Assessment
EC	:	Environmental Clearance
EFRC	:	Environmental Friendly Road Construction
EFS	:	Economic Feasibility Study
EIA	:	Environmental Impact Assessment
EMP	:	Environmental Management Plan
EMS	:	Environmental Management Systems
ES	:	Environmental Statement
ESAI	:	Environmental and Social Impact Assessment (ESIA)
FAO	:	Food & Agriculture Organisation of the United Nations
FDCL	:	Forestry Development Corporation Limited
FMPs	:	Forest Management Plans
FMUs	:	Forest Management Units
FRMD	:	Forest Resources Management Division
GIS	:	Geographical Information System
GNH	:	Gross National Happiness
GRF	:	Government Reserved Forest
ICGEB	:	International Centre for Genetic Engineering and Biotechnology
IEE	:	Initial Environmental Examination
INCOSAI	:	International Congress of Supreme Audit Institutions
INTOSAI	:	International Organisation of Supreme Audit Institutions
WGEA	:	Working Group on Environmental Auditing
IPM	:	Integrated Pest Management
IPPC	:	International Plant Protection Convention
ISDR	:	International Strategy for Disaster Reduction (ISDR)

ISO	:	International Organisation for Standardization
ISSAIs	:	International Standards of Supreme Audit Institutions
LMOs	:	living modified organisms
MBIs	:	Market Based Instruments
MDGs	:	Millennium Development Goals
MEAs	:	Multilateral Environmental Agreements
MoAF	:	Ministry of Agriculture & Forests
MoEA	:	Ministry of Economic Affairs
MoH	:	Ministry of Health
MW	:	Mega Watt
NAPA	:	National Environment Protection Act
NEC	:	National Environmental Commission
NECS	:	National Environmental Commission Secretariat
NGOs	:	Non- Governmental Organizations
NRDCL	:	Natural Resources Development Corporation Limited
OP	:	Operation Plan
PAG	:	Performance Audit Guideline
PCAL	:	Penden Cement Authority Limited
PES	:	Payments for ecosystem services
PPP	:	Polluter Pays Principle
R&R	:	Rehabilitation and Resettlement
RAA	:	Royal Audit Authority
RACI	:	Responsible, Accountable, Consulted and Informed Analysis
RCDC	:	Royal Centre for Disease Control
RE	:	Renewable Energy
RFI	:	Reconnaissance Forest Inventory
SAI	:	Supreme Audit Institution
SDGs	:	Sustainable Development Goals
SEA	:	Strategic Environmental Assessment
SES	:	Socio-Economic Study
SFM	:	Sustainable Forest Management
SPM	:	Suspended Particulate Matter
UN	:	United Nations
UNCCD	:	United Nations Convention to Combat Desertification
UNEP	:	United Nations Environment Programme
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
UNFCCC	:	United Nations Framework Convention on Climate Change
UNIDO	:	United Nations Industrial Development Organization
WS	:	Working Schemes

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# **PART I**

## **GENERAL INFORMATION ON ENVIRONMENT AND ENVIRONMENTAL AUDITING**



## **About the guideline**

### **Introduction**

- 1) This Guideline is revised with a view to reinforce and improve the precept and the practice of Environmental Audit in the RAA.
- 2) The Guideline is aligned with International Standards of Supreme Audit Institutions (ISSAIs) and incorporated the best applicable practices from other SAIs and international organizations.
- 3) The Guideline has been framed primarily for the use by the auditors of the RAA and is expected to provide guidance in conducting environmental audit more professionally and effectively.
- 4) It shall be referred to as the Environment Audit Guideline. The guideline shall be subject to revisions and amendment, when required.

### **Nature and Scope of the Guideline**

- 1) The Guideline should be used in conjunction with the Performance Audit Guidelines, Compliance Audit Manual, Financial Audit Manual, Auditing Standards, Auditor General's Standing Instructions, Handbooks and other policy documents published by the RAA.
- 2) The Guideline provides a framework for undertaking environmental audits. It covers concepts, general procedures and guidance in conducting environmental audits in line with the ISSAIs.
- 3) The Guideline shall apply to conducting environmental audit in the context of performance, compliance and financial audits. The Guideline shall also apply to all Cooperative Environmental Audits (Joint, Concurrent or Parallel and Coordinated audits) and Trans-regional Environmental Audits.
- 4) The National Environment Commission has a mandate to issue standards and guideline for environmental auditing as provided under Section 59 (b) of the National Environment Protection Act of Bhutan 2007. However, this Guideline issued by the RAA would differ in terms of application, scope and objectivity. Most Supreme Audit Institutions (SAIs) have a separate auditing guideline from their Environmental Protection Agencies.
- 5) The Guideline provides only the minimum guidance and it should not be applied as rigidly prescriptive. Therefore, the auditors should not restrain themselves from exercising their own professional judgment.

### **Purpose of the Guideline**

- 1) The Guideline primarily aims to assist environmental auditors to conduct environmental audits.
- 2) The Guideline intends to enhance professionalism and competence in undertaking environmental audits by the RAA. The Guideline should help RAA to achieve better outputs from environmental audits and ensure consistency in environmental audit

approaches.

- 3) Since the Environmental Auditing is highly specialized and technical subject, the Guideline is intended to acquaint the RAA auditors on technical concepts and emerging environmental issues.
- 4) The Guideline will provide basic checklists in conducting environmental audit of specific environmental issues of Bhutan such as air pollution, water pollution, forest, waste management, biodiversity, hydropower, disaster management, performance of environmental programmes, land degradation, timber harvesting, Multilateral Environmental Agreements, and Mining.

### **Structure of the Guideline**

- 1) The Guideline has been broadly outlined under three parts:
  - Part I: Introduction to Environment and Environmental Auditing with emphasis on important concepts, legislations governing the environment and international conventions and agreements.
  - Part II: Guidance on audit process – planning, conducting, reporting, and follow-up.
  - Part III: Specific audit guidelines and checklists on selected areas of audit.

### What is Environment?

- 1.1 The word Environment is derived from the French word “Environ” which means “surrounding”. Our surrounding includes biotic factors like human beings, plants, animals, etc. and abiotic factors such as light, air, water, soil, etc.
- 1.2 National Environment Protection Act of the Kingdom of Bhutan 2007 states that *“environment means the physical factors of the surroundings of human beings including the earth, soil, water, atmosphere, climate, sound, odors, tastes and the biological factors of animals and plants of every description including the complex web of interrelationships between the abiotic and biotic components which sustain life on earth.”*
- 1.3 According to INTOSAI-WGEA, 2016, *“Environment refers to those surroundings that surrounds living beings from all sides and affect their lives in total. It consists of atmosphere, hydrosphere, lithosphere and biosphere. Its chief components are soil, water, air, organisms and solar energy”.*

### Definition of Environmental Audit

- 1.4 The term “environmental auditing” is a convenient label generally used to describe a plethora of activities – such as management audits, product certification, governmental control measures and many other activities – which bear little or no relation to an external audit. In this guide the term “environmental auditing” is used solely in the context of the independent external audit.<sup>1</sup>
- 1.5 The ISSAIs defines Environmental audit *“as a performance, compliance or financial audit addressing the approach taken by responsible bodies (e.g. governments) to a specific environmental problem, or environmental policies, or programmes, as well as their performance in managing environmental issues”.*

### Mandate

- 1.6 Article 25.1 of the Constitution of the Kingdom of Bhutan and Chapter 2(3) of the Audit Act of Bhutan provides that *“There shall be a Royal Audit Authority to audit and report on the economy, efficiency and effectiveness in the use of public resources”.*
- 1.7 Chapter 5 of the Audit Act of Bhutan 2018 provides that *“The Authority shall carry out performance, financial, compliance, special audits and any other form of audits that the Auditor General may consider appropriate.”*
- 1.8 According to ISSAI 5110/201, the SAI can undertake environmental audits under its mandate to carry out regularity audits or performance audits, and there is no requirement for a separate mandate.

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<sup>1</sup> INTOSAI Working Group on Environmental Auditing, Guidance on Conducting Audits of Activities with an Environmental Perspective 2001.

## Objectives of Environmental Audit

1.9 Environmental auditing is conducted to respond to the expectations of the citizens by providing independent, credible and objective verification of the information provided by relevant agencies with respect to their activities and their impact on the environment. The objective of the environmental audit depends on the type of audit carried out, namely, performance audit, compliance audit and financial audit or two or more combinations on case by case basis.

1.9.1 **Performance Audit:** The assessment and reporting of a program, operation or management systems and procedures of a government on whether the entity is achieving economy, efficiency, and effectiveness in the employment of available resources. Performance audits are open to any environmental or sustainable development issue that is managed by a government. For performance audits, audit objectives can relate to areas like:

- a) Existence and adequacy of environment policies, laws and strategies;
- b) Adequacy of data for evaluating impact on environment;
- c) Identifications of risks caused by pollution to health and environment;
- d) Allocation of responsibility amongst the various stakeholders involved in control mechanism;
- e) Adequacy of monitoring and evaluation of environment laws; and
- f) Adequacy of infrastructure and funding.

1.9.2 **Compliance Audit:** The assessment and reporting of a government's adherence to environmental regulatory and other policy requirements in the course of its operations. For compliance audits, focus areas for audit can stem from the applicable government rules and regulations and pre-set standards.

1.9.3 **Financial Audit:** The assessment and reporting on accuracy and completeness of environmental liabilities in the financial statements. Some of the objectives may be derived from following:

- a) Cost or expenditure incurred for adaptation and mitigation of environmental harms and degradation.
- b) Some annual operating costs which are environmental in nature. For example, energy costs can be considered an environmental cost as the use of fossil fuels is a source of carbon dioxide and air pollution
- c) Fines, penalties and liabilities which have been incurred and/or imposed under environmental legislation and for destruction of environmental aspects;
- d) Environmental restoration liabilities, including measurement uncertainties, nature, and timing.
- e) Economic valuation of environment and ecosystem services.

## Scope of Environmental Audit

1.10 An environmental audit can be conducted in context of three main streams of audit: performance, compliance and financial. The scope of an environmental audit may

differ depending on topic and objective of an audit. For instance, the scope may be narrowed down to the compliance with environmental laws, performance of Government's environmental programmes, environmental impact of other Government programmes, evaluating adequacy of proposed environmental policies and legislation, Environmental Management Systems and environmental reporting, addressing cross-cutting environmental issues, and evaluating whether environmental liabilities have been accurately and fully incorporated into the government's financial statements.

### **Importance of Environmental Auditing**

- 1.11 Preservation of environment is one of the foremost pillars of Gross National Happiness, the development philosophy of Bhutan. Bhutan's dedication and commitment in protecting and preserving the fragile mountain ecosystems and its natural environment is clearly spelt in the Constitution of the Kingdom of Bhutan. The wisdom transcending from the Constitution has a wide range impact on the developmental policy formulated by the government. This beckons the RAA to play an effective oversight role to uphold the sacred responsibility of protecting and conserving the environment.
- 1.12 Environment provides ecosystem services such as provisioning, regulating, supporting and cultural. These services are indispensable for the well-being of the society. However, with increase in developmental activities, human interference to the environment has become a pressing issue. It becomes imperative therefore, to assess the impact of such developmental activities on the environment.
- 1.13 It is crucial that RAA respond and contribute through constructive audit recommendations towards sound environmental governance. While environmental audits conducted by other environmental agencies are designed to identify environmental problems, the RAA's objective is to audit the government's responses to environmental problems and mitigation measures in place. The audits conducted through an environmental perspective can play a crucial role in the implementation of environmental goals and objectives, and assist the policymakers and legislators in making informed decisions and sound environmental policies.

### **Important Concepts Related to Environment**

#### **Sustainable Development**

- 1.14 Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs for example keeping population densities below the carrying capacity of a region, facilitating the renewal of renewable resources, conserving and establishing priorities for the use of non-renewable resources, and keeping environmental impact below the level required to allow affected systems to recover and continue to evolve. Sustainable development is now of primary importance as the key to future use and management of finite world resources. It recognizes the need for development opportunities while maintaining a balance between development and the environment. Environmental sustainability can be viewed as balancing the

“three pillars” of economic and social development with environmental protection.

- 1.15 **2030 Agenda for Sustainable Development:** In September 2015, at the United Nations (UN) Sustainable Development Summit, Heads of State and Government adopted the 2030 Agenda for Sustainable Development. The 2030 Agenda provides a framework for shared action “for people, planet and prosperity” to be implemented by all countries and all stakeholders in collaborative partnership. It is an integrated plan of action structured in four main parts: (i) Vision and Principles for Transforming our World, as set out in the Declaration; (ii) Results framework of global Sustainable Development Goals (SDGs); (iii) Means of Implementation and Global Partnership; and (iv) Follow-up and Review.

The 2030 Agenda integrates, in a balanced way, five components of sustainable development – People, Planet, Prosperity, Peace and Partnership. It aims to achieve a just, rights-based, equitable and inclusive world. The Agenda adopts sustainable development as the organizing principle for global cooperation, integrating economic development, social inclusion and environmental sustainability. The Agenda includes 17 Sustainable Development Goals (SDGs), which establish quantitative and qualitative objectives across the social, economic and environmental dimensions of sustainable development to be achieved by 2030. These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected; often the key to success on one will involve tackling issues more commonly associated with another. All 17 SDGs are equally important, as the Agenda presupposes no hierarchy or supremacy between the different dimensions of sustainable development.

## SUSTAINABLE DEVELOPMENT GOALS



169 targets further disaggregate the SDGs. The targets are “global in nature and universally applicable, taking into account different national realities, capacities and

levels of development and respecting national policies and priorities". Each government can set its own national targets, based on national circumstances, and will decide on how these global targets should be incorporated into national planning processes, policies and strategies.

### **Environmental Management System**

1.16 Environmental management system (EMS) refers to the management of an organization's environmental programs in a comprehensive, systematic, planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection. The most widely used standard on which an EMS is based is International Organization for Standardization (ISO) 2004.

1.17 The goals of EMS are to increase compliance and reduce waste:

- ◉ Compliance is the act of reaching and maintaining minimal legal standards. By not being compliant, companies may face fines, government intervention or may not be able to operate.
- ◉ Waste reduction goes beyond compliance to reduce environmental impact. The EMS helps to develop, implement, manage, coordinate and monitor environmental policies. Waste reduction begins at the design phase through pollution prevention and waste minimization. At the end of the life cycle, waste is reduced by recycling.

To meet these goals, the selection of environmental management systems is typically subject to a certain set of criteria: a proven capability to handle high frequency data, high performance indicators, transparent handling and processing of data, powerful calculation engine, customized factor handling, multiple integration capabilities, automation of workflows and quality assurance processes and in-depth, flexible reporting.

### **Strategic Environmental Assessment**

1.18 Strategic Environmental Assessment (SEA) is the formalized, systematic and comprehensive process of identifying and evaluating the environmental consequences of proposed policies, plans or programmes to ensure that they are fully included and appropriately addressed at the earliest possible stage of decision-making on a par with economic and social considerations. SEA, by its nature, covers a wider range of activities or a wider area and often over a longer time span than the environmental impact assessment of projects. SEA is recognized as a key means of integrating environmental and social considerations into policies, plans and programs, particularly in sector decision-making and reform.

1.19 SEA might be applied to an entire sector (such as a national policy on energy) or to a geographical area (for example, in the context of a regional development scheme). SEA does not replace or reduce the need for project-level EIA, but it can help to streamline and focus the incorporation of environmental concerns (including biodiversity) into the decision-making process, often making project-level EIA a

more effective process. SEA is commonly described as being proactive and 'sustainability driven', whilst EIA is often described as being largely reactive.

### **Environmental Impact Assessment**

- 1.20 Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
- 1.21 United Nations Environment Programme (UNEP) defines EIA as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers. By using EIA both environmental and economic benefits can be achieved, such as reduced cost and time of project implementation and design, avoided treatment/clean-up costs and impacts of laws and regulations.
- 1.22 EIA is mandated under the Environmental Assessment (EA) Act, 2000 and Regulation for Environmental Clearance of Projects 2002. The EA Act and its Regulation establishes procedures for the assessment of potential effects of strategic plans, policies, programs and projects on the environment, and for the determination of policies and measures to reduce potential adverse effects and to promote environmental benefits. According to the EA Act, Environmental Clearance (EC) is mandatory for any project/ activity that may have adverse impact(s) on the environment. The National Environmental Commission (NEC) is the nodal agency for administering and granting Environmental Clearance (EC) and had published various sectoral environmental assessment guidelines to guide different project proponents through the process of acquiring an environmental clearance for their projects.

### **Payment for Ecosystem Services (PES)**

- 1.23 Payments for ecosystem services (PES) occur when a beneficiary or user of an ecosystem service makes a direct or indirect payment to the provider of that service. The idea is that whoever preserves or maintains an ecosystem service should be paid for doing so. Forests, mountains, wetlands, agricultural land, freshwater—provide a variety of services that are economically valuable such as fresh water supply for human settlements (e.g. by filtering the water from contaminants); irrigation and power generation; or storm protection and pollination.
- 1.24 Ecosystem services are grouped into four main categories:
- ⦿ Provisioning services: the products obtained from ecosystems such as food and fresh water;
  - ⦿ Regulating services: the benefits obtained from the regulation of ecosystem processes such as air quality and pollination;

- ◉ Cultural services: the non-material benefits that people obtain such as spiritual enrichment, recreation and aesthetic experiences that directly affect people; and
- ◉ The supporting services needed to maintain the other services: such as photosynthesis and nutrient recycling.

The provision of such services might require communities living in the proximity of the ecosystem to undertake or not to undertake certain activities. To complete these tasks in the absence of regulatory provision, the communities need a financial incentive. The PES is the mechanism that governs these payments. In other words PES involves a series of payments to land or other natural resource owners in return for a guaranteed flow of ecosystem services or certain actions likely to enhance their provision over-and-above what would otherwise be provided in the absence of payment. PES can thus support the conservation and expansion of ecosystem when the latter generate services that can be valued in economic and financial terms. For example, a beverage company can pay farmers to reduce the use of chemical pesticides instead of paying higher fees for water treatment facilities. Similarly, government providing benefit of 100 units of free electricity to the rural households to replace use of firewood resulting in conservation of forest.

PES can be labelled according to their geographical scale (local, regional and global), the structure of the compensation (direct and indirect / public and private), the type of ecosystem (forests, wetlands, etc.) they protect or the four types of services the payment is provided for.

### **Polluter Pays Principle (PPP)**

- 1.25 The 'polluter pays principle' states that whoever is responsible for damage to the environment should bear the costs associated with it. Forcing polluters to bear the costs of their activities is also said to enhance economic efficiency. Appropriately applied, policies based on PPP should enable us to protect the environment without sacrificing the efficiency of a free market economic system.
- 1.26 However, the difficulty in application of PPP is that PPP needs to answer four questions: What constitutes pollution? Who are the polluters? How much must the polluters pay? To whom they must make the payment? A correct interpretation of the polluter pays principle would define pollution as any byproduct of a production or consumption process that harms or otherwise violates the property rights of others. The polluter would be the person, company, or other organization whose activities are generating that by-product. Finally, payment should equal the damage and be made to the person or persons being harmed. So the challenge is correct interpretation of these four factors of PPP while implementation.

### **Market Based Instruments (MBIs)**

- 1.27 Market Based Instruments (MBIs) are policies which can be broken down into two categories, taxes and tradable permits. Both are seen as attempts to "make the polluter pay" by attaching a fee to the polluting activities. The taxation approach is most direct. The tax would be paid either in the form of an emissions fee or an excise

tax on the sales of products that are associated with pollution. The tradable permits approach would first have the government establish an overall acceptable level of emissions for an industry and would then distribute permits for that level of emissions to companies within the industry. The companies could then buy and sell these emissions permits based on their needs to emit the pollutant and their abilities to find pollution abatement techniques. By these means, the polluters (or their customers) are made to "pay" for their polluting activities either through a tax, through the purchase of permits from others in the industry, or through the use of their own assigned permits (foregoing the cash that could be earned by selling them). In the taxation case the "payment" is established by and made to the government. In the tradable permit cases it is established by the supply and demand conditions in the market for permits.

### **Corporate Social Responsibility (CSR)**

1.28 Corporate social responsibility (CSR) is a business approach that contributes to sustainable development by delivering economic, social and environmental benefits for all stakeholders. Corporate responsibility is simply a way for companies to take responsibility for the social and environmental impacts of their business operations. CSR aims to ensure that companies conduct their business in a way that is ethical. This means taking account of their social, economic and environmental impact, and consideration of human rights. Recognizing how important social responsibility is to their customers, many companies now focus on CSR and a few most common categories of CSR companies undertake are in the following fields:

- ⊙ Environmental efforts: One primary focus of corporate social responsibility is the environment. Businesses regardless of size have a large carbon footprint. Any steps they can take to reduce those footprints are considered both good for the company and society.
- ⊙ Philanthropy: Businesses can also practice social responsibility by donating money, products or services to social causes. Larger companies tend to have a lot of resources that can benefit charities and local community programs.
- ⊙ Ethical labor practices: By treating employees fairly and ethically, companies can also demonstrate their corporate social responsibility. This is especially true of businesses that operate in international locations with different labor laws.
- ⊙ Volunteering: Attending volunteer events says a lot about a company's sincerity. By doing good deeds without expecting anything in return, companies can express their concern for specific issues and support for certain organizations.

### **Environmental issues in Bhutan**

1.29 It is crucial for the auditors to understand the emerging environmental threats and challenges in Bhutan. Such knowledge would help the RAA to prioritize its audit resources into areas that require the attention. Therefore, the succeeding paragraphs discuss on various concerns and threats to land, water and air.

1.30 **Land Degradation:** Socio-Economic Development of the country puts an enormous

pressure on the land resource. Rapid urbanisation and Infrastructure development activities have taken over land which was once fertile and productive. Usable land is affected by manmade activities like deforestation, overgrazing, fuelwood consumption, industries, unstable geology, extreme climate, monoculture cultivation, tillage and fertilization, etc. contributing to the degradation of the land. Land pressure in Bhutan is mainly attributed to economic and population growth, unsustainable agriculture, livestock grazing, forest harvest, forest fire, land conversion, mining, waste disposal, and it is elevated by mountainous topography.<sup>2</sup> Bhutan Environment Outlook 2013 identified following factors responsible for degradation of land in Bhutan:

- 1.30.1 **Unsustainable Agriculture:** Agriculture is the principal sector providing livelihood, income and employment. Owing to its mountainous topography, land is threatened by soil erosion, gully formation and landslides. Tseri cultivation, a practice of slash-and-burn, is still widely practiced without proper management measures coupled with increased cultivation and extended cropping periods (i.e shortening of the fallow period) leads to land degradation. Improper use of inorganic fertilizers, steep slope agriculture, use of plant protection chemicals and improper irrigation management system are causes of unsustainable agriculture. <sup>3</sup>Widely practised monoculture farming or the agricultural practice of producing or growing a single crop like rice or potatoes is also degrading the land.
- 1.30.2 **Land use conversion:** Each year, a large portion of agricultural and Government Reserved Forest (GRF) land are converted to accommodate urbanisation and various developmental activities. Infrastructure development (particularly roads, power transmission lines and distribution grids), urbanisation, industrial activities and unsustainable mining cause land use conversion.<sup>4</sup> It is apparent that loss of agriculture land is likely to escalate in the near future with economic growth development penetrating in different parts of country and expansion of urban areas. Such activity will not only increase the pressure on land but will also increase the vulnerability of agriculture areas threatening food security.
- 1.30.3 **Mining:** Mining operations have a direct impact on the landscape and environment. Major minerals mined are dolomite, limestone, gypsum, coal, quartzite and talc and their production runs into more than 1 billion tonnes/year (t/yr). Cutting of slopes and excavation works cause changes in slope that may lead to soil erosion, increased run-off, and exposure to potentially reactive natural materials. Dumping or piling of overburden materials can create artificial slopes of potentially hazardous materials. Abandoned mines, if not rehabilitated adequately, leave the landscape degraded and pose immense environmental risks.

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<sup>2</sup> National Environment Commission (NEC). (2016). *Bhutan State of the Environment*.

<sup>3</sup> National Land Commission Secretariat (NLCS). (2016). *Land Information at a glance*.

<sup>4</sup>National Environment Commission (NEC). (2016). *Bhutan State of the Environment*.

- 1.30.4 **Infrastructures Development:** Economic growth is fuelled mainly by investments in hydropower projects and infrastructure developments. Bhutan's rugged terrain and fragile geologic conditions make development of this infrastructure extremely environmentally challenging. Where adequate environmental safeguards and mitigation measures are not employed, development of infrastructure almost inevitably causes problems such as slope instability, landslips, loss of vegetative cover, sedimentation of water bodies, etc.
- 1.30.5 **Livestock Rearing and Grazing:** Livestock rearing is an important economic activity among rural communities. Cattle are owned by almost all of the rural households in the temperate and subtropical regions of the country. They are reared mainly for dairy products, meat, draught power and production of dung for use in farmyard manure. In the alpine and sub- alpine regions, the rural communities subsist largely on yak-herding. Yaks are reared for dairy products, meat and transportation of goods. Overgrazing makes the land vulnerable to degradation.
- 1.30.6 **Forest Harvesting:** Forest degradation is impacted by the harvest of forest products for timber and firewood. Pressures are intensifying from increased timber demand from various sectors. The construction sector has been one of the largest demands on timber resources. High demand for timber is challenged by limited stock available in Forest Management Units (FMUs) and Working Schemes (WS). Extraction of wood from forests not under the sustainable management system could lead to excessive extraction of timber causing forest degradation and making the land vulnerable to soil and water erosion.
- 1.30.7 **Forest Fires:** Wild fire poses a consistent threat on the land environment. Bhutan's diverse geographic terrain combined with high fuel load forests and unpredictable wind conditions make Bhutan susceptible to forest fire incidents. Forest fires often results in degradation and loss of forest resources and wildlife, causing ecosystem disruption. Most forest fire incidents in the country are anthropogenic in nature deliberately set by people to boost the growth of Lemon grass (*Cymbopogan flexuosus*) and other fodder species especially in the Eastern region. Agriculture debris burning coinciding with dry season contributes to most fires in the Western region.
- 1.30.8 **Solid Waste Generation and Disposal:** The increasing waste generation without adequate infrastructures, facilities and services to ensure sound waste management has adverse impact on human health and the environment. Waste Prevention and Management Act of Bhutan 2009 categorizes wastes into four different types: Hazardous Waste (potential hazard to human health or the environment because of its quantity, concentration, persistence or physical, chemical or infectious characteristics), Non-hazardous Waste (waste which does not pose hazard to human health and environment), Medical Waste (waste stemming from

medical procedures and treatments in hospitals, basic health units, clinics, animal husbandries, veterinary hospitals, and domestic households) and E-waste (discarded, obsolete or disposed electrical or electronic equipment including all components, subassemblies and consumables at the time of discarding).

1.31 **Water environment:** Water resources are an essential component of the earth's hydrosphere and an indispensable part of the terrestrial ecosystem. Water is needed in all aspects of life. The presence of a safe and reliable source of water is an essential prerequisite for social well-being and economic productivity. Bhutan's water resources are facing following threats.

1.31.1 **Water pollution:** solid waste generation and disposal; domestic sewage, improper disposal of waste oil and vehicle effluents; and mountainous terrain driven runoff and floods carrying oil, heavy metals, sediment, pesticides, fertilizers and other pollutants into streams or groundwater are significant sources of water pollution.

1.31.2 **Deterioration or destruction of watershed areas and water sources:** encroachment of watershed areas due to the fast pace of socio-economic development; drying up of lakes and water sources; and melting of glaciers or retreating glaciers due to global warming are posing threats to availability of water supply for increasing population's water consumption and demand, agriculture and hydropower.

1.32 **Air environment:** Bhutan is blessed with pristine air environment. However, It is being observed that air quality monitored in all existing network stations indicates the quality of air is deteriorating. Therefore, it may not be a primary area of concern for environmental auditors of the RAA at the macro level. However, localized air pollution is already being experienced due to increasing number of vehicles, manufacturing industries and increasing number of construction activities. The main driving factors responsible for depleting the existing air quality are socioeconomic development, increasing population and climate change. The threats to Bhutan's air quality are also imminent from its neighbouring countries owing to the trans-boundary nature of air pollution.

Bhutan Environment Outlook 2013 identified following factors responsible for depleting air quality in Bhutan:

1.32.1 Air pollution or depleting air quality: Vehicular emissions, construction activities contaminating air by dust and construction materials, emissions from industrial and mining activities, forests fires, and use of fuelwood for heating and cooking are major factors contributing to depletion of air quality.

1.33 **Biodiversity:** Given the outstanding current status of Biodiversity in Bhutan, the issues may not warrant serious attention of auditors. However, it may not always be the situation with changing time and emerging threats to Biodiversity in Bhutan.

The biodiversity faces threats from rapid infrastructure development, increasing

population and urbanization. As per the Bhutan Environment Outlook 2013, wildlife poaching, species habitat loss due to human encroachment and infrastructure development, forest fires and climate change are factors posing threats to biodiversity in Bhutan.

### **Mitigation Measures and Strategies**

1.34 Understanding the mitigation strategies in place to curb environmental threats would provide insights to the auditors that would help them to assess degree of audit risks and thus prioritize environmental audit topics. While it is important for the auditors to understand the causes and factors which lead to environmental degradation, it is equally important to acquire a sound knowledge of the means and measures instituted to prevent, mitigate and adapt to the gravity of threats to the environment. Some mitigation measures and strategies could be as follow:

- a) **Legal framework:** Legislations and policies help institute a strong regulatory framework for protection of the environment. There are several legislations and policies at national and international level to prevent and mitigate the environmental issues. Bhutan has ratified many international environmental accords.
- b) **Institutional framework:** Aligning with the regulatory requirements, there should be strong institutional and accountability framework in place. Each government agencies have different roles and mandates to protect and conserve environment. For example, the National Environment Commission Secretariat is highest decision making and coordinating body on all matters relating to the protection, conservation and improvement of the natural environment.
- c) **Enforcement of environmental rules and regulations:** Strong enforcement of environmental laws is required to mitigate and address the environmental threats. The environmental issues can be contained to a certain degree through proper monitoring mechanism and with strict sanctions to offenders.
- d) **Integrate environmental issues into development policies, plans and programmes:** Mainstreaming environmental, climate change and water security issues into developmental activities and programmes would ensure the protection and conservation efforts.
- e) **Stakeholder Engagement:** One of the strategies towards mitigation of environmental issues is stakeholder and citizen participation (Civil Society Organisations, Non-Profit Organisations, local communities, etc) which will enhance the quality of environmental decisions by considering more comprehensive information inputs. Engaging stakeholders is very important in environmental decision-making due to the complex and dynamic nature of environmental problems. Stakeholder engagement would establish credibility, ensure transparency and accountability, and increase dissemination & awareness.
- f) **Environmental Impact Assessment (EIA):** The aim of Environmental Impact Assessment is to protect the environment by evaluating the likely environmental

impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

- g) Environmental restoration measures: Environmental restoration measures would curb the direct and indirect environmental impacts from development activities. For example, there should land rehabilitation after mining activities.

There are several legislations and policies playing instrumental role in governing environmental protection and conservation. The legislations listed below are to be use for references and should not be limited to. The environmental auditors should have adequate insights and familiarity of those policies and legislations, if any, which are applicable to the audit topics.

### **The Constitution of the Kingdom of Bhutan 2008**

- 2.1 Article 5.1 of the Constitution of the Kingdom of Bhutan stipulate that “*Every Bhutanese is a trustee of the Kingdom’s natural resources and environment for the benefit of the present and future generations and it is the fundamental duty of every citizen to contribute to the protection of the natural environment, conservation of the rich biodiversity of Bhutan and prevention of all forms of ecological degradation including noise, visual and physical pollution through the adoption and support of environment friendly practices and policies*”.
- 2.2 Article 5.2 states that the government shall protect, conserve and improve the pristine environment and safeguard the biodiversity of the country, prevent pollution and ecological degradation, secure ecologically balanced sustainable development while promoting justifiable economic and social development; and ensure a safe and healthy environment.
- 2.3 Article 5.3 states that the Government shall ensure that, in order to conserve the country’s natural resources and to prevent degradation of the ecosystem, a minimum of sixty percent of Bhutan’s total land shall be maintained under forest cover for all time. Parliament may enact environmental legislation to ensure sustainable use of natural resources and maintain intergenerational equity and reaffirm the sovereign rights of the State over its own biological resources.
- 2.4 Article 5.4 of the Constitution also states that Parliament may, by law, declare any part of the country to be a National Park, Wildlife Reserve, Nature Reserve, and Protected Forest, Biosphere Reserve, Critical Watershed and such other categories meriting protection.

### **National Environment Protection Act 2007**

- 2.5 The Act provides regulations governing the use of land, water, forests, minerals and other natural resources. It facilitates establishment of an effective system to conserve and protect environment in order to independently regulate and promote sustainable development in an equitable manner.
- 2.6 The act calls for conservation of Natural resources to be based on a participatory approach aimed at achieving an equitable sharing of the cost and benefits of conservation among resource users. It also provides promoting the use of clean energy and alternative technologies in order to reduce use of fuel wood/timber from primary forest.
- 2.7 The Act calls for conservation and protection of wet lands, alpine regions,

watersheds and other vulnerable ecosystems in addition to the existing protected areas. For inter-generational equity and sustainable utilization of natural resources, the Act provides for bio-prospecting and other commercial extraction and export from the country, of any in-situ or ex-situ plant and animal genetic resources.

### **Environmental Assessment Act 2000**

- 2.8 The Act establishes procedures for the assessment of potential effects of strategic plans, policies, programs, and projects on the environment, and for the determination of policies and measures to reduce potential adverse effects and to promote environmental benefits. It makes environmental clearance (EC) mandatory for any project or activity that may have adverse impact on the environment.
- 2.9 The Act and its regulations require all developmental projects to obtain environmental clearances before their commencement, either from a designated Competent Authority or National Environment Commission. The Act provides regulations for projects that require developmental consent.

### **Water Act of Bhutan 2011**

- 2.10 The Act provides regulations to ensure that the water resources are protected, conserved and/or managed in an economically efficient, socially equitable and environmentally sustainable manner.
- 2.11 The Act confers the position of competent Authority to the Ministry of Agriculture and Forest (MoAF) for implementing activities as they relate to land use and irrigation, watershed management, water resources in forests, wetlands and protection of catchment areas, which collectively falls under the jurisdiction of Department of Forest and Park Services (DoFPS). Further, the Act enjoins the DoFPS to raise issues related to water resources and promote the principle of water resource management within the scope of integrated watershed management.

### **Land Act of Bhutan 2007**

- 2.12 This Act is envisaged to manage, regulate and administer the ownership and use of land for socioeconomic development and environmental well-being of the country through efficient and effective land administration, security of land tenure, equal opportunity to land, facilitation of operation of land market, effective use of land resources and conservation of the ecosystem.
- 2.13 This Act superseded the Land Act, 1979, except provisions pertaining to water channel and embankments and compensation on the crop damaged by cattle.

### **Waste Prevention and Management Act of Bhutan 2009**

- 2.14 The Act covers provisions, regulations and administrative instruments governing waste issues.
- 2.15 The Act stresses on protection of the environment by reducing the generation of waste at source; promoting the segregation; reuse and recycling of wastes; disposal of waste in an environmentally sound manner; and effective functioning and

coordination among implementing agencies.

- 2.16 This Act extend to all forms of waste whether solid, liquid, or gaseous, hazardous or non-hazardous, organic or inorganic, from residential, agricultural, commercial, medical or industrial sources, produced by any person, including materials being stored for recycling or in the process of recycling, including the transportation of waste in any form, and import and export of waste in Bhutan.

### **Mines and Minerals Management Act 1995**

- 2.17 Minerals being an important component of the natural resource endowment of the country, the exploitation of this resource is required to be carried out in a manner compatible with the social and economic policies of the country and within the framework of sustainable development, protection of the environment and preservation of the Kingdom's precious religious and cultural heritage. Thus, the Mines and Minerals Management Act 1995 was promulgated towards fulfilling these national goals and seeks to provide the legal framework for orderly administration and healthy growth of the mineral sector.
- 2.18 The act recognizes the preservation, protection and setting of environmental standards and conservation of natural resources consistent with the provisions of the act and other environmental legislations as a critical feature of mining practices. It requires the restoration of the areas to be mined in a proper manner with the objective of creating a suitable and acceptable environment as approved by NEC. Prior to granting a mining lease, a final mine feasibility study based on an assessment of technical, financial, environmental and social parameters is required. Among other things, the feasibility study needs to obtain a Mine Plan, Environment, Management Plan and Restoration Plan.

### **Pesticides Act of Bhutan 2000**

- 2.19 The Pesticides Act of Bhutan 2000 has been enacted with the objective to:
- ⊙ ensure integrated pest management (IPM) is pursued, limiting the use of pesticides as the last resort
  - ⊙ ensure that only appropriate types and quality of pesticides are introduced in the country
  - ⊙ ensure that pesticides are effective when used as recommended
  - ⊙ minimize deleterious effects on human beings and the environment consequent to the application of pesticides

### **Seeds Act of Bhutan 2000**

- 2.20 The Seeds Act of Bhutan 2000 was enacted with the purpose of regulating the import and export of agriculture seeds, preventing introduction of unwanted plants and diseases and promoting seed industry with the aim to enhance rural income and livelihood. In accordance with the Act, a National Seed Board has been established to advise the MoAF on all matters related to development of national seed

programme and to administer the Act. Specifically, the Act provides for regulation of quality of seeds, sale of seeds, certification of seeds, laboratory testing of seeds, and inspection of seeds.

### **Biodiversity Act of Bhutan 2003**

2.21 The Act was enacted considering the provisions of the Convention on Biological Diversity on the sovereignty of the States over their genetic resources and the need to promote the conservation and sustainable use of these resources as well as the fair and equitable sharing of benefits arising from its utilization.

The objectives of the Act are:

- ◉ To ensure national sovereignty of the RGoB over genetic resources in accordance with relevant National and International Law;
- ◉ To endure the conservation and sustainable use of the biochemical and genetic resources;
- ◉ To promote the equitable sharing of benefits derived from the use of genetic resources;
- ◉ To promote technology transfer and capacity building at the national and local levels, including the buildings of scientific and technological capacity relevant to the conservation and sustainable use of biological diversity;
- ◉ To recognize and protect traditional knowledge, innovation and practice of local communities associated with biodiversity;
- ◉ To regulate and facilities the process by which collectors may legally obtain genetic resources;
- ◉ To prevents illegal access to genetic and biochemical resources and associated traditional knowledge;
- ◉ To recognize and protect the farmers' and breeder's rights; and
- ◉ To make plant varieties subject to property right

### **Forest and Nature Conservation Act of Bhutan 1995**

2.22 The Act replaced and repelled the Bhutan Forest Act of 1969. It is an Act to provide for the protection and sustainable use of forests, wildlife and related natural resources of Bhutan for the benefit of present and future generations.

2.23 The Act covers provisions on forest management, Government Reserved Forest, Social Forestry & Community Forestry, transport & trade of forest produce, protected areas, conservation of wildlife, soil & water conservation matters, and enforcement & penalties.

### **Forest and Nature Conservation Rules and Regulations of Bhutan 2017**

2.24 The Act was promulgated under the Forest and Nature Conservation Act of Bhutan, 1995 by the Ministry of Agriculture and Forests. It provides detailed procedures and

regulations for implementation of the requirements of the Forest and Nature Conservation Act of Bhutan, 1995.

### **Environmental Standards 2010**

- 2.25 The industries, mines, hydropower projects and other developmental activities under the purview of the Environmental Assessment Act, 2000 are required to strictly comply with the Environmental Standards, 2010 while discharging industrial effluent and gaseous emission and to operate the activity strictly in accordance with the terms and conditions stipulated in the environmental clearance.
- 2.26 The environmental standards cover standards on ambient water quality, industrial effluent discharge, sewage effluent, ambient air quality, industrial emissions, workplace emissions, vehicle emissions and noise levels.

### **Regulation for Environmental Clearance of Projects 2016**

- 2.27 This regulation is adopted under the Environmental Assessment Act, 2000. The regulation defines responsibilities and procedures for the implementation of the Environmental Assessment Act, 2000 concerning environmental assessment process for projects.
- 2.28 This Regulation applies to all projects which are subject to environmental assessment process. It provides regulations for application for Environmental Clearance; Environmental Assessment Process; Environmental Clearance; renewal of Environmental Clearance; public consultation process for the proposed project; Monitoring, Enforcement and Reporting of programs to which Environmental Clearance has been granted; and offences and penalties for non-compliances.

### **Waste Prevention and Management Regulation 2012 and Waste Prevention and Management (Amendment) Regulation 2016**

- 2.29 Waste Prevention and Management Regulation 2012 was adopted under Section 53 of the Waste Prevention and Management Act, 2009 and it is primarily aimed to provide its community a safe and healthy environment at all times. It provides procedures to implement the purpose of the Waste Prevention and Management Act, 2009 and to control and prohibit illegal dumping or releasing of waste into the environment. It identifies roles and areas of implementation for the purpose of establishing a sound waste management system including monitoring procedures at every organization level, through efficient collection, segregation, treatment, storage, transportation, reduction, reuse, recycling and safe disposal of solid, liquid and gaseous wastes.

This Regulation covers areas like medical waste management, municipal waste management, industrial waste management, waste management in government in government reserved forest including protected areas and Dzongkhag communities, e-waste management, offences and penalties and etc.

- 2.30 Waste Prevention and Management (Amendment) Regulation 2016 covers amendments and insertion of new sections to various sections of the Waste

Prevention and Management Regulation 2012.

#### **Water Regulation of Bhutan 2014**

- 2.31 This Regulation is promulgated to: (a) enforce the objectives and purposes of the Water Act; (b) effectively implement and enforce the Water Act by the Competent Authorities; and (c) identify roles and responsibilities of designated Competent Authorities and other relevant organizations.
- 2.32 This Regulation shall apply to all the issues relating to water resources and their management under the Water Act.
- 2.33 National Environment Commission is given an authority of an apex independent agency of the Royal Government for the purpose of developing policies, plans, programs and monitoring water resource management. Various Ministries and offices were identified as the competent authorities for the purpose of enforcing respective provisions of the regulation.

#### **Regulation on control of ozone depleting substances 2008**

- 2.34 The regulation incorporates the obligations under Vienna Convention for the protection of ozone layer and to streamline the implementation of the obligations stemming from the Montreal Protocol on substances that depletes the ozone layer.

#### **Mines and Minerals Management Regulations 2002**

- 2.35 Exercising the powers conferred by Article 50 of the Mines and Minerals Management Act, 1995, the Minister of Trade & Industry drafted the Mines and Minerals Management Regulations 2002. The regulation stipulates the requirement of environmental clearances conditions for environmental restoration bond, maintenance of records on mining operation including environmental protection measures, compliance with all emission limits and ambient air quality standards adopted by NEC, water, dust and noise pollution management needs, monitoring of environmental quality in and around the mine lease area and reporting of the area's environmental state.

#### **Regulation for the Environmental Clearance of projects and Regulation on Strategic Environmental Assessment 2002**

- 2.36 The Regulation for the Environmental Clearance of projects and Regulation on Strategic Environmental Assessment 2002 has been framed as per the provisions of the Environment Assessment Act, 2000. This regulation explicates the procedures for environmental assessments of the projects highlighting the environmental requirements to be fulfilled by the projects. It also details the rules for monitoring offences, the compliance orders and remedies.
- 2.37 The regulation was published by the NEC to make the general people understand the procedures for applying and obtaining of environmental clearances for the projects aimed at better compliance and effective implementation. It defines the responsibilities and procedures for the implementation of Environment.

## **Rules and Regulations for the Establishment and Operation of Industrial and Commercial Ventures in Bhutan 1995**

2.38 The rules and regulations for the establishment and operation of industries and commercial ventures in Bhutan came into force in 1995. Rule 15 states that “the licensee shall ensure that government rules and regulations relating to environmental protection as well as health and safety measures are strictly adhered to in the operation and conduct of his/ her industrial or commercial venture”.

## **Bhutan Water Policy 2003**

2.39 The Bhutan Water Policy is a reflection of the Royal government’s commitment on the conservation, development and management of the country’s water resources. It recognizes that water is a precious natural resource and a heritage important to all aspects of social, economic and environmental wellbeing. Therefore, water resources must be carefully conserved and managed in order to promote national development without compromising the integrity of the natural ecosystem.

2.40 This policy adopts an integrated approach, which recognizes natural linkages. Emphasis is placed on water resources management within river basins and aquifers, including both upstream and downstream water users. Surface and ground water are seen as two forms of the same resource, often with close linkages. Water quality and quantity are important and interlinked. It must be planned and managed in a coordinated manner.

2.41 Water for human sustenance has direct linkage with poverty. Recognizing this strong linkage, water related programs shall aim at poverty alleviation and contribute to Gross National Happiness (GNH). This policy shall cover all forms of water resources including snow, glacier, rivers, lakes, streams, springs, wetlands rainwater, soil moisture and groundwater.

## **Renewable Natural Resource Policy**

2.42 Agricultural development is guided by the overall Renewable Natural Resources (RNR) sector policy which outlines the following objectives:

- ⦿ To pursue a people-centered development path that would lead to the realization of their aspirations for a better life through active public participation in the development process;
- ⦿ To pursue economic development that has prospects for long-term sustainability based on the country’s resource situation, comparative advantages, and community based self-help institutions;
- ⦿ To pursue a balanced and equitable development of the country’s renewable natural resources and distribution of benefits accruing from them across society and regions;
- ⦿ To adopt development strategies that are environment friendly and ensure the integrity of the country’s fragile ecosystem; and
- ⦿ To be sensitive and responsive to the rich cultural heritage of the country and

ensure its preservation.

### **Alternative Renewable Energy Policy, 2013**

2.43 Recognizing the importance of clean and green energy sources for Bhutan has led to the formulation of an important policy document named the 'Alternative Renewable Energy Policy, 2013'. The Department of Renewable Energy (DRE) under the Ministry of Economic Affairs (MoEA) is the "Nodal Agency" for implementation of the RE Policy. The long term & short term objectives of the RE policy are as follows:

#### **Long-term objectives:**

- ⦿ Contribute to energy security and broaden the energy portfolio through utilization of available renewable energy potential;
- ⦿ Reduce greenhouse gas emissions and contribute to climate change mitigation;
- ⦿ Promote green growth and enhance sustainable socio-economic development;
- ⦿ Develop productive manufacturing capacity in the Renewable Energy (RE) Sector; and
- ⦿ Develop a framework for Carbon Trading Mechanisms.

#### **Short-term objectives:**

- ⦿ Harness the potential of RE resources and adoption of RE technologies in the Country;
- ⦿ Develop RE Master Plan for each of the RE technologies by mapping capacity, generation potential and cost of generation by location across the Kingdom;
- ⦿ Design appropriate tariffs for various RE technologies to offer secure and stable market to investors and project developers with transparent, guaranteed and time-bound incentives provided by the Government;
- ⦿ Enable, encourage and facilitate both public and private sector participation in the development of RE;
- ⦿ Set realistic target for RE in the energy-mix;
- ⦿ Support and promote Research & Development in RE technologies with long term potentials as viable energy resources;
- ⦿ Institutionalize the development of national and local capacities and capabilities for enhanced and optimum utilization of RE systems; and
- ⦿ Establish the necessary administrative processes, basic physical infrastructure and institutional mechanisms to implement the provisions of this Policy; and
- ⦿ Strengthen regulatory functions in the RE sector.

### **National Strategy and Action Plan (Integrated Solid Waste Management)**

2.44 The national strategy on integrated Solid waste Management outlines how all waste which may have a negative impact on public health and the environment can be removed regularly and in an affordable way.

2.45 The main focus of the strategy was to:

- ⊙ Ensuring that waste producers become responsible
- ⊙ Addressing root cause by reducing the waste to minimum
- ⊙ Gaining control over waste related pollution
- ⊙ Establishing well trained work force

### **National Strategy for Community Forestry: The Way Ahead**

2.46 The strategy was prepared by MoAF in May 2010. It strategically charts the way ahead to ensure that the community Forestry contributes to Bhutan's over socio-economic and environmental development goals and to local democratization, and thus, guides the future implementation of the Community Forestry (CF) Programme. The community forestry strategies include the following:

- ⊙ Enhance the regularity framework for community forestry to ensure that it is enabling rather than enforcing;
- ⊙ Manage community forest by applying the principles of sustainable forest management to achieve both conservation and development outcomes;
- ⊙ Manage the CF to generate the income;
- ⊙ Meet rural timber requirement from CF;
- ⊙ Base the management of CF on principles of good governance;
- ⊙ Improve awareness for public and government staff on CF;
- ⊙ Building capacity to plan and manage community forests;
- ⊙ Base technical and socio economic approaches to CF; and
- ⊙ Monitor and evaluate the biophysical and socio-economic outcomes of the CF

### **Bhutan National Human Wildlife Conflicts Management Strategy-2008**

2.47 This document is produced by the Nature Conservation Division of the Department of Forest, this document is the first of its kind which addresses Human- Wildlife Conflict Management. The root causes of the problems are carefully analysed and mitigation measures, such as compensation programs to offset immediate losses, insurance programs for crops and livestock as longer-term solutions, and wildlife research programs to better understand problem species are proposed and presented in a logical manner.

### **National Forest Policy of Bhutan 2011**

2.48 The policy was prepared by MoAF in 2011. A key feature of National Forest Policy is the application of an integrated landscape level approach to sustainable forest management. This is done through the implementation of strategies aimed at achieving a balance between conservation and sustainable utilization that respects the cultural values of the forests. Of particular importance is the emphasis on poverty reduction that is a thread woven through the policy objectives and strategies. The main features of the policies include:

- ⊙ Integrated landscape level approach to sustainable forest management

- ⦿ All GRF land must be bought under management regimes focused on the sustainable supply of forest products over ecosystem services.
- ⦿ Emphasis on poverty reduction
- ⦿ Promotion of forest based industries through sound resource assessment
- ⦿ Balanced sustainable use and conservation of forest and natural resources
- ⦿ Integration of climate change, disaster management and new challenges and opportunities
- ⦿ Enabling payment of environment services.

## **Chapter 3: International Conventions/Multilateral Environmental Agreements**

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Besides the environmental legislations, as an environmental auditor, it is also important to have insights on international conventions/Multilateral Environmental Agreements (MEAs) ratified by Bhutan. Bhutan joined the international community in their efforts to combat environmental issues as early as 1982. Since then, Bhutan has committed to several conventions and protocols. Bhutan's affiliation to such environmental conventions demonstrates that Bhutan is serious in its conservation policy and commitments to both internal and global environmental conservation. Some major International organisations, conventions or Multilateral Environmental Agreements which are relevant to the environmental auditors are described hereunder:

### **UN Convention on Biological Diversity (CBD)**

- 3.1 The CBD is an international legally binding treaty with the aim of conserving biological diversity, sustainable use of its biological component and the fair and equitable sharing of benefits arising out of the use of genetic resources. It was inspired by the world community's growing commitment to sustainable development. The convention was opened for signature on 5th June 1992 at the Rio Earth Summit and entered into force on 29th December 1993.
- 3.2 Bhutan signed the United Nations Convention on Biological Diversity on 11th June 1992 and ratified it on 25th August 1995.

### **UN Framework Convention on Climate Change (UNFCCC)**

- 3.3 The UNFCCC is an international environmental treaty with the objective to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The treaty is not legally binding and provides a framework for negotiating specific protocols that may set binding limit greenhouse gases. The main theme of the UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a level that ensures the ecosystem to adapt naturally, food production is not threatened and economic development proceeds in a sustainable manner. The treaty was signed in 1992 and entered into force on 21st March 1994 and has 195 parties (194 states and 1 regional economic integration organization).
- 3.4 Bhutan signed the Convention on 11th June 1992, the Instrument of Ratification was signed on 25th August 1995 and the convention entered into force on 23rd Nov 1995.

### **United Nations Convention to Combat Desertification (UNCCD)**

- 3.5 The UNCCD specifically covers issues like dry lands, desertification, climate change, loss of biodiversity and other unsustainable land management issues. It is a legally binding international agreement linking environment and development to sustainable land management. Parties to the Convention further specified their goals "to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas in order to support

poverty reduction and environmental sustainability”.<sup>5</sup> The UNCCD collaborates closely with CBD and UNFCCC given that the dynamics of land, climate and biodiversity are intimately connected. The convention was adopted on 17th June 1994 in Paris and entered into force on 26th December 1996. The convention currently has 195 parties (194 states plus the European Union).

- 3.6 Bhutan signed the United Nations Convention to Combat Desertification in 1992 and ratified it on 20th August 2003.

### **International Plant Protection Convention (IPPC)**

3.7 The International Plant Protection Convention is an international plant health agreement, established in 1951, overseen by the Food and Agriculture Organization, aimed to protect the world’s cultivated and natural plant resources from the spread and introduction of plant pests while minimizing interference with the international movement of goods and people.

- 3.8 International Plant Protection Convention (Adherence) came into force for Bhutan on 20th June 1994.

### **UNESCO World Heritage Convention**

3.9 The World Heritage Convention of 1972 brings together the idea of nature conservation and preservation of cultural properties. Parties to the convention pledges not only to conserve world heritage sites but also to protect its natural heritage. The Convention’s "natural heritage" include natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty. The Convention was signed on 26th November 1972 in Paris and came into force from 17th December 1975.

- 3.10 Bhutan signed the UNESCO World Heritage Convention’s Instrument of ratification on 22nd October 2001.

### **Kyoto Protocol**

3.11 The Kyoto Protocol, an international agreement, commits its Parties to reduce emission by setting internationally binding targets and is linked to the United Nations Framework Convention on Climate Change. This Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities” recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activities.

- 3.12 The Kyoto Protocol was adopted in Kyoto, Japan, on 11th December 1997 and the

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<sup>5</sup> <http://www.unccd.int/en/about-the-convention/Pages/About-the-Convention.aspx>

detailed rules for implementation of the Protocol were adopted at the 7th session of the Conference of the Parties (COP 7) in Marrakesh, Morocco, in 2001 referred to as the “Marrakesh Accords.” However, due to complex ratification process, it entered into force only on 16th February 2005. The first commitment period was from 2008 till 2012 and the second commitment period is from 2013 to 2020. 37 developed and industrialized countries had agreed to legally binding limitations/reductions in their emission of greenhouse gases in the two commitments periods. Bhutan signed the Instrument of accession on 26th August 2002.

### **Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Depletes the Ozone Layer**

3.13 The Vienna Convention serves as a framework for efforts to protect the globe’s ozone layer and was adopted in 1985 and entered into force on 22nd September 1988. However, the convention did not require countries to take concrete actions to control ozone depleting substances. The Montreal Protocol on substances that deplete the Ozone layer was designed to reduce the production and consumption of ozone depleting substances to protect the earth’s fragile ozone layer. The Montreal Protocol was agreed on 16th September 1987 and entered into force on 1st January 1989. The Vienna Convention and the Montreal Protocol, on 16th September 2009, became the first treaties in the history of the United Nations to achieve universal ratification.

3.14 Bhutan acceded to the Vienna Convention for the Protection of the Ozone Layer in 2004 and also signed the Montreal Protocol on Substances that Depletes the Ozone Layer in 2004. The 82nd session of the National Assembly ratified both in 2004.

### **Ramsar Convention**

3.15 The Ramsar Convention is an intergovernmental treaty on wetland protection and utilization providing a framework for national action and international cooperation and is considered the only global environmental treaty that deals with a particular ecosystem. However, this convention is not affiliated with the UN system of MEAs although it works very closely with other MEAs and is a full partner among the biodiversity related treaties and agreement.<sup>6</sup> The convention was signed in 1971 and came into force on 21st December 1975.

3.16 Bhutan acceded to the convention on 7th September 2012.

### **Statutes of the International Centre for Genetic Engineering and Biotechnology (ICGEB)**

3.17 The ICGEB is a non-profit, international research and training organization promoted by the United Nations Industrial Development Organization (UNIDO). The ICGEB carries out research and training in genetic engineering and biotechnology for the benefit of developing countries and comprises a network of 40 national laboratories located in developing countries. The Centre is dedicated to advanced research and training in molecular biology and biotechnology and holds out the prospect of

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<sup>6</sup> [www.ramsar.org](http://www.ramsar.org)

advancing knowledge and applying the latest techniques in the fields of biomedicine, crop improvement, environmental protection/remediation, biopharmaceuticals and biopesticide production.<sup>7</sup> The ICGEB was launched in 1983 with the signing of its Statutes by 26 countries in Madrid. The Statutes of the centre entered into force on 3rd February 1994.

- 3.18 Bhutan signed the statutes of the International Centre for Genetic Engineering and Biotechnology on 31st May 1984 and is a full member state. Instrument of ratification was signed on 15th April 1985.

### **Cartagena Protocol on Bio-safety**

3.19 The Cartagena Protocol on Bio-safety to the Convention on Biological Diversity is an international agreement governing the exports and imports of living modified organisms (LMOs) that will affect the vast majority of the world community trade. The agreement ensures an adequate level of protection in the field of safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on trans-boundary movements. The protocol was adopted on 29th January 2000 to supplement the Convention on Biological Diversity and entered into force on 11th September 2003.

- 3.20 Bhutan acceded to the Cartagena Protocol on Biosafety on 11th September 2003.

### **Final Act and the Law of Sea Conventions (1982)**

3.21 The Final Act and the Law of Sea Conventions is the first environmental convention negotiated by Bhutan and signed on 10th December 1982. The convention came into force on 16th November 1994.

3.22 The oceans and seas became a source of multitude of claims, counterclaims and sovereignty disputes, especially over offshore resources and their protection. The concerns were over costal fish stocks, threat of pollution and waste and also the navies of the maritime powers competing to maintain a presence. The founding stones of this convention were necessitated by the need for a more stable order, promoting greater use and better management of ocean resources and generating harmony among states in conflict over claims. The Convention is claimed to be an unprecedented attempt by the international community to regulate all aspects of the resources of the sea and uses of the ocean, and thus bring a stable order to mankind's very source of life.

### **Basel Convention on the control of Trans-boundary Movements of Hazardous Wastes and their Disposal**

3.23 The Basel Convention is an international treaty with the objective to protect human health and the environment against adverse effects of hazardous wastes. It aims to reduce generation of hazardous waste, promote environmentally sound management

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<sup>7</sup> <http://www.icgeb.org/about-the-centre.html>

of hazardous waste, restrict and regulate the trans-boundary movement of hazardous waste and their disposal, especially to prevent transfer of hazardous waste from developed to less developed countries. The convention was opened for signature on 22nd March 1989 and entered into force on 5th May 1992.

3.24 Bhutan signed the Instrument of accession to the Convention on 26th August 2002.

### **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**

3.25 The CITES is an international agreement between governments to ensure that international trade in specimens of wild animals and plants do not threaten their very survival and accords varying degrees of protection to more than 34,000 species of animals and plants. The Convention recognizes the wild fauna and flora as an irreplaceable part of the natural systems of the earth which must be protected and is mainly aimed at protecting certain species of wild fauna and flora against over-exploitation through international trade by international co-operation in the area. The convention entered into force on 1st July 1975. Currently 178 states have ratified and become parties to the convention.

3.26 The Instrument of accession was signed on 15th August 2002 and ratified on 13th November 2002.

### **Food and Agriculture Organization of the United Nations (FAO)**

3.27 The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger. It aims to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives. It has over 194 member states, and works in over 130 countries worldwide.<sup>8</sup>

3.28 FAO is also a source of knowledge and information, and helps developing countries to make agriculture, forestry and fisheries more productive and sustainable ensuring good nutrition and food security for all.

3.29 FAO assistance in Bhutan reflects national development strategies and is centred on five priority areas: developing and implementing effective agricultural policies and legal frameworks and building institutional capacity for food security and nutrition; fostering multi-sectoral participation, coordination and value chain development in food and nutrition security programmes; strengthening information management and communication systems related to renewable natural resources; enhancing equitable, productive and sustainable natural resource management and community based enterprise development; addressing climate change and its impacts on agriculture and food and nutrition security.<sup>9</sup>

3.30 Bhutan joined FAO in 1981, a country office was established in the mid-1980s and thereafter FAO has implemented close to 100 projects.<sup>10</sup>

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<sup>8</sup> <http://www.fao.org/about/en/>

<sup>9</sup> <http://www.fao.org/countryprofiles/index/en/?iso3=BTN>

<sup>10</sup> FAO, Bhutan and FAO, Partnering for sustainable agricultural development and food and nutrition security

## **PART II**

### **ENVIRONMENTAL AUDITING PROCESS**



## Introduction

- 4.1 Auditing from environmental perspective is generally referred to as environmental audit that is conducted through financial, compliance or performance audit. RAA generally conducts environmental audits as either compliance or performance or a combination of both. However, it is also important to note that environmental audit can be carried out as financial audit. The type of audit to be conducted will depend primarily on the materiality and significance of environmental issues.
- 4.2 Environmental audit in the context of financial, compliance or performance audit audits are explained herein. However, the auditor need to use this guideline in conjunction with the respective guideline and manual of each stream of audit.

**FINANCIAL AUDITS:** The objective of an audit of financial statements is to enable the auditor to express an opinion on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework. Material respects can be directly linked to environmental costs, obligations, impacts, and outcomes. The audit of financial statements requires the auditor to consider environmental regulations as part of the audit, and in particular environmental issues and matters if they have material effect on the financial statements<sup>11</sup>. Some of the environmental issues in audit of financial statements include the following:

- ⦿ initiatives to prevent, minimise or remedy damage to the environment;
- ⦿ the expenditure on conservation of renewable and non-renewable resources;
- ⦿ the cost incurred as a result of violating environmental laws and regulations; and
- ⦿ the cost and actions of the environmental programs and/or developmental programs.

Based on these considerations, an audit opinion can be expressed on whether the financial statement presents true and fair view of the operations of the audited entity, in accordance with the applicable financial reporting and regulatory framework.

**PERFORMANCE AUDITS:** The objective of performance audit is to enable the auditor to assess whether interventions, programs and institutions are performing in accordance with the principles of economy, efficiency and effectiveness, and whether there is room for improvement.

Environmental audit in the context of performance audit can be conducted as theme based or as an individual audit topic or could include a component of environment. For example, the auditor can take water as a theme and conduct several environment audits under this theme. Similarly, the environmental audit can be conducted specifically on timber harvesting, air pollution, or hydropower with a component of audit on environmental issues. The auditor may consider the following in performance audit:

- ⦿ ensuring that environmental programmes are conducted in an economical,

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<sup>11</sup> ISSAI 5120 Environmental Auditing in the context of Financial and Compliance Audits, paragraph 17

- efficient and effective manner, and their potential environmental impact;
- ⦿ assessing risks to the environment, if any, and the adequacy of the mitigation measures taken during developmental activities implemented by agencies;
  - ⦿ assessing cross-cutting environmental issues, such as environmental issues impacted by multiple government entities or programmes;
  - ⦿ evaluating the environmental management systems and their reporting procedures;
  - ⦿ ensuring that indicators of environmental-related performance (where contained in accountability reports) fairly reflect the performance of the audited entity.

Based on these considerations, conclusion can be drawn on whether the programmes and institutions are performing according to the principles of economy, efficiency and effectiveness, and recommendations can be provided to either reduce negative impact in the environment or improve the current environmental situation.

**COMPLIANCE AUDITS:** The objective of compliance audit is to enable the auditor to assess whether the activities, financial transactions and information comply, in all material respects, with the rules and regulations applicable to the audited entity. Environmental auditing in the context of compliance audit can be conducted as individual compliance audit or in combination with either financial or performance audit.

Compliance audit from an environmental perspective can provide assurance on whether the governmental activities are conducted in accordance with relevant environmental laws, standards and policies, both at national and international (where relevant) levels.

### **Audit Process**

4.3 Audit process is similar for all audit engagements and consists of four stages:

- ⦿ Planning the audit;
- ⦿ Conducting the audit;
- ⦿ Reporting; and
- ⦿ Follow-up.

### **Planning the Audit**

4.4 Planning is the most important phase of an audit. It is essential that the auditors spend adequate time in planning, as this will result in better identification of priority areas and potential problems. During planning stage of the audit, background information about the entity is collected, scope of audit is set, audit objectives and audit criteria are decided and audit methodology is determined to gather evidences.

4.5 During planning, the auditor needs to understand the audited entity's commitments in terms of financial norms, compliance requirements and performance expectations. Based on the type of audit selected, the auditor should determine the audit procedure to be followed (audit methodology) and assign competent staff for the conduct of

audit.

- 4.6 The essential elements in the planning of an environmental audit are explained in the following sections. The essential elements in the planning of performance audit is explained with examples in **Appendix I**.
- 4.7 **PRE-REQUISITES:** Prior to audit engagement, the auditor would need to declare conflict of interests if any, accept the adherence to the code of ethics, and assess the competency of the team. The auditor should note that if need be, environmental experts may be engaged by using expert panels or focus groups, or by asking an independent expert(s) on the subject matter.
- 4.8 **GATHERING BACKGROUND INFORMATION:** Planning phase starts with gathering background information related to the audit. Gathering background information takes place during both planning and conducting phases of the audit. It is important to gather information to understand the:
- ⦿ environmental policies, rules and regulations related to the selected topic;
  - ⦿ characteristics of the selected audit topic (role and function, activities and processes related to environment, resources, development trends, etc);
  - ⦿ performance goals of the entity;
  - ⦿ organisational structure and accountability relationships;
  - ⦿ relevant stakeholders for the selected topic;
  - ⦿ financial information related to the environmental activities and programmes implemented; and
  - ⦿ external constraints affecting delivery of outputs and outcomes.
- 4.9 **RISK ASSESSMENT:** Having acquired sufficient knowledge of the business, the auditor would need to identify risks and carry out risk assessment which would lead to audit questions and scope. Risk assessment is carried out to identify risk of material misstatement relating to environmental matters in the financial statements, risk of incompliance to application environmental rules and regulations, and risks of not achieving economy, efficiency and effectiveness in environmental activities and programmes.

Environmental risks are often related to public authorities' efforts in identifying and reducing these negative consequences by implementing environmental management actions and policies. The risk is that these management actions may be insufficient, and fail to deliver an environmental policy or programme economically, efficiently, or effectively. The severity of these risks is measured by their potential negative economic, social and environmental impact having long-term effects.

When assessing the nature and likelihood of the potential environmental risks, governments' responsibilities need to be considered and how environmental policy instruments influence these potential effects. The effectiveness of these instruments influences the likelihood of the potential environmental effects occurring.

Commonly experienced difficulties concerning the use of risk assessments are the availability and reliability of environmental data and indicators. Where sufficient

quality data does exist, one way to facilitate better understanding is the use of key visual data like maps and graphs to support the identification of gaps.

- 4.10 **AUDIT OBJECTIVE:** Audit objectives are broad statements defined to achieve the reason for conducting the audit. The audit objective can be thought of as the overall audit question concerning the subject matter (for instance a government programme or activity) to which the auditor seeks an answer. The audit objective therefore needs to be framed in a way that allows a clear and unambiguous conclusion. The audit objective can be expressed in the form of one overall audit question which is then broken down into more detailed/specific sub-questions.

The auditor can consider the following questions in defining audit objective:

- ◉ What is the goal of the audit?
- ◉ Why are we conducting the audit?
- ◉ What do we wish to achieve at the end of the audit?
- ◉ What is the focus of our audit: is it output, or outcome, or impact?

The need for setting objectives for an audit assignment depends on whether the focus of audit is financial, compliance or performance.

- 4.11 **AUDIT SCOPE:** Audit scope can be determined by answering the following questions:

- ◉ What? - What specific questions or hypothesis are to be examined? What kind of study seems to be appropriate?
- ◉ Who? - Who are the key players involved and the audited entity?
- ◉ Where? - What are the locations to be covered?
- ◉ When? - What is the timeframe to be covered?

The audit objective(s), and scope are interrelated and need to be considered together. Even minor changes in the objective(s) may have a major impact on the general scope of the audit.

- 4.12 **AUDIT CRITERIA:** Audit criteria are the benchmarks used to evaluate the subject matter. The environmental auditors need to define or develop relevant, complete, understandable, and reliable audit criteria. The audit criteria can be qualitative or quantitative and should define what the audited entity will be assessed against. The criteria may be general or specific, focusing on what should be according to laws, regulations or objectives; what is expected, according to sound principles, scientific knowledge and best practice; or what could be (given better conditions). Generally accepted criteria can also be obtained from sources such as professional associations, recognised bodies of experts, and academic literature. The sources of the audit criteria should be identified wherever possible.

The other main sources of criteria for environmental audits are the measures and commitments adopted by the audited entity, including specific targets or requirements set by the relevant authorities. Where the entity has adopted meaningful and specific measures like Environmental Impact Assessments, Strategic Environmental Assessments, Life Cycle Assessments, or environmental performance

indicators for assessing its own performance, those relevant to the audit should be reviewed to ensure that they are reasonable and complete. If criteria are not available, the auditor can focus on performance achieved in comparable organisations, best practices determined through benchmarking or consultation, or criteria developed by the auditor through an analysis of activities.

Since some environmental issues are complex in nature, it is not always possible to set audit criteria in advance. The audit criteria should be agreed by the audited entity either in the entry meeting or during the process of auditing for acceptability of the audit findings. If suitable criteria cannot be determined and agreed, the detailed audit question may need to be reconsidered. In the event that a disagreement persists, the audit report needs to explain the audit criteria used and why it was appropriate for the audit.

- 4.13 **AUDIT METHODOLOGY:** Audit methodology refers to data collection and analysis methods to be used while conducting the audit. The data collection and analysis will help the audit team in answering the audit questions and in determining whether it fulfils the given criteria.

The audit methodology for each environmental audit will depend on the established objectives and the type of audit to be carried out. For instance, in a financial audit, the audit attention may be devoted to the disclosure of environmental assets and liabilities, while in the compliance and performance audits, the emphasis and the methodology will focus towards the compliance with legislation and conventions, both national and international, and measures instituted by the audited entity to promote economy, efficiency and effectiveness.

Due to complexities involved in environmental auditing, the auditor should use latest available methods to obtain and analyse information. Audit methodologies, amongst others, include: surveys, interviews, document reviews, physical verification, global positioning system and geographic information system (GIS), other equipment to test the extent of environmental damages caused, google maps, etc. Different methodologies will be applicable to each type of audit and auditors should use their professional judgement in identifying the best combination of methodologies to achieve the desired result.

### **Conducting the Audit**

- 4.14 During the conducting phase of audit, the auditor should gather sufficient and appropriate evidences to support the findings arising from comparison of field condition against the criteria determined in the planning phase. Based on the evidences, the auditor should draw conclusion and recommendations. The main activities of this phase are the fieldwork to collect data and analysis of the collected data that results as evidences.

- 4.15 The auditor should look for the evidences needed to answer audit questions and must take care not to divert the focus of the work or collect a large amount of information that is often unnecessary and irrelevant.

- 4.16 The auditor may need to arrange site visits to a variety of government agencies as well as beneficiaries in order to assess how effectively public funds have been spent, how well environmental regulatory activities are working, and where improvements can be made. A questionnaire or survey might be useful if a large number of organisations or individuals must be contacted or if there is a need to quantify information.
- 4.17 Sometimes, auditors may need to examine environmental issues concerning a large number of entities such as toxic waste sites, chemical storage facilities, and drinking water supply systems. The necessary information about these entities may not exist in a database or other usable form. In such scenario, one of the alternatives may be to gather the information from a representative sample of the entities to draw conclusions about the characteristics of the overall population. Even where detailed information exists only at an overall level, statistical sampling can still be applied to give assurance on its accuracy, so the audit may focus on the overall outcome, instead of being concentrated on the scope of entities.
- 4.18 Interviews, focus groups discussions, surveys, enquires and other social science evaluation techniques can be used in assessment of environmental activities. Using these evaluation techniques by engaging stakeholders (authorities and other affected parties) helps not only to gather facts that are not officially documented but also helps to confirm the facts that are already gathered in planning phase.
- 4.19 Geographic information system (GIS) is a powerful tool to analyse and present spatial and geographical data. The geospatial technologies are used to examine and compare (between images of two periods) the potential problems such as deforestation, illegal encroachments to land and forests, loss of forest cover, land-use change, drying lakes, glacier retreat, forest fires, etc. It can be used in evaluation and assessment of land and forests such as assessments of landslips, landslides, erosion; protected territories; agricultural areas; land boundaries and settlements of boundary disputes, impact of farm road constructions and infrastructure development on land and forest, etc. In the reporting stage, the spatial information and photographs help readers to understand the substance and magnitude of the problem at hand and also help create a more attractive audit report.

One of the RAA's audit findings reported using geospatial technologies is presented as case study in **Appendix II**.

- 4.20 Other more complex environmental audit tools include spatial web dossier, counterfactual analyses, use of micro and macro-economic models, or vignette surveys. The auditor may use innovative new sources of information, such as social media.
- 4.21 The quality and completeness of data characterising environmental conditions (e.g. pollutant levels of bodies of water; trends in fish populations) may be even more problematic than data on environmental regulatory compliance. While gathering data on environmental conditions is typically the responsibility of the audited entity, in the event of unavailability of data, the auditor should collect the information from

other possible sources (third party studies on the environmental conditions) to understand the extent of the problem and the effectiveness of measures to control it. Incomplete or poor quality data however, should not preclude the auditor from providing a useful analysis and information.

- 4.22 Evidence should be placed in context and all relevant arguments (pros and cons) and perspectives should be considered before conclusions and recommendations are drawn.

### **Reporting**

- 4.23 The audit report communicates the results of the audit work and it is important phase of the audit process. As the report can act as a positive change agent prompting audited entity to take corrective action, it should be balanced, comprehensive, convincing, and reader friendly.
- 4.24 Due to the environment being a technical subject matter and also an interest to the public in general, the auditor should ensure that the report is written in simple and understandable language as the subject matter may allow. The audit reports should allow the reader to understand what was done, why and how, and providing practical recommendations.
- 4.25 Sometimes environmental audits are non-financial or intangible in the sense that possible problems materialise only after a long time span. This requires special attention to communicate results well. Sometimes the cause and the consequences of environmental incidents can be visualised dramatically with photos. If used well, photos, graphs, tables, figures etc. can help make audit reports more convincing and interesting. They may assist in understanding the text, and illustrate ideas and observations in the report.

### **Follow-up**

- 4.26 Follow-up refers to the auditors' examination of corrective action taken by the audited entity, or another responsible party, on the basis of the results of environmental audit.
- 4.27 A primary objective of an environmental audit is to reduce negative impact on the environment and improve the current environmental situation through the implementation of audit recommendations. Through a follow-up process the auditor should monitor and evaluate if the audit recommendations have been implemented or considered for implementation by the audited entity.
- 4.28 When entities are aware that follow-up audits might or will take place, they are more likely to resolve deficiencies and implement recommendations. For environmental audits in particular, the auditor may need to provide long term recommendations. It can thus take several years before the process of following up on the auditor's recommendations can begin.



**PART III**  
**SPECIFIC AUDIT GUIDANCE**



- 5.1 A Government may undertake a range of environmental programmes or activities aimed to protect or improve the environment. The auditor will need to have a firm grasp of the programme’s objectives and the instruments used to address them. The auditor may also consider whether to focus its attention on one main activity or on many different activities of an environmental programme. A practical difficulty of the latter is in judging the significance and effects of various activities to the environment. The auditor need to take care in selecting and scoping an audit of environmental programme based on materiality, the importance of the environmental problem to be addressed, and the magnitude of the potential effects. The auditor requires sufficient, relevant and reliable data to arrive at firm conclusions on the performance of a programme over a period of time.
- 5.2 In addition to programmes whose principal aim is to protect or improve the environment, all other non-environmental activities affect the environment in some way through their consequences of operations in areas in which they are executed. It is important to bear in mind that government programmes may have varied forms of impacts – some impacts are individually small-scale but cumulatively largescale and some impacts may take a long time to have a noticeable effect. Such programmes may have significant impacts which may be both positive and negative, intended and unintended. For instance, the primary objective of road construction is to facilitate movement of people or goods but the construction of a road has a secondary and direct impact through its land use and its effect on the ecology of the area and the landscape, whilst use of the road also has an impact on air and noise pollution. Where resources spent on implementation of programme are not substantial but the potential impact of the programme is significant, the audit may be directed to the effectiveness of the programme in achieving that intended benefits than to the economy or the efficiency of utilization of the resources. Where resources spent are significant, the achievements of the programme’s intended targets and benefits may be assessed considering economy and efficiency in execution of activities.
- 5.3 A checklist consisting of audit objectives and basic audit queries for auditing performance of government programmes include but not limited to the following:

Sl. No.	Objective	Audit queries
<b>Area 1: Auditing government programme executed to protect or improve environment</b>		
1.	To assess compliance of the government programme with relevant environmental regulations.	Are there environmental regulations that apply to the programme?
		Are audit criteria available particularly in programmes which are not subject to statutory requirements?
		Where the regulations do not strictly apply to the activity concerned but are relevant, are there appropriate benchmarks and international best practices?
		Are the applicable regulations or benchmarks or standards or best practices complied or observed?
		Are the environment protection agencies or regulatory agencies adequately monitoring the compliances to the regulations?

2.	To assess whether the environmental programme initiated to protect and improve the environment is effectively implemented.	<p>Are the programme's own targets, and targets or benchmarks set by environmental protection agencies achieved?</p> <p>Are the targets wholly met in line with approved strategy and timeline?</p> <p>Do the benefits of programmes outweigh the cost of inputs to realize the benefits?</p> <p>What are the value additions (whether physically or otherwise) towards protection and improvement of environment?</p> <p>Are the intended benefits of protection and improvement of environment realized? Or Is the environment protected and improved as guaranteed by the programme?</p> <p>To what extent the programme's activities and outputs are achieved?</p>
<b>Area 2: Auditing consequences of operations of developmental activities</b>		
3.	To assess whether the effects of developmental activities on environment are reasonably evaded and mitigated.	<p>What are the possible potential effects or impacts of the programme?</p> <p>Environmental Impact Assessments were carried out in accordance with the requirements specified by the environmental protection agency (NEC)?</p> <p>Where EIA is not necessary, is it substantiated by the Initial Environmental Examination (IEE) of the programme to determine if it requires an EIA or not?</p> <p>Is the EA study scientifically and technically reliable?</p> <p>Is there a logical and systematic approach used to ensure effective impact identification? Impact prediction and evaluation is a vital exercise for assessing impacts, deciding alternatives, setting down mitigation measures and developing an environmental management plan.</p> <p>What are the environmental, social and economic impacts of the programme identified in the EIA (Environmental Impact Assessment) report.</p> <p>What are the means or measures to reduce the adverse impacts of the programme specified in the EIA?</p> <p>Is there Environmental Management Plan (EMP) to understand the framework for the implementation and execution of mitigation measures and alternatives?</p> <p>What are the remedial, preventive and compensating measures specified by rules and environmental regulatory agencies to counter or reduce environmental impacts?</p> <p>In absence of rules specified measures, what are the best applicable practices used for similar environmental programmes in the same country or elsewhere?</p> <p>Are these measures initiated and implemented in line with the rules and best practices effectively, economically and efficiently?</p> <p>Are the environmental impacts minimized and social and economic benefits maximized? Is there a reasonable balance of benefits and costs/impacts?</p>

- 6.1 Forests are among the most diverse and widespread ecosystems on the earth. They are critical for human life as they provide basic human needs such as water, food, shelter, medicine, fuel wood, fodder, and timber. Bhutan has 71 percent of the country under forest cover and the constitution mandates the need to keep a minimum of 60 percent of country's land area under forest cover for all times to come.
- 6.2 To maintain the sustainability of forests, Government, as the key actor in forest management, is responsible for developing and implementing policies, regulations, and appropriate institutional framework for forest programs. In performing this role, government may need to establish governance institutions.
- 6.3 As the oversight body of the government, RAA can assist a government in fulfilling those responsibilities. We can do this by auditing not only the performance and the compliance of government activities, but also the soundness of government accountability systems and practices. Additionally, we can also assist governments in strengthening their forest management internal controls, and providing suggestions about how to improve them. Moreover, SAI can also suggest how government can improve the ways it assesses and mitigates risks related to management processes.
- 6.4 Sustainable Forest Management (SFM) aims at ensuring goods and services derived from forests meet current needs while at the same time securing their continuous availability and contribution to long-term development. Generally, it is agreed that forest sustainability comprises three elements: ecological sustainability, social sustainability, and economic sustainability. Ecological sustainability is the role of forest in maintaining biological diversity and the integrity of ecological processes and systems. Social sustainability relates to the forest's role in maintaining the human community that depends upon the forest. Economic sustainability will maintain companies, communities, and families that are economically dependent on forests.
- 6.5 Forest itself is complex and encompasses vast scope and issues. As such, an audit of forest covers a large range of topics. Thus, it is advisable to prioritize topics, general or specific issues relevant to our country. The RAA needs to consider the level and nature of public attention surrounding the subject, the amount of money involved, and the nature and extent of the impact that might result from the audit findings.
- 6.6 Despite its vastness of scope and issues, a general checklist consisting of audit objectives and basic audit queries is given below. The checklist provide minimal guidance and the forest audit should not be limited to given checklist because checklist may vary and differ depending on topics considered for the audit:

Sl.No.	Objective	Audit Inquiries
<b>Area 1: Policies, rules and regulations governing the conservation of the forests</b>		
1	Whether there are policies, rules and regulations in place for	Has the policies, rules and regulations stipulate the minimum requirement of forest cover for the country?
		Has the policies and rules and regulations encompass all aspects of the forest conservation?

	conservation of the forests?	Is the policies, rules and regulations exhaustive to ensure the minimum required size of forest cover for all time to come?
		Does the government review policies, rules and regulations on need basis from time to time?
		Do the policies and rules and regulations covers the issues relating to illegal harvesting of timber and other forest related products across the border?
		Do the policies, rules and regulations address the movement of forest related products' trading within and outside the country?
		Is there a national strategy on forest conservation and management to protect and increase the green cover?
<b>Area 2: Institutional framework in conservation of the forests</b>		
2	Whether there are system and procedures in place to manage and conserve the forests?	Is there a specific agency to look after the conservation of the forest? List down the name of those agencies?
		Do these agencies have clear roles and responsibilities to ensure effective conservation of the forests?
		Are their roles and responsibilities aligned with the policies, rules and regulations of the conservation of the forests?
		Has the government identified the primary threats to forest resources and its diversity?
		Are the legislations/regulations/policies/programs adequate to address the identified threats?
		Has the government taken into account studies conducted by other agencies while planning for managing and mitigating each of the threats?
		Have long term and short-term goals been clearly defined, milestones set and clear performance indicators established?
		Has the government taken steps to control and eradicate invasive species?
		Are revenues generated through afforestation programmes shared with the local communities in order to provide an incentive to them?
		Has the government established and implemented recovery plans for endangered flora?
<b>Area 3: Forest law enforcement and governance</b>		
3	Whether law and regulations on conservation of the forests being enforced effectively	Do the enforcement agencies strictly enforce the set laws, rules and regulations for protection and conservation of forest?
		Are there a proper co-ordination amongst the enforcement agencies to ensure that the areas are not left out from patrolling?
		Has the forest area been legally classified as Reserved Forests, Community Forests, Parks, etc?

		Are there stringent laws and administrative measures in place to control illicit felling and illegal timber trade and illegal trading of other forests products?
		Does the forest department has adequate and appropriate resources at its disposal to carry out the assigned responsibilities?
		Was there effective deployment of trained manpower?
		Are the personnel engaged in preventive and enforcement activities adequately equipped to carry out their duties efficiently and effectively?
		Have adequate precautionary measures on managing threat and occurrence of wild fires especially during the winter, being taken to control the occurrences of forest fires?
		Have the forest areas been protected from the problems of biotic and human interferences?
<b>Area 4: Adequacy of resources to conserve the forests effectively</b>		
4	Whether the government agencies have adequate resources to conserve the forests?	Do the government/agencies have adequate resources in terms of both human power and funds to assess the country's forest resources?
		Is there a national database with a uniform format for collection, collation, storage, retrieval and dissemination of data relating to the country's flora created?
		Do the agencies concerned have adequate manpower and expertise to diagnose disease of the plant and control spreading?
		Are the government's programs prepared based on accurate/reliable data and identification of risks and level of threat perception to forests?
		Have the annual plans of operation been prepared matching with the operations, functions of management plans and working plans?
		Are there adequate measures taken for the successful survival of the plantations by making provisions for maintenance and protection from biotic pressures?
		Are the plantation models developed so as to meet the needs of the people and the edaphic exactness of species?

- 7.1 Land degradation is a process in which the biophysical environment is deteriorated due to natural and man-made forces acting upon land. Land degradation is caused by urbanization, overcutting of vegetation, shifting cultivation without adequate fallow periods, non-adoption of soil-conservation management practices, improper crop rotation and unbalanced fertilizer use. In Bhutan, forest fires, excessive use of forest resources, overgrazing, urbanization and industrial development are some of the main causes of land degradation.
- 7.2 Land degradation and desertification impacts crop and pasture productivity and results in reduction of fuelwood and non-timber forest products; such occurrences are closely linked to poverty and food insecurity. Due to degradation there are soil damage, loss of habitat, water shortages and siltation ultimately reducing biodiversity and ecosystem services, which in turn leads to economic consequences. Developmental activities are unavoidable but should initiate mitigation measures to ensure that damages to the environment are minimal or reversed.
- 7.3 The implementation of activities pertaining to land degradation prevention obligations are very well supported by the existing laws and regulations, which provide a good legal framework. In Bhutan the key laws for combating land degradation are Land Act 2007; Environment Assessment Act 2000; Forest and Nature Conservation Act, 1995; Forest and Nature Conservation rules 2006; Mines and Minerals Management Act 1995; Mines and Minerals Management regulations 2002; Road Act 2013; Dzongkhag Yargye Tshogdu Chathrim 2002; and Geog Yargye Tshogchung Chathrim 2002.
- 7.4 A checklist consisting of audit objectives and basic audit queries for the audit of land degradation include but not limited to the following:

Sl.No	Objective	Audit Queries
<b>Area 1: Legal framework in safeguarding land</b>		
1	a) Whether appropriate institutional policies are in place	Whether a separate law/rule has been enacted to control land degradation and whether these laws/rules are adequate to effectively regulate land degradation.
	b) Have the rules been developed with proper background study?	While framing rules and laws, whether all the causes of land degradation have been taken into account.
		Whether land management practices have been considered while developing rules and laws.
		Whether the laws/rules incorporate responsibility and penalty for violation of rules/laws
		Whether rules, regulations and policies are integrated based on technical specifications and feasibility studies carried out at various levels
<b>Area 2: Allocation of responsibility for control of land degradation</b>		
3	a) Whether agencies have been identified at various	Whether focal agencies have been identified for control of land degradation

	levels for control of land degradation.	Whether the agencies entrusted with responsibility of land protection have clearly defined roles and responsibilities
		Whether the framed policies have been communicated well to the stakeholders
	b) Whether there is existence of dissemination of clear information to the entities involved.	Does the responsible organization understand its role in safeguarding land?
		Whether regulatory agency has been created for measuring land texture and its condition
		Whether law enforcement by the agencies has been adequate, efficient and effective
		Whether parties involved in land deterioration been coordinated by the concerned agencies
		Whether awareness has been created amongst the relevant stakeholders on significance of land protection rules and regulations
<b>Area 3 : Assessment of land degradation</b>		
3	a) Whether land degradation has been assessed and studied.	Whether studies have been conducted on types of land degradation. Are factors affecting land and contributing to land degradation been studied by relevant agencies? Whether measures and solutions have been designed based on the studies carried out.
	b) Has there been an identification of mitigation measures after an assessment	Has the concerned authority carried out studies on risks of land degradation to human welfare?
		Has the concerned authority carried out studies on risks of land degradation to ecosystem?
		Has the concerned authority carried out studies on risks of land degradation to environment?
		Has there been an assessment of vulnerability of a landscape to degradation?
		Has the Government made any strategy/action plan with clear timeline and commitment for land stabilization and reducing rapid land degradation in due course of time?
		Whether suitable technologies have been adopted to confront natural hazards
<b>Area 4: Compliance of land degradation rules and regulations and monitoring</b>		
4	a) To ascertain the level of compliance to land degradation rules and regulations	Whether monitoring mechanism was effective in checking non-compliance with the provisions of land degradation laws and rules.
	b) Whether effective monitoring was done to ensure compliance to defined acceptable levels of set criteria.	Whether a system was in place for regular and sustained monitoring.
		Whether any independent review/evaluation been carried out regarding implementation of these laws/rules.

		Are funds being provided at the macro & micro level by government for implementation of land degradation prevention programs and strategies?
		Whether need assessment for manpower to implement and monitor land degradation prevention programs has been made and has the manpower been deployed effectively
		Are existing rules and regulations for combating land degradation complied by the implementing agencies?
<b>Area 5: Adequacy of funding and infrastructure</b>		
5	Whether funding and infrastructure is adequate to ensure effective land protection	Whether there is adequate funding and infrastructure to implement strategies to combat land degradation
		Whether enough funding has been channelized in implementing and monitoring land degradation control programs
		Whether resource mobilization has been effectively carried out in ensuring protection of land from identified threats

- 8.1 Hydropower is considered our nation's most precious resource for economic development and self-reliance. The hydropower sector contribution to GDP dominates all other investments and, therefore, plays a vital role for Bhutanese economy. Bhutan has hydropower potential of 30,000 MW and 23,760 MW as techno-economically viable. Hydropower projects in Bhutan have been developed with bilateral grants and loans as Public Sector Undertaking.
- 8.2 Bhutan Sustainable Hydropower Development Policy, 2008 provides the overall framework and guidelines for accelerating hydropower development in the country. There are other legislation related to hydropower development such as Economic Development Policy of the Kingdom of Bhutan 2010, Land Act of Bhutan, 2007, Water Act of Bhutan, 2011, National Environment Protection Act of Bhutan, 2007, Environmental Assessment Act of Bhutan, 2000, Electricity Act of Bhutan, 2001, Labour and Employment Act of Bhutan, 2007, Bhutan Renewable Energy Policy, Foreign Direct Investment Policy, 2010, Bhutan 2020: A Vision for Peace, Prosperity and Happiness, National Employment Policy 2013 amongst others.
- 8.3 The Ministry of Economic Affairs (MoEA) is the apex body for development of hydropower. Department of Hydropower and Power Systems (DHPS) and Department of Renewal Energy (DRE), both under the MoEA are responsible for policy making and planning of all aspects of the energy and power sector. Bhutan Electricity Authority (BEA) is responsible for regulation of the electricity industry. Bhutan Power Corporation (BPC) is responsible for transmission and distribution of electricity, and Druk Green Power Corporation (DGPC) for development and management of hydro power projects during the time of construction and operation and maintenance of powerhouse.
- 8.4 Other agencies that are involved with hydropower development in Bhutan are Ministry of Economic Affairs, the Ministry of Foreign Affairs, the Ministry of Finance, the Ministry of Home and Cultural Affairs, the Ministry of Works and Human Settlement, the Ministry of Agriculture and Forests, the Ministry of Labour and Human Resources, Bhutan Electricity Authority, Gross National Happiness Commission, National Environment Commission, National Land Commission, Druk Green Power Corporation and Bhutan Power Corporation (through Druk Holding & Investments) and investors.
- 8.5 The challenges governing the hydropower sector include gaps in policy, inadequacies in planning, monitoring and implementation, and delays in project execution resulting into huge cost escalations of projects.
- 8.6 A checklist consisting of audit objectives and basic audit queries for the audit of hydropower projects include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit's focus and scope.

SN	Objectives	Checklists
<b>Area 1: Legislative and Institutional Mechanism</b>		
1.	To determine the existence and/or adequacy of legal, policy and institutional framework that regulate effective hydropower planning, development and management.	<p>Whether the Government is equipped with legislative supports in form of acts and policy for effective management of hydropower development in the country? (<i>National Environment Protection Act, Forest and Nature Conservation Act, Environmental Assessment Act, Regulations on environmental clearance, Environment Management plan for projects, etc.</i>)</p> <p>Are the existing regulations adequate, comprehensive and stringent for effective development and management of hydropower projects in the country?</p> <p>Are there enforced provisions, and prescribed process and procedures for different phases of hydropower development and overall management of the project?</p> <p>Whether there exist proper institutional arrangement for effective management of hydropower development amongst relevant agencies with clear roles and responsibilities?</p> <p>Whether there exist a proper arrangement of coordination for planning and implementation of hydropower projects at various levels?</p> <p>Whether the coordination amongst relevant agencies was effective during the planning, construction and implementation of project?</p> <p>Are the project authority required to prepare environmental management plan?</p> <ul style="list-style-type: none"> <li>- Whether implementation of the management plan integrated in the overall project planning, designing, construction and operation phases?</li> <li>- Whether adequate fund was secured and budgeted for supervision and implementation of the management plans including training and monitoring purposes.</li> <li>- Whether adequate facilities were provided in labour camps to minimize the pressure on the ecosystem of the area?</li> <li>- Whether adequate facilities for collection conveyance of municipal wastes generated to the disposal site was developed and implemented?</li> <li>- Whether EFRC is followed during construction of roads?</li> <li>- Whether water quality is maintained during the entire project phase to ameliorate the pollution from various sources?</li> <li>- Whether effective guarding takes place for wildlife conservation in the project areas?</li> <li>- What are the arrangements made to ensure poaching doesn't take places in the project area?</li> <li>- Whether an Environmental Management unit has been established with adequate man power to oversee whether the project authorities comply with environmental norms and standards?</li> </ul>

		Is the Government party to any multilateral, bilateral or regional treaties or agreements on issues associated with hydropower development and operations?
		Whether Bhutan fulfills the requirement of the Clean Development Mechanism under the Kyoto Protocol?
		Whether the Act clearly specifies on monitoring and management mechanisms of environmental risks?
		Whether there is a system of adequate and effective monitoring and supervision by MoEA/government agencies during the construction for implementation of the project?
		Whether there is an environmental monitoring programme (parameters and frequency) to oversee the environmental safeguards, and to ascertain the agreement between prediction and reality and to suggest remedial measures not foreseen during the planning stage but arising during operation and to generate data for further use?
		Whether evaluation or reviews were carried out on the effectiveness of hydropower development and management? If so, have the identified issues governing hydropower development and management been rectified accordingly?
		Whether there are strong provisions on offenses and penalties for failure to comply with prescribed provisions under relevant acts and laws?
<b>Area 2: Reconnaissance and Pre-feasibility Study</b>		
2.	To determine whether reconnaissance study was conducted properly?	Whether studies on project topology, hydrology geology have been conducted based on acceptable/current technologies?
		Whether alternative project layout were considered?
		Whether reconnaissance study report were prepared and reviewed?
		Who were involved during the reconnaissance study?
3.	To determine whether pre-feasibility study was conducted properly?	Whether power potential study was carried out?
		Whether existing pre-requisites, standard and guidelines for geological exploration and geophysical exploration were complied with?
		Whether hydro-meteorological aspects such as hydrological cycle, catchments features, rainfall pattern, river volumes, etc. were studied?
		Whether topographical study of project area including Dam, head race tunnel, power-house, surge shaft, pressure shaft, tail race tunnel, etc. were carried out at appropriate scale?
		Whether social and environmental impact assessment to understand the impacts of the project on various facets of environment during various stage project implementation was carried out or not?
		<b>Physic-Chemical Aspects</b>
		- Whether meteorological data were collected or not?
		- How many years' meteorological data was collected?
		- Whether geological assessment were carried out for bedrock including granite gneiss and different types of schists?

		<ul style="list-style-type: none"> <li>- Whether historical data on earthquakes in Bhutan were available? If not, how was the study on seismicity conducted for the project area?</li> <li>- Whether study and analysis on soil and sediments samples from the river were carried out?</li> <li>- Whether study on water quality of river conducted including identification of different sources of pollution?</li> <li>- Whether hydrological studies and assessment on flows/water availability were carried out and how many years' data were used for analysis?</li> <li>- Whether land use pattern in the project area was studied with respect to forest, agricultural land, "area not available for cultivation" i.e. human habitations, rocky outcrops, river beds, etc.</li> <li>- Whether test on ambient air quality conducted to assess the level of ambient air quality in the project area?</li> <li>- What was the frequency of air quality monitoring?</li> <li>- Whether noise levels in the project areas was studied and how was it measured?</li> </ul> <p><b>Ecology</b></p> <ul style="list-style-type: none"> <li>- Whether the frequency, abundance and density of vegetation components studies and analyzed?</li> <li>- Whether list of flora and fauna and its habitat was prepared for the proposed project areas?</li> <li>- How was the ecological survey carried out? Whether adequate sample was taken into consideration for assessment purpose?</li> <li>- Whether studies was carried out to understand specific faunal characteristics native to the project area?</li> <li>- Whether complete and reliable data on faunal characteristics were available? If not whether adequate time was taken to study and collected the same?</li> <li>- How the assessment was carried out for the aquatic ecology?</li> </ul> <p>Whether project cost estimation and corresponding financial and economic analysis calculated realistically?</p> <p>Whether study/analysis on power transmission including economical routes/lines, line types, and voltage levels, etc. were conducted?</p> <p>Whether studies for availability of construction materials with proper specification were carried out?</p> <p>Whether pre-feasibility study was prepared and reviewed?</p>
<b>Area 3: Detailed Project Report (DPR)</b>		
3.	To assess whether a detailed project report was prepared to assess power potential and associated risks and threats.	<p>Whether environmental impacts have been quantified wherever possible and otherwise, qualitative assessment has been done?</p> <p>Whether all project components (geological, seismology, hydro-meteorology) were surveyed on requisite scale at the DPR level?</p>

		Whether relevant stakeholders were involved during the preparation, review and finalization of DPR?
		Whether comprehensive Environmental and Social Impact Assessment (ESIA) studies was undertaken to understand the social and environmental impacts arising from the project implementation?
		Whether ESIA clearly specified monitoring and management mechanisms of such risks through proper compensation packages for the affected?
		Whether DPR included infrastructure Survey and studies on access roads, housing, bridges, schools, health facilities, contractors' sites, etc.?
		Whether study on power transmission network including routes/lines, line types, voltage levels, etc.?
		Whether the DPR was prepared timely?
		Whether project was planned in a component wise manner for economic and timely completion of project?
		Whether the cost of construction per MW as envisaged in the DPR was realistic?
		Whether DPR provides clear construction methodology for project implementation?
		Whether DPR provides milestones for each contract for timely completion of works in a coordinated manner?
		Whether project authorities had carried out extensive survey other than those carried out for preparation of DPR? If so, to what extend did the project benefit from it?
<b>Area 4: Socio-economic and Cultural aspects</b>		
4.	To ascertain whether socio-economic and cultural impacts were assessed as a result of the construction and operation of the hydropower project including mitigation measures for amelioration of the potential negative impacts, and rehabilitation and resettlement plan for the Project affected families.	Whether a comprehensives socio-economic assessment was carried-out in the project area?
		Whether potential impacts of the project were identified during the construction phase and operation phases?
		Whether Rehabilitation and Resettlement (R&R) Plan were formulated along with compensation measures and implemented accordingly?
		Who all were involved during the assessment?
		Whether there exist a guidelines for Resettlement Programme in the country? If yes, whether compensation were made as per the existing norms of the country?
<b>Area 5: Compliance on Environmental (hydropower) rules and regulations</b>		
5.	To ascertain the level of compliance to existing hydropower development rules and regulation.	Are the project authority and relevant agencies in compliance to prescribed provisions and requirements under various environmental acts, rules and regulations governing hydropower development and management in the county?

- 9.1 Air pollution can be defined as the presence of 'foreign' substances in the atmosphere in high enough concentrations and for long enough duration to cause undesirable effects. Theoretically, air quality is considered polluted when it contains high concentrations of Suspended Particulate Matter (SPM). The SPM usually found in the air include carbon monoxide and dioxide, sulphur dioxide, nitrogen oxide, chlorofluorocarbon (CFC) and methane.
- 9.2 The quality of air in Bhutan is, to a large extent, still pristine. However, rapid development has started exerting pressure on the quality of air in Bhutan. The main causes of air pollution in Bhutan are exhaust emission from vehicles, industry emissions, and domestic activities. Other key pressures, on the quality of air, are population growth, urbanization, improper solid-waste management, and smoke from forest fires.
- 9.3 Air pollution has adverse effects on the human health, plants, and animals significantly. However, the most evident effect of air pollution is greenhouse effects warming the earth and inducing global warming and climate change.
- 9.4 In order to evaluate air quality and to devise appropriate air pollution control systems it is necessary to measure the amount or concentration of the various pollutants. Ambient, or atmospheric sampling, serves several purposes. It provides 'background' air quality data in urban or rural areas and a basis for developing and updating ambient air quality standards. Ambient samples are collected from the open atmosphere, after pollutants from various sources have been dispersed and mixed together under natural meteorological conditions.
- 9.5 According to publications of the National Environment Commission Secretariat (NECS) of Bhutan, air quality standards function as reference levels for classifying the quality of the atmospheric environment in different areas of a country, as targets for improving air quality where levels are higher than the standards, and as thresholds which limit how much air quality may be allowed to deteriorate in areas with good air quality. Air quality standards should reflect a balance between the costs of limiting emissions against the costs of damage to health, the environment and the quality of life.
- 9.6 The NECS has also developed a 'Strategy for Air Quality Assessment and Management in Bhutan' to establish ambient air quality standards, vehicle emission standards, industrial emission standards and defines air quality monitoring programme and air quality management in Bhutan.
- 9.7 A checklist consisting of audit objectives and basic audit queries for the audit of air pollution include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit's focus and scope.

Sl. No.	Objective	Checklist
<b>Area 1: Assessment of the levels of air pollution and its hazards</b>		
1	Whether level of air pollution has been accurately assessed and the risks to human health, ecosystem and environment have been studied.	<p>Has an assessment of quantum of each kind of air pollutant (particulates, sulphur dioxide, nitrogen dioxide, carbon monoxide, hydrocarbons, ozone, lead etc.) been made at the macro level as well as at the micro level by the Government and relevant department/agency?</p> <p>Have the sources contributing to air pollution like power plants, municipal waste incinerators, burning woods, oil refineries, manufacturing facilities (like synthetic, organic, agricultural, chemical, pharmaceutical, paints, aerosol, electrical appliances, refrigeration &amp; air conditioning), landfills, commercial automobiles, privately owned automobiles, locomotives, and aircrafts been identified?</p> <p>Whether the quantum of air pollution by each source has been assessed.</p> <p>Has an identification and analysis of the expected parameters of significance for air pollution like increase in air pollution due to increase in population, seasonal changes, greater economic growth, increase in the number of private vehicles, etc., been done by relevant agencies?</p> <p>Has the Government and relevant department/agency identified risks to environment (on air quality) as a result of air pollution?</p> <p>Has the Government and relevant department/agency identified risks to human health, caused by air pollution?</p> <p>Has the Government and relevant department/agency identified risks to plants, animals and infrastructure caused by air pollution?</p>
<b>Area 2: Existence of rules and regulations pertaining to air pollution</b>		
2	Whether clear rules and regulations/action plan/strategies have been enacted to control air pollution and whether clear responsibility and penalty for violation has been incorporated in the legislations enacted.	<p>Whether a separate law/rule has been enacted to control air pollution and whether these laws/rules are adequate to effectively control air pollution.</p> <p>Whether all sources of air pollution like from power plants, municipal waste incinerators, burning woods, manufacturing facilities (like synthetic, organic, agricultural, chemical, pharmaceutical, paints, aerosol, electrical appliances, refrigeration &amp; air conditioning, landfills, commercial automobiles, privately owned automobiles, locomotive, and aircraft) have</p>

		<p>been taken into account while framing laws/rules for control of air pollution.</p> <p>Whether the Government has defined acceptable levels for each kind of pollutant and do these levels vary with international standards</p> <p>Whether the laws/rules incorporate responsibility and penalty for violation of air pollution control laws/rules.</p> <p>Has the Government made any strategy/action plan with clear timelines and commitment for reduction of quantities for air pollution?</p> <p>Has Government framed policies/ strategies/ action plans for air pollution reduction and have these been communicated to all stakeholders?</p> <p>Has the suitable technology been adopted to minimize the environmental and health hazards caused by air pollution?</p>
<b>Area 3: Allocation of responsibility for control of air pollution</b>		
3	<p>Whether the various entities/agencies involved in the process of control of air pollution have been clearly identified and whether clear responsibility and accountability for air pollution management has been allocated among them and whether there is a mismatch/gap/overlap among the responsibility Agencies.</p>	<p>Has a nodal body for control of air pollution been identified both at the macro and the micro levels?</p> <p>Has the primary agency for making policy/legislation/strategy for control of air pollution been identified at the macro as well as micro levels?</p> <p>Have bodies been created and entrusted responsibility for the implementation of laws/ rules on air pollution?</p> <p>Has a regulatory agency being created for measuring air pollution, setting acceptable levels of air pollution and revising it regularly to ensure better control?</p> <p>In case there are multiple agencies responsible for the implementation of pollution control measures, is there adequate coordination and interaction between them so as to avoid omissions and loopholes in application?</p>
<b>Area 4: Compliance of air pollution rules and regulations</b>		
4	<p>To ascertain the level of compliance to air pollution rules and regulations already in existence.</p>	<p>Are all the entities causing air pollution acting in accordance with the compliance criteria and procedures laid down in law/rules on air pollution?</p>
<b>Area 5: Monitoring</b>		
5	<p>Whether effective monitoring was done to ensure compliance to defined acceptable levels for each kind of pollutant.</p>	<p>Whether monitoring mechanism was effective in checking non-compliance with the provisions of air pollution control laws/rules.</p> <p>Whether a system was in place for regular and sustained monitoring.</p>

		Whether penalty was imposed, when required, on a regular basis as a result of monitoring of levels of air pollution.
		Whether any independent review/evaluation been carried out regarding implementation of these laws/rules.
		How are the findings and reports on pollution levels followed up? For instance, is prompt action taken to penalize the units exceeding the emission limits as per the rules?
<b>Area 6: Adequacy of funding and infrastructure</b>		
6	Whether funding and infrastructure was adequate to ensure effective compliance and monitoring of air pollution control programs.	Are funds being provided at the macro level by government for implementation of air pollution prevention initiatives?
		Are the entities causing air pollution encouraged to use pollution control devices to collect and remove particulate matters from emissions and exhaust?
		Are there fiscal and monetary policy incentives created for control of air pollution?
		Are there highly trained personnel to assess and monitor air quality?

- 10.1 Water pollution occurs due to discharge of any sewage or any other effluents directly or indirectly into water bodies without adequate treatment to remove harmful compounds that may be injurious to public health, animals, plants and other organisms.
- 10.2 Water includes collective bodies of natural or artificial accumulations of snow, ice, glaciers, rivers, lakes, streams, springs, canals, pools, ground water basins, wetlands, rainwater and soil moisture which can be harnessed and used. The need of water in Bhutan usually occurs in the hydropower generation, municipal use, domestic use, irrigation, industrial use, and livestock rearing and production.
- 10.3 Bhutan is gifted with abundant fresh water and most of the water sources are clean and unpolluted. Although, along with the swift developmental activities, it has become necessary to ensure proper management of the resource for sustainable use and availability of safe drinking water is a crucial prerequisite for life of all the people. Some of the causes of water pollution are:
- ⊙ Untreated domestic sewage;
  - ⊙ Vehicle effluents;
  - ⊙ Industrial effluents;
  - ⊙ Urbanization;
  - ⊙ Rural-urban migration;
  - ⊙ Industrialization;
  - ⊙ Solid waste generation & disposal in the river;
  - ⊙ Inadequate waste water/sewage treatment facilities;
  - ⊙ Dumping and spills by sewage;
  - ⊙ Petroleum leaks and spills;
  - ⊙ Dumping of waste in old mines and pits;
  - ⊙ Chemical pesticides and disposal of obsolete pesticides;
  - ⊙ Herbicides;
  - ⊙ Chemical discharges;
  - ⊙ Agricultural chemicals and manure that are washed off or seep downward from farms/agricultural nutrient run-off and atmospheric inputs; and
  - ⊙ Population growth
- 10.4 Effects of Water Pollution include lack of access to fresh water, lack of proper sanitation, desertification, loss of biodiversity, threat to aquatic ecosystem, water-borne diseases, and Glacial Lake Outburst Floods.
- 10.5 A checklist consisting of audit objectives and basic audit queries for the audit of water pollution include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit's focus and scope.

Sl. No	Objective	Audit Checklist
<b>Area 1: Existence of database and identification of risks</b>		
1	Whether database of the sources and quantum of pollution of rivers/lakes/ tributary streams/ water sources has been created. Has the risks to the river and health been assessed by the central government for the control of pollution?	Whether all causes/sources of pollution to the rivers/lakes/ ground water/tributary streams/water sources have been identified.
		Whether the contribution of each source of pollution has been quantified.
		Whether risks to the health as a result of pollution to rivers/ lakes/ground water/ tributary streams / water sources have been identified.
		Whether risks to the environment as a result of pollution to rivers/lakes/ground water/ tributary streams /water sources have been identified.
<b>Area 2: Effective planning for the control of water pollution</b>		
2	Whether planning for control of pollution was effective and took into account data and identification of risks.	Whether planning for the control of pollution was based on accurate/recent/reliable data.
		Whether planning for the control of pollution was based on assessment of risk.
		Whether planning for the control of pollution was based on assessment of requirement/ availability of funds.
		Has the Government/agency estimated the total fresh water resources available in its geographical confines, from different sources such as rivers, lakes, groundwater etc. separately?
		Has the water availability been graded according to the level of purity/pollution level, and type of resource/pattern of use?
		Has the government/agency estimated the current and future water requirements by correlating to the population growth, urban sprawl, agricultural and industrial requirements etc? As also the likely/ planned availability of the required quality of water?
		Have the Government/agency carried out an analysis of the current and future risk perceptions for water pollution and used the data and information for planning its strategy and programmes?
<b>Area 3: Clear allocation of responsibility and accountability</b>		
3	Whether various agencies involved in the control of water pollution have been allocated clear responsibility and accountability for planning, implementation and monitoring.	Whether there was allocation of responsibility and accountability to agencies for planning.
		Whether there was clear delineation of responsibility and accountability to agencies implementing the programs for the control of pollution.
		Whether there was clear delineation of agencies for monitoring (including monitoring of infrastructure for the control of pollution).
		Whether there was clear delineation of regulatory agencies for measurement and setting of standards for the

		control of water pollution.
<b>Area 4: Effective implementation of measures to control water Pollution &amp; Strategy/Policy for the Control and Prevention of Water Pollution</b>		
4	Whether implementation of the program for the control of pollution resulted in the creation of the infrastructure envisaged under the program and were these functioning as envisaged.	Whether infrastructure for the control of pollution created under the program for the control of pollution as envisaged.
		Whether infrastructure created for the control of pollution was being utilised and maintained as envisaged.
		Has the government established a policy for wise and prudent use of water resources by all consumers and to control and prevent water pollution?
		Is the policy followed up by appropriate strategy and plans including Five Year/Annual Plan Programmes?
		Are there sufficient legislations/rules/regulations in position aimed at the conservation and protection of water bodies and to preserve their quality?
		Does the entrusted agency monitor the quality, quantity and pollution levels in large water bodies such as lakes and rivers regularly?
		Is there a machinery to prevent and control excessive and unregulated withdrawal of water from these bodies by agricultural and industrial units?
		Is the mechanism to prevent / control the discharge of effluents and untreated water into these bodies efficient?
		Is the system efficient to control the escapement of chemicals and nutrients from agricultural and farm lands into water bodies?
		Is there a system of detecting and preventing any encroachments of the river beds and banks?
		Is there a mechanism to detect and prevent illegal quarrying for sand and minerals from the river / lakebeds and are such measures adequate?
		In the case of high level of pollution of lakes and rivers, has the Government initiated any plans and programmes for their restoration?
		Are the allocations for such programmes adequate to meet the requirements? Review the economy and efficiency of such programmes from Performance Audit point of view and comment.
		Are there external agencies monitoring the pollution levels of lakes and rivers and do their findings vary from that of the entrusted agency? If so, analyze and record findings.
<b>Area 5: Monitoring and Evaluation</b>		
5	Whether monitoring of implementation of the program for the	Whether effective monitoring of program implementation took place to ensure that the program objectives were met.

	control of pollution took place effectively and whether monitoring was undertaken to ensure operation of the pollution control measures after they were created.	Whether the infrastructure created under the program for the control of pollution was effectively monitored to ensure that it met set/designed performance parameters.
		Whether regular and effective monitoring of pollution levels of rivers/lakes/ground water/water sources took place.
		Has the government/agency established a network to monitor water quality at different locations and resources? Is its working satisfactory?
		Is the system of monitoring reliable and of adequate quality and standards?
		At what periodicity and from how many locations are the samples taken? Is this adequately representative?
		Is the quality analysis done at well-equipped laboratories under proper guidance and supervision?
		Are the findings reported in time to the nominated authority responsible for the analysis and follow up actions? Is the procedure followed in regard to follow up actions appropriate and effective?
		Does this facility release any wastewater to the ground, stream, lake, pond or any other body of water? Is it greater than 60 m <sup>3</sup> ?
		Does this facility release any wastewater to sewer system?
		Where are wastewater discharge locations (point and non-point)?
		What is the design capacity of the wastewater treatment plant?
		What is the current volume of wastewater generated by this facility?
		What licences/approvals are in place for wastewater discharge?
Does this facility have any required ground water monitoring programs?		
<b>Area 6: Utilization of funds</b>		
6	Whether funds were utilized in an efficient and economic manner to further the aim of reducing pollution from the rivers/lakes/ground water/water sources.	Whether funds allocated to the states under the program for the control of pollution were released timely to the implementing agencies/states.
		Whether the funds were utilized economically and efficiently by the states.
		Do the Government/agency monitor and review the quality and availability of water from all sources on a periodical basis?
		Has the water quality improved or has it deteriorated over time since the Government's water policy and strategy came into being?
		Are there any independent studies and evaluations relating to the quality and standard of water from different sources and what do they reveal?

<b>Area 7: Impact analysis</b>		
7	Whether the program for the control of pollution had succeeded in reducing pollution levels in rivers/ lakes/ ground water/water sources and restoring water quality.	Whether there was improvement in water quality as a result of implementation of the program for the control of pollution.
		Whether external evaluation of the program for the control of pollution was done.
		Whether performance of the infrastructure created for the control of water pollution was as per set/designed performance parameters.
<b>Area 8: Adherence to standards and regulations</b>		
8	Whether the entrusted agencies adhere to the appropriate national & international standards of water pollution.	Have the government / the entrusted agency established appropriate standards of water quality covering all water resources? Are they comparable to national / international standards?
		Are there competent regulations to prevent /control the discharge of untreated waste water and effluents from municipal/industrial/chemical units into water bodies?
		Does the entrusted authority examine the proposals, layouts and plans of entrepreneurs from pollution angle before they are allowed to establish manufacturing/ processing plants? Are strict control and prevention measures insisted upon, prior to the grant of permissions, to avoid pollution of water resources by such units?
		Do an entrusted agency/its representatives monitor the presence/level of polluting agents and nutrients in the discharge of effluents regularly to ensure the units' adherence to the permit conditions?
		Is effective follow up action taken in all cases of violation of the permit conditions?
		Are waste water/effluents treatment plants a mandatory requirement for specified industries and establishments of highly polluting nature?
		Have the government / agency initiated steps to encourage/ mandate the industrial units which were in existence prior to the establishment of standards and regulations to establish treatment plants and anti-pollution devices?
		Are there appropriate regulations in position to mandate the installation of waste water treatment plants in all large buildings and commercial complexes?

- 10.6 As per the Waste Prevention and Management Act (2009), the “Waste Management means controlling the generation of wastes, minimizing its quantities and adverse impacts through administrative, financial, legal, planning and engineering functions of storage, collection, transfer and transportation, treatment and disposal in a manner consistent with the best principles of public health, economics, engineering, conservation, aesthetics and other environmental considerations.
- 10.7 Some of the ways to control waste management specified in the Waste Prevention and Management Regulations 2012 are Waste Segregation (e.g. segregating “bio-degradable” and “non- biodegradable”), Waste collection and transfer to landfill (collection shall be done in a manner which prevents damage to the receptacle, or spillage or scattering of solid waste within the collection vicinity), Waste reduce – reuse - recycle, and the Public-Private Partnership measures to improve the solid waste management system through separation of wastes at source by supporting storage infrastructures and enhancing recycling of organic wastes through composting.
- 10.8 Protecting the environment and human health through sound management of waste is mandated by the Waste Prevention and Management Act (2009) and Waste Prevention and Management Regulation (2012, amended in 2016).
- 10.9 According to the National Environment Commission (NEC), the inadequate infrastructure for waste management (waste collection points/bins), limited land to be used as dumping sites/landfills and the sustainability of such landfills, and the fragmentation of the current waste management system was seen as the major challenges.

Further aggravating the problems are the dearth of facilities to process or treat waste, inadequate regulation and laws, lack of coordination among sectors and low level of awareness on waste issue. The lack of comprehensive database and accountability mechanism, inadequate monitoring of compliance to laws, polices and rules are the prominent issues regarding the waste.

- 10.10 A checklist consisting of audit objectives and basic audit queries for the audit of waste management include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit’s focus and scope.

Sl. No.	Objective	Audit Checklist
<b>Area 1: Assessment of quantum of waste and the risk associated with it</b>		
1	Whether the quantum of waste being generated in the country has been accurately assessed and whether risks to	Has the government/entity assessed the types and categories of wastes related to each source of waste generation (municipal/ industrial/ chemical/hazardous/ biomedical/E- waste) which need to be addressed to?

	environment health posed by waste have been identified.	Has an assessment of the quantum of each category of wastes at the current level of generation been <i>estimated accurately</i> ? Is the <i>estimation scientific and reliable</i> ?
		Has the likely growth in the waste generation, based on reliable data and indicators, been made to project the future planning requirements and parameters?
		Are the data and parameters adopted for the assessment of the growth rate comprehensive and wide-based?
		Are the details of the current capacity to handle the waste from different sources readily available? Is the information updated from time to time and reliable?
		In case the current capacity is inadequate to meet the requirements, how is the deficit being met? Has an assessment in terms of physical and monetary requirements been made to meet the shortfall?
		Has a realistic assessment of the risks from each type of waste material to human health, animals and plant life been made through scientific studies?
<b>Area 2: Government policies on waste minimization and waste reduction</b>		
2.	Whether there are established strategies, legislation and programmes	Has the government/ entity established a comprehensive policy/strategy to prevent/ minimize the waste from each identified source, for effective implementation by the stakeholders?
		Are there rules/standards/regulations on the handling and disposal of the waste from each identified source? Are they comprehensive and clearly worded and being enforced strictly?
		Does the strategy reflect the principles of 'prevent/ reduce/minimize/recycle/reuse'?
		If there are gaps in the notifications/regulations relating to any given aspect of the strategy or regarding the waste generated from any given sources, is action being taken to close such gaps?
		Are the enforcement provisions and the prescribed process and procedures for handling /storing /disposal of the waste reasonable, easy to understand, easy to implement/ Do they include adequate disincentives and penalties for non-observance of the procedures by stakeholders?
		Are the legislations/regulations in line with the international conventions and commitments to which Bhutan is party? If there are variations, are they material?
		Are there appropriate action plans and programmes under implementation to tackle the problem of (increasing) waste generation and disposal by

		involving all stakeholders? Review the programmes/plans and comment on the planning and implementation aspects.
<b>Area 3: Effectiveness of implementation policy/strategy</b>		
3.	Whether the policy and strategy are effectively implemented on the management of various types of waste	Are the agencies/ entities responsible to implement the policy/strategy at various levels vested with adequate powers to carry out the task?
		Is the policy to manage wastes from different sources transparent and comprehensive? Are the entities/agencies responsible to oversee the management of wastes provided with clear guidelines and required resources?
		Are the agencies/entities responsible to implement the policy/strategy at various levels vested with adequate powers to carry out the task?
		Is the policy to manage wastes from different sources transparent and comprehensive? Are the entities/agencies responsible to oversee the management of wastes provided with clear guidelines and required resources?
		Have the oversight bodies been entrusted with regulatory powers to issue standards and limits for pollution and waste management? Have the standards been notified? Are they current?
		Is the mechanism to monitor and oversee the adherence to standards and limits by those responsible to do so under the law/rules/permits, and to take follow up actions for any breach in conditions efficient?
		Are there specific and clearly laid down rules and standards applicable for the management of solid wastes generated in municipalities/ corporations/ other local bodies?
		Is the waste management programme of the local body aimed at reducing and preventing waste by applying the principles of modern waste management?
		Is there a Public Awareness Programme, involving the local communities and civil society organizations <ul style="list-style-type: none"> <li>- to educate the public about the need to reduce and minimize the wastes and</li> <li>- to segregate them according to organic, hard, plastic wastes etc, to facilitate the handling and disposal?</li> </ul>
		Are the established standards and criteria for the collection, transportation and disposal of the wastes enforced strictly and judiciously?
		Are appropriate financial disincentives imposed on

		households, commercial establishments and others to discourage the generation of wastes by levy of taxes and fees for the collection and disposal of wastes?
		Are stringent penalties imposed on violators (traders, shops, establishments, construction engineers) for dumping garbage and waste materials indiscriminately and at unauthorized places?
		Is the system of collection, transportation and disposal of municipal wastes designed and implemented efficiently and economically?
		Is there a mechanism to segregate the wastes according to their environmental impact (biodegradable/hazardous/organic etc.) prior to disposal?
		Is there a proper and hygienic storage system/ facility for waste materials within the municipality, if required, prior to their transportation to the disposal sites?
<b>Area 4: Compliance to various policies and regulations</b>		
4.	Whether there is compliance to the various policies and regulations in regard to industrial waste disposal	Does the industrial waste management policy of the Government form part of the general industrial development policy and seek to promote prevention/ minimization/ reuse/ recycling of such wastes to the maximum extent possible?
		Are the permits for industrial units issued only subject to ensuring the scientific management and disposal of the wastes generated from them?
		Is the system to monitor and follow up waste management practices by the permit-holders efficient? Are timely actions taken against violations?
		Are the existing and older units with inadequate waste disposal facility encouraged through regulations and incentives to establish the required facilities and equipment to reduce pollution arising from their wastes?
		Are common waste management facilities established for small industrial complexes and clusters to encourage economical and efficient waste management practices?
		Has the entity/local body issued notifications to regulate the collection, handling, storage, transportation and disposal of wastes arising from construction and demolition of buildings and structures?
		Are the regulations adequate, comprehensive and stringent to avoid accumulation of wastes and indiscriminate disposals?

		Are there earmarked areas where such wastes could be disposed-off safely and without causing water and atmospheric pollution?
		Are the provisions for temporary or permanent storage of the materials for their eventual recovery/recycling etc?
		Do the regulations insist on segregating the wastes and removal of hazardous items (asbestos sheets, paints and chemicals) prior to their disposal?
		Is the transportation of construction and demolition wastes regulated to ensure that there is no spilling and pollution en route?
		Is the entity/authority providing/managing the disposal sites compensated for the expenses and efforts on the principle of “polluter pays”?
<b>Area 5: Monitoring and evaluation of impact of waste management</b>		
5.	Whether the monitoring is effective and timely	Is there a system of regular monitoring of disposal by various authorities like municipalities, hospitals, industries etc.
		Have effective penalties been imposed by the government/ regulatory agencies for improper disposal of waste, in accordance with the polluter pay principle?
		Has the Government/entity/an external agency conducted any evaluations/reviews of the effectiveness of its waste management strategy/policy? If so, have they identified the strength and weakness of the strategy/policy and modified it after taking into account the findings and suggestions from such studies?
		Have the efforts to prevent/minimize waste generation through public awareness and through the establishment of standards been successful in reducing the volume/types of waste generation? If not, what measures are taken to improve the strategy formulation and implementation?
		Is the entity/agency implementing the waste management policy and programme equipped with adequate financial and human resources to carry out their tasks efficiently? Are there appropriate means to raise revenue from the policy implementation to meet the needs of the entity?
		Is the principle of “polluter pays” incorporated into the policy? Are there incentives for reducing/ reusing/recycling of wastes and to penalize those who go against the principle?

- 12.1 Biodiversity is the variety of species, their genetic make-up, and the natural communities in which they occur. It includes all of the native plants and animals and the processes that sustain life on Earth. Biodiversity is closely connected with the ecosystem, in which its survived disruption/destructions caused by habitat fragmentation, urbanization, agriculture and overexploitation of resources, leads to depletion of species which would indulge in imbalance in the ecosystem which makes them less resilient and less able to supply us with necessary resources.
- 12.2 Bhutan's richness in biological diversity is found at the ecosystem, species and genetic levels. About 51.55 percent of Bhutan is under the Protected Area Management System. Despite being a small country, it is home to 5,603 species of vascular plants, 678 species of birds and nearly 200 species of mammals. In terms of domestic biodiversity, there are more than 80 species of agricultural crops and 15 species of livestock. About 9 percent has been declared as Biological Corridors connecting all the protected Areas. Therefore, Bhutan ranks in the top ten percent of countries with the highest species density in the world, and it have the highest fraction of land in Protected Areas and the highest proportion of forest cover of any Asian country.
- 12.3 It is widely recognized that biodiversity is absolute necessities for human survival and welfare. The role of biodiversity in human affairs and therefore its values to mankind can be described as ethical, cultural, aesthetic, utilitarian, and ecological. Loss of biodiversity would lead to the extinction of species, loss of genetic diversity, and major changes in the way the ecosystems function. The most acknowledged threats to biodiversity include habitat change (loss and fragmentation), changes in land use, forest fires, invasive alien species or bio-invasion, overexploitation, pollutions, urbanization, human wildlife conflict, forest fire, hydropower developments, industrial development, climate change and global warming.
- 12.4 Increasing population and its demand for food and infrastructure may cause a huge pressure to land and other biological values. Increasing demand for food and infrastructures are the root of human encroachment to wildlife and biological species. Unsustainable cropping practices and cropland expansion, particularly deforestation and encroachment on steep slope by tseri cultivation, causing deforestation and loss of biodiversity, and degradation of ecological services. Poaching of endangered species of plant and animal with high commercial values in the international market can threaten the viability of the species and can have devastating effect on nature and human life. Economic development such as road constructions, power transmission lines, etc. contributes to destruction and fragmentation of forests, particularly cutting through the protected areas. Mining and Quarrying impact on biodiversity is through the removal of surface features during the extraction of materials, thus disturbing or destroying natural habitats and biodiversity. Hydropower Development disturbs natural flow of river and and causes degeneration of aquatic life.
- 12.5 The legislations related to biodiversity of Bhutan includes Biodiversity Act of Bhutan 2003, the Forest and Nature Conservation Act (1995), National Environmental

Protection Act (2007), National Forest Policy, RNR Sector Policy, National Environment Strategy, Forest and Nature Conservation Rules 2006, Environmental Assessment Act 2000, Regulations for the Environmental Clearance of Projects and Strategic Environmental Assessment 2002, Livestock Act of Bhutan 2001, National Biosafety Framework 2006, Biosecurity Policy, Vision 2020, Agriculture Policy, Water Policy, Surface Transport Policy, Energy Policy, etc.

12.6 A checklist consisting of audit objectives and basic audit queries for the audit of biodiversity include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit's focus and scope.

Sl. No.	Objective	Audit Checklists
<b>Area 1: Identification of the main threats to biodiversity of the country</b>		
1.	To assess whether the government has assessed the country's biodiversity and threats to it.	Has the Government made a reliable and scientific assessment of the biodiversity in the country? Is the assessment readily accessible to stakeholders?
		Has the government assessed the biological resources available in the country
		Does the Government or an entrusted agency (e.g. MoA) prepare annual Natural Resources Budget/Accounts as contemplated in the National Environment Policy? Are these accounts comprehensive and based on extensive research and current?
		Does the Government carry out comprehensive and periodical threat analysis to identify the risks and dangers to species of all types? What are the major findings? Have the findings been appropriately classified and registered for possible mitigation efforts? Are proposals for mitigation in place? Are they well-designed?
		Is there a system of identifying all endangered species across the country, listing them out for conservation measures, public education and research initiatives? Does the entrusted agency monitor the status regularly, and plan remedial/mitigation activities by involving all stakeholders?
		Is there a system to collect traditional knowledge on biodiversity from local communities and to register them appropriately?
<b>Area 2: Government's role in mitigating threats to biodiversity</b>		
2.	Review of Legislation and Treaties.	Whether government has signed and ratified any International convention and treaty for the protection of biodiversity.
		Whether/Does the country's legislation on biodiversity cover all essential biodiversity conservation issues?

		Was the effectiveness of the law tested in courts of law and guarded against any loopholes?
		Has the government enacted legislation and regulation for the protection of all kinds of biodiversity, especially those that are facing threats
		What is the extent of commitment of the Government for conservation incorporated in the law? Are they being followed up through strategies and plans?
		Are the commitments in respect of international treaties (e.g. Reporting to CBD Secretariat periodically) being fulfilled regularly?
		Has the Government framed policies/ strategies/ action plans for threat reduction on biodiversity and have these been communicated to all stakeholders.
		Has the government allocated responsibility to any agency for issuing licenses to limit the volume or concentration of pollutants discharged into the environment for the purpose of protecting biodiversity?
		Has the government allocated responsibility to any agency for monitoring potential environmental damage and applying penalties when laws are violated?
		Has the government allocated responsibility to any agency for ensuring that environmental laws are being enforced by public and private entities?
<b>Area 3: Allocation of responsibility and accountability</b>		
3.	To assess Implementing Agencies and Responsibility Centers	Has the government allocated responsibility to any agency for defining environmental policies dealing with the protection of biodiversity?
		Has the government allocated responsibility to any agency for ensuring that environmental laws are being enforced by public and private entities?
		Has the government allocated responsibility to any agency for preparing environmental standards relating to biodiversity issues
		Has the government allocated responsibility to any agency for issuing licenses to limit the volume or concentration of pollutants discharged into the environment for the purpose of protecting biodiversity
		Has the government allocated responsibility to any agency for monitoring potential environmental damage and applying penalties when laws are violated?
<b>Area 4: Compliance of biodiversity rules and regulations</b>		

4.	To ascertain the level of compliance to biodiversity rules and regulations already in existence.	Are all the entities causing threat to biodiversity are acting in accordance with the compliance criteria and procedures laid down in law/rules on biodiversity?
<b>Area 5: Monitoring of government programs for the protection of biodiversity</b>		
5.	To ascertain whether effective monitoring and evaluation mechanism are in place, which are helpful in effectively implementation of the programmes?	Have specific and designated agencies/ organizations been tasked with regular monitoring of the threats to biodiversity from all sources and reporting the status to the Government?
		Is there a system of regular monitoring and evaluation of the progress of the various schemes and programmes for biodiversity conservation? Are they effective?
		Are independent agencies involved in such evaluations?
		Is the reporting on such monitoring and evaluations timely and efficient? Is prompt and effective action taken on the findings?
		Are there any cases of action taken by the government on violation of biodiversity conservation rules/ programmes?
<b>Area 6: Adequacy of funding and infrastructure</b>		
6.	Whether funding and infrastructure was adequate to ensure effective compliance and monitoring of biodiversity threat control programs.	Has the government provided adequate budget provisions and funding to the entrusted agencies to meet their reasonable requirements of programmes and projects in order to complete them on time and effectively?
		Are the department/agencies prompt and efficient in utilizing the allocation? Is there economy in spending?
		Is the outcome budget prepared by the department/agencies efficient? Are they achieving their targets every year?
		In case the programme/activity has a segment for collection of revenue etc., what is the level of performance?
		Does the organization possess adequate technical and scientific staff to carry out its assigned duties and tasks?
<b>Area 7: Government other initiatives</b>		
7.	Assess the other initiatives of government to create Public awareness & educate them	Have the Government/agencies drafted a suitable Public Education and Awareness Programme to spread the message of biodiversity conservation and sustenance?
		Does the Programme seek to target all possible Stakeholders? Was it developed by involving appropriate technical experts, media, and civil society organizations for the

		widest possible reach?
		Is there a system for receiving periodical feedback from the stakeholders, programme managers and evaluators on the Programme's efficiency and effectiveness?
		Are National Parks and facilities, which have wide reach to tourists, being used effectively to spread the message?
<b>Area 8: Whether government has assessed to mainstreaming the biodiversity into sustainable economic development</b>		
8.	Mainstreaming Biodiversity into Economic Sectors and Development Planning	Are EIA studies mandatory for all major projects with likely impact on biodiversity? Is there an established procedure to review the findings and to ensure their proper consideration while granting project approvals?
		Does land-use planning policy and regulations integrate biodiversity considerations as an essential factor? Are the restrictions implemented stringently?
		Do the guidelines of the Government relating to policy and programme development in various sectors include biodiversity considerations and preservation measures?
		Do the Five Year/Annual Plans of the Government incorporate biodiversity concerns into the sectoral and cross-sectoral plans, programmes and policies in relation to trade, economy, land-use planning, and other related activities?

- 13.1 The UN International Strategy for Disaster Reduction (ISDR) defines disaster as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.”
- 13.2 Bhutan in the past had experienced a series of natural disasters and is susceptible to various natural and man-made hazards and disasters such as Glacial Lake Outburst floods (GLOF), flash floods, forest fires, outbreak of pest and epidemic diseases, storms, forest fire, landslides, and earthquakes, and others induced by climate change. Bhutan is situated in one of the world’s most active seismic zones and is thus vulnerable to earthquakes. It experienced a number of flash floods in the south as well as earthquake claiming lives of people and irreparable damages to properties in the east. These unfortunate events have a social, economic, environmental and overall rippling impact to our people and to our nation as a whole.
- 13.3 In order to strengthen disaster risk management, the Government enacted the Disaster Management (DM) Act in 2013. The Act clearly delineated the roles and responsibilities of the Disaster Management Authority and the different stakeholders at the National, Dzongkhag, Dungkhag, Thromde and Gewog level.
- 13.4 The first step in auditing disaster management in a country should be getting acquainted with the different types of disasters and the likelihood of their occurrence. In doing so, the following questions would help the auditor in getting a head start understanding the issues with disaster management.
- ⦿ What are the types and probability of different disaster in Bhutan?
  - ⦿ Have the Department of Disaster Management (DDM) (agency concerned) prepare risk assessments for all types of disaster in the country?
  - ⦿ Has the DDM prepared hazard maps/hazard analyses?
  - ⦿ What are the types and extend of physical & socio economic vulnerabilities?
  - ⦿ What are the possible combinations of types of disasters?
  - ⦿ What is the Department/Government’s preparedness in times of disasters?
  - ⦿ Which is the recent experience of major disasters? What were the government’s responses? What lessons have been learned?
  - ⦿ What was the worst disaster experienced by the country and how much was the damage?
- 13.5 A checklist consisting of audit objectives and basic audit queries for the audit of disaster management include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit’s focus and scope.

Sl. No.	Objectives	Audit Checklists
<b>Area 1: Legislative and Institutional Mechanism</b>		
1	To determine whether Bhutan is prepared with a strong legislative and institutional mechanism to counter disasters.	<p>Whether the government/Department is equipped with legislative supports like the National Disaster Management Act, National framework for disaster management, Emergency plans, etc?</p> <p>Whether a proper institutional mechanism had been set up for disaster management including pre-disaster risk assessment, mitigation, prevention and preparedness;</p> <p>What are the mechanism put in place for reducing and preventing disaster and hazards and whether there is a strategy to cope up with any kinds of man-made and natural hazards?</p> <p>Have the national disaster plans been designed on the basis of analyses like disaster risk maps, risk assessments, etc.?</p> <p>Do the plans provide a good basis for timely, clear and organized action – including when and who will perform such action during an emergency or disaster?</p> <p>While formulating policies for disaster management, are past disasters taken into consideration?</p> <p>Within the disaster plans, how are the roles and responsibilities defined and allocated to each unit responsible?</p> <p>Have the goals, objectives and strategies set out in the disaster plan been integrated into the annual budget process?</p> <p>Whether there exist a proper arrangement of co-ordination for disaster related issues at the State and district level;</p> <p>Are all units of government such as regional and municipal levels required to prepare their own Disaster Plan based on the National Disaster Plan?</p> <p>Are disaster preparedness plans and policies at all levels prepared or reviewed and periodically updated with a particular focus on the most vulnerable areas and groups?</p> <p>Has the government signed any bilateral or multilateral treaties or agreements on reducing disaster risks and/or promoting cooperation against the threat of hazardous events?</p>

		Whether the coordination amongst the departments was effective and functional during event of a disaster
<b>Area 2: Resources and its Utilization</b>		
2	To ascertain whether resources and funds were used efficiently and the beneficiaries gained from it.	Is the DDM allocated with sufficient government budget to carry out its plan and activities?
		Do the DDM and other stakeholders have capable and sufficient human resources?
		What is the organizational structure and staffing profiles and whether the organogram and staffing is appropriate to coordinate and carry out disaster preparedness activities?
		Does the main agency responsible have a complete and detailed overview of the resources allocated to disaster preparedness activities?
		Whether there is a Quick Response Team to respond to disasters as they occur?
		Does the Department have a strategic plan to use the resources and funds they have at their disposal in the most effective manner?
		Whether funding for relief activities was adequate
		Whether Emergency operation control centers were adequately equipped with telephones, wireless sets and manpower
		Is there an up-to-date disaster management information system?
		Does the management information system contain enough information on hazards and risks to determine, at the local level, who is exposed and who is vulnerable?
<b>Area 3: Capacity building and General awareness</b>		
3.	To assess the adequacy of general public awareness.	What are the arrangements to impart training to state level officials, private sector and Non-Governmental Organizations (NGOs)?
		Whether public are informed on actions to prepare for a possible disaster, and what actions to take in case of a disaster?
		Are education programs and training on disaster preparedness planned and realized in schools and local communities?
		Do programs provide organizations and individuals with the necessary knowledge and skills to respond effectively and quickly recover from various types of disaster?
		Do the disaster plans promote regular disaster preparedness exercises, including evacuation

		drills, with a view to ensuring rapid and effective disaster response and access to essential food and non-food relief supplies, as appropriate to local needs?
		Does Bhutan have early warning mechanisms to predict calamities that may hit the country?
<b>Area 4: Post disaster relief measures</b>		
4.	To examine the initiative undertaken by the Government on post disaster relief measures	Whether post-disaster activities relating to provision of immediate assistance, restoration of infrastructural services, re-construction of houses, etc. were efficient, economic and effective?
		Whether reaction time taken in responding to emergencies and efficiency & effectiveness of post disaster relief measures were timely?
		Whether system of monitoring of relief/rehabilitation/reconstruction activities by Government was efficient and effective?
		Is a monitoring system in place to determine the extent of loss or damage following a disaster?
		Whether donations from private sources intended for disaster preparedness were properly booked and recorded and used for the right purpose for which they were granted?

- 14.1 Until 1979, the harvesting of timber was carried out by allotting working-coupes to contractors through open auctions which was found to be unsustainable. To institutionalize scientific management practice of forest resources on sustainable basis, a Logging Division was established under the Forest Department in 1979. The Logging Division was upgraded as Bhutan Logging Corporation (BLC) in 1984 under a Royal Charter. In 1996, BLC was upgraded to Forestry Development Corporation Limited (FDCL) and FDCL was further re-structured in November 2007 with an Executive Order of the Prime Minister to form the Natural Resources Development Corporation Ltd. (NRDCL).
- 14.2 Scientific management of forests in Bhutan started in 1965 with the preparation of management plans. The Working Plan Division was first established in 1971 and in 1974 a new method of management plan was formulated, and consequently the Division was then called Forest Resources Management Division (FRMD). FRMD is one of functional divisions of the Department of Forests and Park Services (DoFPS).
- 14.3 FRMD is mandated to: a) Identify potential Forest Management Unit (FMU) and assess sustainability of FMUs from social, economic, ecological view; b) Coordinate and provide technical backstopping to the Field Divisions for preparation and Implementation of forest management plans; c) Prepare forest management plan for FMU; and d) Maintain all forestry information and database of the DoFPS.
- 14.4 FMUs are established throughout the country to manage the forests scientifically. These are strictly prepared as per the prescription under the “Forest Management Code of Bhutan”, 2004. Currently, there are 20 identified FMUs with total areas of 193,821.77 hectares.<sup>12</sup>
- 14.5 Harvesting of timber is one of the major activities of the Natural Resources Development Corporation. The extraction of timber from forests has to be carried using scientific and silvicultural methods & techniques prescribed by the DoFPS. NRDCL has mandate to sustainably extract and market natural resources at affordable prices include timber, sand, stones and other natural resources. NRDCL is currently owned by Druk Holding and Investments (DHI), a 100% Government owned Investment Company and is governed by the Articles of Incorporation under the revised Companies Act of the Kingdom of Bhutan 2000.
- 14.6 A checklist consisting of audit objectives and basic audit queries for the audit of timber harvesting but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit’s focus and scope.

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<sup>12</sup> Forest Facts and Figures, 2017, DoFPS, MoAF.

Sl. No.	Objectives	Audit Checklists
1	To evaluate whether the harvesting operations adequately follow the Forest Management Plans and other prerequisites	<p>Is Reconnaissance Survey encompassing socio-economic study (SES), reconnaissance forest inventory (RFI), initial environmental examination (IEE), and economic feasibility study (EFS) is carried out to substantiate selection of potential FMU?</p> <p>Whether the forest management inventory or comprehensive information on composition of forest resources, regeneration potential, site characteristics, and other required information about the FMUs maintained sufficiently.</p> <p>Whether FRDD has undertaken the environmental assessment (EA) and submitted the Forest Management Plans (FMPs) including environmental statement (ES) to the NECS for environmental clearance.</p> <p>Is the harvesting operations carried out based on objective led the Forest Management Plans (FMPs)?</p> <p>Are the management objectives of the FMPs achieved? Is the Mid-term evaluation of FMPs carried out? Is the level of achievement of management objectives reviewed as required?</p> <p>Whether Territorial Divisions have prepared &amp; maintained operational plans (OPs) to facilitate timely implementation of FMPs.</p>
2.	To ascertain whether the harvesting operations are undertaken sustainably.	<p>Is the Annual Allowable Cut (AAC) based on sustained yield computed with due consideration to rate of replacement (expected time for forest to become re-established)? Whether annual cut and other losses of timber do not exceed the average annual growth and assures continuity of harvest, without impairment of the productivity.</p> <p>Whether the forest management goal is to manage forest on a multiple use, sustained yield basis for the production of timber.</p> <p>Are the scientific and silvicultural methods &amp; techniques of harvesting adequately prescribed and followed? E.g. directional tree felling</p> <p>Is the silvicultural system selected considering the forest type, species composition and structure, environmental conditions, labour, machinery and other inputs available for management and the end products and services</p>

		required?
		Is there appropriate silvicultural system determined for all FMUs to achieve the specific end result?
		Whether harvesting operations are continually inspected, supervised and monitored by the Department of Forest and Park Services.
		Is the forest managed based on forest function (grouping the different potential uses of the forest)? Whether forest harvesting practices are accustomed to the specific harvesting site as the environmental condition of the harvesting area will differ. Whether forest functions are mapped in all FMUs.
3.	To determine whether there are adequate post-harvest environment restoration and reforestation measures in place.	Are the harvested areas properly regenerated or restored after harvesting?
		Are Post harvest environmental restorations and reforestations measures in place?
		Whether enrichment or complete stocking are carried out by the NRDCL whenever natural regenerations fails.
		Whether nurseries for the local viable species in advance to supply the planting stock for subsequent plantation are available?
		Whether weeding, brushing, fencing and other necessary action to protect regeneration are carried out
		Is aesthetic value of the harvested site maintained? Whether all disturbances to soil, water, road caused by harvesting stabilized. Whether all litter, food scraps, unserviceable equipment or machinery, plastic wrappings, rags, fuel and oil drums, or other debris resulting from his harvest operations disposed off.

- 15.1 Since environmental issues entered the international agenda in the early 1970s, global environmental politics and policies have been developing rapidly. Global environmental governance refers to policy instruments, financing mechanisms, rules, procedures and norms that regulate the processes of global environmental protection. Multilateral Environmental Agreements or “MEAs” are one of such mechanisms.
- 15.2 There exist various Multilateral Environmental Agreements (MEAs) dealing with various environmental issues under international law for countries to work together on global issues. The assessment of the implementation, compliance and effectiveness of multilateral environmental agreements is in many cases complicated and plagued with gaps in data, conceptual difficulties and implementation challenges. Supreme Audit Institutions (SAIs) with their varied competencies are uniquely poised to assess these gaps and report to parliament and inform the national and international community on the basic question of availability and adequacy of data and information as well as on the status of compliances to MEAs. SAIs play important role in the effective implementation of MEAs.
- 15.3 Over the past few decades, the number and scope of international environmental agreements have grown rapidly. There are hundreds of international agreements that govern some aspects of the environment which are negotiated at the bilateral, regional and global levels. Some have a few Parties; some have almost global participation.
- 15.4 MEAs are a subset of the universe of international agreements. What distinguishes them from other agreements is their focus on environmental issues, their creation of binding international law, and their inclusion of multiple countries. An MEA is a legally binding instrument between two or more nation states that deals with some aspect of the environment. The term “Multilateral Environmental Agreement” is a broad term that relates to any of a number of legally binding international instruments through which national Governments commit to achieving specific environmental goals. These agreements may take different forms, such as “convention,” “treaty,” “agreement,” “charter,” “final act,” “pact,” “accord,” “covenant,” “protocol,” or “constitution” (for an international organization).
- 15.5 MEAs (as with other international agreements) usually bind only those States who have agreed to be bound by the MEA. MEAs may be between two States, in which case they are usually termed “bilateral.” However, most MEAs are between three or more States, and thus “multilateral.”
- 15.6 Once an MEA has entered into force, the focus of the Parties’ work shifts towards “implementation”. While much of the ‘on-the-ground’ implementation is done by Parties at the national level through domestic legislative and administrative arrangements, MEAs can provide for some mechanisms within their terms and structure to help, assist and ensure national level implementation. National implementation plans can be required in a multilateral environmental agreement,

which could potentially include environmental effects monitoring and evaluation in order to determine whether a multilateral environmental agreement is resulting in environmental improvement.

- 15.7 Non-compliance can be a challenging issue to address in any international agreement. States sign agreements voluntarily and are usually free to withdraw at any time in accordance with the specified procedure for withdrawal in the particular agreement (those who do withdraw will have to face the loss of treaty benefits and privileges, which may be considerable). Non-compliance is often the result of incapacity rather than intentional disregard for an agreement's rules. In Bhutan, the National Environment Commission is the regulatory agency to ensure compliances.
- 15.8 One of the fast growing trends is for SAIs to audit to see how well governments are implementing MEAs and their requirements or commitments, whether spending on improving environmental issues is providing value for money, or whether the government is managing natural resources in accordance with sustainability principles. Auditors can play an important role in auditing governments' commitments. Furthermore, as MEAs involve two or more countries, cooperative audits of these agreements could serve as one the bases for the international community to meet the common objectives and commitments made to address global environmental issues. SAIs can play crucial role in evaluating whether the government response has given the intended results and whether the environmental policies are implemented in an economic, efficient and effective manner.
- 15.9 A checklist consisting of audit objectives and basic audit queries for the audit of MEAs include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit's focus and scope.

Sl. No.	Objectives	Audit Checklists
1	To investigate institutional set up of MEAs – administrative system	Are studies carried out by the designated agency on particular agreements before it was signed and ratified?
		Were Parliament and interested groups notified and consulted with at the negotiation stage of the agreements?
		Were impact statements prepared for proposed new agreements covering: reasons for being party to the agreement, advantages and disadvantages to being party, imposed obligations, economic, social, cultural and environmental effects, the costs of compliance, measures to be adopted, provision for withdrawal from the agreements, statements setting out consultation with stake holders?
		Whether a relevant agency is designated as the focal agency for each MEAs
		Did the responsible agencies get roles and

		responsibilities assigned, and were these properly documented and understood? Are there any gaps between agencies roles and responsibilities?
		Is there a proper coordination among the implementing agencies?
		Whether MEAs and commitments are prioritized to ensure that the urgent actions are implemented first.
2.	To assess the compliance on the obligations stated in the agreements.	What are commitments related to a specific MEA?
		Is there domestic policy and legislation in place to realize the commitments?
		Can the available policy and legislation assure the compliance with these commitments?
		Is there a proper governance mechanism?
		Were resources allocated for the fulfilment of the agreements' obligations?
		Is it implemented in the most economic, efficient and effective manner?
		Have the shortfalls and non-compliances explicitly deliberated and reported?
		Are the agreements obligations being met, monitored and reported and where appropriate, amalgamated as a single composite report when there are several responsible agencies?
		Has the deadlines been met for key deliverables?
		Has the measurable targets and time frames established for reporting on the results of its efforts in accordance with given requirements.
		Is there a well-established long-term action plan to successfully implement commitments?
3.	To assess whether periodic reporting required under an MEA is done correctly on time.	Is the designated agency providing sufficient, appropriate and timely information/reports to the MEA secretariat?
		Are the reports submitted to the MEA secretariat correct are properly reviewed?
		Whether information about an accord in report are properly supported by relevant and reliable data.
4.	To ascertain and report on reasons for not being the "signatory" for the certain MEAs.	What are MEAs which are relevant yet the country is not the "signatory" for the MEA.
		What are the reasons why the country is not a Party? Are the reasons valid?
		Are the reasons brought to the public attention?

- 16.1 Mining could simply be “the extraction of minerals from the earth”. The word “minerals” in this case would cover a wide variety of naturally occurring substances extracted for human use. Mining can be seen as a process that begins with the exploration and discovery of mineral deposits and continues through ore extraction and processing to the closure and remediation of worked-out sites. Environmental impacts occur at all of these stages.
- 16.2 Once a commercially viable mineral deposit has been identified, the next step is how to get it out of the ground. There are essentially two ways of doing this: by open pit mining and underground mining. An open pit is a surface excavation, usually conical in shape, dug for the purpose of extracting near-surface bodies of ore. The rock overlying the ore, called the overburden, is drilled and/or blasted and loaded into trucks that carry it away from the pit. The ore is then removed for initial processing. Most mines today are surface excavations. Underground mining, which takes place when minerals lie deep beneath the surface, is only economical for high-grade ore. To get to the ore, a vertical shaft, horizontal entrance or passage (adit), or inclined passageway (winze) must be drilled for ore and waste removal, as well as to provide ventilation. Placer mining is a widely used technique for extracting precious metals from sand or gravel deposits at or near the surface. The sand or gravel is mixed with water, which is then agitated so that the metals sink. The lighter unwanted material is then washed away. Panning for gold is a simple, small-scale example of placer mining.
- 16.3 The mining sector is likely to contribute to the development of the economy of any country through taxes from large-scale mining companies, and contribute to social-economic infrastructural development within the area where the mine is located. In developing countries, mining is a key sector and continues to grow. Legislation for mining may require an environmental impact assessment to be carried out before a mine is developed, and that a mine be developed and operated in an environmentally sound manner with the least impact on the environment. SAIs can undertake audits to check that the mining industry is complying with requirements of this kind. A SAI can therefore play a major role in auditing a government’s commitment to protecting the environment from the negative impacts of mining.
- 16.4 Despite the economic importance of the mining industry, there are serious environmental effects associated with it. The effects start at the exploration stage, extend through the extraction and processing of minerals, and continue after the mine has closed. The type and extent of the effects can vary from one stage to another. Mining is inherently a destructive activity involving the taking of a non-renewable resource. Some environmental damage is inevitable in any mine – the goal should be to minimize the extent of the effects. Mining effects can be sub-divided for convenience into four categories: the effects of the mine itself, the disposal of mine wastes, the transport of the mineral, and the processing of the ore, which often involves or produces dangerous materials. These activities may take place at the same site, in which case the effects are combined, or they may be separated by

considerable distances.

- 16.5 In mining activities, there are six main areas of focus in conducting environmental audit. The six areas are land and water use; waste management; chemicals and pollutants; tailings disposal; human health risks; and potential environmental risks and the plans to mitigate these risks. It is important to note that adequacy of environmental and social safeguards have to be ensured at all stages of a mining operation, ranging from exploration, construction, operation, to the closure of the mine operation. For governments, regulatory tools have to be sharpened considerably, with more emphasis on the planning phase (use of Environmental Impact Assessment, occasionally Life Cycle Assessment, sitting restrictions), the design phase (design standards, safe location) and operational phase (pollution standards, waste disposal, emergency response procedures, monitoring).

In conducting an audit of an environmental problem, four basic steps are essential. The four steps are:

Step 1: Identification of the environmental threats of mining in your country

Step 2: Identification of the government's responses to these threats

Step 3: Choice of audit topics and priorities

Step 4: Deciding on audit approaches (scoping the audit).

- 16.6 Mining in Bhutan started in the early 1970s and it was mostly carried out by the government enterprises. Gradually, with the policy of privatization, mining sector operations were privatized over the years. Mining activities are now mostly carried out by private agencies, except for a few captive mines that are operated by government owned/controlled enterprises such as Penden Cement Authority Limited (PCAL), Dungsam Cement Corporation Limited (DCCL) and NRDCL. Currently, there are more than 33 mines and 48 quarries operated in the country. Bhutan is endowed with rich mineral resources such as dolomite, limestone, gypsum, slate, and coal. It also has small deposits of marble, quartzite, granite, talc, iron ore, and pink shale. The country has further potential of discovery of many more minerals as only about 33% of the country has been geologically mapped. Minerals being non-renewable and limited in nature, it is of paramount significance that it should be extracted and utilized considering the government's development policy of intergenerational equity which is also enshrined in the Constitution of the Kingdom of Bhutan.
- 16.7 A checklist consisting of audit objectives and basic audit queries for the audit of Mining include but not limited to the ones tabulated below. The key queries may be applied and tailored to meet the needs of the audit depending on the particular audit's focus and scope.

Sl. No.	Objectives	Audit Checklists
1	<p>To identify environmental threats related to Mining activities.</p> <p>E.g. loss of habitat, deforestation, reduction of biodiversity, depletion of natural resources, air pollution, water pollution, mines and mineral wastes, tailings, health problems, displacement of people, loss of livelihood and cultural heritage or religious sites, water scarcity, erosion and sedimentation of lakes and streams, seepage of toxic contaminants, loss of agricultural land and forestry resources, etc.</p>	<p>What kind of environmental and social problems arise? Or</p> <p>What are general environmental impacts, impact on ecology and biodiversity, effects on natural resources and social concerns?</p> <hr/> <p>What are the short and long-term effects on the environment, economy and society?</p>
2.	<p>To assess government's responses to environmental issues and threats</p>	<p>Does the government have a resource strategy that sets out its vision of how mineral (or other extractive) resources should be used?</p> <p>Does the government have an overall strategy or policy for the mining sector or extractive sector or the natural resources sector that is focused on sustainable development? Is this strategy coherent with or part of the government's longer-term development strategy?</p> <p>Does the strategy acknowledge and address the impact on the government's commitments to climate change and MEAs?</p> <hr/> <p>Does the government have a well-informed understanding of the country's mineral resources? Does it have a mining cadaster information or geospatial information including information on areas that cannot be licensed for mining, such as protected areas?</p> <hr/> <p>Is participatory &amp; integrating land use planning approaches used to identify appropriate areas for mining?</p> <hr/> <p>What is government doing about environmental threats of mining activities?</p> <p>Are there obligations that will influence national policies?</p> <hr/> <p>Does the government has legal governance (legislation like Acts, regulations, permits, bylaws, and ordinances) in place to address environmental problems and activities?</p> <hr/> <p>Are the regulations efficiently enforced?</p>

		Are these government's actions adequate to address environmental problems?
		Are there standards established and enforced through monitoring operations, and levying penalties on operators that do not observe them?
		Is there a legal provision for education and training to mining staff?
		Is there a legal provision for Environmental Assessment (EA)? Are EAs observed at two levels: the Strategic Environmental Impact Assessment (SEA) and the Environmental Impact Assessment (EIA)? Is it followed?
3.	To assess compliances with laws and regulations by mining entities and evaluate adequacy of procedures, processes and practices to minimize environmental harms.	What are the legislations applicable to the particular mining activity?
		Are these regulations adhered and followed by mining entities?
		Are other requirements (e.g. corporate social responsibility) met by the mining entities?
		Are there stringent safety procedures? Are these procedures adopted by mining entities?
		Is there good disposal procedure and practice for mining waste? Is there improved waste management and implementation of cleaner Technology?
		Are there appropriate procedures for hazardous chemicals handling, storage and disposal? Are these procedures followed?
		Is there efficient administrative management and efficient technology and techniques to minimize environmental harms by mining activities?
		Is there communities' and civil society participation in improving the governance of the mining sector and strengthening enforcement? Are the communities' access to information, public participation, access to justice & access to remedy ensured? Does the government have formal processes for public participation at appropriate times through the mining cycle?
		Is the mining policy and legal framework updated to bring it in line with new thinking around sustainable development?
		Are the mining policies and laws coherent with other national laws that are relevant to the sector particularly with relevant constitutional provisions and legislations on environmental protection?

		Does the government's policies, laws, processes and practices meet international standards and good practices?
		Do the authorities charged with supervision have coordinated approach to regulating and monitoring the mining operations?
		Do the authorities and the company have a process for managing significant expansions or other changes in operations with adverse impacts? Is there a process for informing and involving stakeholders? If the changes are significant enough, do they trigger a new EIA and other requirements?
		Do the relevant authorities have an approach to monitoring the cumulative impacts of multiple mining operations?
		Do the mining or environmental authorities and mine operators have emergency plans in place? Whether emergency preparedness plans to deal with a range of accidents are tested and adopted to each phase of mining?
4.	To assess effectiveness of mitigation measures of each impact.  E.g. Mitigation measures for control of erosion and run-off from the mine lease area and open pit, especially if there is a river or agricultural land adjoining the mines.  E.g. Reclamation of vegetation removal and diversion of water courses.	Are the mitigation measures to be taken against each impact established with timeline for completion, the responsible departments for implementation, post monitoring provisions and reporting to the concerned regulatory authority?
		Is there Environmental Management Plan (EMP)? Does it prescribes adequate mitigation measures?
		Is there a mine closure plan including year-wise backfilling programme and final land Use?
		Does the EMP discuss the financial requirements for the detailed activities proposed to achieve final mine closure?
		Are the mitigation measures effectively implemented? Are there proper systems and procedures for implementation?
		Are the implementation of mitigation measures properly monitored?
		Does the country's mining policy and legal framework cover closure and post-closure? Is there mine reclamation policies, regulations and agreements?
		Are these policies and regulations followed?
		Does the mine closure process cover all closure activities such as recon touring of pit walls and waste dumps, covering of reactive tailing dumps, decommissioning of roads, dismantling of

		<p>permanent structure, Re-seeding/planting of disturbed areas, treatment for water quality, and other mine reclamation activities?</p>
		<p>Is there legal provision for Mine closure to enable the regulating authority to control and prevent operating mines from becoming abandoned mines by setting up funds for rehabilitation?</p>
		<p>Are there adequate funds for the rehabilitation of abandoned mine sites?</p>
		<p>Who provides rehabilitation funds? What mechanisms exist in various jurisdictions to raise these funds, and who is ultimately responsible for the rehabilitation work and the long-term care of the sites?</p> <p>What are the arrangements to provide governments with financial security if a mining company was unable to cover the costs of rehabilitation or declared bankrupt?</p>
		<p>Do the mining contract/license impose closure requirements? Do the contracts impose legal obligations (in addition to financial obligations) on companies beyond the lifetime of the project into final relinquishment at post-closure?</p>
		<p>Do the authorities require environmental and socio-economic monitoring for closure and post-closure? Whether closure plan include a coordinated monitoring programme that specifically covers closure and post-closure. Whether data on baseline conditions before mining are gathered from EIA which help in determining the degree to which restoration activities have brought the site back to baseline conditions and/or determining the differences between baseline conditions and the agreed post-mining condition. Do the authorities involve communities and other stakeholders in post-closure monitoring? Are there mechanisms for stakeholders to hold the authorities or the mining company accountable for a failure to comply with agreed closure plans?</p>

# Appendices



**Appendix I: Essential elements in planning of performance audit from an environmental perspective**

Planning Activities	Performance Audit	EXAMPLE										
<b>Selection of Audit Topics</b>	The environmental audit topic selection criteria includes: Strategic planning, risk or problem assessment and significance (financial, social and/or political significance). The topic selection is done in line with the Selection Criteria and Audit Topic Selection Matrix of PAG	<b>Provision of drinking water in Thimphu Thromde.</b> (This topic was selected based on its importance, sensitivity, media coverage, possible impact etc)										
<b>Gathering Background information</b>	The background information is required to help the auditors understand the legal, regulatory and operational aspects of the audited entity or its programme. It includes obtaining all information relating to the entity and on areas that includes environmental issues.	<ul style="list-style-type: none"> <li>• Legal framework on drinking water supply</li> <li>• Authorities and functions of the National Environment Commission, Ministry of Works and Human Resources, Ministry of Health, Thimphu Thromde.</li> </ul>										
<b>Stakeholder Mapping</b>	Refers to identifying the stakeholders and segregating them in accordance to their involvement and importance to the audit and its results. Done as per Stakeholder Mapping Table of PAG	<ul style="list-style-type: none"> <li>• Thimphu Thromde (Implementation)</li> <li>• NEC (Regulatory)</li> <li>• RCDC, MoH (Regulatory)</li> <li>• Parliament (Decision making and legislation)</li> <li>• Thimphu Thromde residents Consumers)</li> </ul>										
<b>RACI Analysis</b>	RACI determines the involvement of the stakeholder for the activity. Stakeholders can be either Responsible, Accountable, Consulted and Informed stakeholders. Done as per RACI Analysis Table of PAG	<p><b>Activity:</b> Maintenance of the water supply management system</p> <p><b>Agencies:</b></p> <table border="0" data-bbox="890 1167 1342 1373"> <tr> <td>Thimphu Thromde</td> <td><b>RACI</b> (R &amp; A)</td> </tr> <tr> <td>NEC</td> <td>(C &amp; I)</td> </tr> <tr> <td>RCDC, MoH</td> <td>(I)</td> </tr> <tr> <td>Parliament</td> <td>(I)</td> </tr> <tr> <td>Thimphu Thromde residents</td> <td>(C &amp; I)</td> </tr> </table>	Thimphu Thromde	<b>RACI</b> (R & A)	NEC	(C & I)	RCDC, MoH	(I)	Parliament	(I)	Thimphu Thromde residents	(C & I)
Thimphu Thromde	<b>RACI</b> (R & A)											
NEC	(C & I)											
RCDC, MoH	(I)											
Parliament	(I)											
Thimphu Thromde residents	(C & I)											
<b>Audit Approaches</b>	Result, problem or system-oriented approach, or a combination thereof to facilitate the soundness of audit design.	System oriented and Result oriented audit approaches will be applied for the audit on provision of drinking water in Thimphu Thromde. Through these approaches the audit will focus mainly on the institutional framework, review of documentations and whether outcome or output have been achieved as intended by the Thromde.										
<b>Determining Key Lines of Enquiry</b>	<p>i. Whether indicators of environmental-related performance that are adequate to fairly reflect the performance of the audited entity.</p> <p>ii. whether environmental programmes are conducted in an economical, efficient, and effective manner.</p>	<ul style="list-style-type: none"> <li>• Provision of clean and safe drinking water in Thimphu Thromde</li> <li>• Legal Provisions and legislation</li> <li>• Management of water sources and supply systems etc.</li> </ul>										

**Appendix I: Essential elements in planning of performance audit from an environmental perspective**

<p><b>Risk Assessment</b></p>	<p>Aims to ensure that the audit covers aspects related to most significant environmental risks (environmental and/or health damage accompanied by potential economic, social and environmental consequences) and therefore maximising added value. Should be carried out in line with PAG's Risk Assessment tool.</p>	<p><b>Risk:</b> improper treatment of drinking water.  <b>Likelihood:</b> High  <b>Consequence:</b> Very High  <b>Overall Risk:</b> High</p>
<p><b>Setting Audit Objectives and Scope</b></p>	<p>Audit objectives will provide the auditor information on the expected outcome of conducting the audit and the audit scope defines the audit boundary. The audit objective can then be broken down into sub-objective and audit researchable questions. Scope should include the jurisdiction of the audit and period to be covered in the audit.</p>	<p><b>Objective:</b> To ascertain the efficiency and effectiveness in provision of safe, adequate, reliable and equitable drinking water to the residents of Thimphu Thromde.   <b>Scope:</b> Provision of safe drinking water by Thimphu Thromde for the residents for the period 2010 to 2016.</p>
<p><b>Audit Design Matrix</b></p>	<p><b>Audit Design Matrix includes;</b>  <b>Researchable questions:</b> Audit questions are derived from the audit objectives to enable the auditors in making the audit more specific.  <b>Determining Audit Criteria:</b> benchmark against which the existing situation is compared.  <b>Information required and sources:</b> Identifies what information can help the auditor to answer the audit question and where they can be obtained from.  <b>Audit Methodologies:</b> Refers to the ways and means of collecting and analyzing data and information to answer each of the researchable audit questions.  <b>Limitations:</b> Provides information on what could hinder the auditors in obtaining substantial information in answering the audit question.  <b>Expected Audit Findings:</b> Refers to the conclusion that the auditor expects to reach in answering the audit question.</p>	<p><b>Audit objective:</b> To ascertain the efficiency and effectiveness in provision of safe, adequate, reliable and equitable drinking water to the residents of Thimphu Thromde.  <b>Audit question:</b> Is the water supply managed in sustainable and productive way?  <b>Researchable question:</b> Is there well distributed and adequate water supply to the residents of Thimphu Thromde?  <b>Audit Criteria:</b> Drinking water supplied by Thromde should be sufficient and equitable (Source: Water Act of Bhutan, 2011)  <b>Information required and Sources:</b> Water supply quantity and timing to the residents; (Source: primary survey of the residents)  <b>Audit Methodologies:</b> Obtain water resources inventory, National Statistical Report and mapping report on population and water quantity for at least last 5 years; etc.  <b>Limitations:</b> Information on water sources may not be adequately maintained;  <b>Expected Audit Findings:</b> Water supply is sufficient and equitable or not.</p>
<p><b>Detailed Audit Programming</b></p>	<p>The detailed audit programme includes: Audit Design Matrix, job distribution, resource allocation, determining audit methodology and scheduling of the audit</p>	<p><b>Job distribution</b>  <b>Job:</b> Researchable question 1  <b>Allocated to:</b> Mr. Chime Dorji  <b>Time allocated:</b> 5 working days.</p>

**Audit Objective:**

To ascertain whether the FMUs areas overlap community forest areas of Bhutan .

**Background:**

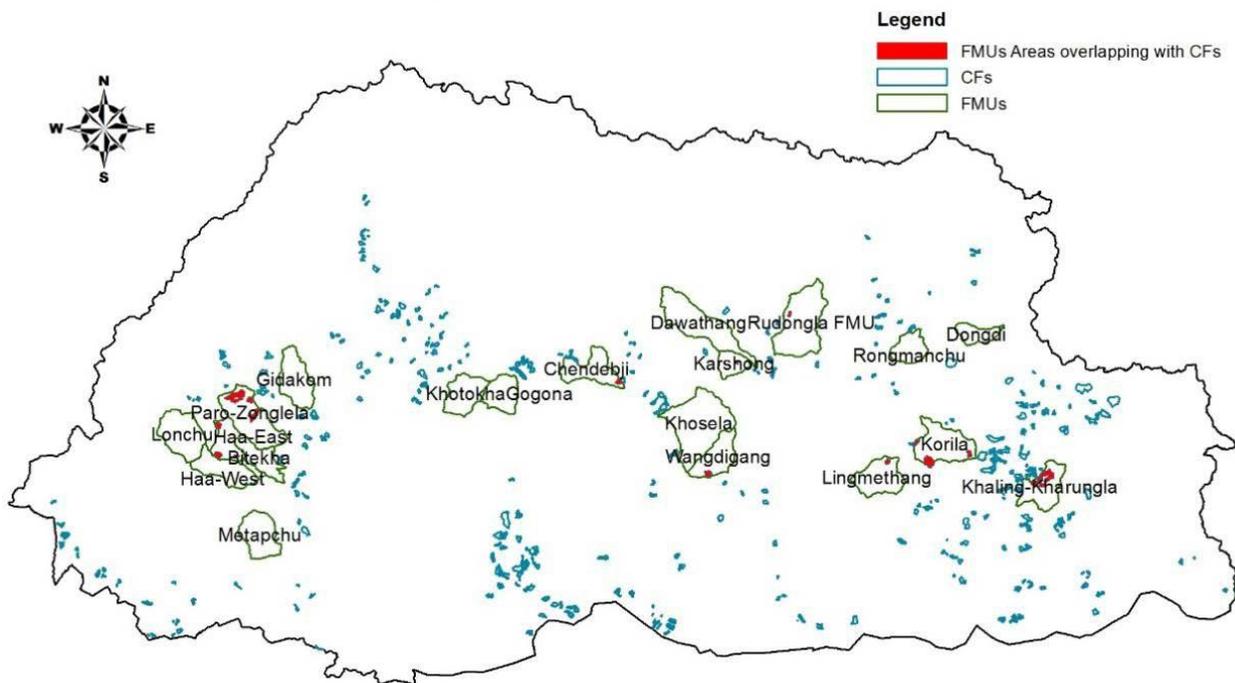
The Department of Forests & Park Services of the Ministry of Agriculture and Forests designates certain forested area as Forest Management Unit (FMU) and prepares Forest Management Plans for sustainable harvest of timber in FMUs. The harvesting activities are carried out by the Natural Resources Development Corporation Limited (NRDCL).

FMUs are forests areas where commercial logging take place. Whereas, the community forests are forest areas managed by local community for generating income from timber and non-timber forest products as forms of goods while in other hand regulating ecosystem, downstream settlements benefits from watershed conservation, carbon sequestration and aesthetic values as in forms of services.

FMUs and community forests are two different forest areas with different objectives, functions and require different forest management prescriptions to ensure sustainable use of forest resources. The intersection or overlapping of FMUs with community forests may give rise to conflicting interests and management difficulties

**Audit Procedure and Analysis:**

In order to check whether the FMUs areas were overlapping or intersecting with community forest areas, FMUs map was overlaid to the community forests map using GIS software (ESRI ArcMap), and the auditors noted intersection of the two areas. The detailed overlapping facts and overlapping Map, as illustrated below, were generated by use of the clip analysis:



The details of facts presented in the above map are tabulated below:

Sl. No	FMU	Status	Name of Community Forests (Intersecting with FMUs)	Intersection (in acres)
1	Chendebji	Operational	Tangsibjee CF	297.30
2	Karshong	Operational	Samdrupcholing CF	114.36
3	Paro-Zonglela	Operational	Khangkhu Pendeling, Jariphensum, Druk Tsenden, Ngoba Phensum, and Namjo	2,963.28
4	Korila	Operational	Orphung, Yakpogang & Wamakhar	1,593.77

**Appendix II: Case study on application of Geospatial Technology in Environmental Auditing**

5	Haa-East	Operational	Jabalingshi, Shari Samar, and Tshapey Isu	867.48
6	Wangdigang	Operational	Dangkhar	385.49
7	Lingmethang	Operational	Masangdaza	223.94
8	Khaling-Kharungla	Operational	Yoezer Choeling, Namseyling, and Jonsham Lomdoksa	1,965.13
9	Bitekha	Operational	Drukthunphen Zhi	14.74
10	Rongmanchu	Operational	Zhasela	5.56
11	Rudongla FMU	Planning	Shambayung	121.00
<b>Total areas of intersection (acres)</b>				<b>8,552.06</b>

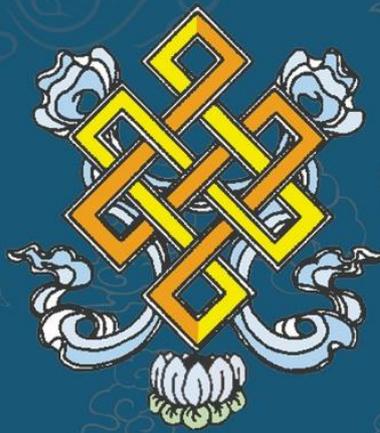
Accordingly, the RAA reported that there exist overlapping of FMUs and community forest and a total overlapping or intersecting areas accounts to 8,552.06 acres.

### **Drafting the second edition of the Guideline**

One of the requirements of the Bhutan Trust Fund for Environmental Conservation (BT FEC) funded project “Institutional Development Initiatives of the RAA – Strengthening Environmental Auditing towards Protection & Conservation of Environment” was to revise the existing Environmental Audit Guidelines 2013. The in-house expert team was formed comprising experienced environmental auditors and the officers with educational qualifications in environmental science. The RAA prepared the Work Plan for revision of the guidelines. In accordance with Work Plan, the expert team reviewed the existing guidelines during a week-long workshop conducted in Tsirang from 25.03.2019 to 29.03.2019. During the workshop, the review team identified and deliberated on identified necessary changes in the existing guidelines. Based on such deliberations, changes (add, delete, or rephrase) were proposed and came up with first draft of the proposed changes. After the workshop, the review team was given a month’s time to further refine and improve upon the first draft.

Thereafter, second workshop on finalization of the revised guidelines was held in Phuntsholing from 13.05.2019 to 18.05.2019. During the workshop, the review team extensively deliberated on contents of the first draft and came up with unanimously endorsed second edition or revised version. The revised document was presented to the RAA management comprising Joint Auditor General and Deputy Auditor Generals on 21.05.2019 for their feedbacks and endorsement. The feedbacks were incorporated and the document was endorsed.

The drafting of the second edition document was undertaken under the directives and guidance of Deputy Auditor General, Department of Follow-up, Regions and Human Resource Management (DFRHRM), and the expert review team was led by the Assistant Auditor General of the Thematic Audit Division (TAD).



REPORTING ON ECONOMY, EFFICIENCY & EFFECTIVENESS IN THE USE OF PUBLIC RESOURCE