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Bhutan
Country Environmental Safeguard Review

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ACRONYMS AND ABBREVIATIONS

BAP	Biodiversity Action Plan
BIBIS	Bhutan Integrated Biodiversity Information System
CA	Competent authority
CBD	Convention on Biological Diversity
CSEMP	Contractor's Site Environmental Management Plan
DC	Development Consent
DANIDA	Danish International Development Assistance
DEC	*Dzongkhag* (District) Environmental Committee
DYT	*Dzongkhag Yarge Tshogdu* (District Development Committee)
EA	Environmental assessment
EAA	Environmental Assessment Act
EC	Environmental Clearance
EFRC-SP	Environmentally Friendly Road Construction-Support Program
EMP	Environmental Management Plan
EU	European Union
FAO	Food and Agriculture Organization
FNCA	Forest and Nature Conservation Act
FRDD	Forest Resources Development Division
GEF	Global Environmental Facility
GYT	*Geog Yarge Tshogchung* (Block Development Committee)
IBRD	International Bank for Reconstruction and Development
ICDP	Integrated Conservation and Development Project
IFC	International Finance Corporation
IPM	Integrated pest management
IUCN	International Union for the Conservation of Nature
IVM	Integrated vector management
IFC	International Finance Corporation
NCD	Nature Conservation Division
NEC	National Environmental Commission
NECS	National Environmental Commission Secretariat
NEPA	National Environmental Policy Act
NES	National Environment Strategy
M&E	Monitoring and evaluation
MW	Megawatt
NPPC	National Plant Protection Center
OP	Operational Policy
PPAH	Pollution Prevention and Abatement Handbook
QCRS	Quality Control and Regulatory Services
RAP I	Rural Access Project
RAP II	Second Rural Access Project
RECOP	Regulation for the Environmental Clearance of Projects
RGOB	Royal Government of Bhutan
SNV	Netherlands Development Organization
UNESCO	United Nations Educational, Scientific, and Cultural Organization
WHO	World Health Organization
WWF	World Wildlife Fund

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Bhutan: Country Environmental Safeguard Review

EXECUTIVE SUMMARY

1. Bhutan, being a small country with a difficult terrain and widely dispersed population, has made rapid socioeconomic progress in recent years. The growth has been sustained principally by hydropower development; export of surplus power to India; and the improved infrastructure in roads and electricity and telecommunication facilities. A sensible macroeconomic policy has ensured that this growth takes place with care and effort to preserve its culture and environment. However, there is a push to expand economic activity, urbanization and decentralization, privatization, and direct foreign investment in order to further accelerate and sustain progress in the coming years. This poses several development challenges identified by the Royal Government of Bhutan (RGOB); among the priority challenges are the elimination of poverty, generation of employment, improvement of access to and quality of basic social services, development of the private sector, transition to a institutional democracy, and better management of the environment.

2. Central to promotion of sustainable economic growth and generation of sustainable employment opportunities and livelihoods for the poor will be the improved management of the Bhutan's natural resources. In its increased reliance on hydropower for generating additional revenues to finance human development, Bhutan would also like to minimize loss to biodiversity and other natural resources effectively. The country's legal and regulatory system for environmental safeguards requires updating to keep pace with the anticipated expansion of economic activity and its continued commitment to decentralize decisionmaking to the district level. As part of the process to improve environmental management, Bhutan has recently approved a National Environmental Policy Act (NEPA) that is designed to clarify and enhance the implementation of environmental safeguards at the national and district levels.

3. When addressing environmental concerns in donor-funded operations, the RGOB strongly believes in the importance of a timely harmonized approach among its key donors. Such an approach can greatly facilitate the strengthening of implementation effectiveness of the country's own policies, help scale up development impact, increase country ownership, help build in-country institutions and their capacity to address environmental issues, and enhance the cost effectiveness of its development programs. This rationale fits very well with commitment made by the development community at the Paris Declaration on Aid Effectiveness to support the harmonization, strengthening, and use of developing country systems and procedures to the maximum extent possible.[1] Achieving such a harmonized approach would however require an assessment of Bhutan's safeguard systems (policies, laws, and regulations) and the institutional arrangements and effectiveness of their implementation.

[1] Access full text of the Paris Declaration of March 2005 at www.oecd.or.

4. As an initial step to help Bhutan strengthen and harmonize its environmental safeguard system, the RGOB and the World Bank selected the Second Rural Access Project (RAP II) for piloting the use of country systems to address environmental issues. This pilot effort was governed by the Bank's Operational Policy (OP) 4.00, *Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank Supported Projects.*[2] The RAP II has been approved by the World Bank under the use of country systems procedures. As a consequence of this decision, the design and construction of road segments under RAP II would use Bhutan's Environmental Assessment (EA) policies and regulations to identify and address environmental issues. While this was a good beginning, the RGOB felt that a project-by-project approach, such as RAP II, would provide only limited benefits and that efforts were needed to expand the pilot results in a systemic and holistic manner to other development sectors in Bhutan. Such a wider effort can help facilitate the improvement and updating of Bhutan's overall environmental policies and strengthen its capacity to effectively implement them.

A. Scope and Objectives of the Review

5. The review is intended to support the RGOB effort to improve and harmonize the use of its environmental safeguard policies for donor-supported investment. It is also intended for use of various government agencies, donors, and financing agencies, nongovernmental agencies, and other stakeholders concerned with implementing environmental safeguards in Bhutan. Although this review was developed within the framework of the World Bank policies on the use of country systems, the methodology and its application is not limited to the World Bank. The methodology can be easily applied and used by other donors that have embraced the use of a country systems approach or otherwise subscribed to it, in conjunction with their own safeguard systems. The review provides a basis for discussion among donors for reaching a common approach for advancing the use of country systems in Bhutan. The review is particularly relevant to the Bank's pilot program for assessing the use of country systems for addressing environmental and social issues in Bank-funded operations. The review can also serve as useful input toward defining future donor support and priorities in the environmental area and in particular as the Bank expands the country systems pilot to the country level. Bhutan, though small in size and with a limited number of foreign donors and a small public administration, has good environmental and natural resources laws and a national commitment to the environment, making it an excellent candidate for piloting the use of country systems at the country level.

6. The Country Environmental Safeguard Review provides an overall assessment of Bhutan's environmental safeguard system. The study is not intended to be comprehensive or prescriptive. It is meant to provide a broad overview of some key legal, policy, and

[2] Country systems is defined as the country's legal and institutional framework, consisting of its national, subnational, or sectoral implementing institutions and relevant laws, regulations, rules and procedures that are applicable to the proposed pilot project. OP/BP 4.0 is accessible at www.worldbank.org (Operations Manual).

institutional challenges and highlight some options for possible future action. The following points identify the broad focus of the review.

- Identify critical gaps in Bhutan's policies and regulations for environmental safeguard management and specific measures to reach equivalence with international best practice *(equivalence analysis)*;
- Evaluate Bhutan's capacity and commitment to implement its environmental policies and regulations and assess specific actions that are necessary to strengthen institutional capacity and improve outcomes *(acceptability assessment)*; and
- Prioritize options for enhancement of Bhutan's environmental safeguard systems, particularly critical actions needed to keep pace with economic development and RGOB commitment to decentralize decisionmaking to the district level.

7. The following methodology was used to complete the review:

- An analysis of Bhutan's laws, regulations, and environmental codes of practice for environmental safeguard policies related to environmental assessment, forests, natural habitats, pest management, and dam safety as defined by the OP 4.00;
- Interviews with RGOB officials, private consultants, and members of civil society who are responsible or otherwise involved in the implementation of Bhutan's legal and administrative framework relating to the environment;
- Consultation with other key donors engaged in projects to support the development of Bhutan's legal system and its institutional capacity;
- Review of previous Bank-funded operations from the perspective of Bhutan's implementation of its own environmental safeguard laws and regulations;
- Review of environmental assessments underway for a few projects, financed independently of the World Bank or other donors, that apply environmental safeguard conditions;
- Site visit to a rural roads segment under construction that is not supported by the Bank or other donors; and
- Stakeholder workshop to review and discuss findings and recommendations of the Bank-prepared safeguard diagnostic report for the application of country systems for addressing environmental impacts of the RAP II project.

B. Key Findings of the Review – Equivalence Assessment

8. The World Bank considers a country's policy to be equivalent to the World Bank's if the country system is designed to achieve the objectives and adhere to the

applicable operational principles laid out in Table A1 of OP 4.00. The intent is to build consensus around the objectives of the Bank's policies and, consistent with them, help countries strengthen their own systems. The results of a comparative analysis of Bhutan's laws and regulations corresponding with the Bank's environmental safeguard policies are discussed in greater detail in Chapter II and Annex A of this review. In particular, the analysis shows that Bhutan's policies, legislation, and regulations pertaining to the environmental assessment process and documentation are relatively recent and reflect international best practice to a significant extent. In terms of the policies on natural habitats, pest management, forests and dam safety, there are broad similarities with the required elements of the OP 4.00.

9. However, the analysis also shows some differences between Bhutan's policies and the required elements of OP 4.00., If Bhutan's policies are to be made more effective and be applied more widely to Bank- and donor-financed investments, it will be necessary to bridge the gaps between these differences, in particular:

- ***Environmental assessment***. The key difference is an absence of required reference in Bhutan's environmental assessment policies to (a) trans-boundary and global concerns; (b) international environmental commitments as reflected in treaties and conventions it has ratified; and (c) international standards of pollution prevention and abatement.

- ***Natural habitats.*** The only major shortcoming of Bhutan's policy was the lack of clear preference for location of projects on previously converted lands.

- ***Forests.*** Bhutan's Forest and Nature Conservation Act of 1995 and Forest and Nature Conservation Rules of 2000 differ with the principles of OP 4.00 in (a) lack of regulations pertaining to plantation forests; and (b) lack of formal requirement for independent certification of industrial-scale commercial forestry (although forest management codes are applied in the country).

- ***Pest management.*** Bhutan's laws differ from OP 4.0 in (a) lack of any reference to international standards for procurement, labeling, storage, application, and disposal of pesticides; and (b) lack of provisions for enhancement of institutional capacity for promoting integrated pest management.

- ***Safety of dams.*** Bhutan has guidelines to promote dam safety, but no legislation to support the design, planning, construction, maintenance, and operation of large dams. In addition, the guidelines do not include specific requirements for use of experienced professionals to design and supervise the construction and operation of dams and specific provisions for planning, design, and operation of dams; and for the independent verification of design, construction, and operation of dams by independent experts.

10. This review recognizes that the differences between Bhutan's system and the corresponding Bank policies identified in the equivalence analysis could be readily addressed by revisions to the relevant Code of Environmental Practices or by the

introduction of additional codes of practices, which is within the administrative authority of the National Environmental Commission (NEC). Others could be bridged on a systemic basis through legal or regulatory measures and, in particular, through the development of new legislation for safety of dams, which will then make Bhutan's environmental safeguard policies fully equivalent with the corresponding Bank policies.

C. Key Findings of Review – Acceptability Assessment

11. The effectiveness of environmental safeguard policies lies in Bhutan's capacity and commitment to implement them. In general, Bhutan seems committed to the environment and to the implementation of its environmental policies, but the assessment of implementation effectiveness is somewhat constrained by the lack of comprehensive and time-series data on monitorable environmental indicators.

12. Some data is available on implementation of Bhutan's legal framework relating to environmental assessment. There is relatively current data on pesticide use in Bhutan and documentation relating to the use of integrated pest management. However, comprehensive reporting in terms of natural habitats and forests was most recently undertaken in 2000-2003. In terms of safety of dams, information is limited on Bhutan's capacity to manage large containment structures. Up to the present, all dams constructed in Bhutan have been run-of-river structures with very limited containment capacity and have been exclusively donor-funded and implemented.

13. Acceptability is considered to be achieved when the country's implementation practices, track record, and institutional capacity are adequate to effectively implement its own safeguard policies. Overall, the acceptability assessment demonstrates that the agencies responsible for implementing Bhutan's environmental policies, laws, regulations, and guidance have the capacity to fulfill their responsibilities. The National Environmental Commission, together with the NEC Secretariat (NECS), is reasonably well organized and has sufficient resources to carry out its role of reviewing environmental assessments and conducting overall compliance monitoring. The Department of Roads has the authority and resources to implement the national policy of Environmentally Friendly Road Construction on the scale required for donor and locally funded investments. Other agencies responsible for granting consent and monitoring the impact of development activities on natural habitats and forests, including the Departments of Forests and its Nature Conservation Division (NCD), under the Ministry of Agriculture also appear to have the requisite expertise and resources to accomplish their missions.

14. ***Environmental assessment.*** The RGOB, in particular the National Environmental Commission, has demonstrated substantial capacity to implement the objectives of its Environmental Assessment Act of 2000 and the 2002 Regulations for Environmental Clearance of Projects (RECOP). However, some weaknesses in the EA approval and clearance process are evident:

- The role of National Environmental Commission in implementing the Environmental Assessment Act, as mandated, seems to have not evolved as anticipated. Its efforts to decentralize environmental clearance to line ministries, departments, and, to some extent, the District Environmental Committees have not been fully realized. In addition, the systematic evaluation of outcomes of the EA process is difficult due to the lack of maintenance of a user-friendly database with respect to implementation and compliance of environmental management plans (EMP).
- While there is interagency coordination at the executive level across sectors through the National Environmental Commission, there seems to be no effective mechanism at the working level for coordination between the National Environmental Commission and competent authorities and *Dzongkhag* (District) Environmental Committees (DEC) for follow-up action, compliance monitoring, and information sharing. This seems to be a constraint to effective decentralization of environmental clearance.
- Decentralization is constrained by the consistent lack of human resources to implement many of Bhutan's policies, laws, and procedures. The issue is endemic to Bhutan due to the small population, and its regionally dispersed and isolated population distribution.
- There seems to be excessive focus on individual training and human resources development at the expense of broader institutional strengthening and systems enhancement measures.
- While efforts are made to consult with project-affected people, there is an absence of adequate broad-based stakeholder consultation during planning of investment operations. Stakeholder consultations that do take place are not well documented with respect to public disclosure and outcomes.

15. ***Natural habitats.*** Bhutan is committed to a highly ambitious policy to protect its unique biological heritage through a system of protected areas and biological corridors that occupy more than one-fourth of the country's total land area and represents all major ecosystems. Conventional threats to protected areas, such as over-grazing, poaching, illegal harvesting of forest products and wildlife, and forest fires, seem manageable under current conditions and within the capacity constraints of the Nature Conservation Division and its limited protected area staff. However, the expansion of the road infrastructure linking rural and new urban areas will facilitate access to previously remote protected areas and impose additional responsibilities on the existing institutional structure. The RGOB plans to commercialize its natural endowment for both conservation and economic development purposes—through the expansion of ecotourism, bio-prospecting, and export of non-timber forest products—would likely further strain the current system's capacity and require the system to adapt to a new role. Bhutan's natural habitats and biological diversity shows signs of constrain:

- Institutional capacity for biodiversity conservation seems inadequate. Protected areas still lack adequately trained personnel; information on key aspects of

conservation, such as distribution of species, and demographic patterns in protected areas and corridors is limited; and conservation infrastructure remains rudimentary.

- At the institutional level, there exist conflicting policies promoting conservation and those promoting agriculture or forestry development and exploitation of natural resources for economic objectives. This is further compounded by limited coordination between government agencies and inadequate authority of agencies promoting conservation.
- Weak enforcement of existing legislation is partly due to lack of staff and absence of clear zoning and boundary demarcation of protected areas, including international boundaries.
- Lack of adequate communication is noticeable between stakeholders, in particular the various sectors involved in conservation.
- Although management plans and integrated conservation and development plans exist for many of the national parks, these remain unimplemented or are at a very early stage of implementation.

16. ***Forests.*** Bhutan has set by legislative fiat the ambitious goal of maintaining 60 percent of its land area under permanent forest cover and has prohibited the export of raw timber. Commercial harvesting of timber is limited to the Forest Development Corporation that operates under close supervision of the Department of Forestry, which has considerable expertise in sustainable forest management, with some gaps as documented by the World Bank and World Wildlife Fund (WWF) studies conducted in the context of Bank-funded forest sector projects. A comprehensive set of guidelines for preparation and implementation of forest management plans for sustainable management and production of forests exists, and these form the basis for logging in specifically defined forest management units. Bhutan has also made substantial recent progress in developing community forestry in a manner that is designed to meet the needs of its rural population in an ecologically and socially sustainable manner. Some key weaknesses in achieving sustainable forest management have been identified:

- Lack of adequate manpower capacity within the Department of Forestry limits its ability to prepare the requisite forest management plans for its total operable forest area. This is further constrained by the lack of good topographic maps.
- Monitoring and evaluation of forestry operations are mostly complaint-driven resulting in difficulty in mainstreaming it into the operations of the forestry sector.
- Lack of an independent certification system in respect to commercial harvesting of timber limits the objectivity of any assessment of the effectiveness of the implementation of sustainable forest management systems.
- Traditional ownership rights still remain inadequately protected in existing forest legislation.

- There is no systematic data on the extent and effectiveness of enforcement of the requirements of the Forest and Nature Conservation Act of 2000.

17. ***Safety of dams.*** Bhutan's hydropower potential is assessed to be 30,000 megawatts, of which 23,760 megawatts is considered technically and economically feasible. Bhutan has been exploiting its hydropower potential through run-of-river projects, largely with foreign donor support. However, this is expected to change as future investments in hydro-electric capacity might include the use of containment structures and reduced dependence on foreign technical assistance from India. Bhutan is also considering the privatization of its hydro-electric sector. In anticipation of these changes, the Department of Energy within the Ministry of Trade and Industry issued *Guidelines for the Safe Operation of Dams in Bhutan* with technical assistance from the Government of Norway. Although the guidelines do not have formal regulatory status, it is anticipated that they will be converted into regulations and in the meantime have been issued to all dam operators as formal guidance from the Department of Energy. In addition, as a result of experiencing several incidents of glacial lake outburst floods, which are expected to increase as a result of climate change affecting Bhutan's alpine regions, Bhutan has implemented a National Disaster Risk Framework as part of its National Adaptation Program of Action to Climate Change. These activities have provided Bhutan with a basic technical capacity in hydrogeology that will enhance its capacity to deal with the safety issues posed by large man-made dams. Administrative measures will be necessary to ensure that dam safety assessments are conducted with sufficient independent, technical expertise as is required by OP 4.00 Table A1, *Environmental and Social Safeguard Policies (Policy Objectives and Operational Principles)*. The review finds some shortcomings in the overall safety of dams:

- Bhutan's limited experience in implementing safety measures relating to large dams reflects the country's dependence on foreign technical assistance from India in design, construction, and maintenance of its existing limited-containment hydro-electric infrastructure.
- Bhutan lacks a defined system for an independent panel for review of planning, design, construction, and operation of dams in the country.
- The Department of Energy and the recently established Druk Green Power Corporation, Limited, lack the institutional capacity to implement dam safety guidelines and monitor its effectiveness.

18. ***Pest Management.*** In a highly centralized and generally effective manner, RGOB Ministry of Agriculture implements the country's policies on pest management and controls over pesticide selection and use. Pesticides banned in other countries for use in agricultural crops are not imported into Bhutan, as are products classified by the World Health Organization (WHO) as highly hazardous and those consistent with World Bank OP 4.00 Table A1 and OP 4.09, *Pest Management*. There is a strong field presence of agricultural extension officers for monitoring the distribution, disposal, recovery of excess pesticides, inventory of pesticide usage at the demand level, and avoidance of

surplus accumulation of pesticides. Some weaknesses have been identified relating to pest management:

- Protection of agricultural workers from the hazards of pesticide application is not uniformly observed in practice.
- There is an absence of implementing regulations on pest management although the country practices prudent pesticide management.
- Pesticide application is done by the end user, but there are no trained applicators in industrial applications, which can pose a serious problem if there is a need to use highly toxic chemicals to deal with an unforeseen endemic situation in the country.
- The legally responsible agency for procurement of pesticides under the Pesticide Act is the Pesticide Board, which has not been established. Instead, this function is being fulfilled without legal mandate by the Department of Research and Development of the Ministry of Agriculture.
- The Ministry of Health is considering the re-introduction (on a limited scale) of the use of DDT as a result of the recent increase in malaria in the southern parts of Bhutan. However, Bhutan lacks adequate controls over the use of DDT that is consistent with WHO guidance under the Stockholm Convention.

D. Recommendations for Priority Actions

Policies and laws

19. Bhutan's legal and regulatory system for environmental safeguards would benefit from review and updating in the near future to keep pace with an evolving national constitutional and political structure characterized by the democratization of political authority at the ministerial level and a continued commitment on the part of the country to decentralize decisionmaking to the ministerial and district (*dzongkhag*) levels. The NEPA provides the National Environmental Commission with clear authority to develop regulations on applicable emissions, effluent, and solid waste limitations for sectors under its jurisdiction based on the Environmental Assessment Act (EAA) and RECOP. To date, the National Environmental Commission relies on Guidelines for Application for Environmental Clearance and Codes of Environmental Practice for a limited number of industrial sectors. These Guidelines and Codes were developed with technical assistance from donors, primarily the Asian Development Bank, between 1999 and 2004. Although many reflect current international good practice, these Guidelines and Codes of Environmental Practice would benefit from consolidation and review with respect to their role in the environmental and developmental clearance process, as well as their legal status in permitting. The list of industries selected would require review in relation to the current and anticipated nature of the industry portfolio that is subject to review and clearance by the National Environmental Commission and other competent authorities. The content of the Guidelines and Codes would benefit from benchmarking against

current international best practices for developing countries, such as the recent IFC-issued Environmental, Health and Safety Guidelines with input from the World Bank and international stakeholders, and revising where appropriate.[3] In keeping with the NEPA improved emphasis on the right to environmental information and citizens' participation, Bhutan might require enactment of legislation to provide for the organization, independence, and authority of civil society to participate in the environmental assessment and management process on behalf of locally affected communities and the public at large.

20. Bhutan's legislative framework of particular safeguard policies, such as forests, pest management, and safety of dams, remains unfinished. The Department of Forestry has issued a comprehensive Forest Code for forest management units to be implemented by the Forest Development Corporation. However the Forest Code is not referenced in the Forest and Nature Conservation Act of 1995 or in the Forest and Nature Conservation Rules; therefore its legal enforceability is open to question. This deficiency could be bridged if the Forest and Nature Conservation Rules are amended to make reference to the Forest Code in a manner that allows the Code itself to be amended to account for improved management capacity on the ground.

21. Regulations for pest management do not exist; hence development of such regulations would be useful as authorized and envisaged under the Pesticide Act of 2000. These regulations should also require designation of the Department of Research and Development Services of the Department of Agriculture as the responsible authority for the procurement of pesticides rather than the Pesticides Board that was envisioned in the Pesticide Act. The regulations should also provide the Department of Research and Development Services with the authority to restrict the procurement and application of pesticides in a manner consistent with the WHO hazard classifications standards; to regulate the labeling, storage, application, and disposal of pesticides according to acceptable international standards; and to enhance Bhutan's institutional capacity to develop integrated pest management (IPM) as a pest management strategy of choice.

22. With respect to dam safety, it would be beneficial if the Department of Ministry of Trade and Industry and other relevant agencies finalize the Guidelines for Safe Operation of Dams in Bhutan and convert the *Guidelines for the Safe Operation of Dams in Bhutan* into an enforceable legislative framework, possibly as revised *Guidelines for Environmental Clearance and Code of Environmental Practice* for project implementation and monitoring that can be enforced through the permitting process. The Code or other regulatory vehicle would be complete if it incorporated additional measures for (a) planning, design, construction, and operation of dams; (b) constitution of independent panel of experts for independent verification of design, construction, and

[3] This would satisfy the requirement in OP 4.00 Table A1 that EA apply the standards included in the World Bank Group Pollution Prevention and Abatement Handbook (PPAH), which the Environmental, Health, and Safety Guidelines are designed to revise, or justify deviations when alternatives to measures set forth in the PPAH are selected.

operational procedure; and (c) using qualified, experienced, and competent professionals and firms in planning, design, construction, and operations of dams.

Capacity and Institutions

21. ***Environmental assessment.*** While Bhutan's capacity to implement its environmental assessment policies might seem sufficient, it would require substantial future improvement in order to meet the new challenges posed by the increasing development pressures as well as the proposed NEPA and RGOP-promoted decentralization approach. Of particular usefulness would be for the National Environmental Commission to undertake an implementation capacity assessment to assess the additional capacity and skills required to meet the new responsibilities placed by NEPA and strengthen the decentralization of environmental clearance responsibilities to the ministerial and district level. Among the enhanced NEPA rules that would require improved capacity and skills are judicial functions, compliance monitoring, record keeping, drafting of implementing regulations, and laboratory certification and oversight. The capacity assessment could also examine existing human resource limitations to decentralization of environmental clearance responsibilities and define the appropriate balance between centralization and decentralization of the EA processes.

23. Where decentralization of the EA process has already been initiated, the periodic review of the capacities of competent authorities to carry out their responsibilities for environmental assessment and the monitoring and regular adjustment of the list of delegated projects would be desirable. The performance of Development Environment Committees and particularly the roles and value added of environmental officers would also benefit from regular evaluation by the National Environmental Commission. In addition, the establishment of a working-level mechanism for coordination between National Environmental Commission and the competent authorities and District Environment Committees could ensure effective follow-up actions, compliance monitoring, and information sharing. Such an arrangement will greatly facilitate the decentralization of EA clearance and enable the National Environmental Commission to manage and provide oversight effectively to such a process. Capacity-building programs would be more useful if they are tailored to building overall institutional capacity of the competent authorities and District Environment Committees to mainstream effectively environmental externalities into their operational plans and programs.

24. The management of the environmental clearance process is constrained by the absence of a database for effective documentation, in particular, of the process of public disclosure and consultation on a project-by-project basis and for submission of aggregated data on compliance with legally mandated disclosure and consultation requirements to National Environmental Commission on an annual basis. The establishment of a user-friendly database for recording and compilation of environmental assessment data and monitoring would greatly facilitate the sharing and documentation of information in relation to the EA clearance, monitoring, and enforcement process.

25. While specific efforts have been made to consult with affected persons in the EA process, this could be strengthened by improving the public consultation process through outreach to the general public and civil society organizations, without limiting consultation to directly affected community groups alone. This could be further strengthened by an increased involvement of non governmental organizations in review of project environmental assessments.

26. ***Natural habitats.*** Since biodiversity is cross sectoral and managed by different institutions and organizations, the establishment of coordination arrangements would ensure an effective and integrated national system for biological conservation and sustainable use. Such a system could address both the institutional aspects and the integration of conservation activities with development aspects that would be both economically and environmentally sustainable. Consultative forums such as national workshops would be a useful first step to harmonize the roles and responsibilities of the different sectors involved with biodiversity conservation and management.

27. The development of management plans and staffing of 3 of Bhutan's remaining protected areas and conducting ecological surveys of connecting corridors are tasks that remain to be completed. While these are essential, the improvement of the capacity of the Nature Conservation Division (NCD) of the Department of Forestry for inventory, diversity analysis, and improved management of existing protected areas under its management would be also relevant. Management of protected areas could further benefit from a clear zoning and boundary demarcation of protected areas and the systematic use of monitoring framework developed by the Nature Conservation Division for the protected areas.

28. ***Forests***. The Department of Forestry has developed codes of practice for forestry operations that are consistent with Bank-recognized standards in the absence of independent certification in Bhutan. However, it is difficult to determine objectively whether the Department of Forestry's implementation of its codes is fully effective. It would be useful to establish an independent certification system to enable the objective determination of effectiveness of the application of sustainable commercial-scale forestry practices. Bhutan's ability to improve sustainable forestry operations within its total operable forest area is constrained by the lack of good topographic maps and inadequate human resource capacity within the Forest Resources Development Division (FRDD) of the Department of Forestry to prepare the requisite forest management plans for the remaining operable forest area. A clearly defined strategy to strengthen FRDD planning, monitoring, and enforcement capacity and upgrading to full division status with additional staffing, technical support, and specialized skills training should be a priority.

29. ***Pest management.*** Pest management has been reasonably effective in Bhutan, although additional controls over DDT for vector control is necessary. There are also specific opportunities for enhancement and mainstreaming of integrated pest management in Bhutan, particularly in the agricultural sector. Integrated pest management has been used on a pilot basis for both economic and ecological reasons. Improved training in integrated pest management for plant protection staff at the National

Plant Protection Center and the Regional Natural Resources Centers would enable better monitoring of pesticide application in the field and actively promote IPM methods of disease control. User-friendly instructions and recommendations in local languages on appropriate IPM practices would expand its use. In addition, cooperation with neighboring countries on the use and application of IPM approaches would facilitate its understanding and promotion in Bhutan.

30. ***Safety of dams.*** Future investments in hydro-power capacity in Bhutan are expected to extend to use of containment structures and depend less on foreign technical assistance from India. To this end, Bhutan has created the Druk Green Power Corporation, Limited, to implement dam safety measures and monitor its enforcement. In order to manage its dams effectively, the institutional capacity of the Department of Energy and Druk Green Power Corporation, Limited, as well as privatized companies and local contractors to oversee and implement dam safety measures, should be developed and strengthened to meet the new responsibilities of these two institutions.

31. ***Additional policies.*** Since this review covers only the 5 environmental safeguard policies, it would be useful to ensure in the longer term that social policies relating to involuntary resettlement and, to the extent applicable, the indigenous peoples policy are sound and effectively implemented. In addition, Bhutan lacks a legal framework for the protection of immovable physical cultural resources and has not engaged in relationships with international organizations such as UNESCO to safeguard its extraordinary rich physical cultural heritage. Since the social and cultural issues relating to Bank safeguards are subject to the use of country systems, a review of Bhutan's corresponding policies would greatly help toward a better understanding and recognition of Bhutan's policies and facilitate a transition to full country systems in the near future. The timing of this review would benefit if coordinated with implementation of Bhutan's recently enacted revision of its Land Act as well as the pending enactment of the draft legislation on immovable cultural property.

E. Short-Term Options for Addressing Environmental Safeguard Concerns

32. While efforts would be desirable in the longer term to bridge gaps in Bhutan's safeguard policies and regulations and improve its capacity to implement these policies to best international standards, it is possible to rely on the existing systems, with some additional oversight and gap filling measures, at least for the immediate future. Some of the country's environmental policies are sufficiently robust, and the evidence on the ground indicates that these are being implemented satisfactorily. Hence, these existing policies offer scope for identifying and addressing environmental issues in a manner that could largely satisfy World Bank and other donor environmental safeguard management requirements, if they are complemented by project-specific environmental management plans to fill gaps in legislation and capacity, and their implementation is ensured through good oversight and monitoring. Some guidance on possible opportunities for the application of Bhutan's existing environmental policies to address impacts of development projects, including additional oversight responsibilities through project-specific environmental management policies are provided in the following table.

Policies and objectives	*Equivalence with World Bank OP 4.0*	*Potential opportunities for application of existing policies and regulations of Bhutan (as is)*	*Additional project-specific EMP oversight requirements for application of Bhutan's policies and regulations*
Environmental assessment: Objective is to help ensure the environmental and social soundness and sustainability of investments. To support the integration of environmental and social aspects in projects into the decisionmaking process	RGOB EA policy largely equivalent to OP 4.00 except for absence of references to (a) transboundary and global concerns; (b) international environmental commitments; and (c) acceptable standards of pollution prevention and abatement	EA policies sufficiently robust for application to investments that (a) do not trigger transboundary and global considerations; (b) are outside the sphere of international commitments; and (c) where there are codes of environmental practice that correspond to acceptable international practices. These could potentially include investments in road construction; urban development; community-driven development; health and education; urban and rural water supply, and in particular if the potential impacts of these activities are small, localized and can be contained within its national boundaries. Dam, reservoir, and hydropower projects will be excluded due to their potential transboundary impacts, as well as industrial activities for which there are no acceptable codes of environmental practices.	(a) Determine adequacy of applicable legal framework; (b) Ensure screening covers projects outside the pre-determined listings; (c) EA process timing linked to technical and financial feasibility; (d) Adequacy of documentation of EA reviews, clearance, compliance monitoring, and enforcement of EMP conditions, consultation with stakeholders and public and disclosure of information of environmental actions and impacts; (e) Application of relevant codes of environmental practices, etc.; and (f) Institutional capacity enhancement measures and implementation.
Natural habitats: Objective is to promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions	RGOB Forest and Nature Conservation Act largely equivalent with the OP 4.00, with exception of lack of reference to preferential siting of projects on previously converted lands.	Bhutan's Forest and Nature Conservation Act could potentially be applied to biodiversity conservation projects and those projects that are located on previously converted lands.	(a) Review of effectiveness of coordination and consultation among key agencies; (b) Relevance and adequacy of ecological surveys and research to meet specific project needs; and (c) Staff capacity and skills and adequacy of management interventions.
Forests: Objective is to realize the potential of forests	RGOB Forest and Nature Conservation Act largely equivalent to OP 4.00 with	Bhutan's Forest and Nature Conservation Act can be reasonably applied to all forestry operations except	Oversight and assessment of capacity for planning, monitoring, and

Policies and objectives	*Equivalence with World Bank OP 4.0*	*Potential opportunities for application of existing policies and regulations of Bhutan (as is)*	*Additional project-specific EMP oversight requirements for application of Bhutan's policies and regulations*
to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests	exception of regulations pertaining to plantation forests and the formal requirement for independent certification of industrial scale commercial forestry.	those concerned with industrial-scale commercial forestry.	enforcement of forest management actions.
***Pest management*:** Objective is to minimize the environmental and health risks associated with pesticide use and promote and support safe, effective, and environmentally sound pest management.	RGOB Pesticide Act has some gaps with the OP 4.00 including the lack of reference to international standards for procurement, labeling, storage, application, and disposal of pesticides; and lack of reference to enhancement of institutional capacity for integrated pest management.	Pesticide Act can be reasonably applied to those projects that use pesticides of low toxicity and low risk based on WHO classification and do not require trained pesticide applicators.	(a) Assessment of effectiveness and application of integrated pest management training and promotion activities; (b) monitoring of pesticide application in field conditions; and (c) availability and use of information on integrated pest management at the farmer level.
Safety of dams: To assure quality and safety in the design and construction of new dams and rehabilitation of existing dams, and in carrying out activities that may be affected by an existing dams.	Legislation on safety of dams lacking in Bhutan.	Not currently applicable	

33. In the medium term, facilitating the upgrading of Bhutan's environmental policies and capacities will enable donors to begin to use Bhutan's systems in lieu of their often more cumbersome safeguard procedures in development assistance. This will be particularly relevant in light of a recent World Bank decision to extend the use of country systems pilot to the country level. In this case, all Bank operations would be eligible to use Bhutan's environmental policies and procedures to address environmental safeguard issues, particularly for those policies where equivalence has been established, and there is sufficient capacity to implement these policies within the relevant sector agencies.

F. Opportunities for the World Bank and Other Development Partners

34. As Bhutan moves toward expanding its economic activity, its environmental challenges will be substantial. While a large part of the economic expansion is likely to be supported by an increased reliance on hydropower for generating additional revenues to finance its human development, it could also open up investment opportunities in development sectors that are new to Bhutan. In this respect, there is opportunity for the World Bank and other development partners to assist Bhutan in the medium term, to move toward a wider application of its own environmental safeguard systems in donor-supported activities. Bhutan would need to develop the additional policies, skills, technical expertise, and tools to meet these new environmental challenges of future developments.

35. Two possible priorities for World Bank and other donor support are in the areas of environmental assessment and safety of dams. In terms of environmental assessment, Bhutan would require support for the following:

- Revising Environmental Assessment Act to align more closely with the NEPA;
- Consolidating, reviewing, and updating existing Guidelines and Codes of Environmental Practices so that they become more relevant in the environmental clearance and permitting process;
- Reviewing and updating the list of industries subject to clearance by National Environmental Commission and other competent authorities;
- Assessing skills, capacity, and training needs for meeting the additional requirements of NEPA and for effective decentralization of the environmental clearance process;
- Improving environmental information management system for recording and compiling environmental assessment data and monitoring, including environmental clearance, compliance, and enforcement actions;
- Building capacity of National Environmental Commission, competent authorities, and Dzongkhag Environmental Committees for EA oversight, review, and enforcement; and
- Improving public participation in the EA process.

36. In terms of safety of dams policy, Bhutan would benefit from support for (a) reviewing and updating existing Guidelines for Safe Operation of Dams and its conversion into an enforceable legislative framework; and (b) facilitating the enhancement of institutional capacity of the Department of Energy to design, oversee,

and implement dam safety measures in their existing and proposed hydropower installations.

37. In keeping with the Bank's Country Assistance Strategy for Bhutan, the strengthening of institutional capacity and procedures in environmental assessment would help the Bank, and possibly other donors, to move toward reliance on Bhutan's country institutions and procedures to ensure compliance of environmental safeguard requirements. Support for improving policies and institutional capacity for ensuring safety of dams is of great importance as Bhutan moves toward expanding its hydropower investments.

CHAPTER I: INTRODUCTION

1.1 The objective of the *Country Environmental Safeguard Review* is to provide an overall assessment of Bhutan's environmental safeguard systems. The systemwide review should provide the basis for potential future harmonization of safeguard systems across a broad development agenda within Bhutan. It is promoted as part of the Paris Declaration on Aid Effectiveness (March 2, 2005), where 60 development agencies, including the World Bank, agreed to strengthen their commitment to establish mutually agreed frameworks that provide reliable assessments of performance, transparency, and accountability of country systems, and use country systems and procedures to the maximum extent possible.[1]

1.2 The specific objectives of Country Environmental Safeguard Review are:

- To identify critical gaps in Bhutan's policies and regulations for environmental safeguard management and identify specific measures to reach equivalence with international best practice;
- To evaluate Bhutan's capacity and commitment to implement its environmental policies and regulations and assess specific actions that are necessary to strengthen institutional capacity and income outcomes; and
- To prioritize options for enhancement of Bhutan's environmental safeguard systems and, in particular, critical actions needed to keep pace with economic development and the Royal Government of Bhutan (RGOB) commitment to decentralize decisionmaking to the district level.

A. BACKGROUND

1.3 Bhutan is a small kingdom covering 38,394 square kilometers in the eastern Himalayas. Bhutan opened to the world relatively recently, especially through tourism. During this process, the country has experienced rapid social and economic development as a result of prudent macroeconomic management, beneficial exploitation of hydropower resources, and substantial support from development partners. The country's population, officially estimated at around 650,000 is mostly young, rural, and widely scattered across Bhutan's rugged terrain. Nevertheless, urbanization has accelerated. Thimpu, the Kingdom's capital, is growing at around 10 percent per year. Agriculture, the mainstay of subsistence and employment, relies on scattered and scarce arable land that amounts to less than 8 percent of the country's territory. The same topography however provides Bhutan with enormous hydropower potential—currently estimated at 30,000 megawatts—in addition to substantial forest resources and biodiversity. The country has started to exploit hydropower resources in a beneficial manner, mainly with support from India, its largest single donor and trading partner. Investments in the hydropower sector have helped accelerate economic growth and social and human development along with creation of extensive infrastructure, including road networks, feeder roads to improve rural connectivity, electricity, and telecommunication facilities.

[1] Access full text of the Paris Declaration of March 2005 at www.oecd.org.

1.4 Sustaining economic growth provides several development challenges. Among the priority concerns identified by the RGOB is the need to reduce or eliminate poverty, reduce inequalities, generate employment, and enhance reach and quality of basic social services. Achieving these priorities will require expanding economic activity, privatization, and promotion of direct foreign investments in the country in the coming years. Improving the management of the environment and natural resources will be critical to management of potential impacts posed by these new economic activities. Bhutan's legal and regulatory system for environmental safeguards and its capacity to implement its safeguard policies will need to be strengthened to keep pace with the anticipated expansion of economic activity and to be able to manage any negative consequences on the environment. As part of this process, Bhutan has recently enacted a National Environmental Policy Act (NEPA) that is designed to establish an effective system to conserve and protect its environment working through the National Environmental Commission (NEC), as an independent means to regulate and promote sustainable development in an equitable manner.

1.5 In addition, the RGOB recognizes that a harmonized approach to address environmental and social safeguards in donor-financed operations can lower transaction costs and enhance local systems and capacity for safeguards implementation. Such an exercise could in the long term help Bhutan improve its overall environmental and social safeguard management system as well as provide opportunity for the country to understand and better manage environmental and social safeguards in its broader development program. It would also provide a basis for reaching agreement among the main donors for harmonization around Bhutan's country systems.

B. COUNTRY SYSTEM PILOT

1.6 The use of country systems has become an important element of the World Bank's agenda for improving and scaling up development effectiveness.[2] The rationale behind this approach is that donors' long-standing practice of stipulating their own project operational requirements can impose high transaction costs on recipient countries, strain their administrative resources, and limit the positive impact of donor assistance to the scale of individual projects. By adopting country systems—developing the recipient country's policies, institutions, and mechanisms to implement donor-supported projects— donors can enhance country ownership, project sustainability, and institutional development. By relying on country systems in line with international good practice reflected in donor agencies' own policies and requirements, donors can simultaneously support institutional development, increase country ownership, and simplify and reduce transaction cost in their operations.

1.7 In March 2005, the World Bank's Executive Directors approved the launch of a pilot program to explore using country systems for addressing environmental and social safeguards, where they were assessed as being equivalent to the Bank's systems, in Bank-

[2] Country systems refer broadly to the applicable laws, regulations, policies, procedures, and practices – at both the national and sub-national level in the country.

supported operations. Bhutan was one of the countries selected for the two-year pilot program. This approach is expected to facilitate moving away from the traditional model in which safeguard policies are applied to only Bank-financed activities to supporting the development and application of effective policies for all government expenditure. Key to the success of this approach will be the increased emphasis on capacity building and human resource development, which is expected to have a major multiplier effect that could lead to broader improvement in the quality of government systems.

1.8 The implementation of the pilot program within a country is governed by the World Bank's Operational Policy/Bank Procedure (OP/BP) 4.00, *Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank Supported Projects*, which requires a broad analysis of the country's legal and regulatory framework (*equivalence assessment,* discussed in Chapter II), and its implementation capacity and practices (*acceptability assessment* discussed in Chapter III). Such an analysis would help decisionmaking on whether the use of a country's system fully or partially satisfy the objectives of the Bank's own policies and requirements to govern preparation and implementation of identified projects. It will also enable the Bank and the borrower to agree on a plan of support for enhancing the country's policy framework and capacity with a view on relying on it for future operations.

1.9 The pilot program for use of country systems to address environmental and social safeguard issues in Bank-financed operations was a good first step toward harmonization of safeguard policies. However, the RGOB and the Bank subsequently agreed that a project-by-project approach proposed in the pilot only provided limited benefits, and efforts were needed to expand the results of the pilot more widely to a broader country level. The wider country systems assessment, which is the objective of this review, could help Bhutan further strengthen its overall environmental policies and enhance its capacity to effectively implement them.

C. SCOPE AND METHODOLOGY OF THE REVIEW

1.10 This review is not intended to be comprehensive or prescriptive. It is meant to provide a broad overview of some key legal, policy, and institutional challenges and highlight some options for possible future action. The primary audience is the Royal Government of Bhutan and its agencies concerned with the implementation of environmental safeguards, donors and financing agencies, engaged nongovernmental agencies, and other stakeholders. The report has particular relevance to the World Bank, on account of the pilot program that is underway for assessing the use of country systems to address environmental and social issues in Bank funded operations. It will also become further relevant if, as expected, the World Bank decides at a later date to expand the use of country systems pilot from the project to country level.

1.11 The methodology used to determine equivalence between Bhutan's environmental assessment (EA) systems and the objectives and operational principles of OP 4.00 involved the following activities:

- Close analysis of Bhutan's laws, regulations and the Codes of Environment Practice as these pertain to 5 environmental safeguards (environmental assessment, natural habitats, forests, pest management, and safety of dams) that are relevant to OP 4.00 (Annex B provides a listing of key policies, acts, regulations and international agreements relevant to Bhutan;

- Interviews with Bhutanese officials, private consultants, and members of civil society who are responsible for or otherwise involved in the implementation of Bhutan's legal and administrative framework related to the environment;

- Consultation with other donors engaged in projects to support the development of Bhutan's legal system for environmental assessment and environmental management plans (EMP) and its institutional capacity both in general and in the specific context of the rural roads and other sector;

- Critical review of the past Bank and non-Bank projects from the perspective of Bhutan's implementation of its own environmental and social safeguard laws and regulations;

- Review of environmental assessments under way for projects financed independently of the World Bank or other donors that apply environmental and social safeguard conditions;

- Site visits to projects that are not being financed by the World Bank or other similar donors; and

- National stakeholder workshop to share findings and recommendations of the Second Rural Access Project (RAP II) pilot program for the use of country systems to address environmental and social safeguard issues.

1.12 The review process included 3 dedicated missions. The first, in May 2006, focused on determining equivalence of Bhutan's laws, regulations, and mandatory codes of practice with the corresponding environmental and social safeguards of the World Bank specific to RAP II. The second mission in September 2006 focused on determining the acceptability of Bhutan's implementation practices with respect to the 3 environmental safeguards for which equivalence had been determined for RAP II. The third mission in April 2007, completed the equivalence analysis of additional safeguard policies not covered in RAP II and undertook broader analysis of country track record and capacity to implement environmental safeguards at the national and *dzongkhag* (district) levels.

CHAPTER II: EQUIVALENCE ASSESSMENT

2.1 The equivalence assessment was restricted to the 5 environmental safeguard policies covered under OP 4.00: environmental assessment, natural habitats, forests, pest management, and safety of dams. The assessment excluded a detailed review of the two social safeguard policies on involuntary resettlement and indigenous peoples. The gaps between OP 4.00 with the corresponding RGOB policies are significant. The analysis of these two social safeguard policies will be done subsequently as a follow-up exercise and will benefit from the recently approved, revised Land Act. The policy related to physical cultural resources was excluded from review due to the lack of appropriate legislation in Bhutan to cover this resource. Physical cultural resources are currently dealt with as part of the monastic governance systems in Bhutan. The RGOB is preparing legislation for immovable cultural properties; this will provide an opportunity for determining equivalence with the Bank's policy at a later time. Bhutan's environmental and social safeguard system is considered to be "equivalent" to the World Bank if its system is designed to achieve the objectives and adhere to the applicable operational principles set out in Table A1 of OP 4.00.

A. OVERALL COUNTRY POLICY FRAMEWORK

2.2 ***The 2005 Draft Constitution of the Kingdom of Bhutan (2005).*** Bhutan is transitioning to a constitutional monarchy. The draft Constitution is scheduled to be adopted in 2008. Although the draft Constitution has no current force of law, it is frequently cited as a source of policy guidance. If the draft is adopted in its current form, Bhutan would become one of the few countries in the world that has incorporated environmental conservation as a constitutional mandate. The draft Constitution, which was released in March 2005 for public review and comments, provides for environmental conservation in its Article 5, which states:

- 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 and prevention of all forms of ecological degradation including noise, visual and physical pollution through the adoption of environmentally friendly practices and ethos.

- The RGOB shall (a) protect, conserve, and improve the pristine environment and safeguard the biodiversity of the country; (b) prevent pollution and environmental degradation; (c) secure ecologically balanced sustainable development while promoting justifiable economic and social development; and (d) ensure a safe and healthy environment.

- The Government shall ensure that, in order to conserve the country's natural resources and to prevent degradation of the fragile mountain ecosystem, a minimum of 60 percent of Bhutan's total land shall be maintained under forest

cover for all time.

- Parliament may, in order to ensure sustainable use of natural resources, enact environmental legislation and implement environmental standards and instruments based on the precautionary polluter-pays principle; maintain intergenerational equity; and reaffirm the sovereign rights of the state over its own biological resources.

- Parliament may, by law, declare any part of the country to be a national park, wildlife reserve, nature reserve, protected forest, biosphere reserve, critical watershed, and such other categories meriting protection.

2.3 ***Bhutan 2020.*** The country's current development philosophy is articulated in the statement of His Majesty King Jigme Singye Wangchuck that "Gross National Happiness is more important than Gross National Product." For the last two decades, "Gross National Happiness"—underscoring that economic, spiritual, and environmental well-being are all equally important—has remained the guiding principle for the Bhutanese in pursuing national development efforts. Around this main tenet, Bhutan has designed its Vision Statement titled "Bhutan 2020: A Vision for Peace, Prosperity and Happiness" providing a 20-year perspective of development goals and objectives. The Vision Statement features environmental conservation as one of the five main development objectives and emphasizes the need to "ensure that choices made in response to the many challenges that confront the nation embody the diversity of the natural environment."

2.4 ***National Environment Strategy.*** The National Environment Strategy (NES) titled "The Middle Path" and launched in 1998 was derived through an inter-sectoral and consultative process. The National Environment Strategy enshrines the concept of sustainable development and identifies 3 main avenues for such development: (a) hydropower development based on integrated watershed management; (b) agricultural development based on sustainable practices; and (c) industrial development based on effective pollution control measures and environmental legislation. It also examines several areas of special importance for environmentally and culturally responsive economic development: tourism, roads, financing mechanisms for sustainable development, public health, urbanization, gender and natural resource management, environmental impact assessments, and population. The Strategy goes on to outline 5 key cross-sectoral needs that the country must effectively address to integrate environmental considerations into economic development planning and policy-making: (a) information systems and research; (b) institutional development and popular participation; (c) policies and legislation; (d) training and education; and (e) monitoring, evaluation, and enforcement (RGOB, NECS, and UNDP 2005).

1. Summary of Applicable Laws: Environmental Assessment

2.5 ***Environmental Assessment Act 2000 (EAA).*** The Environmental Assessment Act of 2000 establishes procedures for the assessment of potential effects on the environment from strategic plans, policies, programs, and projects, and for the determination of policies and measures to reduce potential adverse effects and to promote environmental

benefits. The Act requires that an *environmental clearance* shall be a prerequisite for the issuance of a *development consent*.[3] The EAA also requires the RGOB to ensure that environmental concerns are fully taken into account when formulating, renewing, modifying, and implementing any policy, plan, or program as per regulations that may be adopted within the appropriate provision of the EAA. The EAA outlines the steps in the environmental assessment process; the information required to be publicly disclosed during and after the environmental assessment process; the functions and powers of agencies charged with implementing the EAA; monitoring and control of offenses and penalties; and appeals and dispute resolution procedures under the EAA. These issues are addressed in more detail in Chapter III, *Acceptability Assessment*.

2.6 ***Regulation for Strategic Environmental Assessment 2002.*** The Regulation for Strategic Environmental Assessment was promulgated with the following specific purposes:

- Ensure that environmental concerns are fully taken into account by all government agencies when formulating, renewing, modifying, or implementing any policy, plan, or program;
- Ensure that the cumulative and large-scale environmental effects are taken into consideration while formulating, renewing, modifying, or implementing any policy, plan, or program;
- Complement project-specific environmental reviews as per the Regulation for Environmental Clearance of Projects (RECOP) and to encourage early identification of environmental objectives and impacts of all government proposals at appropriate planning levels;
- Promote the design of environmentally sustainable proposals that encourage the use of renewable resources and clean technologies and practices;
- Promote and encourage the development of comprehensive natural resource and land use plans at the local, district, and national levels; and
- Outline the duties of government agencies in formulating, renewing, modifying, or implementing any policy, plan, or program; the principles of strategic environmental assessment; and essential contents of the environmental statement.

2.7 ***Regulation for Environmental Clearance of Projects.*** Promulgated in 2002, the RECOP defines responsibilities and procedures for the implementation of the Environmental Assessment Act 2000 concerning the issuance and enforcement of environmental clearance for individual projects, as well the following:

[3] EAA Article 6 defines *environmental clearance* as "the decision…issued in writing by the [NEC] Secretariat or the Competent Authority to let a project proceed, which includes terms to ensure that the project is managed in an environmentally sound and sustainable way." EAA Article 6 defines *development consent* as "the approval issued or renewed by a competent authority in the form of a license, lease, or permit for land use or construction."

- Provide meaningful opportunities for public review of potential environmental impact of projects;
- Ensure that all projects are implemented in line with the sustainable development policy of the RGOB;
- Ensure that all foreseeable impact on the environment, including cumulative effects, are fully considered prior to any irrevocable commitments of resources or funds;
- Ensure that all feasible alternatives are fully considered;
- Ensure that all feasible means to avoid or mitigate damage to the environment are implemented;
- Encourage the use of renewable resources, clean technologies and methods;
- Ensure that concerned people benefit from projects in terms of social facilities;
- Help strengthen local institutions in environmental decision making; and
- Create a uniform, comprehensive database on the environmental and cultural conditions and assets in the country.

The allocation of responsibility between the National Environmental Commission Secretariat (NECS) and the competent authority for the conduct of compliance monitoring of projects is delineated in the RECOP, along with detailed instructions on compliance orders, appeals, legal challenges, sanctions, and compensation.

2.8 ***Environmental Guidelines and Codes of Practice.*** Bhutan has developed at least 10 sectoral guidelines or codes of practice to guide environmentally sustainable development through the environmental assessment process. Environmental assessment sectoral guidelines have been developed for forestry (1999 and amended in 2004), hydropower (2004), mining and minerals processing (1999), new and existing industries (1999), roads and highways (1999) and power transmission lines (1999). Environmental codes of practice exist for sewage and sanitation management in urban areas (2000), hazardous waste management (2002), highways and roads (2000) and ambient discharge standards and environmental sampling (1999). These collectively provide a valuable tool for the management of Bhutan's environment.

2.9 ***Environmental Monitoring.*** The National Environmental Commission is given authority under EAA Article 34.2 to "monitor and control compliance with the terms of environmental clearances." The NECS is directed under Article 35.4 to issue regulations and guidelines concerning "monitoring and controlling compliance." The competent authority is authorized under Article 39.3 to "monitor, control and enforce the terms of the environmental clearance attached to development consents, including ordering sanctions and compensation for environmental damage." This monitoring authority gives the competent authority and/or NECS the right to enter project sites with or without prior

notification in order to ensure compliance with the terms of an environmental clearance; to make visual inspections and spot checks; to interview employees, occupants, or other persons on site; to collect samples, inspect, and take copies of relevant data or documents; and to take all other control measures necessary to protect the environment. The respective roles of competent authorities, National Environmental Commission, and NECS with respect to persistent noncompliance with environmental conditions as well as penalties for noncompliance, appeals, and dispute resolution are set forth in EAA Articles 40-43 and Articles 49-62.

2.10 ***Dzongkhag Yarge Tshogdu and Geog Yarge Tshogchung Acts of 2002***. Environment-related provisions of the *Dzongkhag Yarge Tshogdu* and *Geog Yarge Tshogchung* Acts of 2002 give the district-level and block-level development committees, respectively, the power and function to adopt procedures and rules to implement national laws and enforce national regulations on a broad range of activities relating to the construction of roads, such as extraction and conservation of forests; mining and quarrying; designation and protection of monuments and sites of cultural and historical interest; designation and protection of areas of special scenic beauty or biodiversity; parks and sanctuaries; control of noise pollution; conservation and protection of water resources, lakes, springs, streams, and rivers; community forests; prevention of illegal encroachments on land and forests; prevention of construction of structures, whether on national, communal, or private lands within 50 feet of highways falling in local area; and protection and preservation of sacred sites that are not part of custody of a monastic body or central agencies.

2. Summary of Applicable Laws: Protection of Forests and Natural Habitats

2.11 ***The Forest and Nature Conservation Act.*** The Forest and Nature Conservation Act was enacted in 1995 in keeping with evolving conservation needs and allowing for community stewardship of forest resources. The objective of the Act is 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." It covers forest management, prohibitions and concessions in government-reserved forests, forestry leases, social and community forestry, transport and trade of forestry produce, protected areas, wildlife conservation, soil and water conservation, and forest fire prevention. Bhutan's National Forest Policy places priority on conservation of forests and associated resources for their ecological functions. Economic benefit from forest resources is considered secondary and is to be derived within sustainable limits. Bhutan's Renewable Natural Resources Policy emphasizes people-centered economic development that has prospects for long-term sustainability, balanced and equitable development of the country's renewable natural resources and distribution of benefits, and development strategies that are environmentally friendly and ensure the integrity of the country's fragile ecosystem.

2.12 To support the implementation of the Forest and Nature Conservation Act 1995, the Ministry of Agriculture promulgated the Forest and Nature Conservation Rules 2000. The Rules establish regulations for forest management, private and community forestry, establishment and management of protected areas, wildlife protection, and prevention of

forest fires, land clearance, and other activities potentially impacting soil, water and wildlife resources, among other things.

3. Summary of Applicable Laws: Pest Management

2.13 ***Pesticide Act of Bhutan.*** The Pesticide Act of Bhutan 2000 incorporates the key objectives of OP 4.00 with respect to pest management. These objectives include regulating the procurement and application of pesticides to include only those products that have proven safety and effectiveness and to promote the use of integrated pest management. An institutional and regulatory framework is provided for that purpose. Although regulatory institutions have been created and are functioning according to the intent of the Act, no further regulations have been developed.

4. Summary of Applicable Laws: Safety of Dams

2.14 There is no formally adopted legal national regulatory framework for dam safety in Bhutan. However, the Bhutan Electricity Authority, under the Electricity Act of Bhutan 2000, prescribes regulatory safety standards for hydropower dams. As a preliminary step in this process, the Department of Energy issued *Guidelines for Safe Operation of Dams in Bhutan*, based on a review of existing operational practice in Bhutan as well as current state of the art applicable under Bhutan conditions.[4] The Guidelines have been sent to all dam operators, corporations, and project administrators. Although use of the Guidelines is not mandated by law, government-owned corporations that operate dams are, according to Department of Energy, expected to use the Guideline and to be audited against the Guideline. It is expected that these Guidelines will be issued as regulations under the Bhutan Electricity Act 2000.

B. EQUIVALENCE OF BHUTAN'S LAWS AND REGULATIONS

2.15 A comparative analysis was conducted on the Bhutan's laws and regulations corresponding to the World Bank's safeguards on environmental assessment, natural habitats, forests, pest management and safety of dams in accordance with the objectives and operational principles of OP 4.00 Table A1. The results of this comparison are presented in a narrative format below and in the Equivalence Analysis Matrix in Annex A. Major findings of the analysis are discussed here, with an emphasis on differences between Bhutan's systems and the required elements of OP 4.00 Table A1.

1. Environmental Assessment

2.16 The relatively recent Bhutan policies, legislation, and regulations pertaining to the EA process and EA documentation reflect international best practice to a significant extent, resulting in a substantial degree of equivalence between Bhutanese EA systems and the required elements of OP 4.00, Table AI. There are remaining differences between the Bhutan EA system and the World Bank operational principles.

[4] The Guidelines were issued in December 2006 with support from NORAD.

2.17 ***Transboundary and global concerns.*** One potentially significant difference with respect to environmental assessment is the absence of any requirement to assess potential impacts of the project on "transboundary and global concerns." There is implicit reference to transboundary and global concerns in the EAA Section 18 requirement that the NECS can issue an environmental clearance only after finding that a project is "consistent with the environmental commitments of the Kingdom." A similar implicit reference to transboundary impacts is found in the requirement included in the RECOP, Annex C, Section 8, that environmental assessments include "cumulative impacts on other projects…work or activity in the immediate surroundings and region." However, in the absence of a more explicit statement requiring that environmental assessment address global and transboundary issues, it is unclear whether these provisions would effectively provide for their inclusion in the environmental assessment process.

2.18 ***International environmental commitments.*** Related to the absence of any reference to transboundary issues is the absence of any explicit reference to Bhutan's international environmental commitments, such as those involving trade in internationally protected species, or to domestic legislation enforcing such commitments as the Conservation of Biodiversity Act. Although such an intent is evident in the National Environmental Strategy that emphasizes Bhutan's adherence to commitments it has made through international conventions, there is only a general, undefined reference in the EAA Section 18 to the requirement that an environmental clearance may be issued only when the NECS is satisfied that a proposed project meets "the environmental commitments of the Kingdom."

2.19 ***Application of World Bank's Pollution Prevention and Abatement Handbook (PPAH).*** In many countries that have made extensive use of World Bank or other multilateral development bank funding, the Pollution Prevention and Abatement Handbook is cited as a benchmark for qualitative and quantitative environmental criteria (inputs, technical processes outputs) with respect to pollution abatement and control. In a 1999 NECS-issued Guidance Document, as background for the 2000 EAA issuance by National Environmental Commission, there was discussion of "criteria for the selection of parameters for consideration in Bhutan." The discussion was…

> …based on known waste streams of existing industries [and]….emission standards for selected parameters for a number of countries and for World Bank-funded projects in developing countries….The World Bank standards are based on "best-practical-technology" and on levels of waste quality that are routinely achieved by well-run industrial operations around the world. For this reason it is recommended that the RGOB adopt standards that closely approximate those of the World Bank.

2.20 Although Bhutan's EA system does not include any references to the Pollution Prevention and Abatement Handbook per se, the absence of such references does not pose a substantial difference with the operational principles of OP 4.00 Table A1. Many of Bhutan's system of environmental codes of practice do reference other international standards, such as those issued by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO). However, as will be discussed, the content and substance of these codes need to be reviewed and updated, and preferably benchmarked

against the current version of the Environmental, Health and Safety Guidelines recently updated by the World Bank as part as Pollution Prevention and Abatement Handbook.

2. Natural Habitats

2.21 Bhutan, a country with an extraordinarily high level of intact biodiversity and primary forest cover, has some of the most progressive conservation and protected areas management policies among developing countries. Therefore, it is not surprising to find that its legal system incorporates virtually all of the elements of OP 4.00 Table A1 with respect to the protection and conservation of natural habitats, with one substantial difference.

2.22 ***Preference for siting projects on previously converted lands.*** The only difference in Bhutan's system of conservation and protection of natural habitats with respect to the OP 4.00 Table A1 is the absence of any requirement that preference be given to development on lands previously converted from wilderness as compared to lands that remain in their natural state. This issue may be addressed implicitly in the requirement in the Forest and Nature Conservation Rules providing that land located within protected areas and water catchments, or land containing high forest "may be avoided." Some Bhutanese officials suggested that the term "may" be a mistranslation of the Dzongkha term for "must," which if rectified in the English language version of the Rules, would partially address this difference. In any case, a general policy of avoidance in siting projects is not necessarily the same as a policy requiring a preference for converted lands when alternatives are considered.

3. Forests

2.23 Over the last few decades, the RGOB has come to recognize that, if its forest estate is to be kept from deteriorating similarly to some of its neighbors, a systematic forest management program must be put in place. This would have to be based on a balance of conservation and economic development goals through long-term, sustainable, multi-purpose forest management. The 1974 Forest Policy envisages that 60 percent of the land area should be under forest cover and recognizes the need for forest demarcation and inventory and preparation of management plans. The 1979 Forest Policy Statement was more conservative in its approach to utilizing forest resources and restricted logging by commercial operators. Evidence of the RGOB determination to develop a firm policy and strategy for the future is reflected in its issuance of the Forest Policy Statement of 1991, Decentralization and Privatization Policy, Wood Pricing and Marketing Policy, Social Forestry Rules 1990, Forest and Nature Conservation Act 1995, and Forest and Nature Conservation Rules 2000.

2.24 Within the Forest Policy Statement 1991 guidelines, there is the following General Principles for Biodiversity Conservation in Forest Management in Bhutan:

- National forest policy and planning should recognize biodiversity conservation as a major development goal;

- A national system of protected areas should be established that is representative of all ecological zones and types, and protect areas of high biodiversity;
- Protected areas should be linked by corridors of natural forest and surrounded by buffer zones;
- The greatest proportion of the country's natural forest areas should be dedicated to multi-use, multi-purpose management where biodiversity conservation is one of the major management objectives;
- Riparian areas should be reserved, accorded special management status and incorporated into a network of continuously-connected biodiversity reserves within working forest providing both horizontal and vertical ecological linkages through the landscape;
- Silvicultural systems should conserve biodiversity composition, structure and function, and, thus, be based as closely as possible on natural ecosystem disturbance patterns;
- In order to retain the full range of natural forest age classes, portions of the working forest should be managed under very long felling cycles, while others should be reserved in perpetuity and incorporated into the ecological network
- The distribution of logged and unlogged areas should be managed to maintain ecological corridors and prevent ecological fragmentation;
- Within felling coupes, "keystone" biodiversity assets with important ecological functions, such as wildlife food and habitat trees, snags and coarse woody debris, should be retained in both harvesting and stand tending operations; and
- Biodiversity status of forest management areas should be assessed at regular intervals (5-10 years) through comprehensive surveys and between these major censuses there should be annual monitoring of easily identifiable indicator species.

2.25 The major differences between Bhutan's systems and the operational principles of OP 4.00 Table A1 on forests are limited to the following:

- ***Lack of legislation pertaining to plantation forestry.*** The forest management codes to the forest management units under the control of the Forest Development Corporation incorporates nearly all the material and most of the procedural requirements of the Bank's certification policy, which nevertheless is not a legal requirement in Bhutan. The National Forestry Policy of 1991 contains provisions for replanting of deforested and degraded areas, and the Ninth Five-Year Plan proposes guidelines for local participation in reforestation programs.
- ***Lack of formal requirement for independent certification of industrial-scale commercial forestry operations.*** While the Forest Management Code include principles of sound forest management and most of the Bank' criteria for sustainable forest exploitation, it lacks the legislation and mechanism for independent certification of commercial forestry operations. This is a critical gap

in legislation requiring the application of internationally recognized standards of responsible forest management and use.

4. Pest Management

2.26 Although regulatory institutions have been created and are functioning according to the intent of the Pesticide Act of 2000, no further regulations have been developed. In the absence of such regulations, significant gaps remain between international standards referenced in OP 4.00. In particular, the regulations with respect to pest management lack emphasis on the following elements of OP 4.00 Table A1:

- ***Procurement of pesticides.*** OP 4.00 requires the use of WHO hazard classification standards to limit the procurement and application of pesticides. Bhutan's legislation regulates the procurement of pesticides but without reference to WHO hazard classification standards.

- ***Labeling, storage, application, and disposal of pesticides***. OP 4.00 recognizes the need to procure only pesticides that are manufactured, labeled, handled, stored, applied, and disposed according to acceptable standards as described by the FAO Pesticide Guidance on Storage, Labeling and Disposal (1985). However, in Bhutan the intent of the FAO codes are followed but without reference to any specific "good international practice."

- ***Enhancing institutional capacity for integrated pest management***. OP 4.00 calls for the enhancement of institutional capacity for promoting integrated pest management (IPM) and integrated vector management and for regulation and monitoring of distribution and use of pesticides. While, the Quality Control and Regulatory Services of the Ministry of Agriculture might monitor pesticide use and ensure that provisions of the Pesticide Act are strictly followed, the legislation lacks a commitment to enhancing institutional capacity to develop integrated pest management as a pest management strategy of choice, as is required by OP 4.00.

5. Safety of Dams

2.27 Pending the adoption of national regulations on dam safety, most of the hydropower projects with dams in Bhutan are surveyed, investigated, and designed with assistance from the Government of India and are believed to comply with safety requirements as specified in Indian standards and guidelines. Under these guidelines, detailed survey, investigation, and design are expected to look at dam safety issues: these include dam break analysis simulating probable maximum flood as well as glacier lake outburst flood, and seismic risk. However, use of the Indian standards and guidelines is not a mandatory requirement by Bhutanese law. The use of standards depends on the convenience and requirements of the donor. For example, the Basochho Hydropower

Project, which was constructed under an Austrian grant and soft loan, was designed following Austrian standards rather than Indian standards.

2.28 According to Bhutan's environmental requirements, major hydropower projects with dams are subject to mandatory environmental assessment under the authority of the Environmental Assessment Act of 2000 and the 2002 Regulation for the Environmental Clearance of Projects. The Application for Environmental Clearance: Guidelines for Hydropower, issued by the National Environmental Commission in August 2004, requires addressing issues related to flood, glacier lake outburst flood, and erosion and sediment yield, in addition to undertaking public consultation and preparing environmental mitigation plan. The EA report needs to be submitted to and approved by the National Environmental Commission. Environmental factors were also considered when preparing the Power System Master Plan, and preliminary environmental appraisals were conducted for the selected priority projects included in the Power System Master Plan.

2.29 The Guidelines for Safe Operation of Dams in Bhutan provides general guidance on following aspects of safe operation of dams:

- Emergency action plan;
- Preliminary hazard assessment (risk assessment);
- Program for inspection and reassessment;
- Monitoring and instrumentation during operation;
- Qualification and training;
- Classification;
- Internal quality control system, and
- Measures to ensure health, safety, security, and environment related to operation of dams.

2.30 Bhutan is in the process of drafting a Water Act, which should contain safety requirements related to water structures, including dams. This Act will likely cover transboundary issues also. Although there is no transboundary issue in run-of-the river projects (water returns back to the river), it could be an issue in future as Bhutan moves toward reservoir projects.

2.31 The content of the Guidelines are generally equivalent to the dam safety requirements of OP 4.00 with respect to plans for operation and maintenance and emergency preparedness, and conducting safety inspections after completion of construction or rehabilitation. The Guidelines, for use at the operational stage, differ from the requirements of OP 4.00 in the following two ways:

- ***Regulations for dam safety.*** Converting the existing Guidelines to regulations for dam safety would provide an opportunity to attain equivalence with the requirements of World Bank OP 4.00.

- ***Additional provisions in new regulation.*** The new regulations should incorporate specific provisions for (a) planning, design, construction, and operation of dams; (b) constitution of panel of experts for independent verification of design, construction, and operational procedure; and (c) using qualified, experienced, and competent professionals and firms in planning, design, construction, and operations of dams.

C. CONCLUDING REMARKS

2.32 Overall, Bhutan's' environmental safeguard policies are largely compatible with that of international practice with some gaps that might be easily addressed through revisions in existing legal or regulatory measures, or corrected by revisions of the existing Codes of Environmental Practice or other administrative measures. Bhutan expects to revise its Environmental Assessment Act building on over seven years of experiences and learning since implementation, as well as make it more relevant to the recently enacted National Environmental Protection Act. This will provide an opportunity to address some of the gaps identified during the equivalence assessment. The relevance of these gaps and differences varies from project to project depending on the project characteristics and impacts.

CHAPTER III: ACCEPTABILITY ASSESSMENT

3.1 The acceptability assessment is based in part on the results of the equivalence analysis conducted and described in Chapter II. There are some gaps and differences in approach between Bhutan's laws and regulations and specific requirements of the World Bank OP 4.00. The relevance of these gaps and differences to the environmental impact of proposed projects varies from sector to sector and within some sectors, and from project to project depending on their characteristics. In order to effectively rely and apply Bhutan's systems to assess and manage environmental impact and risks, some gaps and differences will need to be bridged on a *systemic* basis through legal or regulatory measures. Others may be addressed on a *sectoral* basis through such administrative measures as modifications of Bhutan's Code of Environmental Practices or on a *project-specific* basis through additional permitting requirements.

3.2 In all cases, reliance on Bhutan's system depends on the country's capacity and commitment to implement its legal environmental safeguards system. Chapter III examines Bhutan's current capacity and commitment for implementation of each of the five environmental safeguard policies. The methodology used for this analysis entailed a comprehensive review of recent reports prepared by the RGOB, World Bank, other donors, NGOs, and academic authorities on Bhutan's efforts to assess and manage the environmental impact corresponding to each of the these safeguards through the application of its legal framework and other human, technical, and administrative resources. Bhutan's capacity to implement its safeguard policies would be considered acceptable if it has demonstrated sound implementation practices and a proven past track record.

3.3 In conducting this analysis, limitations of timing and resources were encountered in obtaining comprehensive and current data. As a general matter, the more recent environmental management systems in Bhutan mean that there is a lack of time-series data on monitorable environmental indicators. This limited database thereby hinders the ability to make a comprehensive evaluation of implementation effectiveness of the country's policies and regulations. On a more safeguard-specific level, some current data is available from the National Environmental Commission Secretariat on implementation of Bhutan legal framework relating to environmental assessment. Likewise, the Ministry of Agriculture maintains relatively current data on pesticide use and documentation on the use of integrated pest management in Bhutan. However, reporting on issues related to the corresponding safeguards — natural habitats and forests — was most recently undertaken in the 2000-2002 timeframe. At that time Bhutan was in the process of preparing its Second Biodiversity Action Plan (BAP II) for submission to the United Nations Convention on Biodiversity which Bhutan ratified in 1998, and the World Bank, in partnership with the RGOB and the World Wildlife Fund (WWF) conducted assessments in 2002 on the capacity of Bhutan's lead conservation agency, the Nature Conservation Division of the Department of Forestry, Ministry of Agriculture, to implement the objectives of BAP II. Likewise, the Bank's most recent engagement in Bhutan's forestry sector was the Forest III project that was completed in 2002.

Documents relating to the capacity of the Department of Forestry to implement its mandates and the results of the project are, therefore, limited to that time framework. No comprehensive reports on either natural habitats or forests have been prepared by the RGOB, the World Bank or other donors since then. With respect to the safeguard policy on Safety of Dams, limited information is available concerning Bhutan's capacity to manage large containment structures as defined in the World Bank OP 4.00 due to the fact that up to the present, all dams constructed in Bhutan have been run-of-river, structures with very limited containment capacity and funded by external donors.

A. KEY FINDINGS: ENVIRONMENTAL ASSESSMENT

3.4 Under the 2000 EAA and the 2002 RECOP, responsibility for environmental assessment in Bhutan is centralized in the National Environmental Commission, its Secretariat, and designated competent authorities at the ministerial and district levels.

1. Institutional Capacity

3.5 ***Institutional capacity at central level:*** The National Environmental Commission was first established in 1989 by Royal Decree as a National Environment Committee, part of the National Planning Commission. Subsequently, as a result of the 1990 Paro Workshop on Environment and Sustainable Development and coinciding with the start of the Seventh Five-Year Plan (1992-1997), the National Environmental Commission was given the mandate of "coordinating all environmental activities and monitoring the environmental impact of development." In September 1992, the National Environmental Commission was officially delinked from the National Planning Commission and began functioning as an independent organization. In September 1998 it was reconstituted under the chairmanship of the Minister of Agriculture and given inter-ministerial representation for policy decisions and guidance on matters related to environmentally sustainable development and institution of measures integrating environmental management in overall development processes.

3.6 ***Functions and responsibilities***. With respect to environmental assessment, the functions and powers of the National Environmental Commission are established in Articles 32 and 33 of the 2000 EAA. Under Article 32, the National Environmental Commission is given the following directions:

- Supervise the activities of the competent authorities and NECS, provide guidance and ensure the EAA implementation;
- Adopt regulations defining requirements for strategic environmental assessment of policies, plans, and programs of the RGOB;
- Adopt regulations specifying the timeframe within which existing projects shall achieve EAA compliance;
- Adopt regulations and guidelines on public information, consultation, mediation, and appeals; and on incentives for persons who may inform authorities about emergency situations under EAA Article 48;

- Adopt regulations concerning decisionmaking and appeal procedures under EAA, when procedures do not exist under other laws;
- Adopt regulations concerning administrative sanctions, fines, and payment of compensation for environmental damage resulting from projects that have received an environmental clearance under the EAA;
- Bring complaints to the Department of Legal Affairs for the prosecution of violations of the EAA;
- Adopt fine schedule under EAA Article 52, which may be reviewed and revised;
- Under Article 33, National Environmental Commission also has the discretion to:
- Adopt a list of projects for which the competent authority shall screen and issue the environmental clearance;
- Adopt emission control limits for projects under the EAA; and
- Hear and decide disputes under EAA.

3.7 However, the role of the National Environmental Commission has not evolved precisely as anticipated in the EAA, particularly in establishing appropriate inter-ministerial organizational structures, protocols for regular meetings, and decisionmaking authority. The NEC composition has been reorganized several times. Although the National Environmental Commission has met 22 times since 1992, including twice during 2006, there was a three-year hiatus (2003-2006) during which time it did not meet due to a jurisdictional dispute over its chairmanship. In 2005 this issue was resolved. The National Environmental Commission now includes ministerial-level representatives from the Ministries of Trade and Industry, Works and Human Settlement, and Information and Communications, as well as the Bhutan Chamber of Commerce and Industry (serving as representative of civil society). At its first meeting in 2006 under the chairmanship of the Prime Minister, the National Environmental Commission resolved to resume meeting on a quarterly basis.

3.8 ***Current NEC capacity.*** The critical role of the NECS in supporting the National Environmental Commission was recognized in the Ninth Five-Year Environmental Sector Plan. The Plan proposed strengthening the capacity of the NECS through streamlined internal management procedures designed to optimize use of its limited human and financial resources. This was to be achieved by having transparent and operational work plans and budgets, and clearly structured lines of authority and management responsibility for key functions and concerns. The NECS was also directed to work toward improving its financial and administrative systems, including introduction of an information and data management system and development of clear terms of reference, work plans, and division of responsibilities. To meet these objectives, the NECS was provided with budget support during the Ninth Five-Year Environmental Sector Plan, particularly for implementing the EAA and supporting legislation; strengthening the administrative and financial management of NECS; strengthening the

national and international policy framework; drafting the NEPA; developing environmental information management and environmental quality standards; and promoting social mobilization, environmental advocacy, and awareness.

3.9 During the period of the Ninth Five-Year Plan, NECS internal capacity building focused on the following priority areas:

- Integration of environmental concerns into the national planning process;
- Preparation of a strategic plan for the NECS;
- Refining and expanding environmental objectives and standards;
- Continuing development of legal framework and EAA enforcement and implementation;
- Collecting and routine monitoring of environmental information and baseline data;
- Implementing of the environmental communications strategy; and
- Strengthening resources in terms of numbers of staff receiving further training.

3.10 To undertake these responsibilities, NECS is divided into three divisions: Administrative and Financial, Technical, and Policy and Coordination. The Technical Division is responsible for environmental assessment, research, monitoring, statistics, information, communication, and outreach. The Policy and Coordination Division deals with matters related to environmental policy, legislation, and program coordination. Since 2002, NECS has a stable contingent of 40 full-time staff, including 8 assigned to the environmental clearance process. As of early 2006, NECS has processed 588 applications for environmental clearance, of which 85 percent resulted in issuance of clearances. The major sectors requiring environmental clearance include power transmission lines, roads, and industries. The approval procedures for EA documents, for conditioning Environmental Clearances on EA findings and recommendations, for linking environmental clearance to the larger project approval (Development Consent) process, and for monitoring compliance with environmental clearance conditions are coherent and well managed by NECS.

3.11 The NEC mandate is reinforced in the NEPA, with National Environmental Commission becoming an "independent, multi-sectoral authority and the highest decision-making body of all matters relating to the environment and its management in the country." The draft further describes the powers and rules of procedure of the National Environmental Commission. Notwithstanding its right to delegate its powers and functions to other competent authorities, including District Environmental Committees (DECs), "nothing shall preclude the National Environmental Commission from its cardinal responsibility of enforcing and administering the provisions of [NEPA]." The NEPA provides all citizens with a right of access to environmental

information and enables them to participate in decisionmaking processes concerning the environment.

3.12 ***Institutional capacity at the ministerial level.*** The Ninth Five-Year Environmental Sector Plan (2002-2007) recognizes that although the National Environmental Commission has overall responsibility for coordinating and initiating activities relevant to sustainable development in Bhutan, "it has a limited role when it comes to enforcement of rules and regulations and program implementation." The Plan directs NECS to take the lead in "institutionalizing and strengthening capabilities" in line ministries, districts, and private organizations with respect to EAA requirements. Accordingly, Annex 2 of the RECOP designates several agencies as competent authority to screen, issue, or deny environmental clearances for specified types of projects. National Environmental Commission was specifically directed to work with selected staff of line ministries to enable the latter to undertake "basic environmental assessments" of proposed projects, thus reducing the workload at the central level. The Plan also directed the EA Section of NECS to facilitate line ministries in setting up environmental units and to work closely with these units in coordinating environmental activities with the line ministries in implementation of the EAA and its regulations and conducting basic training for sector heads and extension agents in the districts. Each environmental unit is responsible for reporting on implementation, enforcement, and monitoring compliance with the EAA.

3.13 The Ninth Five-Year Environmental Sector Plan and the RECOP also provide for establishment of District Environmental Committees in each district, and Annex 2 of the RECOP specifies activities for which the District Environmental Committees would normally be authorized to issue environmental clearances. This list has been slightly amended by the National Environmental Commission with the increased experience and capacity of the District Environmental Committees. A few ministerial agencies have established environmental cells within competent authorities, including the Ministry of Works and Human Settlements and its Departments of Roads and Urban Development and Engineering Services; Ministry of Trade and Industries; and Ministry of Agriculture. To date, although designated as competent authorities, few agencies assigned to screen, issue, or deny environmental clearances have the expertise or manpower to take on the responsibilities effectively of a competent authority. The NECS has organized training on Application of Environmental Clearance Guidelines for applicants and jointly for consultant and contractors on an annual basis. However, many designated competent authorities, including both line ministries and some District Environmental Committees, have yet to complete any environmental assessment or clearance responsibility. Thus, the EA process is still centrally driven by the National Environmental Commission for the most part.

3.14 ***Institutional capacity at the district level***. Although District Environmental Committees have been established in all 20 districts, they are operating at a very low capacity, both at the institutional and individual levels. District Environmental Committees generally do not have their own office space and administrative support. The existing members of District Environmental Committees represent planning, agriculture,

forestry, engineering, and land recording. Environmental responsibilities are therefore viewed as an addition to their main sectoral responsibility. Although staff receive some training on environmental clearance and compliance monitoring from NECS, frequent turnover leaves many untrained staff. As a result, in many cases, delegated environmental clearances are reverting to the central level despite the decentralized mandate. There is no dedicated technical environmental officer in any District Environmental Committees. However, the NECS has recently completed recruitment of 20 environmental officers. who are being trained and assigned to the District Environmental Committees. With the training and assignment of dedicated environmental officers, the efficiency and effectiveness of District Environmental Committees are expected to improve. Insight into the capacity and operations of a District Environment Committee obtained by the World Bank mission in April 2007 is described in Box 1.

Box 1. Capacity and Operation of a District Environment Committee

More insight into the capacity and operations of the District Environment Committee was obtained by the World Bank mission in April 2007. During a World Bank mission in April 2007, the Paro District Environment Committee expressed willingness to implement (National Environment Commission) NEC policies and regulations at the district level. The Paro District Environment Committee processes one environmental clearance application per month, and has processed clearances of all sectors for which it is delegated by the RECOP. The District Environment Committee meets on an ad hoc basis in response to incoming applications for environmental clearance. District Environment Committee meetings are not open to the public. However, the public participates in decisions through the *Geog Yargye Tshogchhungs* (GYT), block development committee. The GYT members must sign a no-objection certificate before a project can be considered by the District Environment Committee. The *gup* (head of *geog*) sometimes participates in District Environment Committee meetings. Decisions of the District Environment Committee are announced in letters to the project applicant and to the *Geog Yargye Tshogchhungs*.

The District Environment Committee is also responsible for compliance monitoring under terms and conditions of environmental clearances issued by the NEC or other Competent Authorities, and facilitation of environmental assessment beyond its jurisdiction. For example, the Department of Geology and Mines (the Competent Authority) asked the Paro District Environment Committee for its views on a recent mining project for which the Committee did not have delegated authority. The District Environment Committee then proceeded to request a No-Objection Certificate from the GYT, which reported back to the District Environment Committee on social and land issues.

Another example was the siting of the municipal solid waste containment facility to replace the uncontrolled landfill in use. This was a priority of the Paro Donghdag. This was a described as a difficult year-long exercise for which local politics complicated the DEC task of finding an acceptable site (near enough to town, but sufficiently far from human settlement and forest and catchment areas). Objections to various alternative sites were raised by several local communities ("a good idea but not in my back yard"), as well as by the Central Government (namely, objections by the Ministry of Works and Human Settlements on technical grounds) A site was finally agreed on but without funding which threatens the consensus.

The Paro District Environment Committee monitors compliance with environmental clearance conditions by conducting site visits in coordination with other activities in the district. On one visit, a marble quarry cleared by the Department of Geology and Mines was found by the District Environment Committee to be engaging in unacceptable practices. However, the District Environment Committee found it difficult to enforce the environmental clearance conditions.

3.15 To institutionalize and strengthen local-level EA capability, the NECS has conducted consultative workshops and training programs for DEC members from the 20 districts. The training focused on developing technical capacity for compliance monitoring of development activities, expediting environmental clearance process, facilitating incorporation of environmental concerns in mainstream planning, and creating awareness of funding opportunities for environmental projects in respective districts. Despite these efforts, district-level environmental expertise remains rudimentary and little effort have gone toward improving environmental mainstreaming in local-level planning.

2. Environmental Assessment and Management Process

3.16 The focal point for environmental governance of project activities, including environmental assessment, mitigation, monitoring, and compliance is the environmental clearance (EC) process. Environmental clearance is a mandatory requirement for project development consent unless exempt by Annex 2 of the RECOP. The scope of activities subject to this exemption is very limited.

3.17 Authority to issue environmental clearance is delegated to the NECS or to competent authorities, typically line ministries, a ministerial department, or the District Environment Committee. The decision for allocation of authority between the NECS and the competent authorities is based on the nature and location of the project. Large, complex projects and those sited in environmentally sensitive areas are assigned to the National Environmental Commission; smaller, less sensitive projects are assigned to a competent authority based on the capacity to undertake the necessary environmental assessment, mitigation, and monitoring responsibilities.

3.18 Annex 2 of the RECOP has been amended by the National Environmental Commission on several occasions to expand the activities subject to DEC-level clearance, commensurate with increases in DEC capacity as agreed by the District Environmental Committees and National Environmental Commission. If a project proponent happens also to be a designated competent authority, authority to issue environmental clearance defaults to NECS. Annex 2 of the RECOP also includes a list of activities for which an environmental clearance is not required.

3.19 If screening determines that further investigation is necessary, an environmental assessment would be required and the applicant required to prepare and submit draft terms of reference to NECS or the relevant competent authority for approval. The draft EA terms of reference are internally reviewed by NECS or competent authority. There is no consultation with stakeholders in this approval process. The timeframe in which to conduct the environmental assessment is negotiated between the applicant and the competent authority or NECS. The applicant prepares or contracts out preparation of the environmental assessment and submits it to NECS or the designated competent authority for approval. Once the EA report is submitted, it is reviewed by NECS or competent authority with different chapters of the report being reviewed internally by the relevant in-house staff. The review process determines if the report satisfies the elements of the

approved terms of reference and the environment management plan. Comments, if any, are sent to the applicant for incorporation. The report requires no revision if it is satisfies the terms of reference and the quality is deemed acceptable.

3.20 The NECS or competent authority issues environmental clearance for the approved project either after screening, or after environmental assessment on the basis of findings. Site visits are conducted prior to issuing environmental clearance in some cases even if an environmental assessment is not required. Criteria for issuance of environmental clearance include the following:

- The effects of the project on the environment are foreseeable and acceptable.
- The applicant is capable of carrying out the terms of the environmental clearance.
- The project, alone or in conjunction with other programs or activities, contributes to the sustainable development of the Kingdom and the conservation of its natural and cultural heritage.
- Adequate attention has been paid to the interest of concerned people.
- The project is consistent with the environmental commitments of the Kingdom.

3.21 Environmental clearance would be required to attach environmental terms, including the relevant Environment Code of Practice, if available. At a minimum, environmental terms attached to an environmental clearance must specify (a) binding mitigation and compliance measures; and (b) appropriate monitoring, recording, and reporting requirements. All environmental clearances (whether issued by NEC or competent authority) are effective for up to five years and can be renewed with or without changes to environmental terms and conditions.

3.22 ***Environmental management plan.*** With respect to environmental management plan, the *Application for Environmental Clearance Guidelines* recommends a tabular format that describes projected impacts at each stage of project activities and specifies mitigation measures and their estimated costs. It also recommends a detailed breakdown of environmental costs related to construction, including materials and supervision. The *Environmental Assessment Application Guideline* makes the applicant responsible for ensuring that environmental terms (attached to the environmental clearance) are carried out, including all contractor-implemented activities. It recommends use of a mechanism of attaching the environmental terms to the contract document to assure a clear understanding of the environmental requirements during construction. The *Environmental Assessment Application Guidelines* also stipulates that at the time of tendering the contractor will be required to prepare a Contractors' Site Environmental Management Plan (CSEMP) that shows how the contractor will implement the environmental terms included in tender specifications. Included in the contract documents, the CSEMP should be evaluated as part of the overall tender. Along with the application, the applicant is also required to provide (a) Land Compensation and Resettlement Plan and (b) Worker Health and Safety Plan, if relevant.

3.23 ***Public consultation.*** Consultation with affected communities is expected to take

place at two stages in the EA process: when the no-objection certificate is issued from the designated agency and during the preparation of the environmental assessment. Article 31 of the RECOP requires the following mandatory procedures: (a) written notices to local people and newspaper notice; (b) public hearing; (c) public disclosure; (d) period for public comment; (e) submission of a public consultation plan; and (f) verification of public consultation. In particular, the applicant must explain the expected impacts of their development, where the impact will occur and how the impact will be mitigated. In practice, consultation should be conducted with affected communities or those identified as potentially affected people and organizations and stakeholders only. However, so far, no development activity in Bhutan has been subject to a public hearing, and public consultation is not open to the general public.

3.24 ***Compliance monitoring.*** The NECS conducts annual compliance monitoring. The annual monitoring visit, announced and pre-informed, checks compliance with the terms and conditions attached to the environmental clearances. The NECS also includes in the annual compliance monitoring visits any relevant competent authority officials such as representatives from the Department of Geology and Mines and the Department of Industries. Competent authority's environmental compliance monitoring is part of overall project monitoring. The EAA also provides for spot checks and unannounced visits; however, this is not happening at present due to resource and capacity constraints. The NECS does not have priority areas or a list of projects for compliance checks, and no site visit, other than annual visit, is made unless a problem is reported to NECS. A detailed discussion of the environmental assessment and management process is presented in Annex C.

3. Environmental Assessment Outcomes

3.25 Outcomes of an acceptable EA system can be assessed through review of environmental assessments that follow procedures prescribed in the EAA and the RECOP, as well as applicable sectoral *Guidelines for Environmental Assessment and Codes of Environment Practice*. A systematic review of environmental assessments prepared under the authority of National Environmental Commission and other competent authorities is beyond the scope of this review. The review team is familiar with EA documents prepared under recent World Bank projects, including the RAP II that was piloted under the Use of Country Systems Pilot and the Sustainable Land Management Project. In addition, in connection with the RAP II, the review team reviewed an environmental assessment prepared for a road segment that was not financed by the World Bank and involved no participation by the World Bank or any other donor having environmental and social safeguards similar to the Bank.

3.26 Numerous EA documents have been submitted by the RGOB in connection with Bank-supported projects in sectors such as road construction, forestry, land management, private sector development, and urban development. The terms of reference and EA documents, prepared since the NECS became operational in 2002, have all been reviewed and approved by NECS and in some cases with substantive input from line ministries. None have as yet involved substantive input at the DEC level. All were prepared by

Bhutanese consultants, some in partnership with internationally based consulting firms with experience in preparing environmental assessments to World Bank specifications. Because these environmental assessments were prepared to meet the requirement of World Bank OP 4.01, *Environmental Assessment*, (and other applicable Bank safeguards), it is difficult to determine the impact of Bhutan's legal requirements or the institutional capacity of Bhutan's implementing institutions on the quality of process or the resulting document.

3.27 The EA documents that have been reviewed by the World Bank team, including the environmental assessment prepared for non-Bank-funded projects, were found consistent with Bhutan's legal requirements. Likewise, the EA process referenced in the EA document is consistent with Bhutan's procedural requirements for preparation of environmental assessments. As summarized in the RAP II report, the EA documents are of satisfactory quality with respect to the key elements of environmental assessment in OP 4.00.

3.28 The NECS role in reviewing and providing critical quality control in the EA process under the RAP II projects is largely anecdotal. It appears that NECS does have a value-added role in ensuring that environmental assessments provide baseline data consistent with NECS knowledge and experience of project sites, addressing significant project impacts, and recommending feasible and effective mitigation measures.

3.29 Other indications of acceptable outcomes can be found in project implementation through monitoring, compliance, and enforcement. Such systematic data has not been made available by NECS. The NECS does not maintain a user-friendly database with respect to project implementation and compliance. Experience with Bank-supported and -supervised projects in Bhutan demonstrate that despite limited capacity, particularly in line ministries and districts, most projects have been implemented in a satisfactory manner with respect to applicable environmental and social safeguards. A single exception was a Bank-supported forestry project in which the Bank's supervision was found to be less than satisfactory and therefore inadequate for determining whether the project was in compliance with Bank safeguard requirements.

4. Conclusions and Recommendations for Environmental Assessment

3.30 ***Strengths***. Based on the above analysis, the review concludes that the major strengths of Bhutan's EA system from an acceptability standpoint are as follows:

- There exists strong institutional capacity at the central level in the form of clear lines of authority with policy leadership vested in the National Environmental Commission and implementation at the project level in NECS.
- A well-educated and qualified environmental staff exists at the central level for coordination and implementation of environmental assessment policy and procedures.

- Adequate budget and material resources is available to carry out essential EA functions, including approval of terms of reference for EA review and clearance, coordination with competent authorities, and on-site monitoring of environmental clearance compliance.
- The few locally based consulting firms seem to have sufficient experience to prepare environmental assessments to the requirements of Bhutan's EA system, as well as World Bank operational policies.
- There exist coherent and transparent procedures for the preparation and approval of EA documents, for conditioning environmental clearances on EA findings and recommendations, for linking environmental clearance to the larger project approval (development consent) process and for monitoring compliance with environmental clearance conditions.
- Bhutan has a good track record of approving terms of reference and environmental assessments consistent with the requirements of its own system and World Bank operational policies.

3.31 ***Weaknesses.*** Based on the above and other recent analyses,[5] the review identifies the following major weaknesses of Bhutan's EA system from an acceptability standpoint:

- Over-centralization of authority for environmental assessment exists in the capital city given the challenging geography of the country and the resulting logistical challenges of site visits for purposes of EA review and project monitoring.
- Over-compartmentalization of development strategies for environmental management exists. Efforts seem to be focused on specific needs of a particular ministry, department or division, rather than on complementarity and linkages with external agencies.
- There is an excessive focus on individual training and human resource development at the expense of broader institutional strengthening and system enhancement issues.
- There is an absence of broad-based stakeholder consultations during planning and implementation of projects.
- There is very limited effort at prioritizing needs for environmental assessment and environmental clearance.
- Limitations of personnel resources, technical capacity, and will on the part of line ministries hinders their assumption of more responsibility for critical evaluation of environmental assessments prepared under their authorities.
- There is limited technical capacity of district-level authorities to conduct environmental assessment and to assist central authorities in monitoring environmental impacts of projects.

[5] GEF project proposal "Enhancing Global Environmental Management in Bhutan's Local Governance System" 2006

- Monitoring of environment enforcement and compliance lacks an effective information system.

3.32 ***Recommendations.*** Based on the identified strengthens and weaknesses of the EA procedures and the country's capacity to effectively implement them, the review team recommends the following priority actions for consideration:

- ***Building capacity to meet responsibilities of proposed National Environmental Protection Act.*** Following enactment of the National Environmental Policy Act, the National Environmental Commission should undertake an implementation capacity assessment to identify the additional capacity and skills required to meet the new responsibilities placed by NEPA and the need to strengthen the decentralization of environmental clearance responsibilities to the ministerial and district levels.
- ***Balancing resources between centralization and decentralization.*** Given the constitutional changes anticipated in 2008 and the new political context in which it will likely be operating, an appropriate balance between centralization and decentralization of the EA process should be examined. This examination would help the National Environmental Commission define the best options and priorities for best using the country's limited human resources. Although proposed decentralization of environmental management may be necessary to meet development needs at the sectoral and district levels, such devolution of authority, in the absence of sufficient capacity may, also result in poorer outcomes in both environmental assessment and management, at least in the short term.
- ***Providing leadership to environmental assessment process.*** The National Environmental Commission should make maximum use of its authority and resources to provide leadership to the EA process both internally and among government ministries. In particular, this might require the National Environmental Commission to provide technical support to strengthen environmental management capacity in the line ministries and District Environmental Committees. Such support would likely focus on establishing procedures for environmental site supervision, compliance monitoring, environmental audit and reporting systems, preparation of environmental management plans and establishing reporting systems for dealing with noncompliance and public complaints.
- ***Establishing effective environmental information systems.*** The establishment of a user-friendly database is a priority for recording and compilation of environmental assessment data and monitoring, including recording of environmental clearance conditions and compliance with agreed safeguard measures, inspections, public disclosure and public concerns, and remedial measures.
- ***Developing technical capacity to meet new economic challenges.*** The National Environmental Commission should continue to develop its technical capacity as

Bhutan expands its industrial base and increases its interactions with other countries through such activities as expanded tourism.

- ***Evaluating capacity of competent agencies.*** The regular NEC evaluation of the capacity of competent authorities to carry out responsibilities under the EA system, provision of training where necessary, and regular adjustment of the list of delegated projects is essential to support the decentralization of environmental clearances. The NEC review of the content and substance of its *Application for Environmental Clearance Guidelines and Codes of Environmental Practice* would help to ensure that these correspond to the sectors of economic activity for which environmental assessments are likely required during the term of the 10th Five-Year Plan (2008-2112). In addition, the benchmarking of the *Codes of Practice to the Environmental, Health and Safety Guidelines* issued by the World Bank in 2007 would be beneficial.
- ***Evaluating DEC performance.*** The National Environmental Commission should evaluate the performance of District Environment Committees and particularly the roles and value added of environmental officers assigned to the District Environmental Committees.
- ***Improving public consultation.*** Improvement of NEC public consultation by implementing outreach to the general public and civil society organizations, rather than limiting consultation to directly affected community groups, should be a priority. Affected community groups may have limited knowledge of how prospective projects will affect them and would likely gain knowledge from the experiences of other communities, whose knowledge may be transmitted by civil society.

B. KEY FINDINGS: NATURAL HABITATS

1. Bhutan's Biological Heritage

3.33 Bhutan's biological resources are some of the richest and most diverse in the world, and its economy is very much dependent on the sustainability of these natural resources. The watersheds that are made up of several rivers, rivulets, and glacial lakes are critical for sustaining agriculture and hydropower development, the country's economic mainstays and key avenues for environmentally sustainable economic development. Although tourism has been largely culture based, the serene and scenic natural landscapes hold added value and there is immense potential to develop tourism based on the country's natural assets.

3.34 Bhutan is among the top 10 countries in the world with the highest proportion of area under legal protection. Over one-fourth of Bhutan is designated as park or other category of nine protected areas (Ura and Kinga 2004: 28)**.** The protected area network consists of 4 national parks, 4 wildlife sanctuaries a strict nature reserve, and a network of biological corridors covering an additional 9 percent of the country's area, and 6 designated conservation areas. According to WWF (2004), "protected areas are the cornerstone of most national biodiversity strategies." In assessing the effectiveness of Bhutan's policies on natural habitats, it is therefore appropriate to focus on the management of its protected areas.

2. Bhutan's Protected Area Network

3.35 Bhutan's protected areas network consists of 3 broad categories: protected areas, biological corridors, and conservation areas. These categories are subject to different legal status and levels of conservation activities. Annex D provides more detailed characteristics of Bhutan's protected areas.

3.36 ***Protected areas***. The 9 protected areas are further sub-designated as national parks, wildlife sanctuaries and strict nature reserves, corresponding to the Protected Areas Management Categories of the International Union for the Conservation of Nature (IUCN). The country's first protected area—renamed the Royal Manas National Park —was designated in 1966. The national protected area system was introduced in 1974 covering 8 more protected areas decreed in a notification issued by the then Ministry of Trade, Industry and Forests. Five more protected areas were initially added to the system under a similar notification issued by the same Ministry in 1983. In the same year, 3 protected areas—Laya, Gasa and Jigme Dorji Wildlife Sanctuaries—were consolidated as the Jigme Dorji Wildlife Sanctuary, covering almost the entire northern part of Bhutan.

3.37 Subsequent reviews of the protected area systems conducted by IUCN, FAO, and WWF between 1988 and 1993 concluded that the distribution of protected areas did not represent all major ecosystems found in the country. Some ecosystems, such as the alpine-tundra and the tropical-subtropical zones, were over-represented while the system accorded no protection to the central zone, which has vast tracts of biologically rich, temperate forests and scenic natural landscapes. It was also deemed necessary to protect

the easternmost and westernmost variants to capture east-west differences in species distribution. In 1992, the Nature Conservation Division (NCD) undertook the exercise to revise the protected areas system with WWF support. Combining earlier reviews with field reconnaissance and map studies and using IUCN classification guidelines, the Nature Conservation Division proposed a revised protected areas system comprising the existing 4 national parks, 4 wildlife sanctuaries, and a strict nature reserve. The Ministry of Agriculture approved and gave notice of the revised protected areas system in 1993.

3.38 Soon after the revision of the protected areas system, the RGOB identified 4 priority protected areas for conservation management taking into account its limited resources in terms of trained personnel and funds. These were Bumdeling Wildlife Sanctuary (then known as Kulongchhu Wildlife Sanctuary), Jigme Dorji National Park, Jigme Singye Wangchuck National Park (then known as Black Mountain National Park), and Royal Manas National Park.

3.39 ***Biological corridors.*** In 1999, based on NCD/WWF field assessments of forest areas between various protected areas and tiger-status survey findings carried out between 1996 and 1998, a network of biological corridors linking the national protected areas was identified, enlarging the protected area system from 26 percent to 35 percent of the country's total geographical area. The resulting 12 biological corridors, collectively encompassing an area of 3,640 square kilometers, connect all protected areas with the primary purpose of maintaining gene flow through uninterrupted wildlife movements and succession of habitats. In an event marking the 44th birthday of His Majesty King Jigme Singye Wangchuck on November 11, 1999, the biological corridors were bequeathed as a "Gift to the Earth" from the people of Bhutan.

3.40 Accordingly, conservation management plans were developed and promulgated for Royal Manas National Park in 1995, Jigme Dorji National Park in 1997, and Jigme Singye Wangchuck National Park and Bumdeling Wildlife Sanctuary in 2001. Also, in the same year, the Ministry of Agriculture included Thrumshingla National Park for conservation management. Consequently, the conservation management plan was completed and its implementation started in 2002. The conservation management plan of the Jigme Dorji National Park was completed in June 2003. The Bumdeling Wildlife Sanctuary is into its second year of implementation and Thrumshingla National Park is in its first. Subsequent to an interim 18-month conservation management plan, the Jigme Singye Wangchuck National Park has completed a long-term conservation management plan, which will be implemented by the end of the Ninth Five-Year Plan. Conservation management planning for Sakten Wildlife Sanctuary is in progress and will be completed soon. The conservation management activities in Royal Manas National Park have been put on hold due to threats of Indian insurgency in the border areas. Annex D summarizes the present status of various protected areas.

3.41 ***Conservation areas.*** Conservation areas are multiple use areas with special values that do not need to be under the management of the Nature Conservation Division, but each requires some special regulations to ensure the protection of local species of conservation importance. Conservation areas are constrained by lack of strong and

specific regulations and activities. Of the 6 conservation areas in Bhutan (described in Annex E), Phobjikha—the black-necked crane habitat located in the buffer zone of Jigme Singye Wangchuck National Park—is the only area that has been exposed to conservation initiatives. The Royal Society for the Protection of Nature, the only national environmental NGO, has been involved in development and implementation of an integrated conservation and development project (ICDP) that it envisages as bringing economic well-being to area residents.

3.42 The protected areas approach in Bhutan departs from the conventional "exclusionary" approach in that it recognizes human–nature interaction as a part of the ecosystems. Local communities have the right to live in a protected area and subsist on natural resources but within the limits of sustainability and in harmony with the environmental conservation objectives for which the protected area was established. Efforts to integrate nature conservation objectives and local community development needs in a mutually reinforcing manner are inherent in the protected area management programs. Irrespective of their classification as a national park or wildlife sanctuary, the protected areas are based on a common management concept of zonation, allowing for varying degrees of human intervention or use in different zones along a continuum (core zone, multiple-use zone and buffer zone).

3. Threats to the Integrity of Bhutan's Protected Areas

3.43 Compared to other countries facing strong population pressure and rapid industrialization, Bhutan's relatively intact protected area system as a whole faces little threat from wide-scale land use conversion (agriculture, extractive, or infrastructure activities) and is protected from industrial logging by legislative fiat. Based on the World Bank/WWF (2004: 8) Rapid Assessment of the Management Effectiveness of Bhutan's Protected Areas System, the threats to the integrity of Bhutan's protected areas are considered small in scale, and include the following, in order of significance:

- Rural poverty;
- Overgrazing by both nomadic and residential communities;
- Road construction designed to link isolated rural communities with each other and with the country's main road system;
- Poaching for commercial trade in musk deer, black bear, and cordyceps (Chinese caterpillar);
- Personal consumption of species, such as blood pheasant and alpine pheasant;
- Trapping, poisoning, and shooting of animals, such as wild boar, tiger, leopard and wild dogs in order to protect crops and livestock;
- Collecting non-timber forest products, in particular, bark, incense, lemongrass, bamboo, papal leaves, mushrooms, and a wide variety of medicinal plants:
- Timber harvesting for construction of housing and roof shingles;
- Slash and burn agriculture;
- Firewood collection; and
- Anthropogenic fires.

3.44 Emerging future threats to Bhutan's protected areas include bio-prospecting, ecotourism, and global climate change. Potentially, all three could provide an array of benefits if properly managed. A detailed analysis of these various threats to Bhutan's biodiversity is included in Annex F.

4. Institutional Capacity for Implementation of Bhutan's Natural Habitats Policies

3.45 Bhutan's natural habitats policy, programs, and regulatory implementation are the responsibility of the National Environmental Commission, Ministry of Agriculture, Biodiversity Management Board, National Biodiversity Center, Department of Tourism, Natural Resources Training Institute, and the Institute of Traditional Medicinal Services. Autonomous agencies, such as Bhutan Trust Fund for Environmental Conservation and the Sustainable Development Secretariat (SDS) also play important roles in mobilizing and allocating donor assistance for biodiversity protection. Bhutan's single non-governmental organization, the Royal Society for the Protection of Nature (RSPN), also plays an important role in conservation education and biodiversity protection in Conservation Areas. Boxes 2 and 3 provide brief explanations of the roles of these institutions.

3.46 ***Nature Conservation Division.*** Within the Ministry of Agriculture, the Nature Conservation Division is the principal agency responsible for implementing Bhutan's natural habitats policy. Initially designated as the Nature Conservation Section of the Department of Forestry Services (now Department of Forestry), it has been upgraded with increased authority and responsibility. Therefore, this assessment will focus on the institutional capacity policy and programmatic output of the Nature Conservation Division as well as the outcomes of its activities.

3.47 The mandate for the Nature Conservation Division covers the following:

- Manage the wild biodiversity of Bhutan;
- Develop and implement management plans for protected areas;
- Formulate nature conservation policy;
- Identify potential additional protected areas; and
- Prioritize inputs from conservation-releated agencies.

3.48 The Nature Conservation Division headquarters and the protected areas both have their own organizational structures. At the functional level, the Nature Conservation Division is made up of three sections: (a) Management Planning and Integrated Conservation and Development Program; (b) Inventory and Data Management; and (c) Species Conservation, Research and Monitoring. These sections are subdivided into two units each. For field operations, the Nature Conservation Division has established park management offices in all operational protected areas, which currently include Bumdeling Wildlife Sanctuary, Jigme Dorji National Park, Jigme Singye Wangchuck National Park, Royal Manas National Park, and Thrumshingla National Park. Each national park's management is now structured in the same way.

Box 2. Institutions Implementing Bhutan's Natural Habitats Policies

The ***National Environment Commission*** is the national focal point for national environment policies and the RGOB instrument for coordinating its responsibilities under the Convention on Biological Diversity, which in turn constitutes the framework for international effort in biological diversity.

The ***Ministry of Agriculture,*** which manages the renewable natural resources sector, encompasses agriculture, forestry, animal husbandry, and nature conservation.

Formalized in August 2000l, the ***National Biodiversity Management Board*** had 13 members representing a cross-sectoral body of important stakeholders involved with biodiversity management. The Board was formed to have executive authority over the National Biodiversity Center and to advise on, review or reform any national policies, projects, and actions taken regarding the nation's biological resources. NBMB mandates are:

- Overseeing implementation of the Biodiversity Action Plan;
- Developing a national policy framework that fosters the sustainable use of biological resources and maintenance of biodiversity;
- Strengthening capacity for sustainable conservation and utilization of biodiversity;
- Creating conditions and incentives for effective biodiversity conservation; and
- Catalyzing conservation actions through international co-operation and national planning.

The ***National Biodiversity Center*** was established in July 1998 as a non-departmental agency of the Ministry of Agriculture, specifically to oversee and ensure the implementation of the Biodiversity Action Plan. It serves as a focal institute for coordination and integration of biodiversity conservation efforts of the various renewable natural resources subsectors, namely agriculture, livestock production, and forestry. The National Biodiversity Center has a mission to promote the effective conservation and sustainable utilization and ensure equitable sharing of benefits arising from the conservation and the sustainable utilization of the nation's rich biological resources. The National Biodiversity Center is vested with the following institutional mandates:

- Co-ordinate Bhutan's biodiversity-related activities and serve as a national focal institute;
- Facilitate national decisionmaking on biodiversity concerns, cutting across sectors, divisions and institutions;
- Guarantee a national balance between conservation and sustainable utilization of biological resources in general, and between in situ and ex situ conservation in particular;
- Assure a participatory approach to building national consensus on biodiversity around complex issues and resolving conflicting situations;
- Facilitate sub-regional, regional, and international cooperation; and
- Assure continuity of biodiversity-related activities over time.

3.49 A rapid assessment of four protected areas carried out by the World Bank in 2002 showed that Bhutan lacks staff by nearly 60 to 80 percent compared to the requirements projected in their respective conservation management plans. Also given that conservation knowledge is evolving, human resource development will need to be continuous so that the conservation personnel are up to date with contemporary conservation science. More importantly, the coordination and communication has been weak between the Nature Conservation Division as the central agency and the protected areas as implementation bodies in the field. External communication also needs to be enhanced with partners, including donor agencies.

Box 3. Institutions Implementing Bhutan's Natural Habitats Policies

The ***Natural Resources Training Institute*** is the leading training institute for renewable natural resources management. The Institute, started in early 1990s, offers a three-year diploma course in renewable natural resources management with specialization in crop agriculture, livestock production, or forestry. It also has a mandate to conduct crash courses for in-service staff of renewable natural resources.

The ***Institute of Traditional Medicinal Services*** is a center for development of indigenous medicines through research, training, and practice. It also works with local communities and other research institutions to promote domestic cultivation of medicinal plants. Jigme Dorji National Park has been a pilot site in promoting domestic cultivation and processing of medicinal plants.

The ***Bhutan Trust Fund for Environmental Conservation*** was created in 1992 and legally incorporated under a 1996 Royal Charter as an independent grant management organization to sustain environmental conservation work in Bhutan. Under the guidance of a fully nationalized high-level management board since 2001, the Bhutan Trust Fund operates with an endowment now totaling more than US$30 million. The Trust Fund projects range from environmental education to protected area management and study of species ecology. In the FY2001/02, it managed projects budgeted at US$5.6 million

The ***Sustainable Development Secretariat*** coordinates, disburses, and monitors external assistance to Bhutanese organizations under the Sustainable Development Agreement, a cooperation framework among Benin, Bhutan, Costa Rica, and the Netherlands. Under the Secretariat, the Dutch Government funded the Biodiversity Conservation Program, Phase I, for development of Jigme Singye Wangchuck National Park and institutional strengthening of the Nature Conservation Division.

The ***Royal Society for the Protection of Nature*** is one of the few nongovernmental organizations in Bhutan and the only one that is exclusively dedicated to environmental conservation. The RSPN was founded in 1987 and legally incorporated as a non-profit NGO in 1997. The mission of the organization is to "inspire personal responsibility and actively involve the people of Bhutan in the conservation of the Kingdom's environment through education, applied research and information dissemination, and collaboration with concerned agencies and indigenous institutions." The forte of the RSPN is environmental education, and this is very well reflected in the vast network of school nature clubs that RSPN has created and sustained across the country. The RSPN staff are also actively involved in activities to protect the black-necked cranes and their habitats.

The ***Tourism Authority of Bhutan*** was re-designated as Department of Tourism in 1999. It serves as the central government authority to facilitate, monitor, and regulate tourism activities. It also provides technical assistance, including training of tour guides, for tourism development. In 2001, the Department of Tourism developed the National Ecotourism Strategy to elucidate ecotourism development potentials, issues, and needs and outline strategies for organizational, product, and human resource development; and marketing.

3.50 There is broad consensus that under current staffing and structure, the Nature Conservation Division should not take on more than it is presently doing. Within the protected area framework, in addition to park management the Nature Conservation Division is faced with such diverse tasks as establishing, managing, and monitoring the recently created biological corridors; coordinating the tiger conservation program; developing an anti-poaching program; creating a wild boar culling project; and many other administrative tasks.

3.51 ***Role of local authorities in nature conservation.*** District (*dzongkhagt*) administrations have overall responsibility to district-level government programs. Development programs and activities at the district level generally pertain to agriculture, livestock development, social forestry and forest fire management, education, health, and urban development and housing. In the wake of decentralization of program implementation to the block (*geog*) level during the Ninth Five-Year Plan, Block Environment Committees [*Geog Yargye Tshogchhungs* (GYT)] have assumed immense importance. The GYT *Chathrim (*Rules*)* 2002, which came into force from July 2002, empowers local community leaders with a wide range of powers, authority, functions, and responsibilities to decide and implement their development plans and programs. The GYT is made up of *gup*, *mangmi* and *tshogpa* as members and *chimi*, *geog* clerk and representatives of various government sectors as observers.

3.52 While significant progress has been made over the past decade in terms of building institutional capacity for biodiversity conservation, it is far from adequate. Protected areas are still inadequate with regard to trained personnel; information on species distribution and demographic patterns in protected areas and biological corridors; and conservation infrastructure. Major weaknesses at an institutional level include (RGOB 2002):

- Conflicting policies exist, for instance, between those promoting conservation and those promoting agricultural or forestry development and exploitation of natural resources for economic objectives. This threat is related to poor co-ordination between governmental departments, and inadequate authority of agencies promoting conservation. There is also a problem of overlapping jurisdiction in protected areas (e.g. between conservation and development objectives of *districts)*.
- Weak law enforcement of existing legislation is partly due to lack of staff and partly due to inadequate or unclear legislation (e.g., how to deal with poachers). This threat is related to the absence of clear zoning and boundary demarcation of protected areas, leaving users not knowing where the protected area is located and what legislation is appropriate.
- Lack of adequate communication exists between stakeholders, (e.g., inadequate communication and lack of transparency between the various sectors involved in conservation). As a result, an integrated approach to conservation, as required in view of the multiple sectoral interests involved, will be difficult to put in place.

5. Institutional Capacity Strengthens and Constraints

3.53 Bhutan is entering the third of five phases in the normal progression in establishing a country's protected areas systems. These phases include (a) development of a protected areas system, (b) operationalization of those areas and development of staff, (c) thorough inventory and assessment of biodiversity and cultural assets, (d) development of management and planning systems for those assets, and (e) realization of benefits from sound management

3.54 The NCD institutional capacity has been subject to systematic internal and external reviews supported by the World Bank and WWF from 2001-2003. Although some progress has been made in addressing NCD capacity limitations both at headquarters and in the field, the key findings and recommendations regarding Nature Conservation Division and Bhutan's protected area management system remain valid today. The Bank/WWF review used the following key indicators: quantity and quality of management and staff, budgetary resources, technical resources, and logistical resources.

3.55 ***Staffing.*** The Nature Conservation Division is considered to have adequate numbers of headquarter staff, but inadequate staffing of protected areas is cited as one of the few unqualified weaknesses of Bhutan's protected area system. As a result of these chronic staff shortages, the Nature Conservation Division has been able to establish park management offices in only 6 of the 9 operational protected areas, with 3 offices remaining to be staffed. Among the 6 that are staffed, all park managers report an acute shortage of staff, ranging from 60 to 80 percent, most frequently at the warden and park guard levels. The impact of low staffing is widespread; park managers cite poor to ineffective law enforcement; poor threat detection, mitigation, monitoring, or prevention; high workloads; low staff morale; poor staff organization; inadequate research and education levels; and a chronic crisis management mode from NCD headquarters to park guard levels.

3.56 The NCD core staff is comprised of highly educated, skilled, and dedicated individuals. However, many of them are recent graduates with only limited field experience. As a result, NCD headquarters has not been able to provide necessary technical backstopping to field staff. Some external donors believe that the Nature Conservation Division is not allocating workload efficiently. Now with the 3 sections, the Nature Conservation Division should be in a better position to provide institutional support to protected areas. Also with the increase in staff strength and consultation mechanisms being established at NCD level (monthly office meetings, quarterly park managers meetings, and annual conferences), the opportunities have increased for strengthening the links between Nature Conservation Division and the parks. Staff need more specialized skills in plant and animal identification, GIS mapping, and surveying skills that would facilitate the development of natural resource inventories. The benefits of such training were demonstrated as an outcome of the Global Environment Facility (GEF) project that trained staff in participatory planning, monitoring, and park management. Staff are now able to monitor and conduct biodiversity surveys and better enforce regulations. Community relations and conflict resolution has also been cited as an area for skills improvement. Park managers report a strong sense of leadership and team work among staff.

3.57 ***Training.*** Although park managers feel that training is an overall strength, there are concerns about the ad hoc nature of training opportunities and reservations about whether or not some training programs were effective in providing key skills. Ironically, the frequency of training connected to job rotations is sometimes cited as a reason for staff shortages.

3.58 ***Internal organization of protected area staff.*** Park managers are consistent in their views on a clear internal organization and staff who understand their respective responsibilities. Wardens are required to submit monthly reports on their activities. Quarterly warden meetings are held in protected areas at different warden posts on a rotational basis. Most managers view communication with staff as adequate; this includes monthly meetings with all park staff. A program of annual national parks conferences has been instituted with the aim of encouraging exchange of information between various protected areas; presenting technical papers; assessing progress in implementation of management plans; discussing problems; and seeking common solutions while learning from shared experience.

3.59 Others are more critical, particularly of the lack of regular communication with NCD headquarters and in other cases due to logistical obstacles. As a result of this lack of communication and coordination, park managers are viewed as developing work plans that suit their own interests and priorities, with poor documentation and little continuity when a manager moves on. Work plans for all staff are developed on a monthly basis. However, some external stakeholders have noted the frequency with which park managers are rotated as a weakness: in one case a park has seen 4 managers in less than 6 years.

3.60 ***Funding***. Overall, existing funding appears adequate to meet the short term (year-to-year) needs of the parks. In general all protected areas depend largely on external donors that provide support to individual parks for periods coinciding mostly with management plans (preparation and implementation). Considering different donors have different priorities, there are important differences among the parks in the total funding available as well as the allocation to various activities. The dependence on donors has raised some doubts about future sustainability, even though in most cases funding is being committed at least for the coming years. Many of the protected areas are dependent on continuing support from a single donor making them vulnerable. (Only Thumshingla National Park has a five-year WWWF grant). However, none of the parks has a long-term financial sustainability plan. Proposals for ecotourism policy and infrastructure development are critical to securing a sustainable funding source.

3.61 ***Logistical resources.*** A lack of adequate telecommunications appears to be a clear problem in all protected areas. Wardens' offices are equipped with solar-powered telephones, but these often lack sufficient battery capacity. It is often difficult for wardens to communicate with guards in the field. In contrast, data processing facilities (computers, faxes, printers, email, and Internet access) are generally considered adequate. In general, park managers believe that transportation means are adequate given that the vast majority of patrolling needs to be done on foot because of the rugged terrain. There are adequate vehicles available for transportation between Thimpu and the parks.

3.62 ***Biological and geographic information.*** Lack of natural resource inventory data is another major systemic weakness in all 9 protected areas. Managers' lack detailed data about park biodiversity, such as the actual presence (other than anecdotal evidence from communities) of species and populations (with the exception of charismatic mega-fauna of international importance such as the tiger, takin, red panda and the black- necked

crane) and the extent and quality of critical habitat and species interactions. This is particularly the case for about a dozen species on the national list of critically rare species. Even for the handful of key species identified as conservation targets, there is limited information about actual populations, reproductive rates, critical habitats, resource needs, breeding requirements, and impact of poaching and other human activities. Although there have been some small-scale research projects (on black-necked cranes in Bunderling Wildlife Sanctuary; and the snow leopard, tiger, and cordyceps in Jigme Dorji National Park) there is no systematic research program or protocol. Lack of detailed maps, even at the 1:50,000 resolution level, and satellite images means that guards are often unaware of the exact locations for specified management activities and spend considerable time trying to locate sites on the ground.

3.63 ***Local community support.*** The World Bank survey indicated that many communities were resentful when parks were first established, reflecting unrealistic expectations regarding the park as a source of income and not clearly understanding why the park was established. However, park managers believe that this perception is gradually changing partly as a result of the ICDP process and educational efforts of the Royal Society for the Protection of Nature and other educational efforts. As part of the ICDP development process, a socio-economic survey was conducted in all but one of the protected areas.

3.64 ***Monitoring and recording*** of the impact of legal and illegal uses of protected areas are generally not well monitored, largely due to insufficient staff, lack of adequate maps and GIS training and analysis, and lack of a consistent monitoring format. In recognition of the need to build up an efficient and effective monitoring and data management system, the Nature Conservation Division is taking steps to make its monitoring section and that of the Research and Monitoring Wardens in the protected areas more operational. Through the Biodiversity Conservation Project, technical assistance has been sought to prepare a monitoring framework to make clear how surveys and monitoring can be part of an adaptive planning approach. This would involve the following aspects:

- *Background biodiversity monitoring*. The objective is to detect changes and long-term trends with respect to biodiversity (in and possibly outside protected areas), and adjust plans and policies to avoid irreversible biodiversity changes.
- *Monitoring of biodiversity values and potential threats.* The objective is to detect changes with respect to critical biodiversity values and potential threats (in and possibly outside protected areas), and adjust plans and policies to avoid irreversible biodiversity changes.
- *Monitoring of ICDP*. The objective is to assess changes with respect to development conservation attitudes and behavior and to draw conclusions on the success and sustainability of ICDP programs; then, based on those conclusions, adjust ICDP plans to better reach conservation goals.

6. Protected Area Outcomes

3.65 Indicators of effective policies and procedures for the management of protected areas include:

- Legally binding protection;
- Effective enforcement of laws applicable to protected areas (patrolling, apprehension of poachers, community engagement on poaching);
- Protected area configuration designed to optimize the conservation of biodiversity with appropriate siting and adequate demarcation of protected area boundaries and zoning systems with park boundaries, as well as buffer zones adjacent to park boundaries that are consistent with land use in the surrounding area;
- Connectivity between protected areas;
- Comprehensive, relatively recent written management plans including Integrated Conservation Development Plans;
- Analysis and strategy for addressing protected area threats and pressures;
- Annual work plans that specify goals and targets to achieve management objectives;
- Up-to-date resource inventories, including maps of the area;
- Transparent management decisionmaking;
- Management plans that clear and consistent with respect to the objectives of each protected area;
- Procedures for communication and collaboration with local communities, partners and other organizations;
- Financial management practices that enable efficient and effective protected area management; and
- Routine incorporation of research and monitoring into management planning.

3.66 All 9 protected areas have long-term, legally binding protection, and all include a designated buffer zone, averaging 3 to 5 kilometers around the park's core zone. All of the parks are connected by legally protected biological corridors to at least one other protected area. The location of corridors is considered another key strength being based on preliminary wildlife surveys and existing land use patterns. According to IUCN and other major donors, the protected area system well represents the country's broad range of ecosystem types.

3.67 Surveyed park managers and staff perceive the most successful outputs of the protected area management process to include the following:

- Community outreach and education (in cooperation with the Royal Society for the Protection of Nature, school programs, videos, calendars, Red Panda Festival);

- Visitor and tourism management (establishment of camping grounds, trail identification, visitor center construction, and education displays);
- Staff support and development (training, study tours, on-the-job training);
- Management plan preparation (including stakeholder meetings and boundary demarcation);
- Site restoration and mitigation efforts (plantation in flood-prone areas, restoration of black necked crane roosting sites);
- Wildlife and habitat management (surveys); and
- Research and monitoring (medicinal plant study).

3.68 Less successful outputs are perceived to be assessment and monitoring of aquatic biodiversity;[6] ICDP implementation; law enforcement; boundary and zoning implementation; fodder plantation; replacing domestic animals killed by leopards; and threat prevention and enforcement (patrolling, apprehension of poachers).

3.69 Although the layout and configuration of protected areas is regarded as one of the unqualified strengths of the entire protected area system, in some cases precise boundaries remain undelineated. Boundary surveys of most protected areas are underway. In the case of Jigme Dorji National Park, prominent landmarks along the southern boundary have been fully demarcated by the staff. To accommodate both biodiversity conservation and the needs, aspirations, and rights of the people living within and around the protected areas, the protected areas will be zoned into core, buffer, and multiple-use zones (RGOB 2002). However, zoning has yet to be undertaken. Boundary demarcation and zoning require both time and commitment not only from park staff but also from other partners/stakeholders like *Dzongkhag*, territorial divisions, and local people. Several boundaries have been revised, in some cases more than once (for the purpose of improving habitat protection of key species), leading to uncertainty on the part of some park managers, with respect to boundaries of both the core and buffer zones. However, zones are demarcated on paper and not on the ground leading to confusion over land use rights. A GEF-funded project in Jigme Dorji National Park succeeded in demarcating the southern boundary using Global Positioning System.

3.70 Currently there are a total of 6 operational national parks and wildlife sanctuaries. Each park is further divided into 15 park warden offices and park deputy range offices, 20 park guard posts, and 2 check posts to regulate and monitor the activities and provide services.

3.71 Three other protected areas, which are not operational but notified by the Royal Government in 1993, are Toorsa Strict Nature Reserve covering 651 square kilometers; Phibsoo Wildlife Sanctuary with 266 square kilometers; and Khaling Wildlife Sanctuary with 755 square kilometers. The 9 protected areas constitute about 26 percent of the total area of the country representing pristine Himalayan ecosystem. The total area under a

[6] For the present, the only aquatic conservation effort outside of protected areas (where no fishing is allowed) is the strict vigilance over the issuance of fishing licenses and monitoring of strict adherence to regulations.

protected area system is about 10,913 square kilometers, excluding the biological corridors connecting all protected areas, which constitute about 9 percent of the total area (3,804 square kilometers). Bhutan has the highest percentage of land under protected area management system in Asia. Management plans for 4 of the protected areas—Royal Manas National Park, Jigme Dorji National Park, Thumshingla National Park, and Bunderling Wildlife Sanctuary—have been prepared and approved. A one-year plan for Jigme Singye Wangchuck National Park has been prepared (RGOB 2002).

7. Conclusions and Recommendations for Natural Habitats Policy

3.72 ***Strengths.*** Significant progress has been made over the past decade in terms of building institutional capacity for conservation of biodiversity and natural habitats in Bhutan. Major strengths include the following:

- Clearly defined institutional authority, vested in the Nature Conservation Division, for designation and management of protected areas. The fact that forest management units under supervision of Department of Forestry are located outside of protected areas avoids a potential conflict of interest between the Department of Forestry and the subordinate position of Nature Conservation Division within the Ministry of Agriculture hierarchy.
- Strong, internationally recognized and experienced leadership within Nature Conservation Division.
- Well-educated and trained technical staff within Nature Conservation Division and in some of the protected area management units.
- Sufficient technical resources to carry out core headquarters functions of Nature Conservation Division.
- Management plans that impose restrictions that limit commercial and external population pressure on protected areas.
- A nationally based strategy for integrating populations living within protected areas into a site-specific development framework (through ICDP) that is consistent with the objective of protecting biodiversity in protected areas.
- An ecotourism strategy that is designed to develop revenue from protected areas while limiting adverse ecological, social, and cultural impact.

3.73 ***Major Weaknesses.*** Given immense biodiversity assets of Bhutan's protected area system, the number of protected area units, and their remote locations, Bhutan's system of natural habitat protection remains inadequate in key areas:

- Chronic shortage of trained personnel assigned to protected areas with some protected areas having no on site staff;
- Management plans remain to be developed for some protected areas and remain unimplemented or in early stages of implementation in other protected areas;

- Baseline information remains rudimentary on key aspects of conservation, such as distribution of species and demographic patterns in protected areas and biological corridors, and conservation infrastructure.

Major weaknesses at an institutional level include**:**

- Weak law enforcement of existing legislation, partly due to lack of staff and partly due to inadequate or unclear legislation (e.g., how to deal with poachers). This threat is also related to the absence of clear zoning and boundary demarcation of protected areas so that users do not know where the protected area is located and what legislation is appropriate.
- Over-reliance on single external donors for financial support of research and management activities in protected areas.

3.74 ***Recommendations*.** The 2003 Vision and Strategy for Nature Conservation Division is intended to serve as a guide to meet the challenges over a time horizon of 15-20 years. This plan largely remains unimplemented. The following 4 strategically chosen components are linked in a synergistic manner to intended conservation impacts and targets:

- Management of protected areas, buffer zones and biological corridors;
- Integrated conservation development programs;
- Environmental education; and
- Research, survey, and monitoring.

3.75 The Nature Conservation Division, in collaboration with partners, will focus its efforts on these 4 components to reach the respective targets. The synergy of these 4 strategic components simultaneously put into operation would create the expected conservation impact. Recommended actions include the following:

- Improve all aspects of management of protected areas, buffer zones, and biological corridors;
- Develop and implement a common strategy for ICDPs;
- Develop further environmental education; and
- Develop standardized biodiversity survey methodologies for all protected areas;
- Maintain an information database on species found in protected areas;
- Update GIS database and develop working maps for all protected areas;
- Conduct studies on priority species and initiate surveys on herpeto-fauna and other lesser known species.

3.76 The RGOB recognizes that since biodiversity is cross-sectoral and co-managed coordination mechanisms need to establish an integrated national system for biological conservation and sustainable use in Bhutan. The National Biodiversity Center thus needs to develop and propose systems that not only address institutional aspects but also take into consideration the integration of conservation activities with development aspects that would be both economically and environmentally sustainable.

3.77 A detailed strategy to achieve actions set forth in Bhutan's Second Biodiversity Action Plan is included in Annex G. Priority actions include the following:

- ***Establish coordination mechanism for integrated national system.*** There is need to direct and coordinate the multiple and often competing efforts of agencies in the relevant areas of conservation to define and demarcate the official boundaries of the conservation areas; develop and enforce rules and regulations that are specific to each conservation area; and develop implementation arrangements for the conservation programs, including ICDP and law enforcement. As a first step in this process, national workshops to harmonize the roles and responsibilities of the different sectors would be useful. The role of the Biodiversity Management Board should be strengthened as a nationwide decisionmaking body on biodiversity issues.

- ***Expand existing information about ecosystems and species***. External stakeholders perceive a lack of satisfactory research outputs, which can be largely attributed to the absence of a common research framework, a systematic natural resource inventory method or protocol, and weak data management skills. To respond to this concern, the National Biodiversity Center has established the Bhutan Integrated Biodiversity Information System (BIBIS). The BIBIS integrates data regarding forest resources, floral and faunal diversity, micro-organisms, medicinal plants, and genetic resources (wild food relatives). It was anticipated that once in place BIBIS could serve as a strong data management partner for Nature Conservation Division but would need continuing financial support, skills development, and training to sustain these activities.

- ***Enhance monitoring of protected areas*.** With the new monitoring framework developed by the Nature Conservation Division, all protected areas are now in a position to plan monitoring activities within their protected areas. However, keeping in mind the current priorities of the protected areas, their staffing situation, and the recent adoption of the framework by park staff, it is expected that at least one pilot monitoring plan will be initiated for monitoring biodiversity values and threats and another pilot plan for an approved ICDP. For this purpose, guidelines should be prepared and provided, in addition to securing support from the Species Conservation, Research and Monitoring Section of the Nature Conservation Division. It is also proposed to involve NCD partners, sectoral agencies, *Geog* and *Dzonkhag* staff, where possible, for ICDP monitoring. For this purpose, technical assistance has been sought to develop a Rapid Biodiversity Survey Methodology for all protected areas, and to develop a monitoring

framework for protected areas, which will form an essential component of an adaptive management approach.

- ***Improve management and staffing of remaining protected areas***. Developing management plans and staffing for the remaining 3 of Bhutan's protected areas and conducting ecological surveys of connecting corridors are uncompleted tasks. Improving management of Bhutan's protected area system as a whole requires building NCD capacity for inventory, diversity analysis, and improved management in existing NCD-managed protected areas; as well as ensuring a minimum staff level to carry out management responsibilities in all protected areas.

- ***Improve community engagement***. Protected areas should better incorporate community members in activities. For example, the role of village forest guards (*risips*) should include reporting on wildlife siting rather than just reporting on poaching and other illegal activity. A community-based model was used to conduct the tiger survey. Organized to create an ICDP, the Conservation Area Program Committee, comprised of representatives from various community sectors in Phubjika, served as a model for involving communities in park management planning. The experience of the GEF project in Jigme Dorji National Park illustrates the benefits of involving local people in securing economic benefits from conservation.[7] Biodiversity conservation has potential to bring benefits to local people by promoting social and community forestry; encouraging traditional use of herbal plants and other non-wood forest products; improving broad access to forest products through distribution, marketing, and proper monitoring systems; encouraging users of forests to participate in development and management of local forests; reviewing existing forestry rules; and developing favorable conditions for forestry on private registered land. A sustained effort to develop and promote community involvement in protected area planning, decisionmaking, and implementation is necessary, along with the implementation of a well-developed ICDP to provide sustained benefits to local communities within and around the protected areas and connecting corridors.

- ***Enact new legislation on land tenure rights in protected areas***. Land tenure or use rights appear to be an issue in 2 of the protected areas. Park managers attribute these disputes to lack of clarity regarding traditional grazing rights within different park zones, and conflicts and overlapping authority between park and district authorities causing confusion for local community members. However, for the most part, such conflicts appear to be quickly and fairly resolved. Enactment of the pending revision of the Land Act could help facilitate the prevention and resolution of these conflicts.

[7] UNDP Project Fact Sheet.

C. KEY FINDINGS: FORESTS

3.78 Forests play a major role in Bhutan's domestic development effort and its national economy through export of wood products (export of raw logs having been banned since mid-1990s) and non-wood products; and through the protection of watersheds, thereby making possible the development of hydropower, the country's primary source of foreign exchange (Box 4). As noted in Chapter II, Equivalence Assessment, the national goal that is embedded in legislation and the draft constitution is to retain at least 60 percent of the land area under forest cover.

3.79 Due to its extensive forest resources and small (but rapidly growing) population, Bhutan is self-sufficient in forest products at a national level. Increasing pressure on forests generated by population growth and an increase in living standards and aspirations has led Bhutan to embark gradually and rationally on a program to build up the required capacity to utilize its forest resources on a sustainable basis. Sustainability will help meet demands of existing local industries, without impairing the natural resource base or the environment. In this context, institutional capacity strengthening needs to incorporate the key themes of integrated renewable natural resource development, sustainable forest management, decentralization, institutional implementation capacity, people's participation, and monitoring and evaluation. Support to capacity building is needed to enable Bhutan to carry out its policy of sustainable utilization of its forest resources (UNDP 1996).

3.80 Forest patterns in Bhutan are the outcome of a close relationship between the macro-level financial constraints of the government on investments in forestry (human resources, research and development) and micro-level disturbances due to biophysical, economic, social, and other factors. There is more pressure on forests in areas with low productivity of land, high population per unit area of forest, insufficient cash income, and ineffective social institutions than in areas with high productivity of land, lower population per unit area of forest, sufficient cash income, and effective local social institutions (FAO 1999).

Box 4. Forests and Sustainable Hydropower

Forest conservation is essential for the sustainable generation of hydropower. Bhutan's large hydropower potential, estimated at 20,000 megawatts, can only be effective if the forests in the river catchments are adequately conserved. Implementation of proper watershed management plans, including biological diversity conservation programs, can contribute to the sustainability of this important source of income for the country.

Protecting forests in river catchments is important because all existing and planned hydropower plants are based on a run-of-the-river system that takes advantage of the natural fall of the rivers to generate power. Most of these rivers, originating from lakes in the northern part of the country, are fed by catchments in forested areas. The forest cover defines the water holding capacity and silt contribution of the catchment. Hydropower electricity generation in Bhutan is increasingly becoming synonymous with economic development because of its immediate positive impact on the country's balance of payment and future development. However, the large hydropower potential can only be realized if the forests in the catchment areas of the rivers are adequately protected.

3.81 The per capita statistics at the national level indicate self-sufficiency in forest goods and services. However, there are problems of local-level resource scarcity and degradation due to excessive unplanned firewood extraction, shifting cultivation, and livestock grazing and browsing. These problems have resulted mainly from increasing human population growth and limited availability of forest resources. Accelerated economic growth, declining enforceability of forest regulations, and disruption of local social institutions have further aggravated these problems. Regional studies indicate that the contribution of forests to fodder and grazing has increased from 30 to 66 percent. The current level of fuelwood consumption (1.0 million square meters) alone is reaching the limit of annual allowable cut of wood from all operable forest areas. The Forest Department has been able to develop forest management plans for 34 forest management units covering about one-fourth of the operable forest area with limited financial and human resources.

3.82 The RGOB assumes responsibility for forest resource management by changing forest property rights through the Forest Act of 1969, as amended by the Forest and Conservation Act of 1995, and other laws. This shift of responsibility from local communities to the state has adversely affected the local social organizations and their control over forest resources. Dependence of local people on the state for forest resources has increased while the value of self-reliance, group effort, and customary regulation has declined. This has posed major challenges to Bhutan's ability to manage effectively its forest resources on an economically and ecologically sound basis**.**

1. Pressures on Natural Forest Resources

3.83 The major threats to Bhutan's timber and non-timber products and other natural forest resources are population growth, patterns of agricultural cultivation, livestock grazing, urbanization, and the increased monetary value and commercialization of forest products. These threats are described in detail in Annex H. The enactment of the Forest Act of 1969 and the Forest and Nature Conservation Act of 1995 is undermining local institutions as the state assumed full authority and control of the forests (Wangchuk 1998). The impact of this change has been documented in studies of local community responses in terms of incentives and disincentives to comply with central government regulations regarding use of forest resources (Lam Dorji and others 2006). The Forest Act of 1969 legislates a fundamental change in forest rights and accessibility by transferring ownership of forests and forest produce, whether in reserved forest or on private land, to the government (Giesch 2000). The Forest Act designates all forests as"government reserve forest" and brings them under the purview and management authority of the central government. This includes harvesting of non-timber resources and the use of forests as traditional grazing areas. The Act also requires local people to obtain a permit from the Department of Forestry to extract forest trees and products designated as Schedule I (protected) species. In recognition of rural community dependence on forest products, however, the Act provides some leverage to rural populations to appropriate non-timber resources for subsistence needs (RGOB 1995). The increased value of forest products, both in the domestic and export markets, is putting pressure on Bhutan's

extensive non-timber forest resources, including leaf litter,[8] medicinal plants,[9] lemon grass, mushrooms, vegetable dyes, waxes, and resins. The RGOB is involved in the forest products market and maintains a differential pricing policy for forest products in urban and rural areas, which often provides incentive to divert some subsidized (high value but low priced) forest products from rural into urban areas. This in turn reduces the incentive to enforce forest protection regulations.

2. Institutional Organization and Capacity

3.84 The Ministry of Agriculture has overall authority for the renewable natural resources sector, which includes forestry, nature conservation, national parks, livestock, and agriculture. These are organized into 3 departments or divisions (Crop and Livestock, Research and Extension, and Forestry) and 2 public sector corporations (Food Corporation of Bhutan and Forest Development Corporation). The Department of Forestry was established in 1952 to undertake the following mandates:

- Preserve the natural ecological balance by maintaining at least 60 percent of the country under forest cover for all times;
- Implement forest policies, acts, and rules for sustainable management of the country's forest;
- Contribute to production of forest, water energy, and other commodities effectively coordinating between forestry and farming systems;
- Facilitate development of forest-based industries to contribute to local and national economies and to create employment opportunities; and
- Provide relevant analysis on forest resources data for formulation of effective strategies, policies, rules, and regulations for sustainable forest management.

3.85 The Department of Forestry is organized into 4 functional divisions:

- ***Forest Protection & Utilization Division*** undertakes tasks related to protection from pest and diseases, land inspection, and utilization of timber and non-wood forest products, mostly in collaboration with the Territorial Forest Divisions & National Parks.

[8] Leaf litter provides bedding for cattle in winter and fertilizer. In Bhutan, it has traditionally been obtained from *sokshing* meaning a government forest registered in an individual's name for collection of leaf litter. Legal reforms have effectively transformed sokshing from a private to a public resource, reducing incentives for individuals to protect and plant additional trees. This is evident from observation that tree cover in most sokshings is intact, but the adjoining government forests are often relatively degraded (Wangchuk 1998).

[9] About 300 out of 600 identified medicinal species in Bhutan are commonly used to prepare drugs. Certain minerals from the forest and animal parts are incorporated in the drugs for the Bhutanese system of medicine.

- ***Forest Resources Development Division (FRDD)*:** is responsible for preparation of management plans for sustainable utilization of forest resources in forest management units, forest demarcation, preparation of management guidelines, and monitoring of non-wood forest products outside protected areas.
- ***Social Forestry Division*** is responsible for technically backstopping the Dzongkhag forestry sectors in effective and efficient implementation of the decentralized forestry activities and enhancing participatory sustainable forest management.
- ***Nature Conservation Division*** facilitates activities of national parks and wildlife sanctuaries (protected areas) in conservation of natural resources.

3.86 The Ministry of Agriculture, through its board of directors, also has direct control over the Forestry Development Corporation Limited, which has both commercial and social responsibilities. Its commercial activities include timber harvesting, marketing, road construction, and afforestation. Timber harvesting, processing, and marketing of timber and timber products by the Corporation are governed by government-approved forest management plans. Under its social responsibility falls the provision of rural timber from the Corporation's depots. The Forest Development Corporation is also mandated to carry out construction of forest roads and reforestation within approved forest management units. The Ministry of Trade and Industries approves operating licenses for wood-based industries. The private sector operators comprise contractors and industrial entrepreneurs. The Forestry Development Corporation Limited harvests and extracts timber through contractors. Contractors (under the supervision of the Forest Development Corporation Limited) build the forest roads, carry out logging operations and transport the harvested wood. All wood-based industries are owned and run by private entrepreneurs. The commercial activities and social responsibility of the Forest Development Corporation should be delineated more clearly in the future for it to function properly.

3.87 ***Forest management at the district level.*** In accordance with the RGOB decentralization policy, some forestry activities, which have direct relevance to the lives of rural people, have been decentralized to the Dzongkhag administration since 1993. Accordingly, forest officials, mostly at the level of senior forest rangers have been transferred as dzongkhag forest officers. The Department of Forestry is in the process of transferring forest extension agents (at the level of assistant forest ranger) in each of the geogs to support the dzongkhag forest officers in implementing the decentralized forestry activities.

3.88 The responsibilities of the dzongkhag forestry sector in accordance with the decentralization document cover (a) management of community forests; (b) management of social forests (private and school social forests); (c) protection of forest from fire and encroachment into sokshing & tsamdrog; (d) allocation of dry firewood to the rural people; (e) implementation of afforestation program; and (f) sanctioning of subsidized timber for rural house construction.

3.89 To accomplish this mission, the Department of Forestry has developed substantial human and technical resources, including a cadre of highly trained foresters at both the central and district levels; use of GIS forest and soils mapping technology; and a thorough knowledge of the country's forest resources and their vulnerability. However the inaccessibility of much of Bhutan's terrain and financial limitations for using state-of-the-art technology adversely affects the ability of the Department to carry out its monitoring and enforcement functions at the local level. To overcome these limitations the RGOB is attempting to revitalize local social institutions through the development of partnerships and the decentralization of authority and control over forest resources

3.90 A December 2000 institutional study of the Department of Forestry[10] and related institutions within the Ministry of Agriculture (including the Policy and Planning Division) was undertaken by the World Bank and the WWF Global Forest Alliance, focusing on the monitoring and evaluation (M&E) of sustainable forest management (Tashi Wangchuck 2000). Given the time past since the study, some of the perceived strengths and weaknesses of Bhutan's M&E systems may have evolved. Briefly, the study found the following weaknesses in Department of Forestry M&E system:

- Limited M&E of forestry management activities, which are largely project driven.
- The work culture tends to equate M&E with investigations for mismanagement.
- Ad hoc and instruction-driven action regarding M&E.
- Limited coordination for M&E activities between departments.
- Due to limited M&E, staff rotation is seen as antidote to mismanagement.
- Over reliance on complicated and lengthy procedures for funds released by the Administrative and Finance Division (Ministry of Agriculture) rather than on efficient M&E.
- Inefficient use of available pool of trained staff and acute need for training.

3.91 ***Forest management at the local level.*** Decentralization has re-empowered the role of traditional, local institutions in regulating access, use, and management of forest resources (Wangchuck 2001; Allison 2002). Traditionally in the *mang* (community/village), the *reesup* (village forest guard) managed most of the forests. The mang used to appoint the reesup on an annual or biannual basis. The village elders decided the reesup's duties and responsibilities. The reesup was delegated the authority to ensure that everyone had adequate firewood and construction timber and empowered with the responsibility to enforce *reedum* (prohibition of forestry activities, including extraction of bamboo and grazing during the summer, i.e., June-October) in the communities (Wangchuk, T. 2000).

3.92 The Forest Act of 1969 replaced the institution of reesup with forest officials appointed by the government; but in practice most of the customary rights and sanctions continued because the government did not have adequate personnel to implement the

[10] Called the Department of Forest Services at time of the 2000 study.

provisions of the Forest Act. The reesup was officially revived in 1985 when the forestry organization realized that the reesups could play a key role in providing local knowledge and information, interpreting the concept of sustainable forest management, and developing useful institutional links with the local people in managing the forests. The responsibilities of reesup now include explaining government policies, rules, and regulations regarding sustainable forest management to local people; encouraging local people to abide by government rules and regulations; and assisting local forest officials to detect forest offenders (Wangchuk, T. 2000).

3. Forest Management Procedures

3.93 The Forest Policy of 1991 and the Forest and Nature Conservation Act (FNCA) of 1995 define the objectives of forest planning and require an approved forest management plan for each reserved forest in Bhutan and especially for logging areas. The Forest Department classifies the forested areas into two categories: protected areas in forests and the balance of the forest areas. The balance of forest areas is further divided into (a) critical, fragile, and depleted forest areas for conservation and protection and (b) operable areas for production.

3.94 ***Forest Management Code.*** The forest management units or production units are carved out within the operable areas for preparation and implementation of forest management plans, which are long-term silvicultural plans for a ten-year period for the sustainable management and production of forests. To provide a comprehensive set of guidelines and requirements for forest planning, management, and implementation of forest management units, the Department of Forestry prepared a detailed Forest Management Code of Bhutan in July 2004, with technical assistance from GTZ.

3.95 ***Forest Resources Potential Assessment.*** At the macro level, the Forest Management Code specifies procedures for conducting a Forest Resources Potential Assessment for the purpose of determining the location, size, and external boundaries of potential forest management units. The Forest Resources Potential Assessment is based on the land use classification under land use policy and planning, which specifies forest cover according to forest type and density class using a GIS-based analysis, with a conservative margin of error reflecting the inherent limitations of this technology and the availability and reliability of satellite data.

3.96 ***Reconnaissance Survey.*** At the intermediate level, the Forest Management Code outlines the sequence of field-based procedures to be undertaken in a Reconnaissance Survey with the objective of providing decisionmakers with the social, environmental and economic information necessary to determine whether or not a forest management unit should be opened and managed on a commercial basis and for demarcating its boundary. These procedures include an Initial Environmental Examination and a Socio-Economic Survey as well as a Reconnaissance Forest Inventory and Economic Feasibility Study. It is required that other agencies, including the National Environmental Commission, be consulted during preparation of the Reconnaissance Survey. The Initial Environmental Examination, prepared as part of the Reconnaissance Survey, is required to provide

baseline information on wildlife; rate ecosystems and fauna, soil conditions, water catchments; and assess environmental risks of forest management. The Socio-Economic Survey, in the form of a Rapid Rural Assessment, includes requirements to inform local communities of the intended opening of a forest management unit, and of consultations for identifying the communities' current forest resource use, priority problems, and concerns, and any other expectations and information communities may have about wildlife and other environmental issues.

3.97 ***Forest function mapping and scoping***. Mapping and scoping is designed to define the ecological, environmental, and social functions for all forest areas within the forest management unit and to balance the often diverging interests of commercial logging, local forest use, and nature conservation. Typical functions addressed include soil conservation; water and watershed conservation (riparian reserve protection, local water supply); nature conservation; social functions (religious); and road buffering. Forest functions are classified into three zoning categories: (a) protection zone has no commercial logging, (b) local use zone is limited to social forestry, and (c) limited production zone has restricted commercial use if permitted under the control of a forest management plan.

3.98 ***Forest management plan***. At the operational level the Forest Management Code outlines requirements of a forest management plan. The forest management plan is a participatory process that is designed to combine national with locally derived forest management objectives specific to a forest management unit. Following existing Department of Forestry requirements, the forest management plan is designed as a 10-year plan with a mid-term evaluation and revisions as necessary. The forest management plan process is designed to be broadly participatory with participating stakeholders, local people, and government and local institutional representatives, including NGOs. The draft outline of a forest management plan is not intended to supersede the preparation of an environmental assessment as required by the Environmental Assessment Act, but should contain many of the elements of an environmental assessment and an environmental management plan.

3.99 ***Other requirements and resources.*** Other sections of the Forest Management Code relating to environmental and social impacts of forest management units outline the procedures to be followed in preparing environmental assessments under the authority of the EAA and the RECOP; forest management inventories and data processing; calculating sustained yield (annual allowable cut); socio-economic survey and participatory planning; spatial organization of the forest management unit; silvicultural systems; operational planning, inventory and data management; health and safety; forest protection against pests and diseases; road construction and maintenance; record keeping; mapping; and monitoring and evaluation.

3.100 ***Assessment of Bhutan's forest management procedures.*** OP 4.00 Table A1 requires that projects involving industrial-scale commercial logging must be certified under an independent forest certification system. This certification would demonstrate the project meets, or has a time-bound action plan to meet, internationally recognized

standards of responsible forest management and use. It also requires that projects use forest certification systems that require the following:

- Compliance with relevant laws;
- Recognition of, and respect for, legal or customary land tenure and use rights, as well as the rights of indigenous peoples and workers;
- Measures to enhance sound community relations;
- Conservation of biological diversity and ecological functions;
- Measures to maintain or enhance environmentally sound multiple benefits from the forest;
- Prevention or minimization of environmental impacts;
- Effective forest management planning;
- Active monitoring and assessment of relevant forest management areas; and
- Independent, cost-effective, third-party assessment of forest management performance against measurable performance standards defined at the national level and compatible with internationally accepted principles and criteria of sustainable forest management through decisionmaking procedures that are fair, transparent, independent, designed to avoid conflict of interest and involve the meaningful participation of key stakeholders, including the private sector, indigenous peoples, and local communities.

3.101 Although Bhutan does not participate in any independent certification system with respect to the commercial logging activities of the Forest Development Corporation Limited, most key elements of certification required by OP 4.00 Table A1
3.102
3.103 are in place in Bhutan's Forest Management Code. The most significant missing element is the requirement for independent, cost-effective third-party assessment of forest management performance.

4. Outcomes of Forest Protection Systems

3.104 ***Retention of forest cover***. At the macro-ecological level, a crude but relevant indicator of effectiveness under Bhutan's forest management policy is the percentage of forest cover. The RGOB has set the goal of retaining no less than 60 percent of its land area in forest, and this commitment is embedded in law and in the draft Constitution. Satellite data on Bhutan's total forest cover was collected in 1978, 1989, and 1999, but inconsistent analytical interpretation of this data has led to inconclusive results. The general consensus is that Bhutan's total forest cover is at 72.5 percent—one of the highest in the Asia region. Almost all forests are natural, nearly all classified as "closed forest" based on standard measurements of crown density, with 4.44 percent classified as "open forest," 8.12 percent as "scrub forest," 0.16 percent as "plantation," 0.15 percent as

"horticulture," and 2.20 percent under "shifting cultivation."[11] Although these relative percentages have undergone some change over recent decades, the overall level of forest cover is generally considered to be stable.

3.105 However, there is concern about unsustainable use of forest resources. A recent report of the Forest Resources Development Division states that the annual total consumption of timber (190,000 square meters) in recent years exceeded the total annual allowable cut (149,000 square meters) from all forest management units. The excess demand was met from ad hoc sources and not based on sustainable forest management planning, which is a cause for concern. Fuelwood consumption is even higher at 1.27 tons or 1.8 square meters per person per annum. This works out to nearly 1.2 million square meters per annum. As a result of excessive forest use, localized deforestation has occurred in several places especially where population density is high (e.g., in parts of eastern and southern Bhutan).[12]

3.106 ***Process and quality of forest management units and forest management plans.*** The Department of Forestry is required to prepare forest management plans for 90,000 to 100,000 hectares yearly to cover all the identified operable forest areas with forest management plans on a ten-year cycle (the period of a plan). However, the current annual capacity of the Forest Resources Development Section (Division), which prepares such plans, is about 10,000 to 40,000 hectares. Obviously, the progress of developing forest management plans is slow. Only about 25 percent (226,815 hectares) of operable area either have Forest Management Units or one is in preparation. Obstacles to development of a sound forest management plan arise due to many forest management units in Bhutan do not have good topographic maps. As in the road projects, the existing 1:25,000 scale topographic sheets are blown up from 1:500,000 scale maps. Under these circumstances, intensive field reconnaissance is necessary to explore details of the logging areas to learn the peculiarities of the terrain and to select feasible road corridors (Winkler 1999).

3.107 During the Ninth Five-Year Plan period (July 2002–June 2007), a total of 214,267 hectares of forests has been earmarked for logging operations, primarily to harvest timber. An annual allowable cut of 208,088 square meters has been projected from these forest areas, nearly 40 percent increase over the previous annual allowable cut. This entails creation of 5 forest management units in addition to the existing 10 . Additional forest management units will mean more roads into forest areas and laying of cable cranes, which will have concomitant environmental consequences, the degree of which will depend on the quality and design of road construction and logging operations. Environmental monitoring of forest management units is critical, but up to now this has been far from adequate and is likely to remain so in the future too due to lack of trained personnel, funds, and equipment.[13]

[11] Sustainable Land Management Project, Environment Management Framework.
[12] National Report, Implementation of the United Nations Convention to Combat Desertification in Bhutan. Prepared for the Fifth Session of the Committee for the Review of the Implementation of the Convention (CRIC5), June 2006.
[13] National Report, Implementation of the United Nations Convention to Combat Desertification in Bhutan. Prepared for the Fifth Session of the Committee for the Review of the Implementation of the Convention (CRIC5), June 2006.

3.108 ***Logging practices.*** Found in Bhutan's forested mountain slope, logging in steep terrain requires environmental-friendly techniques to avoid collateral damage to vegetation and soils. Forest Development Corporation Limited has long recognized that long-distance cable logging system (first introduced by several Swiss and FAO-supported projects) are the most suitable option for commercial timber harvesting based on sustainable forest management in steep mountainous terrain of Bhutan.[14] However, strip-wise, clear-felling techniques were still in evidence in Bhutan as recently as the late 1990s. Such techniques have the effect of exposing cleared slopes to erosion and regenerating forests with poor species composition and even-aged, one-story forest stands. This practice has gradually given way to a selective felling approach that has the effect of reducing the potential for erosion and regenerating uneven-aged, multi-story forest stands.

3.109 ***Community-level forest management outcomes.*** At the micro level, one indicator of the effectiveness of Bhutan's forest management policies is the results of its efforts to decentralize forest management by empowering local communities to make use of traditional community institutions to regulate forest use, supplemented by scientifically based forest management practices. The 2003 Forest and Nature Conservation Rules gave rural communities further impetus to manage the government reserved forests as community forests. Today, Bhutan has 31 community forests. Although it too soon to undertake a comprehensive analysis of community forests, a recent study was undertaken in 3 community forests in the Mongar district by the forest officers and the adjoining district of Chukha (Rinchen Wangdi and Nima Tshering 2006). The study was conducted to explore the social, economic, and environmental benefits of the 3 community forests on rural livelihoods and to discuss the current status and future expectations of community forests. Three methods were used in this study to assess the impact of community forests on rural communities: semi-structured interviews with 3 community groups of 10 persons (with equal numbers of male and female members); a transact walk across all 3 community forests; and a questionnaire survey.

3.110 The study concluded that all 3 community forests are effectively being managed by the 3 rural communities through their communal participation. The community forests positively affect the social, economic, and environmental aspects of its rural community. Community members have strengthened their relationship among themselves as they improve the forest cover and maintain the catchments by planting valuable tree species and protecting them through community participation.

3.111 Although the communities have developed a strong sense of ownership rights over the community forests, they are still concerned that these ownership rights are not fully protected by the Government particularly in the case of amendments to the forest acts, rules, and regulations. The study recommended that rural communities be consulted and their views incorporated when the forests acts and rules are being revised by the Government. The study recommended expanding benefits for rural livelihoods from community forests by strengthening education and extension services to increase

[14] National Report, Implementation of the United Nations Convention to Combat Desertification in Bhutan. Prepared for the Fifth Session of the Committee for the Review of the Implementation of the Convention (CRIC5), June 2006.

awareness of communities and extension agents of the potential for more community forests in rural areas. Further, the government should give due emphasis and continued support to the rural communities in promoting increased community forest participation.

3.112 ***Enforcement outcomes.*** No systematic data is available on the extent or effectiveness of the Department of Forestry's enforcement of requirements of the 1995 Forest and Nature Conservation Act or the supporting Rules issued in 2000. Some data is available for the period 1991-96 obtained from Department of Forestry records in various districts (Wangchuck 2005). The applicable legal instrument is therefore the Forest Act of 1969. An analysis of 256 offense cases illustrates a wide range of illegal activities, including poaching (33 percent of offenses); felling of trees for house construction; land clearing for cultivation; collection of firewood; timber removal; transportation of sand and stones; land encroachment; and fishing. The majority of offenses (60 percent) were committed in rural areas followed by 27 percent in urban areas and 13 percent in semi-urban areas (urban enclaves and satellite towns). Offenders include government employees (15 percent) and contractors (17 percent), and farmers being the majority. Fines ranged from Nu.500 to 10,000 (US$12 to 240) and above. Twenty-six percent of the cases were resolved in court with the balance adjudicated by divisional forest offices. In addition to demonstrating an existing will and capacity within Department of Forestry to enforce the law, some cases of illegal felling resulted from Department of Forestry's failure to mark trees in a timely manner that were otherwise within the offender's permissible harvesting rights.

5. Recommendations for Improved Implementation of Forest Management Policy

3.113 The Ninth Five-Year Plan set forth recommendations for the forest sector, linked to its role in the broader natural resources sector:

- Strengthening the capability of the Dzongkhag extension staff to implement the decentralized forestry activities;
- Encouraging greater people's participation in forest management, through private and community forestry, and also through greater involvement in the management of forest management units and other national forests;
- Increasing sustainable utilization of forest resources, including non-wood forest products, to generate employment and income while maintaining the condition of the forests; and
- Creating an appropriate policy and legal environment for the development of wood-based industries.

3.114 Relating specifically to the M&E function of the Department of Forestry, which is critical to the implementation of sustainable forest outcomes, the World Bank/WWF Global Forest Alliance developed a matrix of recommendations (Table 1) related to the ongoing decentralization of authority in the forest sector.

Table 1. Decentralization of Authority in the Forest Sector

	Decentralization of rural timber	***Strengthen FRDD***	***RGOB reform***
Policy / strategy	▪ Implement decentralization policy ▪ Develop detailed strategy for decentralization	▪ Develop clear strategy to strengthen M&E capacity of FRDD	▪ Formulate M&E legislation ▪ Develop policy and strategy for enforcement of legislation ▪ Implement M&E Section (Policy Planning Division)
Capacity	▪ Increase management planning and M&E capacity of dzongkhags	▪ Upgrade existing forest management unit M&E cell (staffed with 1 ranger presently) to a full M&E section with a forestry graduate as coordinator	▪ Increase enforcement capacity of competent authorities such as the Policy Planning Division, territorial district forest officer, and FRDD.
Human resources	▪ Transfer senior district forest officer to dzongkhag ▪ Transfer staff from territorial divisions to dzongkhag ▪ Train staff in M&E and management planning	▪ Appoint forestry graduate at FRDD to coordinate and head M&E activities. ▪ Provide graduate-level training in M&E to officer ▪ Recruit graduates to fill new posts for M&E. ▪ Train graduates in management planning and M&E	▪ Staff of competent authorities trained in M&E.
Coordination / Roles	▪ FRDD initially help make rural timber management plans for dzongkhags ▪ TFDP and FRDD train dzongkhag and territorial staff in use of M&E forms ▪ Policy Planning Division provides technical support for data collection and analysis in coordination with dzongkhag renewable natural resources	▪ New M&E section will coordinate and provide technical backstopping for M&E in forest management units (territorial district forest officers) and rural timber (dzongkhag forestry sector) ▪ Work closely with M&E Section, Policy Planning Division and provide M&E reports for funds release approval	▪ M&E Section, Policy Planning Division authorizes release of funds based on M&E report. ▪ Administration and Finance Division (Ministry of Agriculture) not play policing role as presently done

6. Conclusions and Recommendations on Forest Policy

3.115 ***Strengths.*** There has been significant progress in the past years to build Bhutan's capacity to plan, manage, and inventory its large forestry resource. Major strengths in forest management include the following:

- National policy that recognizes the preservation of the natural ecological balance of its natural forests, with a mandated 60 percent of forest cover to be maintained in perpetuity;
- Clearly delineated institutional responsibilities to plan and manage natural forests and sustainably harvest its resources;
- Direct oversight within the Ministry of Agriculture to coordinate and manage the conservation and sustainable harvest of forest resources;
- A cadre of highly trained central and field staff to manage the forest estate;
- A comprehensive set of guidelines for preparation and implementation of forest management plans for sustainable management and production of forests;
- Approved forest management plans forming the basis for logging in specifically defined forest management units;
- Strong political will and an effective system to monitor and evaluate sustainable forest management and clear legislation and policies in support of sustainable forest management; and
- Strong emphasis on decentralization of forest management to the community level that makes use of traditional community institutions to regulate forest use that is supplemented by scientifically based forest management practices.

3.116 ***Major weaknesses.*** Given the extensive areas of intact forests left in Bhutan and the national commitment to sustainable management of the forests, Bhutan's forestry system remains weak in some critical areas, namely:

- The inaccessibly of much of Bhutan's terrain and financial constraints have limited the use of state-of-the-art technology to carry out monitoring and enforcement of functions at the local level.
- Despite the emphasis on monitoring and evaluation of forestry operations, these are mostly project driven resulting in limited effort of mainstreaming it into the operations of the forestry sector.
- Lack of an independent certification system in respect to harvesting of timber prevents an objective assessment of the effectiveness of the implementation of sustainable forest management systems.
- Lack of adequate manpower capacity within the Forest Resources Development Division of the Department of Forestry limits its ability to prepare the requisite forest management plans for its total operable forest area. This is further constrained by the lack of good topographic maps.

- Although there is a strong sense of interest among communities to manage forests, ownership rights still remain inadequately protected in existing forest legislation.
- No systematic data is available on the extent and effectiveness of enforcement of the requirements of the Forest and Nature Conservation Act of 2000.

3.117 ***Recommendations***. Specific recommendations to improve the management of the forest estate in Bhutan include:

- ***Strengthening monitoring and enforcement.*** A clearly defined strategy to strengthen the Departments of Forestry planning, monitoring and enforcement capacity; upgrading the Forest Resources Development Section to full Division status, with additional staffing and specialized skills training, including provision of technical backstopping for monitoring and evaluation of the forest management units to territorial forestry staff (territorial district forest officers). Mapping capability and skills should be improved to complete management plans for the backlog of forest management units.

- ***Improving community participation and ownership and expanding benefits of community forestry.*** To improve community participation and ownership in forest management, it is necessary to revitalize local social institutions through the development of partnerships and the decentralization of authority and control over forest resources. Education and extension services should be enhanced to realize the potential for more community forestry in the rural areas so that local communities can reap sustained benefits from the forest.

- ***Independent certification of forest management effectiveness.*** Introduction of independent certification would facilitate the objective assessment of effectiveness of commercial-scale forest operations.

D. KEY FINDINGS: SAFETY OF DAMS

3.118 Bhutan's hydropower potential is assessed to be 30,000 megawatts of which 23,760 megawatts is considered technically and economically feasible. Until now, Bhutan has been exploiting its hydropower potential through run-of-river projects. All existing hydropower plants, except mini/micro hydro, have dams that divert water. Although the diversion dams do not create reservoirs, they can hold water for short periods of time creating pondage in the upstream, which may be utilized for additional power generation to meet higher demand during peak-hours (up to 4 hours). The diversion of water significantly reduces the downstream water availability particularly during the low-flow winter time.

3.119 With a ready and practically insatiable market in the region, hydropower is being looked upon as a sustainable and clean source of revenue for Bhutan that would finance other aspects of both its development and conservation agendas. Expansion of hydropower is expected to promote more regionally balanced industrial development, thereby minimizing the adverse socio-economic and environmental fallout of large-scale rural-urban migration. Exploitation of hydro potential will also minimize the importation of fossil fuel-based energy, creating a more favorable balance of trade for Bhutan and improving the environmental quality in the region as a whole.

1. Hydro-power Infrastructure

3.120 ***Existing dams*** There are 4 major hydropower dams constructed in Bhutan for hydropower development with total installed power-generation capacity of 1,488 megawatts. Three of the four dams meet definition of large dams per World Bank OP 4.00 Table A1: a large dam is 15 meters or more in height. Dams that are between 10 and 15 meters in height are treated as large dams if they present special design complexities, such as an unusually large flood-handling requirement, location in a zone of high seismicity, complex and difficult foundations, or retention of toxic materials. Dams less than 10 meters in height are treated as large dams if they are expected to become large dams during the operation of the facility.

3.121 High seasonal flow variation in the rivers means power generation by these run-of-river hydropower plants also varies accordingly. Although the total installed capacity is 1,488 megawatt, the 4 plants generate approximately only 288 megawatts during the lean flow winter period. Current domestic demand for power is estimated to be 150 megawatts, which is rising fast as the number of energy consuming industries and enterprises increase. It is estimated that the 288 megawatts low flow generation could meet the demand until 2009/10.

3.122 ***Future dams*** The 2003-2022 Power System Master Plan, prepared by the Department of Energy (Ministry of Trade and Industry), is an integral part of the Water Resource Management Plan of Bhutan and an update of the earlier plan for hydropower development. The Power System Master Plan provides an overview of current power

sector scenario including power sector infrastructure in Bhutan and, based on an analysis of power market demand, proposes a priority list of hydropower projects that are ranked using multi-criteria analysis.

3.123 Planners in Bhutan are more conscious about the need for storage reservoir projects together with the run-of-river projects although none of the 7 priority projects identified in the Power System Master Plan involve containment structures. The Power System Master Plan priority targets development of larger hydropower projects aiming to export power to India as well as to allow all of Bhutan access to electricity (Table 2).

Table 2. Power System Master Plan: Priority 7 projects for development

Project	*Installed capacity (MW)*	*Type*	*Dam height (meters)*	*Target service year*
Punatsang Chhu I	1,002	Run-of-river	42	2012
Mangde Chhu	670	Run-of-river	31	2014
Punatsang Chhu II	992	Run-of-river	42.5	2016
Chamkhar Chhu I	671	Run-of-river	32	2020
Chamkhar Chhu II	568	Run-of-river	32	2023
Kholong Chhu II	468	Run-of-river	31	2024
Amo Chhu	499	Run-of-river	35	

Source: The 2003-2022 Power System Master Plan.

2. Potential Sources of Risk to Dams in Bhutan

3.124 ***Fragile geology and seismic zone.*** Risks posed by geological fragility are high in the Himalayan region. The region also happens to be a potential earthquake zone. In September 2004, huge landslide debris blocked the river upstream of Kurichhu dam; the debris dam breached a year later in July 2005 causing a significant flood in the river. The monitoring team posted in the site had sent the message of the event to Kuricchu Project in time to take precautionary actions (including opening all the gates of dam): thus no damage to the dam was caused and there were no human casualties.

3.125 ***Glacial lake outburst flood).*** There are several glaciers and glacial lakes in the upper Himalayan range. In Bhutan, 3 glacial lakes identified as high risk could break and cause huge floods in the downstream river systems. These lakes are located in Punatsong Chu, Mange Chu, and Chemkhar Chu basins. Of the 2,674 glacial lakes in the country, researchers have found 24 to be potentially dangerous. While several glacial lake outburst floods have occurred in the past, they have gone unrecorded. The most recent glacier lake outburst flood, which occurred in October 1994, wreaked enormous damage to agricultural land, property, and infrastructure, and caused several deaths in the downstream valleys.

3.126 ***Reservoir sedimentation.*** Risk of reservoir sedimentation is high in the Himalayan region in general due to fragile slopes and high erosion. However, risk in Bhutan is relatively low compared to Nepal and India. This is because there is no

habitation in the upper catchments that are well protected with dense forest/vegetation cover.

3. Institutional Capacity for Dam Safety in Bhutan.

3.127 All existing hydropower dams in Bhutan are RGOB owned. The Department of Energy under the Ministry of Trade and Industry is responsible for policy and planning aspects of the energy/power sector. The Bhutan Electricity Authority is mandated for regulating the power sector as per the Electricity Act 2001. Bhutan Power Corporation, which is fully state owned, is a utility service company responsible for transmission, distribution, and supply of electricity in Bhutan.

3.128 For the purpose of operation, maintenance, asset management, and sale of electricity, the RGOB has formed three corporations: (a) Chhukha Hydropower Corporation; (b) Kurichhu Hydropower Corporation; and (c) Basochhu Hydropower Corporation. The Tala Hydropower Project, which commenced operations in March 2007, is at present operated under a bilateral agreement with India. After 2 years of operation, this will also be converted into a corporation. The RGOB has merged all hydropower corporations into one company, Druk Green Power Corporation, Limited, which would also invest in hydropower projects in addition to operation and asset management. Under preparation with support from Asian Development Bank, a new hydropower policy is likely to open hydropower development to private sector and foreign investment.

4. Dam Safety Procedures

3.129 Hydropower dams in Bhutan are operated by the government owned corporation. The Guidelines for Safe Operation of Dams in Bhutan notes that all of the dams, except Tala, are attended 24 hours of the day by qualified personnel (Table 3).

Table 3. Operation of Dams in Bhutan

No.	*Dam*	*Operation*
1.	Chhuka Hydropower Corp.	▪ 24-hour attendance ▪ 30 people involved in operation ▪ Has operational manual ▪ Hourly log book
2.	Basochhu Hydropower Corp. (upper and lower stages)	▪ 24-hour attendance ▪ 60 people involved in operation of two plants ▪ Intake automated and monitored by surveillance camera
3.	Kurichhu Hydropower Corp.	▪ 24 hour attendance ▪ 23 people involved in operation ▪ Record in log book ▪ Operation and instrumentation manuals
4.	Tala Hydropower Project	▪ Test commission since March 2007

Source: Based on Guidelines for Safe Operation of Dams in Bhutan.

3.130 ***Operational manual.*** There are written manuals for operation of Chhuka and Kurichhu dams. These manuals describe different functions, responsibilities, and procedures to be followed during normal operation, as well as procedures for monitoring of the instrumentation. There is also a Dam Instrumentation Manual for the Kuricchu Dam. There is no manual for Basochhu Dam. The operational manual for Tala Dam is under preparation and testing.

3.131 **Emergency plan, responsibility and early warning.** Only Kurichhu Hydro Power Corporation has developed an emergency plan. This is a one-page document developed when there was a risk of landslide-created artificial lake outburst flood in 2005. There is a generic strategic action plan for disaster events, with responsibility assigned and coordinated by Department of Local Governance under Ministry of Home Affairs. The Department of Energy is responsible for monitoring and early warning in case of dam-related risks. At present a two-person team is stationed in the Pho Chu Glacial Lake (Punachachu basin upstream) to monitor the situation. They are equipped with wireless and satellite phone and communicate any unusual events to designated agencies.

3.132 ***Dam safety incidents.*** In September 2004, landslide debris created a dam and blocked water in the Chhatichhu River. This was risky as it could breach and damage the Kurichi power project located downstream. A team was posted to monitor the situation and provide early warning of breaks. In July 2005 the debris dam breached was and the monitoring team reported immediately. As a result of these precautionary measures, the power plant in Kurichi was closed, all gates were opened, and there were no human casualties or damage to the plant. Timely information was also given to Indian flood warning stations in Barbeta (in the east of Bhutan) and in Jalpaigudi (in the west of Bhutan).

3.133 ***Independent inspections.*** As noted in Chapter II, Equivalence Assessment, there is no defined system or provision for independent panel review of planning, design, construction, and operation of dams. During operation, the corporation that operates the dam inspects and records the dam condition. The dam designer is invited to review and advise as necessary; this usually happens when some problem or difficulty is encountered. In Tala Hydropower Project, a joint committee of Indian and Bhutanese specialists reviews and advises on any aspect of dam operation or safety reported to it by dam operators.

3.134 Hydropower projects have been identified as a primary means for Bhutan to achieve a high-level social and economic development. However, there is a need to protect forested watersheds in order to sustain hydropower development, which inevitably gives rise to conflicts with the needs of other economic sectors. The RGOB has prepared a Hydropower Master Plan to implement power projects in a well-coordinated manner that includes watershed management and water resource management. Even though reliance on hydropower minimizes the environmental deterioration and health hazards associated with wood-burning stoves, the development of hydropower—especially if it requires the construction of large dams—imposes several

social and environmental costs. Recognizing these concerns, the National Environmental Commission has prepared guidelines for strategic environmental assessment to assist ministries and project developers incorporate environmental protection parameters into the project cycle. It is mandatory for the Department of Power to procure an environmental clearance from the National Environmental Commission prior to a hydro project being approved.

5. Conclusions and Recommendations for Safety of Dams Policy

3.135 Bhutan's limited experience in implementing safety measures relating to large dams reflects the country's dependence on foreign technical assistance from India in design, construction, and maintenance of its existing limited containment, hydro-electric infrastructure. However, this is expected to change as future investments in hydro-electric capacity include the use of containment structures and reduced dependence on foreign technical assistance from India. Bhutan is also considering privatization of its hydro-electric sector.

3.136 In anticipation of these changes the Department of Energy has obtained technical assistance from the Government of Norway for the preparation of Guidelines for the Safe Operation of Dams in Bhutan. Although the guidelines do not have formal regulatory status, it is anticipated that they will be converted into regulations. In the meantime they have been issued to all dam operators as formal guidance from the Department of Energy. In addition, it is necessary to create the institutional capacity within Department of Energy and the recently established Druk Green Power Corporation, Limited, to implement the dam safety guidelines and monitor its enforcement.

3.137 In addition, as a result of experiencing several incidents of glacial lake outburst floods, which are expected to increase as a result on climate change affecting Bhutan's alpine regions, Bhutan has implemented a National Disaster Risk Framework as part of its National Adaptation Program of Action to Climate Change. These activities have provided Bhutan with a basic technical capacity in hydrogeology that will enhance its capacity to deal with the safety issues posed by large man-made dams. Administrative measures will be necessary to ensure that dam safety assessments are conducted with sufficient independent, technical expertise as is required by Bank OP 4.37, *Safety of Dams.*

E. KEY FINDINGS: PEST MANAGEMENT

1. Institutional Capacity

3.138 There is general acknowledgement that the institutional component of the Pesticides Act of 2000 is not fully implemented, but many of its objectives have been attained through other means. With respect to agriculture, the Department of Research and Development Services under the Ministry of Agriculture is responsible for the implementation of policies regarding pest management. Although the Pesticides Act of 2000 authorizes the establishment of a Pesticides Board to regulate the manufacture, import, and distribution of pesticides, the Board has not been created. The RGOB has given the National Plant Protection Center (NPPC) under the Department of Research and Development Services, sole authority to import, distribute, and sell agro-pesticides through the Ministry of Agriculture extension network. Regulations have not been issued that would permit NPPC to license some other entity to carry out these functions. The NPPC is also mandated to develop and promote the use of integrated pest management in Bhutan (Nuth Sakhan 2002). With respect to public health, pesticide use is controlled by the Ministry of Health. Integrated pest management and other pest management policies and laws have been developed and implemented with assistance from the European Union (EU). Bhutan continues to receive donor assistance from the EU office in Delhi and from the Netherlands Development Corporation (SNV).

2. Process for Selection and Control of Agricultural Pesticides.

3.139 ***Selection and procurement of pesticides***. Bhutan neither manufactures nor formulates pesticides. Until 1986, all types of pesticides were imported, primarily from India, and supplied to farmers in Bhutan without reference to environmental and health impact such as mammalian and eco-toxicity and persistence. Uncontrolled imports of pesticides not only stimulated overuse of very toxic insecticides but also resulted in an accumulation of obsolete pesticides. In 1995 some 66 tons of obsolete pesticides were collected, including 13 tons of fungicides, 23 tons of herbicides, and 30 tons of insecticides. In 2005 these pesticides were incinerated in Europe with assistance from the Government of Switzerland. Previous over-reliance on pesticides also resulted in pest resistance, notably in the case of the red spider mite that affects apple orchards and the diamond backed moth in some cabbage-growing areas.

3.140 Between 1986 and 1990 the pesticides Aldicarb, Aldrin, Aluminum phosphides, BHC, Captafol, Ekalux, Agallol, Methyl-parathoin, Red lead, and Thimet were banned for use in agricultural crops due to their high toxicity and persistence. Any pesticides banned in other countries today for use in agricultural crops are not imported into Bhutan. Pesticides imports are limited to those that fall under WHO hazard classification II and III (or less toxic), which is the standard required by OP 4.00 for application by farmers untrained in the use of more hazardous pesticide products.[15]

[15] The only apparent exception to this rule is the continued use of Zinc Phosphate, classified at IIb by WHO, which is widespread in the country though in very limited quantities.

3.141 The NPPC imports pesticides from internationally recognized manufacturers in India with assistance from the Bhutan Food and Agricultural Regulatory Authority and the SHRIRAM Institute in Delhi for quality control. Some illegal import and trade in pesticides does occur along the Indian border to the south. There are no laboratory facilities in Bhutan that have the capacity to analyze pesticide residues in agricultural or other products.

3.142 Until 1989 insecticide and fungicide use was fully subsidized. In 1990 the RGOB began reducing the subsidy each year and completely eliminated all subsidies in July 1995. As a result of these regulatory changes with respect to cost and product availability, the pattern of insecticide and fungicide use has declined considerably since the 1980s and has continued to decline as incentives to use pesticides were aligned with the prospect of farmers getting a good return from their use. With the reduction in the reliance on pesticides, pest resistance has become much less of a problem.

3.143 Demand and supply is carefully aligned through a process in which the district agricultural officer solicits demand requirements from farmers before the start of the season and submits the requests to NPPC along with cash deposits. This system has prevented the accumulation of surplus pesticides; however, it does leave farmers vulnerable to shortages of particular products in response to pest outbreaks. Pesticides are used mostly in horticultural and vegetable crops; in particular, fungicides are used on a symptomatic basis for control of blast disease in rice. In contrast, herbicides were never subsidized and have been used increasingly for weed control due to shortages of agricultural labor and the high cost of imported labor for hand weeding.

3.144 ***Application of pesticides.*** The FAO has provided training to Ministry of Agriculture and the district agricultural officers and staff and on the appropriate use of pesticides. As yet, there are no certified pesticide applicators in Bhutan. All products are applied directly by farmers who are trained and, to a lesser extent, supervised by district agricultural officers.

3.145 ***Disposal of pesticide wastes.*** The NPPC collects all outdated pesticides and packages and stores them in dedicated storage facilities in each district following recommended FAO practice. In addition, pesticides are packaged for distribution in paperboard cartons rather than metal or plastic drums to prevent their reuse. The NPPC acknowledged that storage facilities could be improved from the standpoint of design and ventilation. There is no means of further treatment and disposal in Bhutan

3.146 ***Integrated pest management.*** Since 1993, NPPC has begun to actively promote the use of integrated pest management on a pilot basis for both economic and ecological reasons. Integrated pest management has been particularly successful with respect to the control of fruit flies in citrus, trunk and twig borer in both apple and citrus, scab control in apples, late blight disease in potato, rice blast control, and wilt disease in chili. Substantial economic benefits have been documented (Nuth Sakhan 2002).

3.147 ***Pesticide use in the public health sector.*** Malaria, kala azar, dengue fever, and other vector-borne diseases are endemic to Bhutan, particularly in the southern districts. Traditionally Bhutan relied on the use of DDT for mosquito control. However, increasing resistance to DDT and concerns about long-term DDT toxicity in the environment led the RGOB to discontinue its use in the mid-1990s in favor of synthetic pyrethroids and treated bednets. However, since 1999 there has been a dramatic increase in the incidence of malaria and other vector-borne diseases in Bhutan. This is attributed to the fact that the rural population spends a great deal of time in fields where they are directly exposed. Officials are concerned that DDT remains freely and cheaply available from sources in India where it is still being used for malaria control in rural households. WHO has recommended that Bhutan consider reintroducing the use of DDT on a selective and strictly controlled basis under the terms of the Stockholm Convention.

3. Public Health and Environmental Outcomes

3.148 There is no systematic data on the ecological or public health impact of pesticide use in Bhutan. There are no laboratory facilities in Bhutan that have the capacity to analyze pesticide residues in agricultural or other products. Reported instances of pesticide poisoning in Bhutan are very rare. Excessive herbicide use is sometimes associated with fish kills. Thus far, integrated pest management has been developed through pilot projects, several of which have proven successful. However, considerable work remains to be done to mainstream integrated pest management into agricultural practices at the operational level.

4. Conclusions and Recommendations on Pest Management Policy

3.149 It is recognized that Bhutan has risk containment pest management legislation that is supported by a highly centralized and effective system to control the import and distribution of pesticides and a highly selective procurement system that selectively excludes pesticides that are highly dangerous. In addition to a strong capacity in controlling pesticides distribution, there is a strong field presence of agricultural extension officers for monitoring distribution, disposal, recovery of excess pesticides, inventory of pesticide usage at the demand level, and avoidance of surplus accumulation of pesticides.

3.150 However, major weaknesses relate to the absence of accompanying regulations to current legislation on pest management, even though Bhutan practices prudent pesticide management. Furthermore, all pesticide application is done by the end user (farmer) and there are no trained applicators in industrial applications, which might pose a problem if there is a need to use highly toxic chemicals to deal with an unforeseen endemic situation. Key opportunities to improve pest management include the following:

- ***Expanding use of integrated pest management in agriculture.*** Results of pilot projects strongly suggest that there are opportunities to expand and mainstream the use of integrated pest management in the agricultural sector. Crops that offer particularly promising opportunities include maize, ginger, cardamom, mango,

betel nut, and chili. There is a need to increase the numbers of plant protection staff in NPPC and Regional Natural Resource Centers who are trained in integrated pest management and to better monitor the application of pesticides in the field. It is also recommended that user-friendly instructions and recommendations on appropriate IPM practices be translated into local languages and that Bhutan expand its cooperation and information exchange with neighboring countries on the use of integrated pest management.

- ***Promoting organic agricultural opportunities.*** There are undeveloped opportunities for organic agriculture in Bhutan, particularly for niche crops. Organic rice has been grown in the Bumthang District and is seeking to be certified by "IndoCert".

- ***Wise use of DDT.*** Bhutan faces an acute challenge in controlling the increased incidence of malaria. In considering the selective use of DDT, it would have to seek a formal waiver under the terms of the Stockholm Convention and abide by the conditions imposed by WHO.

- ***Training and utilization of license applicators.*** Related to reintroduction of chemical control of malaria and other vector-borne diseases, Bhutan should train and license in acceptable practices of insecticide application, and control and monitor carefully the use of DDT and other harmful insecticides while ensuring that use is not extended into the agricultural sector.

CHAPTER IV: PRIORITIES FOR ACTION

4.1 Bhutan's environmental protection framework is excellent in its scope and state of development. Nonetheless, some improvements would be needed in the future to keep pace with the country's evolving constitutional and political structure. This is characterized by the introduction of a system of multi-party democratic governance and decentralization of decisionmaking to the ministerial and district levels.

A. SHORT-TERM OPPORTUNITIES

4.2 While efforts would be desirable in the longer term to bridge gaps in Bhutan's safeguard policies and regulations and improve its capacity to implement these policies, it is possible to rely on the existing systems, with some additional oversight and gap filling measures, at least for the immediate future. Some of the country's environmental policies are sufficiently robust, and the evidence on the ground indicates that these are being implemented effectively. These existing policies would identify and address environmental issues in development projects largely satisfying World Bank and other donors' environmental safeguard management requirements if they are complemented by project-specific environmental management plans to fill gaps in legislation and capacity, and their implementation is ensured through good oversight and monitoring. Table 4 provides some guidance on possible opportunities for the application of Bhutan's existing environmental policies to address impacts of development projects, including additional oversight responsibilities through the environmental management plan.

Table 4. Environmental Policy Application in Bhutan

Policies and objectives	***Equivalence with World Bank OP 4.0***	***Potential opportunities for application of existing policies and regulations of Bhutan (as is)***	***Additional project-specific EMP oversight requirements for application of Bhutan's policies and regulations***
Environmental assessment: Objective is to help ensure the environmental and social soundness and sustainability of investments. To support the integration of environmental and social aspects in projects into the decisionmaking process	RGOB EA policy largely equivalent to OP 4.00 except for absence of references to (a) transboundary and global concerns; (b) international environmental commitments; and (c) acceptable standards of pollution prevention and abatement	EA policies sufficiently robust for application to investments that (a) do not trigger transboundary and global considerations; (b) are outside the sphere of international commitments; and (c) where there are codes of environmental practice that correspond to acceptable international practices. These could potentially include investments in road construction; urban development; community-driven development; health and education; urban and rural water supply, and in particular if the potential impacts of these	(a) Determine adequacy of applicable legal framework; (b) Ensure screening covers projects outside the pre-determined listings; (c) EA process timing linked to technical and financial feasibility; (d) Adequacy of documentation of EA reviews, clearance, compliance monitoring, and enforcement of EMP conditions, consultation with stakeholders and public and disclosure of information of

Table 4. Environmental Policy Application in Bhutan

Policies and objectives	*Equivalence with World Bank OP 4.0*	*Potential opportunities for application of existing policies and regulations of Bhutan (as is)*	*Additional project-specific EMP oversight requirements for application of Bhutan's policies and regulations*
		activities are small, localized and can be contained within its national boundaries. Dam, reservoir, and hydropower projects will be excluded due to their potential transboundary impacts, as well as industrial activities for which there are no acceptable codes of environmental practices.	environmental actions and impacts; (e) Application of relevant codes of environmental practices, etc.; and (f) Institutional capacity enhancement measures and implementation.
Natural habitats: Objective is to promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions	RGOB Forest and Nature Conservation Act largely equivalent with the OP 4.00, with exception of lack of reference to preferential siting of projects on previously converted lands.	Bhutan's Forest and Nature Conservation Act could potentially be applied to biodiversity conservation projects and those projects that are located on previously converted lands.	(a) Review of effectiveness of coordination and consultation among key agencies; (b) Relevance and adequacy of ecological surveys and research to meet specific project needs; and (c) Staff capacity and skills and adequacy of management interventions.
Forests: Objective is to realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests	RGOB Forest and Nature Conservation Act largely equivalent to OP 4.00 with exception of regulations pertaining to plantation forests and the formal requirement for independent certification of industrial scale commercial forestry.	Bhutan's Forest and Nature Conservation Act can be reasonably applied to all forestry operations except those concerned with industrial-scale commercial forestry.	Oversight and assessment of capacity for planning, monitoring, and enforcement of forest management actions.
***Pest management*:** Objective is to minimize the environmental and health risks associated with pesticide use and promote and support safe,	RGOB Pesticide Act has some gaps with the OP 4.00 including the lack of reference to international standards for procurement, labeling, storage, application, and disposal of pesticides; and lack of reference to	Pesticide Act can be reasonably applied to those projects that use pesticides of low toxicity and low risk based on WHO classification and do not require trained pesticide applicators.	(a) Assessment of effectiveness and application of integrated pest management training and promotion activities; (b) monitoring of pesticide application in field conditions; and (c) availability and use of

Table 4. Environmental Policy Application in Bhutan

Policies and objectives	*Equivalence with World Bank OP 4.0*	*Potential opportunities for application of existing policies and regulations of Bhutan (as is)*	*Additional project-specific EMP oversight requirements for application of Bhutan's policies and regulations*
effective, and environmentally sound pest management.	enhancement of institutional capacity for integrated pest management.		information on integrated pest management at the farmer level.
Safety of dams: To assure quality and safety in the design and construction of new dams and rehabilitation of existing dams, and in carrying out activities that may be affected by an existing dams.	Legislation on safety of dams lacking in Bhutan.	Not currently applicable	

B. LONG-TERM OPTIONS

4.3 In the longer term, it would be desirable if Bhutan would further update and improve its legal and regulatory system for environmental management to meet internationally acceptable standards. And it should internalize the environmental costs of long-term economic planning and development decisionmaking, and enhance its capacity for implementation, oversight, and enforcement of its environmental policies. These actions could greatly facilitate the full application of country systems to address future environmental safeguard issues in all development sectors in Bhutan.

4.4 Toward this end, it is desirable if the EA framework could provide further clarification with respect to transboundary and global concerns. Similarly, Bhutan's existing framework of legislation with respect to particular safeguard policies, such as forests, pest management, and dams should be finished.

- The Forest and Nature Conservation Act requires amendment to make reference to the existing Forest Code in a manner that allows the Code itself to be amended to account for improved management capacity on the ground.

- Regulations should be developed as authorized and envisaged under the Pesticide Act of 2000. These regulations would require designation of the Department of Research of Development and Development Services as the responsible authority for the procurement of pesticides in place of the Pesticides Board that was envisioned in the Act. The regulations should also provide the Department of Research and Development Services with the authority to restrict the procurement and application of pesticides in a manner consistent with WHO hazard classifications standards; to regulate the labeling, storage, application, and

disposal of pesticides according to acceptable FAO standards, and to enhance Bhutan's institutional capacity to develop integrated pest management as a pest management strategy of choice.

- The country would greatly benefit from finalization of the Guidelines for Safe Operation of Dams in Bhutan and its conversion into an enforceable legislative framework, possibly in the form of a Code of Environmental Practice that can be enforced through the permitting process. The Code or other regulatory vehicle would require incorporation of additional measures for (a) planning, design, construction and operation of dams; (b) constitution of independent panel of experts for independent verification of design, construction, and operational procedure; and (c) using qualified, experienced and competent professionals and firms in planning, design, construction, and operations of dams to make it fully compatible with international standards.

4.5 Although there is a very high degree of expertise in Bhutan in terms of technical competence for implementation of its environmental safeguard policies, there is at least one consistent pattern of findings: human resources are inadequate to implement many of its policies, laws, and procedures. This issue is endemic to the country due to its low population, its regionally dispersed and isolated population distribution and until recently its limited contact outside the country. The limited number of qualified personnel makes appropriate prioritization and use of human resources and institutional capacities an even more important issue. In spite of these constraints, Bhutan has a relatively high literacy rate and a well-educated leadership; and because of its late emergence, Bhutan is not saddled with obsolete technology but instead is well prepared to absorb 21st century technologies and apply them to environmental and social challenges. Human resource constraints present more of a problem for some environmental issues than others.

4.6 In terms of environmental assessment, Bhutan appears to have access to sufficiently trained national and international experts for conducting environmental assessments of routine projects. However, as economic development progresses, Bhutan may attract domestic and foreign investment into economic sectors in which it has limited expertise with respect to environmental impacts. In this respect, Bhutan should build additional skills and technical expertise to deal with its future development challenges, as well as develop manpower and skills to meet the additional responsibilities posed by the new National Environmental Protection Act. In particular, National Environmental Commission would require expertise to help establish and maintain an environmental information system to capture EA clearance, monitoring, and compliance and enforcement actions; mainstream environmental assessment into national and sectoral development planning; implement international environmental agreements; establish appropriate emissions and effluent limitations; facilitate public consultation in environmental assessment and permitting; improve coordination with Competent Agencies; finance environmental protection measures; and establish protocols for payment for environmental services.

4.7 In terms of other environmental policies, the forestry department would benefit from additional manpower and expertise to expand its forest operable area and improve

supervision and monitoring of the existing forest management units, while the Department of Agriculture would require improved access to international best practices of integrated pest management approaches and technologies.

4.8 With respect to dam safety, as Bhutan proceeds with implementation of its Master Plan for Hydroelectric Power, the Department of Energy will need additional personnel, trained in various technical aspects of dam safety in order to implement the Guidelines for Dam Safety. In addressing these institutional gaps it would be necessary to seek an appropriate balance between decentralization and centralization of these responsibilities and functions on account of the severe shortage of manpower in Bhutan.

C. Opportunities for the World Bank and Other Development Partners

4.9 As Bhutan moves toward expanding its economic activity, urbanization and decentralization, privatization, and direct foreign investment to further accelerate and sustain progress in the coming years, its environmental challenges could be substantial. While a large part of the economic expansion is likely to be supported by an increased reliance on hydropower for generating additional revenues to finance its human development, it is likely that it might also open up investment opportunities in development sectors that are new to Bhutan. In this respect, there is opportunity for the World Bank and other development partners to help Bhutan develop the additional policies, skills, technical expertise, and tools to meet the new environmental challenges posed by these future developments. The two priority areas for future World Bank and other bilateral donor support seem to be in the areas of environmental assessment and safety of dams.

4.10 In terms of environmental assessment, Bhutan would require support for the following:

- Revising Environmental Assessment Act to align more closely with the recently enacted NEPA;
- Consolidating, reviewing, and updating existing Guidelines and Codes of Environmental Practices so that these could become more relevant in the environmental clearance and permitting process;
- Reviewing and updating list of industries subject to clearance by National Environmental Commission and other competent authorities;
- Assessing of skills, capacity, and training needs for meeting the additional requirements of NEPA and for the effective decentralization of the environmental clearance process;
- Establishing effective environmental information management system for recording and compiling environmental assessment data and monitoring, including environmental clearance, compliance, and enforcement actions;

- Building capacity for National Environmental Commission, competent authorities, and Dzongkhag Environmental Committees to improve EA oversight, review, and enforcement; and

- Improving public participation in EA review, oversight, and monitoring.

4.11 In terms of safety of dams policy, the Bank and other development partners could provide technical assistance and support to advance the following:

- Review and update existing Guidelines for Safe Operation of Dams and its conversion into an enforceable legislative framework; and

- Facilitate the enhancement of institutional capacity of the Department of Energy to design, oversee, and implement dam safety measures in their existing and proposed hydropower installations.

4.12 Another opportunity for future donor support would be in supporting the review of Bhutan's remaining social and cultural safeguard policies, particularly since Bhutan has recently revised its Land Act and is in the process of enacting legislation on immovable cultural property. This will complete the review of Bhutan's entire safeguard systems and help move toward the full application of country systems at the country level in the future.

ANNEX A: EQUIVALENCE ANALYSIS MATRIX

World Bank (OP 4.00) Requirements *(Objective and operational principles)*	*Government of Bhutan's Equivalent Requirements with specific reference to urban development and Rural Access II projects*		*Differences between OP 4.00 and Bhutan's requirements*	*Gap-filling measures needed to attain equivalence with OP 4.00 requirements*
	*Objectives and operational principles as stated in the relevant laws, rules, regulations, procedures, and policies**	*References to the relevant sections of the laws, rules, regulations, procedures, and policies*		
ENVIRONMENTAL ASSESSMENT				
Objective: To help ensure the environmental and social soundness and sustainability of investment projects. To support integration of environmental and social aspects of projects into the decision- making process.	Under Bhutan's policies and laws, the objectives of the EA is to establish procedures for the assessment of strategic plans, policies, programs and projects for the determination of policies and measures to reduce potential adverse impacts and promote environmental benefits. The National Environment Strategy of Bhutan (NES), 1998 stresses the importance of EA as a major way to ensure a sustainable natural resource base for the country. The Strategy Paper "Bhutan 2020" places high priority on institutionalizing capacities for EA which must be applied a wide variety of projects and activities in order to evaluate their likely impacts on the environment. It states: EA is "particularly important…for helping ensure that development projects are environmentally and economically sound in the longer term. Adverse environmental, social, economic and cultural impacts of development projects are minimized. Environmental impacts on ecologically fragile systems receive prior evaluation The Environmental Assessment Act (EAA) 2000 mandates the Government to ensure that environmental concerns are fully incorporated into development activities, and while implementing any policy, plan or program. No development consent can be issued without first seeking environmental clearance.	NESB Bhutan 2020 Environmental Assessment Act (EAA), 2000 Article 8: "The issuance of environmental clearance shall be prerequisite to the issuance of a development consent"	None	None
Operational Principles: 1. Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment (EA) so that appropriate studies are undertaken proportional to potential risks and to direct, and, as relevant, indirect, cumulative, and associated impacts. Use sectoral or regional environmental	A screening process is in force for projects requiring an Environmental Clearance (EC) from permitting authorities. "Screening is defined as "the determination by the Secretariat or Competent Authority [CA] of how the environmental assessment process ….shall be applied to a project." An EC is required for all projects that require a Development Consent (DC) A DC is required for all projects requiring a license, lease or permit for land use or construction as well as the renewal of same. In addition, all projects of the RGOB that do not require that DC must also receive EC . Project proponents must submit an application in a standard form for all prescribed projects. The Competent Authority (CA) shall	Environmental Assessment Act 2000, Arts. 6.6, 8 and 9. Regulations for Environmental Clearance (EC) for Projects, Chapter I, Art. 5.19 and Chapter II Sections 16 through 28 and Annex 2.	None.	None.

World Bank (OP 4.00) Requirements *(Objective and operational principles)*	*Government of Bhutan's Equivalent Requirements with specific reference to urban development and Rural Access II projects*		*Differences between OP 4.00 and Bhutan's requirements*	*Gap-filling measures needed to attain equivalence with OP 4.00 requirements*
	*Objectives and operational principles as stated in the relevant laws, rules, regulations, procedures, and policies**	*References to the relevant sections of the laws, rules, regulations, procedures, and policies*		
assessment when appropriate.	determine whether the proposed project requires an EA. Once screening determines the need to undertake an EIA, the level of EA effort is determined. The NEC has enacted sectoral guidelines to define process, content and level of assessment. Eight such sectoral guidelines are in force. The Project proponent must check whether its project falls under the eight activities for which the NEC has issued sectoral guidelines. If so, the proponent must follow the standard guidelines as to determine what data and information need to be provided to the CA. If the project does not fall under any of the eight sectors, then the NEC and/or CA will issue terms of reference commensurate to the project. The CA would issue an EC, reject the application or subject the project to a full EA and/or further studies.			
2. Assess potential impacts of the proposed project on physical, biological, socio-economic and physical cultural resources, including transboundary and global concerns, and potential impacts on human health and safety.	An EC is issued if the CA is of the opinion that a proposed project : (i) "alone or in connection with other programs or activities" contributes to the sustainable development of the Kingdom and the conservation of its natural and cultural heritage", (ii) grants adequate attention to the interests of "concerned people" and is (iii) consistent with the environmental commitments of the Kingdom" The minimum requirements and level of detail for EAs reflect the potential environmental, economic and social impacts of the proposal. The EA report must be prepared in accordance with NEC sectoral guidelines, which list common environmental concerns associated with different development activities. Apart from a project description, the EA is to include, a description of the existing environment, an assessment of impacts (positive and adverse), mitigation measures, and a response to comments received from "concerned people" on the environmental report. "The potential adverse effects of the project…including the direct, indirect and cumulative effects" must be clearly stated in the application. "Environment is defined as "the complex web of relationships between the abiotic and biotic components which sustains life on earth, including the social, health and cultural aspects of human beings." The recently enacted National Environment Protection Act (NEPA) is intended to	Environmental Act , Section 18 Regulation for the Environmental Clearance of Projects, Section 28.2 and Annex 3 on the description of the Environmental Assessment Report Format, notably Section 8 0n Assessment of Impacts.	Absence of clear reference to "transboundary and global impacts" may be considered a significant gap. There is no explicit reference to trans-boundary impacts; however, there is reference to impacts on the "immediate surroundings and region."	Enactment of NEPA provides provides an "umbrella" framework for all environmental legislation in Bhutan and authorizes NEC to ensure that the EA process becomes an integral part of the development planning process, through implementation of the EAA, and would include transboundary consultation when a plan, program or project may have an impact on a neighboring country . The proposed revision of EAA and RECOP as required by NEPA provides an opportunity to bridge the gap.

World Bank (OP 4.00) Requirements *(Objective and operational principles)*	*Government of Bhutan's Equivalent Requirements with specific reference to urban development and Rural Access II projects*		*Differences between OP 4.00 and Bhutan's requirements*	*Gap-filling measures needed to attain equivalence with OP 4.00 requirements*
	*Objectives and operational principles as stated in the relevant laws, rules, regulations, procedures, and policies**	*References to the relevant sections of the laws, rules, regulations, procedures, and policies*		
	provide an "umbrella" framework for all environmental legislation in Bhutan would authorize NEC to ensure that the EA process becomes an integral part of the development planning process, through implementation of the EAA, and would include trans-boundary consultation when a plan, program or project may have an impact on a neighboring country.	NEPA Draft VII of July 24, 2006, Article. 10.3		
3. Assess the adequacy of the applicable legal and institutional framework, including applicable international environmental agreements, and confirm that they provide that the cooperating government does not finance project activities that would contravene such international obligations.	The Environmental Codes of Practice issued by the NEC require that the EC shall refer to the legal and regulatory framework for the proposed project, including the provisions of the relevant Code of Practice. Although policy documents, including the NES, state a strong commitment to environmental protection and commitments made through international conventions there is no explicit legal requirement that EA include the assessment of applicable international conventions to which Bhutan is party. Such conventions and agreements include the Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC), the CITES, and the Kyoto Protocol (acceded 2002. The EA Act makes general reference to "the Kingdom commitments" and states that no project would be granted an EC if it is not "consistent with the environmental commitments of the Kingdom." However, the term "the Kingdom commitments" is not defined. The recently enacted National Environment Protection Act (NEPA) provides an "umbrella" framework for all environmental legislation in Bhutan, that require that international (multilateral and bilateral) environmental agreements ratified by the National Assembly shall be enforceable as any other domestic laws, retrospectively as well as prospectively.	EA Act, 2000, Section 18 And Environmental Codes of Practice for Hazardous Waste Management, Chapter III, Environmental Code of Practice for Sewage and sanitation Management in Urban Areas, Chapter III NEPA Draft VII, July 24, 2006, Article 103	The requirement to refer to the legal and regulatory framework for the proposed project stops short of requiring the EA to "assess the adequacy of the applicable legal framework." The absence of any reference in the EA process to laws enforcing Bhutan's commitments to international environmental agreements constitutes a significant gap	The recently enacted National Environment Protection Act (NEPA) provides an "umbrella" framework for all environmental legislation in Bhutan, that would require that international (multilateral and bilateral) environmental agreements ratified by the National Assembly be enforceable as any other domestic laws, retrospectively as well as prospectively None. As required by NEPA, the proposed revision of EAA and RECOP provides an opportunity to bridge the gap
4. Provide for assessment of feasible investment, technical, and sitting alternatives, including the "no action" alternative, potential impacts, feasibility of mitigating these impacts, their capital and recurrent costs, their suitability under local conditions, and their institutional,	Under Bhutan's system, the EA must provide a detailed analysis of he negative and positive impacts of the proposed project and its alternatives including the "alternative of not undertaking the project and include: (i) analysis of all feasible alternatives, (ii) analysis of the principal differences among the feasible alternatives under consideration, particularly regarding environmental impacts, and (iii) discussion of any alternative non longer under consideration" .	Regulation for the EC of Projects (RECOP), Annex 3, Sections 6 and 8.	None.	None.

World Bank (OP 4.00) Requirements *(Objective and operational principles)*	*Government of Bhutan's Equivalent Requirements with specific reference to urban development and Rural Access II projects*		*Differences between OP 4.00 and Bhutan's requirements*	*Gap-filling measures needed to attain equivalence with OP 4.00 requirements*
	*Objectives and operational principles as stated in the relevant laws, rules, regulations, procedures, and policies**	*References to the relevant sections of the laws, rules, regulations, procedures, and policies*		
training and monitoring requirements associated with them.				
5. Where applicable to the type of project being supported, normally apply the Pollution Prevention and Abatement Handbook (PPAH). Justify deviations when alternatives to measures set forth in the PPAH are selected.	There is no reference to the PPAH Guidelines in Bhutan's environmental legislation. However the Sectoral Guidelines and Environmental Codes of Practices for specific activities provides very specific guideline and discharge standards setting out acceptable levels of air, noise and other pollutants applicable to specific industries, some if which are drawn from international organization's guidelines such as WHO and FAO and were drafted with technical assistance from the Asian Development Bank.	Environmental Discharge Standard, NEC, August 2004/	No significant gap. Absence of reference to PPAH is partially mitigated by the use of internationally recognized guidelines and standards (WHO, FAO) for the development of discharge standards applicable to specific industries.	References to internationally recognized standards should be incorporated into ECPs where appropriate.
6. Prevent and, where not possible to prevent, at least minimize, or compensate for adverse project impacts and enhance positive impacts through environmental management and planning that includes the proposed mitigation measures, monitoring, institutional capacity development and training measures, an implementation schedule, and cost estimates.	The EAA provides for the formulation of environmental management plans (EMPs). The EMPs must identify environmental risks and address means of avoiding or minimizing adverse impacts (including direct, indirect and cumulative effects) and enhancing positive impacts. Applicants must also set out a monitoring program (both baseline and compliance monitoring) and are responsible for all project monitoring (project monitoring is undertaken by CA or NEC). The Code of Environmental Practice for Highways and Roads (CEPHR) requires that EMPs include the proposed mitigation measures, the need to budget mitigation measures, supervision, monitoring and evaluation requirements for the construction, operation and maintenance of the project cycle. The RECOP provides that: (i) "the CA shall be responsible for monitoring compliance" for projects requiring development consent and EC, and (ii) the Secretariat [of NEC] shall monitor projects "that do not require development consent". The EA Act states that "compliance monitoring of projects" is undertaken by the Secretariat [of NEC]…of non-compliance with the terms or other activities related to a project that may be dangerous to the environment." In addition, the NECS or CA may, without prior notification, enter the site of a project to ensure compliance EC for a project must be reviewed every 5 years and may be revised and renewed upon review but the Secretariat is empowered to review the EC at any time where there is new information indicating the project	EAA, Sections 7 through 10, 23, 26 through 31, 40 through 43 and RECP, Sections 30, 31, 33-34, 40, 44 and Annex to the Regulations	None	None.

World Bank (OP 4.00) Requirements *(Objective and operational principles)*	*Government of Bhutan's Equivalent Requirements with specific reference to urban development and Rural Access II projects*		*Differences between OP 4.00 and Bhutan's requirements*	*Gap-filling measures needed to attain equivalence with OP 4.00 requirements*
	*Objectives and operational principles as stated in the relevant laws, rules, regulations, procedures, and policies**	*References to the relevant sections of the laws, rules, regulations, procedures, and policies*		
	creates unacceptable risks to the environment, where improved and cleaner technology becomes available, and where the review is needed to bring the project into compliance with changes to Bhutanese laws.			
7. Involve stakeholders, including project-affected groups and local nongovernmental organizations, as early as possible, in the preparation process and ensure that their views and concerns are made known to decision makers and taken into account. Continue consultations throughout project implementation as necessary to address EA-related issues that affect them.	Under the EAA, applicants have a duty to inform and consult with "concerned people" and organizations before submitting the EA documents to the CA where the project is classified as a "significant project". NECS or the CA is authorized to "ensure that concerned people are given adequate opportunity to express their views on the project and that their views are adequately taken into account.."' Concerned people' and "organizations" are those "individuals, groups or communities whose interests may be affected by a project or proposal" and "significant project" is defined as a project nominated as a type A or B project by sectoral guidelines issued by the NEC. (Category C and D projects may also be considered significant if the cumulative effects of two or more projects are significant.) The NECS and the CA are authorized to ensure that the views of concerned people and organizations "are adequately taken into account in the project". Where it applies, the duty to inform and consult includes, at a minimum, written notice to local people, a newspaper notice, and public hearings. Local authorities are directed to assist people express their views to the applicant; the public and other agencies have three weeks to respond to the application with comments. The applicant is solely responsible for costs associated with public consultation. The Secretariat of NEC or CA may require the applicant to undertake public consultation beyond the minimum standard, including public notice and review procedure. Public information: The Secretariat of NEC or CA must make a public announcement of the decision to issue an environmental clearance and provide reasons for decision including information to the public describing the project, and its environmental terms, describing measures to avoid or mitigate potential adverse effects and to enhance positive impacts, and a non-technical summary of this information. Public notice must be made within 15 days of a decision by the Secretariat or CA. The Secretariat or competent authority may take comments of the public made during the public consultation stage into account when	EA Act, 2000, Sections 16 and 22 The Regulations for Environmental Clearance of projects: Sections 5.4, 28.8, 29, 30 and 31. and Annex 1 to the Regulations (Timing of EA processing including for consultation and disclosure)	None.	None

World Bank (OP 4.00) Requirements *(Objective and operational principles)*	*Government of Bhutan's Equivalent Requirements with specific reference to urban development and Rural Access II projects*		*Differences between OP 4.00 and Bhutan's requirements*	*Gap-filling measures needed to attain equivalence with OP 4.00 requirements*
	*Objectives and operational principles as stated in the relevant laws, rules, regulations, procedures, and policies**	*References to the relevant sections of the laws, rules, regulations, procedures, and policies*		
	making a decision. All sectoral for applications for environmental clearances detail requirements for public consultation. The applicant must explain the expected impact to affected people, where these impacts will occur and how they will be mitigated; the applicant must provide a record of the meetings (including a record of names, times and place of meeting and information on issues raised and agreements made). Signatures of consulted parties as proof of consultation are required, as is a description of unresolved issues of discussion.	Environmental Codes of Practice: Highways and Roads, Annex 1, 2000		
8. Use independent expertise in the preparation of EA where appropriate. Use independent advisory panels during preparation and implementation of projects that are highly risky or contentious or that involve serious and multi-dimensional environmental and/or social concerns.	The Secretariat is authorized to establish an Environmental Assessment Advisory Board to advise him on particular projects. The Board membership includes "qualified or knowledgeable persons" and may include (among others) representatives of ministries –representatives of local administrations, municipalities, representatives of NGOs, and representatives of local communities affected by the project. The Advisory Board is authorized to adopt rules and procedures governing its activities. The Head of the Secretariat may also nominate up to three experts to advice on particular projects.	EAA, Section 38 on the establishment of an Environmental Assessment Advisory Board (EAAB). The Regulations for Environmental Clearance of projects: Sections 6 through 13 on the EAAB membership and procedures and more specifically Section 11 on the three member's expert panel to advice on specific projects.	None	None
9. (EA) Provide measures to link the environmental assessment process and findings with studies of economic, financial, institutional, social and technical analyses of a proposed project.	Because project activities require environmental clearance prior to development consent, the environmental assessment process and findings are linked to studies of economic, financial, institutional, social and technical analyses of a particular project contained in the initial application for environmental clearance and where appropriate, an environmental assessment report	EA Act 2000, Sections 9-10	None.	None
10. Provide for application of the principles in this Table to subprojects under investment and financial intermediary activities.	There is no reference to Financial Intermediary and subprojects as such, however, EC are granted to "individual projects". Any individual project is subject to the EA Act and its implementing regulations and subject to screening and EAA as appropriate.	EA Act, 2000 Chapter III, Sections 11 through 25 Regulations on Environmental Clearance for Projects, 2002, Section 2 *in fine*	None. Bhutan's laws and regulations make no distinctions between projects financed directly and those financed through intermediaries.	None
11. Disclose draft EA in a timely manner, before appraisal formally begins, in an accessible	Under the EA Act, applicants have an obligation to inform and consult with concerned people and organizations before submitting the EA documents to the CA or	EAA 2000, Sections 16, 28.4 and other provisions cited under Principle 7 above.	None.	None.

World Bank (OP 4.00) Requirements *(Objective and operational principles)*	*Government of Bhutan's Equivalent Requirements with specific reference to urban development and Rural Access II projects*		*Differences between OP 4.00 and Bhutan's requirements*	*Gap-filling measures needed to attain equivalence with OP 4.00 requirements*
	*Objectives and operational principles as stated in the relevant laws, rules, regulations, procedures, and policies**	*References to the relevant sections of the laws, rules, regulations, procedures, and policies*		
place and in a form and language understandable to key stakeholders.	NEC. With respect to "significant projects" the proponent has the further obligation [19] to provide at a minimum, written notice to local people, a newspaper notice, and public hearings. NECS or the CA may require the applicant to undertake public consultation beyond the minimum standard, including public notice and review procedures. Local authorities are required to make copies of all EA documents and decisions available to affected communities. NECS or the CA must make a public announcement of the decision to issue an environmental clearance and provide reasons for decision including information to the public describing the project, and its environmental terms, describing measures to avoid or mitigate potential adverse effects and to enhance positive impacts, and a non-technical summary of this information. Public notice must be made within 15 days of a decision by the Secretariat or CA. Sectoral guidelines for applications for environmental clearances also detail requirements for public consultation. The applicant must explain the expected impact to affected people, where these impacts will occur and how they will be mitigated; the applicant must provide a record of the meetings (including a record of names, times and place of meeting and information on issues raised and agreements made). Signatures of consulted parties as proof of consultation are required, as is a description of unresolved issues of discussion.	Regulations for EC for projects, Section 31		
		FORESTS		
Objective: To realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests	The Government is committed to ensure that in order to conserve the country's natural resources and prevent degradation of the ecosystem a minimum of sixty percent of Bhutan's total shall be maintained under forest cover for all time Bhutan's forest legislation provides for "the protection and sustainable use of forests, wildlife and related natural resources of Bhutan for the benefit of present and future generations". Bhutan uses an integrated approach to forest resources management through which natural resources conservation, community forest and sustainable use of forest resources including development of environmental services are part of the strategy.	Draft Constitution, 2005 Preliminary of Chapter 1 of the 1995 Forest and Nature Conservation Act (FNCA)	None	None

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	The legal and regulatory framework for forest allows the sustainable use of the natural resources to meet its requirements for developmental activities while at the same time safeguarding its environment through appropriate polices and plans.			
Operational principles: 1. Screen as early as possible for potential impacts on forest health and quality and on the rights and welfare of the people who depend on them. As appropriate, evaluate the prospects for new markets and marketing arrangements.	The FNCA provides for "the protection and sustainable use of forests, wildlife and related natural resources of Bhutan for the benefit of present and future generations". Bhutan uses an integrated approach to forest resources management through which natural resources conservation, community forest and sustainable use of forest resources including development of environmental services are part of the strategy. Screening is required by the Secretariat of NEC for all projects requiring a Development Clearance, which include all projects having a potential impact of forest health and quality and on the rights and welfare of forest-depending peoples. Screening is to include how the project complies with relevant sectoral guidelines or code of best practices, if any, issued by the Secretariat or Competent Authorities. The sectoral guidelines for Forestry Projects require the applicant for Environmental Clearance to address potential impacts on water quality due to land disturbances caused by logging activities as well as the . Identify communities living downstream of the project who may be impacted by the activity and the type of impact; details of land use including protected areas and occurrence of wildlife	FNCA, Chapter 1 Preliminary Environmental Assessment Act of 2000, Art. 14 Application for Environmental Clearance: Guideline for Forestry Activities, 2004	None	None
2. Do not finance projects that would involve significant conversion or degradation of critical forest areas or related critical natural habitats, or that would contravene applicable international environmental agreements.	No change to land use can be undertaken in a Reserved Forest which include virtually call of Bhutan's forested areas. No activities resulting in significant conversion or degradation are permitted in any of Bhutan's Protected Areas including national parks, wildlife reserves and wildlife corridors represent more that 30% of the whole territory of Bhutan Bhutan is committed to conserve at least 60% of its territory covered by forest and is avoiding projects that may negatively impacts such objective, and Bhutan is party to various international environmental conventions and agreements including the Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC),	Forest and Nature Conservation Act Section 10 Applicable international environmental agreements reified by Bhutan include: Convention of Biodiversity, UN Framework Convention on Climate Change UN Convention to Combat Drought And Desertification,	None	.None

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	the CITES, and the Kyoto Protocol (acceded 2002). Policy documents, including the NES, state a strong commitment to environmental protection and commitments made through international conventions			
3. Do not finance natural forest harvesting or plantation development that would involve any conversion or degradation of critical forest areas or related critical natural habitats.	Management plans are mandatory and must recognize and define a sustainable yield of timber that is adequate to achieve "sustainable supply of forest produce". Management Plans must define all measures to ensure the sustainability of the exploitation and its environmental soundness Each management plan shall describe the area and its resources, their uses and their role in the biological diversity of Bhutan; state the management regime required for the protection and sustainable utilization of the resources, including logging and reforestation requirements and designation of protected areas; and assess the environmental and socio-economic impact of the proposed management regime. Harvesting of forest products may be authorized for domestic use and other uses including forest lease defined by the Act under very stringent conditions.	FNCA, Art. 5	None	None
4. Support projects that adversely impact non-critical natural forests or related natural habitats only if viable alternatives to the project are not available and only if appropriate conservation and mitigation measures are in place.	EA regulations mandate analysis of all alternatives including the non-project alternative. Impacts on Reserved Forest should be avoided and where they can't, they must be mitigated through appropriate measures agreed upon and to be monitored by the CA and the Secretariat of the NEC. The application for EC must demonstrate how sustainability issues will be addressed by the project All accessible forest areas outside of protected areas are required to be brought under management as Production Forests subject to strict sustainability criteria including (1) ecological sustainability; (ii) economic sustainability and (iii) social and cultural sustainability. Management Plans are required for all Production Forests, as well as Community and Private Forests Management Plans must define all measures to ensure the sustainability of the exploitation and its environmental Each management plan shall describe the area and its resources, their uses and their role in the biological diversity of Bhutan; state the management regime required for the protection and sustainable utilization of the resources, including logging and	RECP, 2002 Art. 2. 4, Annex 3, Art. 6 FNCA, Art. 5 Forest and Nature Conservation Rules	None	None

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	reforestation requirements and designation of protected areas; and assess the environmental and socio-economic impact of the proposed management regime. .			
5. Support commercial, industrial-scale forest harvesting only when the operation is certified, under an independent forest certification system, as meeting, or having a time-bound action plan to meet, internationally recognized standards of responsible forest management and use.	Not applicable	Not applicable	There are no rules on forest certification nor obligation to certify forest exploitation	Legislation should be enacted to require independent certification for commercial industrial scale harvesting
6. Ensure that forest restoration projects maintain or enhance biodiversity and ecosystem functionality and that all plantation projects are environmentally appropriate, socially beneficial and economically viable	EA legislation reinforced by the objectives and requirements of forest sector legislation have the legal effect of mandating that forest restoration projects maintain or enhance biodiversity and ecosystem functionality and that all plantation projects are environmentally appropriate, socially beneficial and economically viable	EAA, RECP , FNCA and FNCR	There is no legislation specific to plantation forestry in Bhutan. (?) However, the National Forest Policy of 1991 contains provisions for replanting of deforested and degraded areas and the Forestry Sub-Sector Ninth Five Year Plan proposes guidelines for local participation in reforestation projects	Forest Sector Legislation and/or guidance having the force of legislation, e.g. Application Guidelines for Environmental Clearance of Projects, should be amended to explicitly address forest plantation projects.
7. Give preference to small-scale community-level management approaches where they best reduce poverty in a sustainable manner.	The legal and regulatory framework for forest management in Bhutan provides for "Social Forestry and Community Forestry" which is "encouraged" as preferred system for forest exploitation and use. The Ministry may make rules for the establishment of community forests on Government Reserved Forest. The rules for community forests may provide for the transfer of ownership of the forest produce in the community forest to appropriate groups of inhabitants of The group to which community forests have been transferred shall manage them for sustainable use in accordance with the rules for community forests and the approved management plan.	FNCA, Art 3.b. FNCA Art. 3, q	None	None

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8. Support commercial harvesting by small-scale landholders, local communities or entities under joint forest management where monitoring with the meaningful participation of local communities demonstrates that these operations achieve a standard of forest management consistent with internationally recognized standards of responsible forest use or that they are adhering to an approved time-bound plan to meet these	The Ministry may make rules for the establishment of community forests on Government Reserved Forest. The rules for community forests may provide for the transfer of ownership of the forest produce in the community forest to appropriate groups of inhabitants of Management Plans are required for all Community and Private Forests. The group to which community forests have been transferred shall manage them for sustainable use in accordance with the rules for community forests and the approved management plan. The participation of at least 10 households is required to form a Community Forest Management Group with the right to participate in the selection of a suitable forest area prepare and management plan and be responsible for implementation of the plan in a transparent and accountable manner that protects forest resources and ecosystems.	FNCA, Art. 17 FNCA	None	None
9. Use forest certification systems that require: (a) compliance with relevant laws; (b) recognition of, and respect for, legal or customary land tenure and use rights as well as the rights of Indigenous Peoples and workers; (c) measures to enhance sound community relations; (d) conservation of biological diversity and ecological functions; (e) measures to maintain or enhance environmentally sound multiple benefits from the forest; (f) prevention or minimization of environmental impacts; (g) effective forest management planning; (h) active monitoring and assessment of relevant forest management areas; and (i) independent, cost effective, third-party	Not applicable	EAA	There are no provisions on forest certification in Bhutan's laws and regulations but many of the characteristics of the desired certification system under Principle 9 are embodied in laws, regulations and practices of Bhutan including: (a) compliance with relevant laws; (b) recognition of, and respect for, legal or customary land tenure and use rights as well as the rights of Indigenous Peoples and workers; (c) conservation of biological diversity and ecological functions; (d) measures to maintain or enhance environmentally sound multiple benefits from the forest; (e) prevention	Mandated legislation to required independent certification should reference relevant provision sin Bhutan's existing laws and regulations supplemented by applicative guidance contained in the Forest Management Code of Bhutan, issued by the Forest Resources Division in July 2004

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assessment of forest management performance against measurable performance standards defined at the national level and compatible with internationally accepted principles and criteria of sustainable forest management through decision making procedures that are fair, transparent, independent, designed to avoid conflict of interest and involve the meaningful participation of key stakeholders, including the private sector, Indigenous Peoples, and local communities.			or minimization of environmental impacts; (f) effective forest management planning; and (g) active monitoring and assessment of relevant forest management areas;	
10. Disclose any time-bound action plans in a timely manner, before appraisal formally begins, in an accessible place and in a form and language that are understandable to key stakeholders.	Public disclosure and consultation on the Environmental Assessments for forestry projects is mandatory. The Applicant must explain to the affected people the expected impacts of the development, where they will occur and how they will be mitigated. Provide a record of the meetings and attach a list of the names of the affected people together with the date of consultation/s, details of their Geog and village, issues raised by the affected people and the agreement/s arrived at between the Applicant and the affected people to resolve these issues. Provide signatures or other proof of the consultation/s. Describe issues that remain unresolved.	EAA 2000, Sections 16, 28.4 and. Regulations for EC for projects, Section 31	None	None
NATURAL HABITATS				
Objective: To promote environmentally sustainable development by supporting the protection, conservation, maintenance and rehabilitation of natural habitats and their functions	72% of the territory of the Kingdom of Bhutan is forest covered, 35% of the territory of the Kingdom consist on six national parks, two wildlife reserves, and one nature reserve, all linked and served by wildlife corridors. It is the official policy of Bhutan to maintain at all time at least sixty percent (60%) of its territory under forest cover.	NESB	None.	None

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Operational principles: 1. Use a precautionary approach to natural resources management to ensure opportunities for environmentally sustainable development. Determine if project benefits substantially outweigh potential environmental costs	Under Bhutan's laws and regulations, it is prohibited to undertake any human activities within the core zone of a protected area unless determined necessary by forest/ protected area officials to achieve nature conservation objectives. Outside the core area, no construction is allowed except with a written permit or authorization from the Ministry of Agriculture, acting as CA under the EA Act. A permit for land clearance may be granted in private lands under strict conditions but not to alter protected area status, water catchment areas and areas containing high forest. Any activity that may impact protected area and natural habitats in general can not be undertaken unless it is permitted by the Secretariat of the NEC and the CA including local government. The permitting process shall analyze all alternatives including no-project alternative before any decision is reached.	Forest and Nature Conservation Act, 1995 Forest and nature Conservation Rules, Sections 62, 70 EAA and RECOP.	None.	None
2. Avoid significant conversion or degradation of critical natural habitats, including those habitats that are (a) legally protected, (b) officially proposed for protection, (c) identified by authoritative sources for their high conservation value, or (d) recognized as protected by traditional communities.	Bhutan has set more than half of its territory as "Reserved Forests". Under Section 10 of the Forest and Nature Conservation Act, no change to land use can be undertaken in a Reserved Forest which include all Bhutan's Protected Areas. Protected Areas including national parks, wildlife reserves and wildlife corridors represent more that 30% of the whole territory of Bhutan and their legal status includes the prohibition to convert or degrade them. Activities that have an impact on any protected area must be submitted to prior review by the Secretariat of the NEC. Prohibitions include all activities that may alter, degrade, or convert any part of a "habitat" and those permitted activities are to be undertaken by the Forestry Department for the purpose managing the habitat only including "culling species for sanitation and conservation purpose… [as required by].. a management plan". In general protected areas comprise: (i) a Core Zone, (ii) a Multi-Use Zone, and (iii) a Buffer Zone. Activities and changes to land uses are strictly regulated and stringent norms apply to Core Zone which, in general is a pure conservation area where only scientific and educational activities may be authorized.	Forest and Nature Conservation Act 1995 Chapters III, Section 10 and Chapter VI, Section 21 and Forest and Nature Conservation Rules of Bhutan, 2000, Chapter VI "Protected Area Management" especially Section 62. 5 on "Specific Provisions in Specified Zones or Conditions"	None..	None
3. Where a project adversely affect non-critical natural habitats, proceed only if viable alternatives are not available, and if appropriate	Clearing or breaking up of any forest land for cultivation or any other purpose is prohibited except in accordance with the rules and procedures defined in the Forest and Nature Conservation Rules, 2000. These rules define the procedural requirements, technical regulations and criteria for	Forest and Nature Conservation Act 1995 Chapter III Section 17 of the Forest and Nature Conservation Rules, 2000,	None.	None.

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conservation and mitigation measures, including those required to maintain ecological services they provide, are in place. Include mitigation measures that minimize habitat loss and establish and maintain an ecologically similar protected area.	allotment of forest land to a person for a purpose other than conservation. However, it is silent on land exchange/ swapping involving forest land. To address this gap, the Ministry of Agriculture has developed Procedure for Exchange (Swapping) of Marginal Farm Lands with Forest Land. The Procedure outlines legal and geophysical criteria and procedural steps for application, field verification, decision-making, demarcation and registration of land, handing/taking over and procedural monitoring.			
4. Whenever feasible, give preference to sitting projects on lands already converted.	EA process provide for analysis of all potential alternatives. Forest and Nature Conservation Rules provide that "land located within protected area, water catchment and area containing high forest may be avoided	EAA and RECOP	Although the applicable laws provide for alternative assessment and appear to require avoidance of mature forest, this does not necessarily require that preference be given to lands previously converted.	Revision of CEPHR to require preference for siting new roads on previously converted lands. Enactment of NEPA Draft VII article 5.4 stating that developmental activities "shall be strategically planned an executed in harmony with the carrying capacity of the country's sensitive ecological settings and geographical terrains" and article 5.9 which states that activities should be planned to "cause the least possible change in the environment" or equivalent administrative measures enhanced by stating a preference for siting projects on lands already cleared would bridge the gap on a systems level.

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5. Consult key stakeholders, including local nongovernmental organizations and local communities, and involve such people in design, implementation, monitoring and evaluation of projects, including mitigation planning.	All Reserved Forests in Bhutan must be equipped with a Management Plan which is developed and adopted after a participatory process including consultation of stakeholders and participation. Stakeholders include: (i) local residents, local authorities, and other members of the public, (ii) persons operating forest-related businesses and other operations, and (iii) government officials in other agencies (other than the forest department), divisions and ministries. Committees will be established at local and national levels to oversee and advise the Forest Department on the implementation of management plans for Reserved Forests	Forest and Nature Conservation Rules, Section 9.1 "Participation and Comment/Consultation" and 12 on "Forest management Committees"	None.	None
6. Provide for the use of appropriate expertise for the design and implementation of mitigation and monitoring plans.	The Forest Department is in charge of preparing forest management plans and benefits for the NEC and other agencies and ministries for the definition of mitigation measures under management plans as appropriate. Generally, TA is used for the purpose of assisting the Forest Department and NEC to implement their mandates as needed.	Chapter II of the Forest and Nature Conservation Rules 2000, especially Section 47 on TA provision and use.	None.	None.
7. Disclose draft mitigation plan in a timely manner, before appraisal formally begins, in an accessible place and in a form and language understandable to key stakeholders.	Mitigation measures as part of management plans are disclosed for the purpose of public consultation early in a project preparation process. It follows rules for EA.	See above on EA requirements on public disclosure.	None.	None
PEST MANAGEMENT				
Objective: To minimize and manage the environmental and health risks associated with pesticide use and promote and support safe, effective, and environmentally sound pest management	The objectives of this Act are: 2.1 to ensure integrated pest management is pursued, limiting the use of pesticides as the last resort. 2.2 to ensure that only appropriate types and quality of pesticides are introduced into Bhutan 2.3 to ensure that pesticides are effective when used as recommended; 2.4 to minimize deleterious effects to human beings and the environment consequent to the application of pesticides; and 2.5 to enable privatization of sale of pesticides as and when required.	Pesticides Act of Bhutan, 2000	None	None
1. Promote use of demand driven, ecologically based	3.10 "Integrated pest management" means a combination of methods in which with particular attention being paid to biological, biotechnical, plant breeding and cultivation	Pesticides Act of Bhutan, 2000	None	None

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biological or environmental pest management practices (integrated pest management [IPM] in agricultural projects and Integrated Vector Management [IVM] in public health projects) and reduce reliance on synthetic chemical pesticides. Include assessment of pest management issues, impacts and risks in the EA process.	related measures, the use of pesticides is limited to an essential minimum.			
2. Procure pesticides contingent on an assessment of the nature and degree of associated risks, taking into account the proposed use and intended users. Do not procure formulated products that are in WHO Classes IA and IB, or formulations of products in Class II unless there are restrictions that are likely to deny use or access to lay personnel and others without training or proper equipment Reference: WHO's "Recommended Classification of Pesticides by Hazard and Guidelines to Classification" (IOMC, 2000-2002).	4.1 A person may only import a pesticide that is authorized on his application under this Act. 4.2 A person may only manufacture a pesticide if the Minister, in consultation with the Board, regulates the circumstances of manufacturing. 5.1 A person may only sell a pesticide that is authorized under this Act.	Pesticides Act of Bhutan, 2000	Procurement is regulated but without reference WHO hazard classification standards	Additional regulations should reference WHO hazard classification systems
3. Follow the recommendations and minimum standards as described in the United Nations Food and Agriculture Organization (FAO) International Code of Conduct on the Distribution and Use of Pesticides (Rome, 2003) and procure only pesticides that are manufactured, labeled, handled, stored, applied and disposed of	5.3 The person who sells a pesticide must have the necessary level of integrity and reliability and possess the knowledge to give information about safe handling and appropriate use. 6.1 A pesticide must only be used with regard to .its authorized application and m accordance with good professional practice. Good professional practice shall include observation of the guidelines provided by the Board and the principles of integrated pest management, where appropriate. 10.3 The Board shall ensure that a pesticide is not authorized unless it *is* established in	Pesticides Act of Bhutan, 2000	The intent of the FAO Codes are followed but without reference to any specific "good international practice."	Additional regulations should reference FAO guidelines

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according to acceptable standards as described in FAO Pesticide Guidelines on Storage, Labeling, and Disposal (Rome, 1985).	the light of current scientific and technical knowledge and having regard to all norm41 conditions under which it may be used, and to the consequences of its use that: 12.1 The Board may cancel the authorization of a pesticide if: (a) the Board considers it undesirable that the pesticide should continue to remain authorized owing to its toxicity or inefficacy; or (b) the pesticide does not comply with the requirements of this Act or provisions of the certificate. 19.1 The Minister may, after consulting the Board, make rules to implement this Act and to give effect to the provisions thereof and in particular, such regulations may: (a) prescribe the procedure to be followed in making applications under this *Act* and the fees payable therefore; (b) provide generally for matters connected with authorization and licensing; *(c)* prescribe the manner of obtaining samples for analysis; (d) regulate waste disposal for pesticides; (e) prescribe the measures to be taken and the practice *to* be followed for the manufacture of pesticides; *(0* prescribe the manner of labeling and packing pesticides, and the matters to be displayed on labels of pesticides; (g) regulate maximum residue limits for food; (h) regulate the manner of using certain pesticides and the precautions to be taken in respect thereof; (i) prescribe the requirements to be met in transporting and handling pesticides in bulk; j) regulate the advertising of pesticides; (k) prescribe procedures to control availability and application of pesticides.			
4. Support policy reform and institutional capacity development to (a) enhance implementation of IPM- and IVM-based pest management, and (b) regulate and monitor the distribution and use of pesticides	14.1 The Quality Control and Regulatory Services (QCRS) of the Ministry of Agriculture may monitor the quality of the pesticides and ensure that the provisions of the Act are strictly abided. QCRS shall submit its reports to the Board for deliberations and decision-making.	Pesticides Act of Bhutan, 2000	Promotion of IPM is a stated objective of the Bhutan's legislation but no further policy guidance is given in law or regulation.	Regulations should support institutional capacity to promote IPM

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5. Disclose draft mitigation plan in a timely manner, before appraisal formally begins, in an accessible place and in a form and language that are understandable to key stakeholders.				
SAFETY OF DAMS				
Objective: To assure quality and safety in the design and construction of new dams and the rehabilitation of existing dams, and in carrying out activities that may be affected by an existing dam.	Under the EAA 2000 and RECP 2002, development projects must obtain Environmental Clearance (EC), which requires adequate consideration to maximum flows in the river, Glacial Lake Outburst Flood (GLOF) and sediment yields, which have potential risk to dams. EC also requires identification of adverse effects, and measures to avoid, minimize or reduce the impacts Under the Electricity Act of Bhutan, a licensee, in carrying out electricity industry operation, must comply with the engineering and safety under the regulations prescribed by the [Bhutan Electricity] Authority.	Article 8, 9 ,10 of EAA 2000 Article 16, 28.2 (a), 28.2 (c), Annex 3 (9) of RECOP 2002 Section 3.7.2, 3.7.5, 3.7.6 of Application for Environmental Clearance Guideline for Hydropower. Article 62 of Electricity Act of Bhutan 2000.	No regulations prescribed yet	Regulation on Safety of Dam would be necessary
Operational principles: 1. Identify existing dams and dams under construction that can influence the performance of the project and implement necessary safety measures/ remedial works.	The RECOP also requires a description of mitigation measure to be implemented prior to when appropriate in relation to environmental impacts. Inspections and reassessment of dams is recommended by the Guidelines for Safe Operation of Dams in Bhutan Different levels of inspections are recommended: operational inspection (daily), periodic inspection (annually), main inspection (every 5th year), reassessment (every 15th year), and special inspection (after an abnormal event).	RECOP, Annex 3, Article 7. Section 3.11, Application for Environmental Clearance Guideline for Hydropower, 2004 Guidelines for Safe Operation of Dams in Bhutan Section 3.3, 3.4 and Annex 4	The guidelines apply for the existing dams. And this is not yet a mandatory requirement.	It would be necessary to frame new regulation on Safety of Dams incorporating these aspects
2. Use experienced and competent professionals to design and supervise the construction, operation, and maintenance of dams and associated works	All of Bhutan's hydropower dams have been designed by foreign professionals and constructed under their supervision. The operation and maintenance staff were also trained by the foreign designer and contractor before handing over the O&M functions to Bhutanese	None	And this is not yet a mandatory requirement	It would be necessary to frame new regulation on Safety of Dams incorporating these aspects
3. Develop detailed plans, including for construction	Along with environmental and social parameters the Application for Environmental Clearance for Hydropower projects includes structural details on the	Application for Environmental Clearance: Guideline for Hydropower, August 2004	None.	Covering Guidelines to mandatory regulations

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supervision, instrumentation, operation and maintenance and emergency preparedness	dam type (concrete arch, gravity, earth-filled) design (e.g. crest elevation, gates), weir details (type of construction, elevation; reservoir/headpond details (height, area, volume, minimum draw down level, capacity inflow ratio, and highest flood level; topography, hydrology, sediment yield and other factors bearing directly or indirectly on dam safety. Guidelines for Safe Operation of Dams in Bhutan recommends preparation of Emergency Action Plan, Preliminary Hazard Assessment, Program for Inspection and Reassessment, Monitoring and Instrumentation during Operation, Qualification and Training, Dam classification according to failure consequences, Internal quality control including Manuals of Operation, and Measures to Ensure Health, Security and Environment.	Guidelines for Safe Operation of Dams, 2006		would extend regulatory authority for dam safety to existing dams as well
4. Use independent advice on the verification of design, construction, and operational procedures and appoint independent panels of experts for large or high hazard dams.	Under the EAA 2000, NECS is authorized to appoint an Environmental Assessment Advisory Board to provide technical advice on the environmental assessment and the environmental terms for a project, and head of the NECS may nominate not more than 3 individuals to provide expert opinion. The Advisory Board is authorized to adopt rules and procedures governing its activities.	Article 38 of EAA 2000 Article 11 of RECP.	Although the use of independent advisory boards is authorized for environmentally sensitive projects, it is not explicitly mandated for high hazard dams	Regulations should mandate the use of independent advice on the verification of design, construction, and operational procedures and appoint independent panels of experts for large or high hazard dams.
5. Use contractors that are qualified and experienced to undertake planned construction activities	None	None	Use of qualified contractors is not mandated by regulations pertaining to dam safety	New Regulation on Safety on Dams needs to incorporate these aspects.
6. Carry out periodic safety inspections of new/ rehabilitated dams after completion/ rehabilitation, review/ monitor implementation of detailed plans and take appropriate action as needed.	Environmental Clearance also requires project's monitoring and evaluation plan for construction and operation period. Inspections and reassessment of dams is recommended by the Guidelines but not mandatory for Safe Operation of Dams in Bhutan. Different levels of inspections are recommended: operational inspection (daily), periodic inspection (annually), main inspection (every 5th year), reassessment (every 15th year), and special inspection (after an abnormal event).	Section 3.11, Application for Environmental Clearance Guideline for Hydropower, 2004 Guidelines for Safe Operation of Dams in Bhutan, Section 3.3, 3.4 and Annex 4	The requirement to monitor dam safety is limited to new dams; the monitoring of existing dams is included in the Guidelines which have not been made mandatory by law	Monitoring and inspection provisions of the Guidelines for the Safety Operation of Dams should be made legally binding.

ANNEX B: APPLICABLE POLICIES, ACTS, REGULATIONS, AND INTERNATIONAL AGREEMENTS

I. Relevant Policy Documents

- Gross National Happiness (GNH)
- The Middle path, National Environment Strategy (NES), 1998
- Bhutan 2020

II. Relevant Legislation to Overall Environmental Governance in Bhutan

- The Road Act, 2004
- Mines and Minerals Management Act, 1995
- Penal Code, 2004 (Section 309, 408 and 409)
- Bhutan Municipal Act, 1999
- The Seeds, 2000
- The Live stock Act, 2001
- The pesticides Act, 2000
- Water and Sanitation Rules, 1995
- National Environmental Protection Act, Draft VII, July 24, 2006

III. Environmental Assessment

- The Environmental Assessment Act, 2000
- Regulations for Environmental Clearance, 2002
- Regulation on Strategic Environmental Assessment, 2002
- EA: Sectoral Guidelines for Forestry, 1999 as amended by the Guidelines for Environmental Clearance for Forestry Activities, 2004
- EA: Sectoral Guidelines for Hydropower, 1999
- EA: Sectoral Guidelines for Mining & Minerals Processing, 1999
- EA: Sectoral Guidelines for New and Existing Industries, 1999, 1999
- EA: Sectoral Guidelines for Roads and Highways, 1999
- EA: Sectoral Guidelines for Power Transmission Lines, 1999
- Environmental Codes of Practice for Sewage and Sanitation Management in Urban areas, 2000
- Environmental Codes of Practice for Hazardous Waste management, 2002
- Environmental Codes of Practice for Highways and Roads, 2000
- Ambient Discharge Standards and Environmental Sampling Manual, 1999

IV. Management of Cultural Property

- The Antique and Art Treasures Rules and Regulations
- The Movable Cultural Property Act of Bhutan, 2005

V. Involuntary Resettlement

- Urban Areas & Property Regulations, 2003
- Registration of land in Thram (Land Act), 1979
- Land Compensation Rates, 1996 as amended to date
- Policy Framework for Land Acquisition and Resettlement, 1999

VI. Natural Habitats

- Forest and Nature Conservation Act, 1995
- Forest and nature Conservation Rules of Bhutan, 2000
- Biodiversity Act, 2003

VII. International Environmental Treaties, Conventions and Agreements to which Bhutan is a party and which are relevant to the use of country systems

- Convention on Biological Diversity
- Convention on World Natural and Cultural Heritage
- United Nations Framework Convention on Climate Change
- Convention to Combat Drought and Desertification,
- Convention on International Trade in Endangered Species (CITES)

ANNEX C: ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PROCESS

1. ***Overview.*** The focal point for environmental governance of project activities, including environmental assessment, mitigation, monitoring, compliance, and enforcement is the environmental clearance (EC) process. Environmental clearance is a mandatory requirement for project development consent unless exempted by Annex 2 of the Regulation for the Environmental Clearance of Projects (RECOP) issued in 2002. The scope of activities subject to this exemption is very limited.

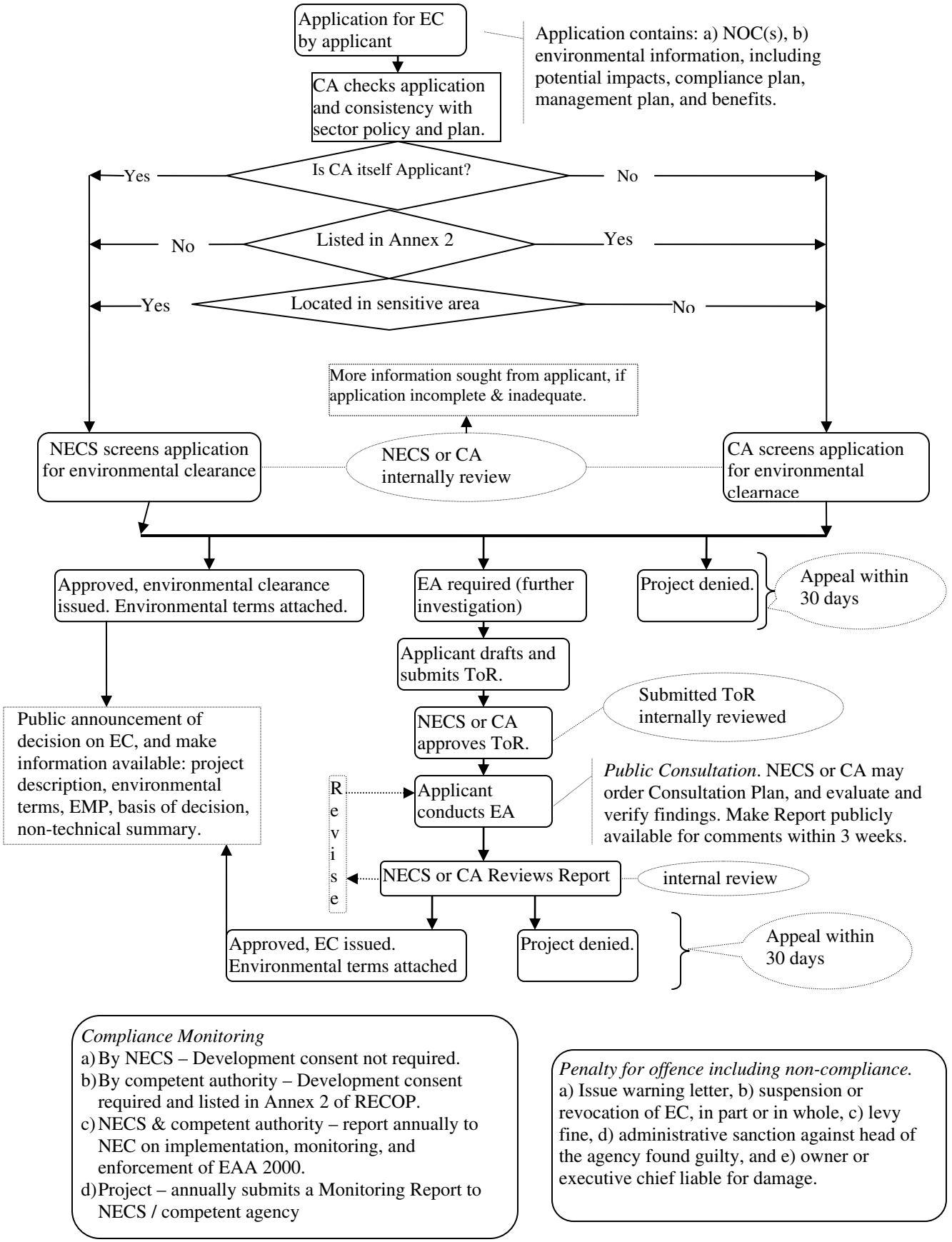
2. ***Authority to Issue Environmental Clearance***. Authority to issue environmental clearance lies either with the National Environmental Commission (NEC) with environmental clearance authority delegated to the National Environmental Commission Secretariat (NECS) or to competent authorities, typically line ministries, a department within one of these ministries, or the District (*Dzongkhag)* Environmental Committee (DEC). The allocation of authority between the NECS and the competent authorities is based on the nature of and location of the project. Large, complex projects and those sited in environmentally sensitive areas are assigned to NEC with smaller, less sensitive projects assigned to the competent authorities based on the particular competent authority's perceived capacity to undertake the necessary environmental assessment, mitigation, and monitoring responsibilities.

3. The allocation of environmental clearance authority between and among NEC and the designated competent authorities are included in Annex 2 of RECOP. Annex 2 has been amended by NEC on several occasions to gradually expand the list of activities to be subject to clearance at the DEC level, commensurate with increases in DEC capacity as agreed by the DEC and NEC. If a project proponent happens also to be a designated competent authority for that particular activity, authority to issue environmental clearance defaults to NECS. RECOP Annex 2 also includes a list of activities for which an environmental clearance is not required.

4. ***Application for Environmental Clearance***. The formal EA process begins with application by the proponent. The applicant furnishes environmental information with the environmental clearance application. Application for Environmental Clearance Guidelines helps the applicant prepare and furnish information correctly and adequately. An applicant is free to consult the competent authority or NECS prior to submitting an application to determine whether the proposed activity is subject to the RECOP as well as the potential scope and duration of the EA process

5. Application for environmental clearance is routed through the relevant agency with authority over that activity and ultimately to NECS or the designed competent authority for final action. (No environmental clearance application comes directly to NECS—the application is forwarded to NECS by competent authority (or relevant sectoral agency if no formal competent authority is designated). This is to ensure coordination and consistency with sectoral policies plans and programs.

6. ***Environmental Clearance Process.*** The Environmental Clearance process and procedure in Bhutan is illustrated below.



Compliance Monitoring

a) By NECS – Development consent not required.
b) By competent authority – Development consent required and listed in Annex 2 of RECOP.
c) NECS & competent authority – report annually to NEC on implementation, monitoring, and enforcement of EAA 2000.
d) Project – annually submits a Monitoring Report to NECS / competent agency

Penalty for offence including non-compliance. a) Issue warning letter, b) suspension or revocation of EC, in part or in whole, c) levy fine, d) administrative sanction against head of the agency found guilty, and e) owner or executive chief liable for damage.

7. ***Issue of No-Objection Certificate (NOC).*** The first step in processing an application for environmental clearance is the securing of a No-Objection Certificate (NOC) from the relevant agency. There is no pre-defined list of organizations from which NOC is required. It varies from project to project depending on type of activities, location, etc. The NECS or competent authority reviews the environmental information submitted by the applicant and designates the organizations from which NOCs is required. The table below provides an illustrative list of organizations which issue NOCs for the given circumstances.

List of Agencies Authorized to Issue No-Objection Certificate.

No.	Agency	Circumstances
1.	Dzongkhag (district)	Administrative approval from Dzongkhag
2.	Municipal Authority	Within a municipality
		Within 50m of a public park
3.	Department of Culture	Should the project be located within 50m of a cultural or religious site
4.	*Tsamdo* or *Sokshing* from Cabinet routed through Department of Forest	Should the project damage or acquire *Tsamdo* (grazing land) *or Sokshing* (woodlot for collection of leaf).
5.	Department of Forest	In case the project is proposed within the forest area or if
		project located in government land
6..	Nature Conservation Division	Within boundary of protected area
7.	Private owner	Within a private boundary
		Within 50m of human dwelling.
8.	Private property owner	Should the project need to acquire private property
9.	Department of Health	Within 50m of hospital
10.	Department of Education	Within 50m of school
11.	Bhutan Power Corporation	Should the project require the relocation of a power transmission line
12.	Department of Energy	Should the project require relocation of power transmission or distribution lines
		In case the power requirement is more than one MW
13.	Bhutan Telecom Corporation	Should telephone structures need relocation
14.	Bhutan Telecom Authority	Should the project require relocation of telephone lines
15.	Department of Roads	Should the project require access from highways and feeder roads

Source: Application for Environmental Clearance Guideline for (Hydropower, Tourism, Highways and Roads, Forestry Activities, Transmission and Distribution Lines, Preparation of Industrial Project Reports), National Environmental Commission, August 2004.

8. ***Environmental Screening***: Environmental Screening is based on the environmental information submitted by the applicant. The competent authority or sectoral agency evaluates the project's consistency with the sectoral policy, plan and program, and the completeness of the submitted environmental information (covered subject areas and level of details) including no objection certificate.

9. Competent authority proceeds with reviewing the information and screening the project if it falls within its mandate e.g. if the project is listed in RECOP Annex 2 and not located in sensitive areas defined in RECOP 17; otherwise it forwards the application to the NECS. The NECS is mandated to screen and issue environmental clearance for projects not listed in RECOP Annex 2; located in sensitive areas such as within the boundary of a

protected area, or within 50 meters of a public park, human dwelling, hospital, school or sacred landscape or site, or any other sensitive area designated by the Secretariat; and project of the Royal Government that does not require a Development Consent.

10. If the information included in the application is deemed inadequate, the competent authority or NECS seeks further clarification from the applicant. If the information included in the application is inadequate and this may cause delay in screening, competent authority/NECS, as relevant, may conduct a site visit to verify information included in the application. The screening is an internal review process which leads to one of three outcomes: (a) issuance of an environmental clearance; (b) requirement for further study (Environmental Assessment); or (c) rejection of the application.

11. Bhutan's environmental assessment legislation and guidelines do not categorize projects into Environmental Category A, B, C. etc, as can be found in many other countries as well as in the World Bank OP. Nature of information sought from the applicant for environmental clearance suggests that the applicant conducts a preliminary assessment, prior to application for environmental clearance as a part of environmental information. For example, RECOP requires that the environmental information submitted together with application for environmental clearance must contain the following information at the minimum:

- The potential adverse effects of the project on the environment including direct, indirect and cumulative effects,
- How the project complies with relevant sectoral guidelines or code of best practices, if any, issued by the Secretariat or competent authorities,
- How the impact of the project will be avoided, minimized or reduced; and
- The environmental benefits of the project including, how the project will benefit concerned people and use clean and sustainable technologies.

12. The Application for Environmental Clearance Guidelines further suggests inclusion of the following information in the application for environmental clearance: project description including objective and project details such as location, area, cost, activities, raw materials and resources consumed, production and wastes, labor and machines, methods and technology to be used, sustainability, ancillary facilities; public consultation; description of physical, ecological and social environment of the project area; project impacts and mitigation measures; monitoring program and No-objection Certificates (NOCs).

13. ***Environmental Assessment***. If screening determines that further investigation is needed, an Environmental Assessment (EA) is required from the applicant, and the applicant is required to prepare and submit draft Terms of Reference (ToR) to NECS or relevant competent authority for approval. The draft EA ToR is internally reviewed by NECS or competent authority in the process of approval and there is no consultation with the stakeholders in this process. The time frame in which to conduct the environmental assessment is negotiated between the applicant and the competent authority or NECS. The applicant itself prepares or contracts out the preparation of the environmental assessment and submits the environmental assessment to NECS or the designated

competent authority for approval. Once the EA report is submitted, it is reviewed by NECS or competent authority with different chapters of the report being reviewed internally by the relevant in-house staff. The review process determines if the report satisfies the elements of the approved ToR, and focuses on environmental management plan. Comments, if any, are sent to the applicant for incorporation – no revision of report is necessary if it is as per the ToR and quality is deemed acceptable.

14. ***Issuance of Environmental Clearance***. NECS or competent authority issues environmental clearance for the approved project either after screening, or after environmental assessment on the basis of findings. Site visits are conducted prior to issuing environmental clearance, in some cases even if an environmental assessment is not required. Criteria for issuance of environmental clearance include the following:

- The effects of the project on the environment are foreseeable and acceptable
- The applicant is capable of carrying out the terms of the environmental clearance.
- The project, alone or in conjunction with other programs or activities, contributes to the sustainable development of the Kingdom and the conservation of its natural and cultural heritage.
- Adequate attention has been paid to the interest of concerned people, and
- The project is consistent with the environmental commitments of the Kingdom

15. The environmental clearance is required to attach environmental terms including the relevant Environmental Codes of Practice (ECOP), if available. At the minimum environmental terms included in environmental clearance must specify: (a) binding mitigation and compliance measures, and (b) appropriate monitoring, recording and reporting requirements. All environmental clearances (whether issued by National Environmental Commission or another competent authority) may be effective for up to five years and may be renewed with or without changes to environmental terms and conditions.

16. ***Public Consultation***. Consultations with public and stakeholders takes place at two stages in the EA process: when NOC is issued from the designated agencies and during the preparation of the environmental assessment. Environmental clearance can be issued only after local authorities and affected persons are adequately informed and consulted. For "significant projects", the minimum procedure that has to be followed for the public consultation is defined by Article 31 of the RECOP and includes the following mandatory procedures:

- *Public notice*. Written notices to local people and newspaper notice.

- *Public hearing*. Notice to be given in the newspaper of public hearing at least a week before the meeting, and given to the head of the local people and local authorities in writing.

- *Public disclosure*. Local authorities are responsible for making copies of all EA documents and decisions available to the affected community and open for public inspection.

- *Public comments*. The public and other agencies are given at least three weeks from the notice of public availability of EA documents to submit comments.

- *Public consultation plan.* The competent authority or NECS may order the applicant to submit a proposed plan for public consultation, notice, and review procedures beyond the minimum requirements outlined above, and may order changes to any such public consultation plan to ensure that concerned people and organizations are adequately informed, have adequate opportunity to express their views and to ensure that such views are adequately taken into account. Each applicant is required to implement any such public consultation plan at its sole expense.

- *Verification of public consultation*: The competent authority or NECS is required to review and evaluate the implementation of the public consultation process and to verify the findings of any public consultation.

17. ***Application for environmental clearance guidelines.*** This requires that the applicant must explain to the affected people the expected impacts of the development, where they will occur and how they will be mitigated. It suggests that the applicant provide a record of the meeting/s and attach a list of the names of the people together with the date of consultation/s, details of their Geog and village, issues raised by them and the agreement/s arrived at between the applicant and the people to resolve these issues. The applicant needs to provide signatures or other proof of consultation/s with the affected people, and describe issues that remain unresolved. Affected people are defined as the ones who are directly or indirectly affected by the construction and operation of the project. For instance, they may lose their land to the project site, while emissions or discharges during operation may affect their health, etc. In practice, consultation is conducted with affected or identified as potentially affected people and organizations/ stakeholders only. No project has yet required a public hearing, and "public consultation" is not open to the general public.

18. ***Public disclosure.*** When a decision on an environmental clearance has been taken, NECS or the competent authority is required to make a public announcement of the decision and make the following information available to the public: project description: environmental terms; measures to avoid or mitigate potential adverse impacts and enhance positive benefits; main reasons and considerations on which the environmental clearance decision is based, including the basis for the acceptance or rejection of views and arguments presented by other authorities and concerned people; and a non-technical summary of the above information.

19. ***Appeals and legal challenge.*** Any person may provide notice of intent to commence legal action against a screening decision or environmental clearance within 30 days of public notice of the decision. Attempt is to be made first to settle the disputes amicably through informal dialogue: when this is not possible, National Environmental Commission decides whether to hear the dispute and, if so, may conduct adjudicatory hearing to decide the matter. An aggrieved party may appeal to a Court of Law within 30 days of the decision by the National Environmental Commission.

20. ***Time limits***. The competent authority has 15 days to acknowledge receipt of an application for environmental clearance. Within three months, the competent authority or NECS must assess the adequacy of application. The competent authority has 15 days to forward the application to NECS if it is beyond its jurisdiction. The competent authority or NECS has up to three months to screen the project to decide either to issue environmental clearance or require an environmental assessment, or to reject the project. If environmental assessment is required, time for conducting it is negotiated between the applicant and NECS or competent authority. The competent authority/NECS has up to three months to issue or deny the environmental clearance based on the findings of the EA report. Within 15 days of decision, the competent authority or NECS is required to notify the public of its decision. Based on the environmental clearance, the applicant has up to one month to undertake a legal agreement to comply with the EAA. Any decision by the competent authority may be appealed for up to 30 days from the date of public notification.

21. ***Environmental management plan requirements*.** With respect to the environmental management plan, the Application for Environmental Clearance Guidelines recommends a tabular format that describes projected impacts from each stage of project activities and specifying mitigation measures and their estimated costs. It also recommends a detailed breakdown of environmental costs related to construction, including materials and supervision. The EA Application Guideline recommends that the applicant be held responsible for ensuring that environmental terms that are attached to the environmental clearance are carried out, including all activities to be implemented by contractors. It recommends use of a mechanism of attaching the environmental terms to the contract document so that the contractor has a clear understanding of the environmental requirements that are to be adhered to during construction. It is also stipulated in the EA Application Guidelines that at the time of tendering, the contractor will be required to prepare a Contractors' Site Environmental Management Plan (CSEMP) that shows how the contractor will implement the environmental terms that are included as part of the tender specifications. The CSEMP is to be included as part of the contract documents and is to be evaluated as part of the overall tender. Applicant is also required to provide the following plans along with the application if they are relevant: (a) The Land Compensation and Resettlement Plan, and (b) Worker Health and Safety Plan.

22. ***Compliance monitoring*.** The NECS and competent authority are authorized to monitor and control compliance with the terms of environmental clearance. The competent authority can enforce the environmental terms attached to environmental clearance and can order sanctions and compensation for environmental damage. The competent authority and/or NECS has the right to enter project sites with or without prior notification in order to ensure compliance with the terms of an environmental clearance, to make visual inspections and spot checks, interview employees, occupants or other persons on site, collect samples, inspect and take copies of relevant data or documents and take all other measures necessary to the control of the environment.

23. Legislation requires NECS and competent authority to conduct annual compliance monitoring, against the terms and conditions set in the environmental clearance, and environmental clearance issuing agency is responsible for monitoring the compliance.

Application for Environmental Guidelines requires the holder of the environmental clearance to monitor regularly as detailed in the environmental clearance**.** Either the competent authority or the National Environmental Commission conducts unannounced monitoring and checks.

24. The NECS conducts compliance monitoring annually. The annual monitoring visit by NECS is an announced and pre-informed monitoring that checks compliance with the terms and conditions attached to the environmental clearances. The NECS also include relevant competent authority officials in the annual compliance monitoring visits such as representatives from the Department of Geology and Mines and the Department of Industries. Competent authority's environmental compliance monitoring is part of overall project monitoring. The EAA also has provisions for spot checks and unannounced visits; however, according to NECS this is not happening at present due to resource and capacity constraints. The NECS does not have priority areas or list of project for compliance checks and no site visit is made from NECS other than annual visit unless problem is reported.

25. The NECS issues warning letters for any violation giving the alleged violator an opportunity to respond with their plan for remedial action. If the same violation is repeated again, penalty action is taken which could be a monetary fine, suspension of permit or revoking etc depending on the nature and severity of the violation.

ANNEX D: CHARACTERISTICS OF BHUTAN'S PROTECTED AREAS

Protected area	*Area (km^2)*	*Main habitat types*	*Key species*	*Operational status*	*Estimated human population*
Bomdeling Wildlife Sanctuary	1,487	Alpine meadows, high altitude coniferous forest and temperate broadleaf forest	Tiger, snow leopard, musk deer, blue sheep, capped langur, red panda, black-necked crane, chestnut-breasted partridge, Pallas' fish eagle.	Implementation of its first conservation management plan (July 2001 – June 2007) in progress; headquarters established at Chortenkora, Trashi Yangtse	3,000
Jigme Dorji National Park	4,349	Alpine meadows, high altitude coniferous forest, temperate and warm broadleaf forests	Snow leopard, tiger, leopard, takin, musk deer, blue sheep, Himalayan black bear, red panda, satyr tragopan,	Implementation of its first conservation management plan (July 1997 – June 2002) completed; Headquarters established at Damjee, Gasa	6,500
Jigme Singye Wangchuck National Park	1,400	High altitude coniferous forest, temperate and subtropical broadleaf forests	Himalayan black bear, red panda, giant flying squirrel, leopard, tiger, golden cat, rufous-necked hornbill, black-necked crane, Pallas' fish eagle	Wangchuck National Park Long-term conservation management planning in advanced stage. Headquarters under construction at Tshangkha, Trongsa.	5,000-6,000
Khaling Wildlife Sanctuary	273	Tropical and subtropical broadleaf forests	Tiger, elephant, pygmy hog	Not operational.	
Phipsoo Wildlife Sanctuary	278	Tropical and subtropical broadleaf forests	Tiger, spotted deer, elephant, golden langur	Not fully operational but some basic activities such as wildlife patrolling and habitat monitoring are ongoing on ad hoc basis under the supervision of Sarpang Forest Division.	
Royal Manas National Park	1,023	Tropical and subtropical broadleaf forests, and temperate broadleaf forest.	Tiger, leopard, clouded leopard, golden langur, Assamese macaque, elephant, gaur, pygmy hog, hispid hare, rufous-necked hornbill, great Indian hornbill, Pallas' fish eagle.	Basic operational activities ongoing but major conservation programme suspended due to threats from presence of Indian militants in the border areas.	5,000
Sakten Wildlife Sanctuary	650	High altitude coniferous forest and temperate broadleaf forest.	Tiger, leopard, musk deer, Himalayan black bear, serow.	Conservation management planning in progress. Site for headquarters tentatively identified at Phongme, Trashigang.	
Thrumshingla National Park	768	Old growth fir forest, mixed coniferous forest, temperate and subtropical broadleaf forests.	Tiger, snow, leopard, red panda, giant squirrel, satyr tragopan, rufous-necked hornbill, wood snipe.	Implementation of its first conservation management plan (July 2002 – June 2007) in progress; headquarters established at Ura, Bumthang.	10,000-11,000
Torsa Strict Nature Reserve	651	Temperate coniferous forests and alpine meadows.	Snow leopard, leopard, tiger, serow, rufous-throated wren babbler	Not operational.	

Source: (Area) Selected renewable natural resources statistics 2003, Ministry of Agriculture; and Sustainable Land Management Project Environmental Management Framework, March 2005.

ANNEX E: CONSERVATION AREAS IN BHUTAN

Name	*Region*	*Biological assets*
Docchula	Thimpu	Endemic rhododendrons, birds, red panda
Pele la	Wangdue Phrodrang	Scenery, langurs, red panda, birds
Yutong la	Trongsa	Scenery, pine forests, birds
Durtsachu	Bumthang	Hot springs, geology, scenery
Phobjikha	Wangdue Phrodrang	Black-necked crane habitat
Doga	Paro	Goral habitat

ANNEX F: THREATS TO BHUTAN'S BIODIVERSITY

1. ***Rural poverty***. While the country's per capita Gross Domestic Product (GDP) at US$553 is among the highest in South Asia, the household incomes are low (CSO, 2002, and RGOB, 2002). The monthly per capita consumer expenditure, as a proxy for income, is Nu.1,945 for urban households and Nu.928 for rural households. This works out to US$1.4 for urban households and US$0.68 for rural households per day. About 79 percent of the Bhutanese fall below the global poverty of less than US$1 per day.

2. The Ninth Five-Year Plan articulated one of its five development goals as "improving quality of life and income, especially of the poor". Some of the country's poorest communities live in the protected areas and biological corridors. For these communities, long-term conservation benefits mean little when their daily subsistence is at stake and, therefore, they will be less prepared to participate in conservation and even resentful when conservation adversely impacts their subsistence, e.g. crop and livestock depredation by wildlife. Poverty in protected areas can be associated with lack of development opportunities in the form of education, access to markets, access to resources, rural infrastructure, and so on. Clearly, there is a need to integrate poverty alleviation in the management of protected areas and biological corridors

3. ***Human/wildlife conflict***. Every year, wild boars, deer, monkeys, bears, and elephants plunder fields destroying hundreds of tons of crops causing immense misery to the farmers. In addition to direct loss of crops, farmers have to bear several indirect costs such as loss of time, added costs of production, expenditure on items such as torches and batteries, kerosene, used tins, and building of guard sheds, and disruption in family life. Although rare, there is also the risk of human injury or death due to wildlife attacks. Livestock depredation by predator species, especially tigers, leopards, wild dogs and black bear, is also common albeit on a lesser scale and geographically more unevenly than crop depredation.

4. ***Over-grazing***. Cattle are owned by almost all of the rural households in the country and it dominates the temperate and subtropical regions of the country Livestock rearing is integral to rural livelihood and forms a part of the fabric that links other elements of the socio-economic structure of individual households and communities. In the alpine regions yaks are the dominant animals, and the economy is solely based on yak products. Individuals, households and communities have grazing rights over pastures, legitimated by the *Thrimzhung Chenmo*, Land Act 1978, and Forest and Nature Conservation Act 1995. The National Assembly has also passed resolutions relating to ownership and management of grazing land/pastures from time to time. All these rights are recorded in the "main thram" maintained by the Ministry of Home Affairs and a copy held by the owner. Livestock rearing and forest grazing are therefore to stay both from socio-economic and legal perspectives. In this context, it is important to recognize that grazing is an environmental problem when it is excessive and not managed but when it occurs at low or moderate level it can have a positive effects on biodiversity.

5. High livestock population has led to overgrazing in many instances. Overgrazing, mainly in broadleaf forests, may lead to attrition or loss of species, reduction of land

productivity and soil erosion. Forest regeneration is also hampered and change in vegetation is induced where grazing is rampant. Not only does over-grazing affect forest regeneration and land productivity, it also affects the availability of forage to wild ungulates. This can lead to two major consequences; wild ungulates will increasingly raid field crops when forage in the forest becomes scarce and insufficient forage in the forest will weaken the natural prey base and, consequently, predator species will turn to lifting livestock

6. ***Excessive wood consumption***. Traditional rural house construction entails extensive use of wood. Almost all housing structures – floor, roof, staircase, windows and doors, and beams and pillars – are made of wood. With dilapidation of old houses, population growth and fragmentation of families, construction of new houses becomes necessary. Moreover, roofing shingles need to be replaced every two to four years depending on climatic conditions. Although collection of dry fuel wood in the form of fallen twigs and driftwood is common, bulk of the fuel wood needs is met from natural forests.

7. ***Unsustainable harvesting of non-timber forest products***. Apart from timber and fuel wood, there is a long list of biodiversity resources that the rural Bhutanese use. These include medicinal and aromatic plants, forest food such as mushrooms, ferns and wild greens, bamboo and cane for local handicrafts, Daphne barks for traditional papermaking, wood for agricultural and household implements, animal fodder, and leaf litter for farmyard manure. To give an idea of the magnitude of the importance of biodiversity resources in Bhutanese life, here are some facts and figures: more than 300 species of plants are said to be used in traditional Bhutanese medicines; almost all of Bhutanese farming is based on use of farmyard manure where forest leaf litter is an indispensable ingredient; and a partial ethno botanical inventory of Jigme Singye Wangchuck National Park recorded more than 20 species of forest plants that the local people consume for food.

8. There are several examples from across the country of biodiversity resources becoming scarce due to unsustainable harvesting. For instance, in Bumdeling *geog*, excessive collection and unsound harvesting techniques have depleted Daphne plants to the extent that several families had to give up paper-making. Similarly, bamboo and cane in the Monpa area of Jigme Singye Wangchuck National Park, which were once abundantly available.

9. ***Poaching***. The country has several species of wild animals and plants of great commercial value in the international market, especially for use in production of traditional oriental medicines. A porous international border both in the north and south, inadequate law enforcement personnel, and general lack of knowledge of the legal consequences of poaching have made control a difficult job. Wildlife poaching and trade is prevalent in the border areas and some interior areas. Poaching of musk deer, bear and tiger and hunting and trapping of deer, pheasants and other wildlife are believed to occur in the Bunderling Wildlife Sanctuary sanctuary (NCD, 2001b), and Thumshingla National Park (NCD, 2001). In Jigme Dorji National Park poaching of medicinal plants is also quite high. Medicinal plants such as *Fritillaria cirrhosa (Tsega), Cordyceps sinensis (Yartsa Guenboop)* and *Saussuria spp. (Ganglameth)*, are the most commonly sought after species. The main species targeted for poaching are musk deer and Chinese caterpillar fungus *Cordyceps sinensis* as musk pods and

Cordyceps pieces are easy to conceal and smuggle. Poaching of other species such as tiger and bear is limited.

10. It has also been observed that the existing schedule of penalties related to poaching is lenient and therefore not much of a deterrent in contrast to the high commercial value of wildlife parts and products in the international market. For instance, the fine for failure to produce illegally acquired musk is Nu.25,000 per piece while a kilogram (kg) of musk pods can fetch up to US$50,000 in major destination countries such as Japan. At the border with China, poachers can sell a kg of *Cordyceps* for as much as Nu.50,000 but currently there is no specific fine implying that it falls under the general category of other wildlife products of Nu.350 per piece. The protected species listed in the FNCA has also been found to be lacking in sound basis. Some of the species that are not threatened, e.g. spotted deer, Chinese caterpillar fungus and snow down lily, have been listed whereas some that are known to be highly endangered, e.g. capped langur, hispid hare and white-bellied heron, are missing from the list. Clearly, there is a need to rationalize the existing schedule of penalties as well as the totally protected species list based on a comprehensive set of national, regional and international criteria, including the status of the species on the IUCN Red List of Threatened Species and the CITES Appendices.

11. ***Forest fires.*** Depending on the local site conditions, the negative impact of forest fires may be immediate or on a longer term. In steep areas the negative impact may be immediate, especially if heavy rains follow forest fire. The rainwater washes away topsoil and ash, depriving the exposed area of nutrient to support natural regeneration. If such a process is repeated several times, a succession process starts whereby the site completely degenerates into a barren area. Some species such as Chir pine *Pinus roxburghii* can withstand few forest fires. However, there is gradual degeneration of the site, and the associate species would be completely destroyed rendering the site to soil erosion and degradation of the ecosystem. This may also result in a change of the ecosystem if it is repeatedly subjected to forest fires.

12. The Forest and Nature Conservation Act 1995 prohibits setting of forest fires and imposes fines and penalties, including imprisonment. In spite of such stringent legislation, forest fires are a recurrent and widespread phenomenon. In the last five years, more than 486 square kilometers or 48,600 hectares, of forest was destroyed by forest fires. All forest fires in the country are man-made; either set deliberately to invigorate the growth of pastures or commercially valuable grasses such as lemon grass, or occur due to general public carelessness. Therefore, the causes of forest fires have to be thoroughly analyzed, and a strategy developed to reduce forest fire incidences. The strategy could include among others, ways and means of involving the local communities in the prevention of forest fires, use of both proactive and penal approaches to forest fire management, and introduction of new techniques in forest fire prediction, and control appropriate to mountain terrain.

13. Since forest fire programs have been decentralized to the Dzongkhag Administrations, an effective coordination mechanism will need to be developed between the DFS, the Dzongkhag Administrations and the territorial forest offices. It will be difficult for one agency to control and manage forest fires, which by nature are a complex, manpower-intensive and

physically risky task, more so in a country like Bhutan with rugged terrain and thick vegetation.

14. While strict penalties to deter occurrence of forest fires are necessary, proactive approaches such as educating the local communities on the negative effects of forest fires and involving them in forest fire management may have more lasting impact in reducing forest fires. The use of print and broadcast media to spread messages on ill effects of forest fires, and penalties for setting forests fires will need to be more vigorous.

15. At the regional level economic development projects such as road construction, transmission lines and large-scale infrastructure development, when not carried out in an environmentally friendly way, contribute to destruction and fragmentation of forests, particularly when they cut through protected areas. These projects may also cause pollution (e.g., of waters) and threaten biodiversity. Problems have increased during recent years due to increasing economic development. Increasing population pressure (by 2.5 percent per year) will lead to increasing pressure on scarce land and other biological values, both within and beyond protected areas. One underlying problem is that of land ownership and use patterns. Transboundary problems, involving illegal exploitation of biological resources by invasive poachers, are most acute along the southern border, and involve mainly poaching of mammals and exploitation of medicinal plants. At the northern border, yak herders crossing the border contribute to over-grazing, and intensive exploitation of medicinal plants. Other generalized threats to biodiversity include inadequate return of tangible benefits to local people (e.g., benefits from tourism and inadequate environmental awareness). Although the concept of conservation is embedded in Buddhist values, the essence of ecological integrity and the need to set aside areas for conservation purposes is not understood by the general public.

ANNEX G: AREAS OF INTERVENTION, CORRESPONDING OBJECTIVES, AND ACTIVITIES

(A) Human-Wildlife Conflict Mitigation

***Objective*:** Reduce human-wildlife conflict to a level that is manageable and not detrimental to both biodiversity conservation and socio-economic development

Activities:

- Implement controlled wild boar culling schemes in at least ten pilot sites, identified based on set of agreed criteria such as geographic balance and intensity of the conflict.
- Continue implementation of the tiger conservation fund to compensate farmers for loss of livestock to predators, monitor and evaluate the results of the implementation, and make necessary adjustments.
- Introduce conservation fund to compensate farmers for loss of crops to wildlife, to start within two priority protected areas and eventually in all the protected areas.
- Based on action research, develop and propagate measures and approaches to prevent or reduce crop and livestock depredation by wildlife, and evaluate their effectiveness.
- Establish a central database on human-wildlife conflicts to monitor trends and evaluate the effectiveness of the above activities.

Success indicators:

- Decrease in number of complaints of crop and livestock depredation.
- Decrease in the magnitude of crop and livestock depredation.
- Increase in positive perception of local people towards biodiversity conservation.

(B) Improved Livestock and Fodder Management

***Objective*:** Develop and implement integrated livestock management to reduce surplus livestock population.

Activities:

- Provide effective animal health coverage to provide the security that will encourage farmers to keep smaller herds of livestock.
- Revise taxation scheme on the basis of livestock holding in adult equivalents to discourage the rearing of unsustainable numbers of livestock.
- Enhance livestock sterilization service through better coverage, including mobile units.
- Improve yak and cattle breed through selection of superior bulls from local population on the basis of pedigree and/or progeny performance, distribution of bulls from other areas to introduce new blood lines and reduce inbreeding, and artificial insemination with imported semen.

Success indicators:

- Decrease in livestock population, specifically unproductive stock numbers.
- Decrease in grazing pressure, resulting in better natural regeneration and lesser soil erosion in otherwise vulnerable areas.
- Increase in number of improved breeds of yak and cattle.

***Objective*:** Develop and implement improved fodder management to increase forage reproductive capacity, conserve soil and reduce grazing pressure on forests

Activities:

- Establish farmers' cooperatives that will among other things oversee proper utilization of forage resources through monitoring of stock numbers, grazing duration and grazing time, nutrient management, and shrub and weed control.
- Manipulate grazing pressure from livestock and wild ungulates by introducing livestock species that have less habitat competition with wild ungulates, e.g. cattle in Laya and sheep in Lunana.
- Establish hay meadows with high-yielding fodder legumes and grasses under high nutrient supply condition to reduce pressure on forests.
- Introduce controlled burning or mechanical clearing of shrubs followed by reseeding with selected species and protection from grazing based on applied research and extension.
- Establish community and homestead forests of species with high forage and soil conservation values, and preferably with other ethno botanical values using participatory strategies with local people. This will necessitate establishment of forest nurseries, where such nurseries do not exist.

Success indicators:

- Increase in forage reproduction.
- Decrease in forage competition between livestock and wild ungulates.
- Decrease in grazing pressure on forests.
- Better communal cohesion and organization with regards to pasture management.

(C) Sustainable Wood Consumption

***Objective*:** Reduce consumption of timber and fuel wood to a level that is within the limits of annual allowable cut from sustainably managed forests.

Activities:

- Promote use of alternative house construction materials such as corrugated galvanized iron (CGI) sheets for roofing through appropriate subsidy schemes.
- Introduce environment friendly wood treatment technology to increase the life of wood used in construction to reduce the frequency of construction wood consumption.
- Promote use of more efficient wood harvesting technology, e.g. pit sawing in place of hewing by axe, to reduce wastage.

- Promote use of appropriate electrical appliances for cooking and heating at household, community (e.g. community lhakhangs) and institutional (e.g. schools and military camps) levels through sound economic instruments such as removal of taxes, suitable rural electricity tariff structuring, and users' training.
- Promote use of energy efficient wood stoves at household, community and institutional levels through appropriate subsidy schemes and users' training. Examples of such stoves include shielded metal stoves such as the ones produced in Bumthang and simple mud kilns with metal sheet chimney pipe and iron grate such as the ones installed in Tsirang dzongkhag by the Tsirang Women's Group.
- Promote use of energy efficient kitchen appliances, e.g. pressure cookers, thermos flask and hot case.

Success indicators:

- Reduction in consumption of timber and fuel wood in terms of number of permits issued.
- Increase in use of wood saving technology.

Objective: Increase wood production in non-forested areas through establishment of community and household forests on degraded forest areas and homesteads to reduce pressure on natural forests.

Activities:

- Establish community and household forests of species with high timber and fuel wood value, and preferably with other ethno botanical value such as fodder and fruit using participatory strategies with local people, including participatory rural appraisal (PRA) and collaborative development of community forest management plans.
- Conduct regular extension and training activities to develop community knowledge and skills for community and household forest management.

Success indicators:

- Increase in wood production from non-forested areas.
- Increase in use of wood produced from non-forested areas.
- Increase in number of communities and households engaged in self-managed forestry.

(D) Sustainable Use of Biodiversity Resources

***Objective*:** Develop and propagate sustainable regimes of biodiversity resources use based on community-based natural resource management (CBNRM) framework**.**

Activities:

- Make a full inventory of potential areas/ resources for CBNRM.
- Develop and establish CBNRM schemes to promote sustainable use of biodiversity resources and directly benefit local communities from such initiatives, in each operational protected area based on the aforesaid inventory.
- Conduct regular extension and training activities to develop community knowledge and skills in various aspects of CBNRM.

- Conduct research trials on domestic cultivation of medicinal plants and, depending on the results, carry out extension activities to propagate it in the field.
- Provide alternatives to biodiversity resources, which are threatened by overuse or fall in core zones/ critical wildlife habitats.

Success indicators:

- Increase in number of CBNRM schemes.
- Increase in domestic cultivation of medicinal plants, thereby reducing pressure on stocks in the natural.

(E) Species Conservation

***Objective*:** Reduce poaching and trade in wildlife parts and products to half of 2002 level.

Activities:

- Identify key areas and species subject to poaching threats and assess the magnitude of the threats.
- Augment anti-poaching measures, including strengthening of anti-poaching squads and local informers' network and upgrading of surveillance equipment, on the basis of the aforesaid assessment.
- Establish warden and guard posts to cover all transit points related to wildlife trade.
- Revise the totally protected species list based on CITES appendices, global status as per the IUCN red list of threatened species, and national significance.
- Increase the existing schedule of fines related to poaching and trade in wildlife parts and products based on the national status of the species and the actual value of their parts and products in the international and regional markets.
- Conduct yearly inter-agency workshops to update various law enforcement personnel on poaching and wildlife trade and to coordinate joint activities to control poaching and wildlife trade.
- Develop database and produce annual reports to monitor poaching and trade in wildlife parts and products in keeping with the requirements of CITES.

Success indicators:

- Decrease in poaching incidents in relation to a consistent level of law enforcement.
- Decrease in trade of wildlife parts and products obtained from poaching.
- Increased level of cooperation and coordination between various law enforcement personnel.

***Objective*:** Conserve keystone species and their habitats at or higher current levels**.**

Activities:

- Maintain the two critical populations of black-necked cranes in Bumdeling Valley and Phobjikha Valley at 150+ and 200+, respectively, through habitat protection, community stewardship, and annual counts and observation.

- Carry out another series of countrywide tiger status surveys, preferably from 2006 to 2008, to assess the trend in tiger population since the 1996-98 survey.
- Complete countrywide snow leopard status surveys, following up on the preliminary snow leopard survey carried out in the northwestern part of Jigme Dorji National Park in 1997.

Success indicator:

- Population of keystone species at current or higher levels.

(F) Forest Fire Prevention and Control

Objective: Reduce the occurrence of forest fires at least to half of 2002 level

Activities:

- Conduct a countrywide assessment of forest fire occurrence and associated issues (including public attitude) and impacts.
- Develop and implement a comprehensive forest fire management strategy based on the above assessment.
- Strengthen forest fire management capacities at dzongkhag and geog levels through training and provision of fire fighting equipment as per recommendations specified in the aforesaid strategy.
- Develop and implement proactive public awareness-raising and education activities related to forest fire prevention and control through effective use of a wide array of avenues such as media (newspaper, TV and radio), school events (e.g. concerts) and public events (e.g. World Environment Day, local Tshechus).
- Strengthen legislation and law enforcement related to forest fire prevention and control.

Success indicators:

- Decrease in forest fires.
- Improved capacities at dzongkhag and geog levels for forest fire management.
- Increased public awareness and education about the negative impacts of forest fires and their role in forest fire prevention and control.

(G) Poverty Alleviation and Integrated Conservation and Development Programs

Objective: Implement ICDPs, especially with the emphasis on scaling up successful experiences and enhancing linkages between conservation objectives and socioeconomic development needs of the local communities.

Activities:

- -Develop an ICDP strategy, encompassing potential models and operational guidelines for planning, implementing, and monitoring, based on lessons learnt within the country and in the region.

- Enhance linkages between poverty alleviation and sustainable livelihoods and biodiversity conservation through comprehensive assessments of human-nature interactions and associated socio-economic development realities and potentials.
- Assess the full potential of ecotourism and develop comprehensive community-based ecotourism plans within the ICDP framework for Bumdeling Wildlife Sanctuary, Jigme Dorji National Park, Jigme Singye Wangchuck National Park, and Thrumshingla National Park, in coordination with stakeholders at national, dzongkhag and geog levels.
- Provide capacity-building support and technical assistance to Dzongkhag Administrations and GYTs to integrate biodiversity conservation issues in their development planning and management processes.
- Link and build synergy with activities from other areas of intervention, e.g. CBNRM, human-wildlife conflict management, and fodder and rangeland management.

Success indicators:

- Stronger interface between conservation and socio-economic development needs.
- Reduced poverty and improved livelihoods as a result of ICDP activities.
- High level of public appreciation for ICDP activities.

(H) Institutional Capacity Building

Objective: Improve coordination and collaboration both within Nature Conservation Division and with external partners

Activities:

- Convene meetings on a quarterly basis between Nature Conservation Division at the central level and its protected areas in the field to among other things share information on progress and future plans, and improve internal communication, understanding of management issues and needs and delivery of necessary conservation inputs.
- Convene annual protected areas conference as a forum for broad-based interaction with stakeholders to among other things share information on progress and future plans, harmonize implementation and inter-agency coordination issues, and develop knowledge on topical conservation themes.
- Network with international agencies such as donors and conservation expert organizations, e.g. IUCN, WWF and Wildlife Conservation Society, to improve financial and technical collaboration.
- Strengthen partnership with non-governmental organizations for niche conservation actions, e.g. as the Royal Society for the Protection of Nature for black-necked crane conservation and conservation education and the National Women's Association of Bhutan for poverty alleviation and wood energy conservation.
- Develop a Nature Conservation Division communications strategy for improved information development and dissemination, media relations and public outreach, including creation of Nature Conservation Division website and publication of a newsletter.

Success indicators:

- Improved level of communication and coordination within Nature Conservation Division.
- Improved planning and implementation of activities both at Nature Conservation Division and in the field.
- Greater appreciation of NCD's work by partners and NCD staff themselves.
- Increased transparency in planning and implementation of activities.
- Improved availability of information.
- Better mobilization of financial and technical assistance.

Objective: Develop the human resources of Nature Conservation Division and protected areas, in terms of quantity as well as quality.

Activities:

- Draw up a coordinated human resources development plan for inflow of staff and training.
- Post trained personnel in the protected areas in accordance to the requirements projected in their conservation management plans.
- Provide training opportunities to NCD personnel for specialization/ knowledge and skill enhancement in subjects such as biodiversity survey and monitoring techniques, land conservation science, natural resources conflict management, PRA, CBNRM, application of Geographic Information System (GIS) in protected area management.
- Establish a computerized database of all collected data.
- Establish a library of all documents produced by Nature Conservation Division, in both hard and soft copies. The library should also maintain at least hard copies of relevant documents produced by other agencies both within and outside the country.
- Produce and maintain audiovisuals, such as videotapes, slides and digital pictures, to aid information development and public outreach.

(I) Conservation Management Planning and Implementation

Objective: Develop, or update, and implement conservation management plans for the protected areas.

Activities:

- Carry out a mid-term review of the ongoing conservation management plan of Bunderling Wildlife Sanctuary by 2004 and a terminal review on completion. Based on the terminal review, update the Bunderling Wildlife Sanctuary conservation management plan for the subsequent five years.
- Carry out a mid-term review of the ongoing conservation management plan of Thumshingla National Park by 2004 and a terminal review on completion. Based on the terminal review, update the Thumshingla National Park conservation management plan for the subsequent five years.
- Update the conservation management plan of Jigme Dorji National Park on the basis of the terminal review carried out in July 2003 and accordingly implement it.

- Finalize the conservation management plan for Jigme Singye Wangchuck National Park and commence its implementation by 2004.
- Complete socio-economic and biological surveys in SWS and accordingly prepare SWS conservation management plan for commencement of implementation by 2006.
- Complete delineation and physical demarcation of the boundary of SWS by 2006.
- Consistent with conservation management plans, carry out zoning of respective protected areas in consultation with local communities and dzongkhag / geog authorities.

Success indicator:

- Number of protected areas with operational conservation management plans

(J) Transboundary Cooperation

Objective: Establish systematic transboundary cooperation with protected area authorities in India and China

Activity:

- Initiate dialogue with Indian and Chinese protected area authorities and based on this dialogue establish systematic transboundary cooperation, initially in the form of annual transboundary meetings to share information and experience and discuss critical issues.

Success indicators:

- Systematic transboundary cooperation established, initially in the form of annual meetings.

ANNEX H: PRESSURES ON NATURAL FOREST RESOURCES

1. The major threats to Bhutan's natural forest resources, including timber and non-timber products are: population growth, patterns of agricultural cultivation, dependency on forests for livestock grazing and other uses, urbanization, and the increased monetary value and commercialization of forest products.

2. ***Population growth.*** Although Bhutan's population is currently estimated at about 650,000 inhabitants, its population growth rate of about 2.9 percent per annum is historically correlated with a high rate of deforestation, ecological degradation and loss of resiliency of natural resource systems in other countries experiencing similar patterns of population growth (FAO 1990).

3. ***Fuelwood extraction.*** Population growth in subsistence based rural economies contributes most directly to deforestation through increased consumption of fuelwood. Although Bhutan is self sufficient in per capita availability of firewood at the national level, at the village level, the availability of fuelwood falls short than the requirement due to the concentration of settlement in the valleys and other favorable locations. This can impose extra stress on the forests near settlements, leading to fragmentation and degradation. Social changes contribute to this trend. In the past, the firewood collection was often a group effort, based on the concept of mutuality and reciprocity of labor and not on cash transaction, and the neighbors used to take care of each other's needs for firewood requirements. Presently, group collection of firewood is becoming uncommon and has since been transformed from a social activity to an individual household activity (Kwangchow, 1998). Legal regulation provides a permit system for felling trees to collect fuel wood, but the Forest Department does not have sufficient capacity to adequately regulate cutting leading to some illegal extraction of firewood. A study estimates that about 90 percent of the total firewood extraction in Bhutan is unregulated (FAO 1991).

4. ***Timber harvesting.*** The demand for construction timber in the domestic sector is not well documented. Wood-based industries are the second largest revenue earner for the government after hydropower (Wangchuk 1998). However, much of the industry is at an early stage of development and often uses old technology. The majority of the industry is small sawmills. There are only two medium-sized industries, one an integrated sawmill, plywood and joinery factory and the other a medium size particleboard factory.[1]

5. There is also a small demand for timber used for religious purposes. These species are used for performing rituals. In contrast, sacred trees and forests are protected and not harvested. Less than 20 percent of the demand of timber is met from regulated cutting in forest management units while the rest is met through ad-hoc felling by the Forest Department and by villagers in nearby forests (Wangchuk 1998). However, the use of non-timber materials such as concrete and steel for urban residence and commercial construction appears to be reducing demand for timber for residential construction which is increasingly confined to rural areas.

[1] A typical Bhutanese sawmill has an input capacity of 10 to 20 m3 per day or about 4,000 –to 5,500 m3 per annum

6. ***Agriculture***. Agriculture directly competes with forests for land to feed the growing Bhutanese population. The area under cultivation is increasing with most suitable land is already in agriculture and the potential for additional allocations to agriculture is limited due to the rugged and heavily forested terrain. Unlike many developing countries, shifting cultivation is not a major threat to forest resources in Bhutan. The practice is concentrated in the sub-tropical and upland broadleaf forest types. It is not deeply rooted in Bhutanese culture as evidenced by the fact that the practice is readily changed for other types of agriculture or subsistence production. Under the Forest and Nature Conservation Act of 1995 government effectively prohibited additional clearances of forest for shifting cultivation.

7. About 90 percent of the rural households own livestock. Dependency on forests for grazing livestock adversely affects forests. Livestock are an integral part of the Bhutanese farming system and support agriculture through provision of manure for fertilizer and draught power. The value of livestock as a source of cash income is increasing with better marketing of butter, cheese and meat. The pressure to feed increasing numbers of animals prompts herders to girdle forest trees to expand their pastures. The trampling of forest soil by domestic animals has also initiated gully formation at many locations.

8. ***Urbanization***. Rapid urbanization, as is occurring in Bhutan is generally correlated with decline of natural resources. In addition to putting direct pressure on forest resources located on the margins of urban areas, the rapid economic development of Bhutan has transformed many of its social values and institutions, including people's traditional perceptions about forests. The traditional perception was of community ownership with unlimited access to the forest for firewood, timber and food. In contrast the growing urban perception is of government ownership with limited access, a source of monetary income and the potential for other forms of economic land use.

9. ***Legal reforms***. One impact of the enactment of the Forest Act of 1969 and the Forest and Nature Conservation Act of 1995 is the undermining of local institutions as the state assumed full authority and control of the forests (Wangchuk 1998). The impact of this change has been documented in studies of local community responses in terms of incentives and disincentives to comply with central government regulations regarding use of forest resources.[2] The Forest Act of 1969 legislated a fundamental change in forest rights and accessibility by transferring ownership of forests and forest produce, whether in reserved forest or on private land, to the government (Giesch 2000). The Act designated all forests as 'government reserve forest', and brought them under the purview and management authority of the central government. This includes harvesting of non-timber resources and the use of forests as traditional grazing areas.

[2] Lam Dorji, Edward I. Webb, and Ganesh P. Shivakoti, "Forest Property Rights under Nationalized Forest Management In Bhutan," *Environmental Conservation,* Vol. 33, Issue 02: 141-47.

10. The Act also required local people to obtain a permit from the Department of Forest to extract trees and products designated as 'Schedule I' (protected) species from the forest. In recognition of the dependence of rural communities on forest products, however, the Act provided some leverage to the rural populations to appropriate non-timber resources for subsistence needs (Ministry of Agriculture 2003).

11. The increased value of forest products both in the domestic and export markets is putting pressure on Bhutan's extensive non-timber forest resources, including leaf litter,[3] medicinal plants,[4] lemon grass, mushrooms, vegetable dyes, waxes, and resins. The government is involved in the forest products market and maintains a differential pricing policy for forest products in urban and rural areas, which often provides an incentive to divert some of the subsidized (high value but low priced) forest products from rural into urban areas, This in turn reduces the incentive to enforce forest protection regulations.

[3] Leaf litter is a major resource used to provide bedding for cattle in winter and fertilizer. In Bhutan, it has traditionally been obtained from "Sokshing" means a government forest registered in an individual's name for collection of leaf litter. It has been noted that legal reforms that have effectively transformed sokshing from a private to a public resource has reduced incentives for individuals to protect and plant additional trees. This is evident from the observation that while tree cover in most of the sokshings is intact well, the adjoining government forests are often relatively degraded (Wangchuk 1998).

[4] About 300 out of 600 identified medicinal species in Bhutan are commonly used to prepare drugs. Certain minerals from the forest and animal parts are incorporated in the drugs for the Bhutanese system of medicine

ANNEX I: KEY INTERNATIONAL PARTNER AGENCIES IN BHUTAN

The international community has been very supportive of Bhutan's environmental work. In combating land degradation specifically, the following international agencies have been involved in the last five years:

United Nations Development Program in the areas of environmental policy, sustainable energy, natural disaster, and community-based nature conservation.

World Bank in the areas of sustainable land management, sustainable forest harvesting, reforestation, community forestry and environment-friendly rural access.

Asian Development Bank in the areas of environmental assessment capacity development.

DANIDA in the areas of land use and management policy, environmental legislation and regulation, protected area management, urban environment, industrial environment and environmental management capacity development.

Netherlands Development Organization (SNV) in the areas of ecotourism, biodiversity conservation and environment-friendly rural access.

Helvetas and Swiss Development Cooperation in the areas of natural resources management training, renewable natural resources research and extension, and participatory forest management.

German Technical Cooperation (GTZ) in the area of sustainable renewable natural resources management.

European Community in the areas of integrated watershed management and sustainable management of medicinal plants.

World Wildlife Fund (WWF) in the areas of protected area management, wildlife protection and ICDP.

MacArthur Foundation in the areas of environment and forest resources management training and protected area management.

Global Environment Facility (GEF) in the areas of environmental trust fund, sustainable land management, protected area management, environment policy and strategy development, environmental management capacity development, and information development.

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