



# **GHANA'S NATIONAL CAPACITY SELF- ASSESSMENT REPORT**

**CAPACITY NEEDS FOR GLOBAL  
ENVIRONMENTAL MANAGEMENT**

**OCTOBER 2005**



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## ACRONYMS

|        |   |   |
|--------|---|---|
| ARI    | - | Animal Research Institute                             |
| CBD    | - | Convention on Biodiversity                            |
| CBUD   | - | Centre for Biodiversity Utilization and Development   |
| CDM    | - | Clean Development Mechanism                           |
| COP    | - | Conference of Parties                                 |
| CRIG   | - | Cocoa Research Institute of Ghana                     |
| CSIR   | - | Council for Scientific and Industrial Research        |
| DANIDA | - | Danish International Development Administration       |
| DFID   | - | Department for International Development              |
| EPA    | - | Environmental Protection Agency                       |
| FORIG  | - | Forestry Research Institute of Ghana                  |
| GEF    | - | Global Environmental Facility                         |
| GERMP  | - | Ghana Environmental Resource Management               |
| GHG    | - | Greenhouse Gas  |
| GOG    | - | Government of Ghana                                   |
| GPRS   | - | Ghana Poverty Reduction Strategy                      |
| INC    | - | Intergovernmental Negotiating Committee               |
| IPCC   | - | Intergovernmental Panel on Climate Change             |
| MDG    | - | Millennium Development Goal                           |
| MEAs   | - | Multilateral Environmental Agreements                 |
| MES    | - | Ministry of Environment and Science                   |
| MLF    | - | Ministry of Lands and Forestry                        |
| NAP    | - | National Action Plan                                  |
| NCCAP  | - | National Climate Change Assistance Programme          |
| NCCAP  | - | Netherlands Climate Change Assistance Programme       |
| NCCC   | - | National Climate Change Commission                    |
| NCCSP  | - | National Climate Change Scenarios Development         |
| NCSA   | - | National Capacity Self – Assessment                   |
| NEAP   | - | National Environmental Action Plan                    |
| NGO    | - | Non-Governmental Organisation                         |
| NPACD  | - | National Plan of Action to Combat Desertification     |
| NRMP   | - | Natural Resource Management Programme                 |
| NTFP   | - | Non-Timber Forest Product                             |
| ODA    | - | Overseas Development Administration                   |
| OPRI   | - | Oil Palm Research Institute                           |
| PCC    | - | Project coordinating Committee                        |
| PGRC   | - | Plant Genetic Resources Centre                        |
| UNCBD  | - | United Nations Convention on Biological Diversity     |
| UNCCD  | - | United Nations Convention to Combat Desertification   |
| UNDP   | - | United Nations Development Programme                  |
| UNEP   | - | United Nations Environment Programme                  |
| UNFCCC | - | United Nations Framework Convention on Climate Change |
| UNIDO  | - | United Nations Industrial Development Organisation    |
| WMO    | - | World Meteorological Organisation                     |

# EXECUTIVE SUMMARY

## A. INTRODUCTION

The Ghana National Capacity Self-Assessment Project (NCSA) for global environmental management was implemented during the period June 2003 to October 2005. The overall objective of the NCSA was to assess the capacity needs of Ghana in meeting the country's commitments under the three Rio Conventions, namely the United Nations Framework Convention on Climate Change, the United Nations Convention on Biological Diversity and the United Nations Convention to Combat Desertification. This has led to the preparation of this report, which is referred to as the NCSA Report.

## B THE NCSA PROCESSES

The NCSA sought to address the capacity needs of the country along the main building blocks for capacity development – systemic needs, institutional and human resource capacity needs, with emphasis on exploring the synergies between the capacity needs for the three Conventions so as to maximize on the utilization of scarce resources.

The specific objectives of the NCSA included

- Assessment of Ghana's national capacities to manage the global environment;
- Establishment of a close link between global environmental management and the achievement of sustainable development goals especially as it relates to Ghana Poverty Reduction Strategy, the Johannesburg Plan of Implementation, the MDG and NEPAD
- Identification of the capacity needs and associated constraints within the three thematic areas covered by the Conventions on biological diversity, climate change and desertification.
- Enhancement of the national capacities to mobilize information and share knowledge
- The formulation of a strategy and an action plan to strengthen the country's capacities for meeting its global environmental management commitments;
- Mainstreaming the outcomes of the NCSA process into national development plans and programmes;
- Strengthening of national capacities to monitor, evaluate, report and learn from the implementation of global environmental commitments

A major component in the project implementation activities was the organization of sub-national or zonal consultations workshops. The country was divided into six zones based more on their geographical location, contiguity, similarities in vegetation and also convenience in logistical organization.

This process brought together stakeholders representing the broad spectrum of constituencies who contributed to the realization of the stated objectives of the NCSA. Particular attention was paid to engaging the District Environment Management Committees so as to ensure the

integration of the NCSA process into district development plans. Through these consultations the priority areas for capacity development were established.

The NCSA project consisted of a number of activities including review of background information and data, thematic and cross-cutting capacity assessments, priority setting, in depth analysis of priority areas and monitoring and evaluation.

The main output of the NCSA in addition to this report are three separate thematic reports in the areas of climate change, biodiversity and desertification, a national capacity self-assessment report. This report contains the strategy and action plan for capacity development. The reports provide an overview of the current situation in each of the thematic areas and identification of the priority issues. The common and the cross-cutting issues have been thoroughly analyzed to ensure more efficient use of the resources and achieving synergetic effects.

## C COMMON FEATURES OF THE THREE CONVENTIONS

In-depth analysis of the capacity needs of the three Conventions revealed the following common and cross-cutting issues which offer themselves for complementary and synergistic implementation actions. Listed below are some of the common features.

1. The principles and implementation of the Convention involves prevention, protection and conservation of natural resources in consistence with common policy for sustainable development. The country parties have common responsibilities, but differentiated obligations and they have to integrate the objectives of the Conventions in development programmes.
2. As an obligation under the Conventions, specific long-term policies, strategies and programmes need to be formulated by the parties. These programmes should include action plans backed by legislation for their implementation under the Conventions.
3. Fulfilling the obligations and the recommendations under the three Conventions requires international cooperation through exchange of information and good practices, transfer of technologies and financial support for local and regional programmes.
4. The three Conventions stipulate that there should be inter-agency coordination, supported by science through public dissemination of information.
5. Implementation of the activities under the Conventions should be subject to environmental impact assessment (EIA) and must build the capacity for effective implementation through training and awareness creation.
6. The three Conventions have common obligations in respect of land use, utilization of forest products and sustainable soil management for agriculture and forestry. All three (3) Conventions are influenced by climatic variables and water resources.
7. The Conventions deal with demographic characteristics, such as population density, poverty and encroachment of settlements which can result in natural resource degradation and emission of greenhouse gases.
8. The Conventions stipulate that there should be an efficient technical infrastructure for assessing the current situation and future implementation of improvements.

9. All the three Conventions require the establishment of indicators for monitoring and control, and trends and forecasts for predicting the occurrences of events that hinder sustainable management of natural resources.
10. Under all three Conventions, parties are to keep records of inventories of changes and also provide assessment of costs and benefits.
11. It is a requirement of all three Conventions to establish a National Secretariat to oversee the activities under the Conventions, such as development of national communications, mitigation and adaptation projects and action plans.
12. The implementation of the Conventions requires the participation of stakeholders such as governmental agencies and organisations, local authorities, the private sector the academic and scientific community, NGOs and civil society and the media.
13. The overall vision for capacity development for successful implementation of the three Conventions is to provide a sound environment for socio-economic development of the respective countries, with the guiding principles being the development of capacities at the systemic, institutional and human levels.
14. Provision of financial support through the national budget and international sources for the implementation of the Conventions.
15. The approach to monitoring should be based on systematic field studies and observations as required under the three Conventions.

Based on the list provided above which emanates from the in-depth thematic assessment and priority needs identified in Chapters 3 and 4 respectively, the following five common areas for capacity development which are required for the implementation of the three Conventions have been identified:

- a) Institutional and legal arrangements to ensure the effective implementation of the three Conventions.
- b) Access to and development, diffusion and transfer of environmentally sound technologies and know how.
- c) Development of a national policy/strategy for integrating the objectives of the Conventions into national development programmes to enhance inter-agency coordination
- d) Effective national programmes to support public education, training, sensitization and awareness creation.
- e) Provision of funding through national and international sources.

These capacities could be developed based on the opportunities offered for capacity development across the areas of the three Conventions as identified under the ongoing national programme of activities and potential government policy reforms listed under Section D below and in Section 5.2.2.

## D. OPPORTUNITIES FOR CROSS-CUTTING CAPACITY BUILDING

Existing opportunities in Ghana that will allow for the smooth implementation of the identified actions (see section E of executive summary and chapter 6 of the final report) include:

**i. Government Policy of Decentralisation**

The aim of the decentralisation policy is to regionalise the activities of the sector ministries, while at the same time providing institutional linkages between them which will foster the easy implementation of the identified institutional gaps. The NCSA took advantage of the decentralised governance system of administration by ensuring that representatives from the District Assemblies made inputs into the NCSA process. The follow up activities of the NCSA process could address specific zonal or district capacity needs as identified in the outcome of the zonal consultation report. (PCC 2005).

**ii. The Ghana Poverty Reduction Strategy (GPRS)**

The GPRS is aimed at providing alternative means of livelihood instead of total dependence on natural resources, with the sector ministries working as a team. It provides a window for mainstreaming environmental issues into the development planning process. A strategic environmental assessment of GPRS has been conducted and results have been used to update the existing GPRS. The NCSA follow up activities could build up on the identified capacity needs of the revised GPRS. (PCC 2005)

**iii. Ghana Government Educational Reform**

The aim is to make basic education free and compulsory. This should help create attitudinal change and ensure the understanding of environmental issues leading to good environmental stewardship. The government white paper to this reform has been produced. The thematic assessment reports identified education, training and public awareness as a priority area. The NCSA follow up activities could ensure development of course modules for all the educational levels, preparation of education and information aids and materials; institution of specialised training programmes for teachers and trainers.

**iv. National Environmental Action Plan (NEAP)**

The main objective of the NEAP should be updated to reflect the obligations under the Conventions. The outcome of the NCSA could contribute to this updating process.

**v. Development of the Second National Communication for Climate Change**

Preparation of the Second National Communication for climate change has capacity building as a core activity which is intended to cut across the areas of Industry, Agriculture, Health, Energy, Gender and Poverty etc., making it much easier in exploring the synergies between these Conventions.

**vi. Proposals for the Establishment of Climate Change Commission**

The EPA's has prepared a proposal to establish climate change commission to oversee the activities under the UNFCCC and presented to the Cabinet through the Ministry of Environment and Science. A workshop to educate and inform sections of the Members of Parliament has been organised for five select committee of Parliament, namely the Parliamentary Committees on Environment and Science; Legal, Constitutional and Parliamentary Affairs; Lands and Forestry; Energy and Mines; and Finance. It is believed that such an over-sight authority will build the needed capacities for climate change mitigation and adaptation as well as addressing common key issues that cut



across the three Conventions. The NCSA could build on the proposal to include the Conventions on Desertification and Biodiversity to establish a common secretariat for the three Conventions..

**vii. Establishment of Environmental Science Departments and Programmes in the Country's Universities**

The three leading universities in Ghana, Kwame Nkrumah University of Science and Technology, University of Ghana and University of Cape Coast have established Department of Environmental Sciences to produce graduates with skills in environmental science and management. This should in the short medium and long term address most of the capacity needs if these institutions are strengthened. The human resource needs identified under the NCSA process could be met by strengthening these programmes.

## **E ACTION PLAN**

This action plan is based on the assessment of Ghana's capacities needed to manage the global environment drawing on the synergies among the obligations under the three Conventions and the cross cutting issues involved in the implementation of the Conventions. (see review zonal workshop and thematic reports)

The outcomes of this assessment have been arranged under three capacity building areas namely: systemic, institutional and individual as priorities for implementation with corresponding responsibilities, budget and time frame. These priorities have been arrived at on the basis of short, medium and long term needs. (see Chapter. 6).

The following synergies pertain to all three Conventions and provide the basis for the activities identified in the action plan.

### **Systemic synergies**

- Legislation to ensure the integration of environmental challenges into national developmental efforts
- Formulation and implementation of a national strategy for the development and transfer of environmentally sound technologies
- Public education and awareness creation about the need to protect the environment.
- National co-ordination and networking and information exchange on the approaches to combat environmental degradation
- Management of ethnic conflicts which are barriers to common approaches to environmental conservation.
- Provision of new, additional and adequate financial resources in the government budget to deal with environmental matters

### **Institutional Synergies**

- Establishment of secretariats to implement the Conventions.

- Effective networking for co-ordination among the various sectors and institutions to adopt common policies for sustainable development.
- Promotion of international corporation and collaboration on the implementation of the Conventions.

### **Individual Synergies**

- Comprehensive public education programmes (both formal and informal) to address attitudinal change and disseminate environmental information.
- Training of trainers to build effective human capacity to manage the environment
- Provision of incentives for trainees in the field of environmental science, eg. Scholarships
- Integration of human resource development with poverty reduction strategy to enhance the capacity for the management of the environment.

These synergies have been reformulated as activities of the action plan as shown in Table 0.1

**Table 0.1 NCSA Action Plan**

| <b>Key Issues</b>  | <b>Activities</b>   | <b>Responsible Agency</b>       | <b>Time frame</b> | <b>Budget</b>      |
|--|---|---------------------------------|-------------------|--------------------|
| Institutional arrangement  | Create a National Conventions Coordinating Authority for the three Conventions  | MES, EPA                        | Jan.-June 2007    | \$450,000          |
|  | Set up institutional network of government agencies, sectors and civil societies to adopt common policies for sustainable development . | EPA                             | -do-              | \$350,000          |
| Education, training and public awareness   | Develop and implement a national strategy for education, training and public awareness on the three Conventions...                      | EPA, MOEdu, MOI, Universities   | 2007-2010         | \$850,000          |
| Access to environmentally sound technologies   | Develop and implement a national strategy for technology development and transfer.  | CSIR, EPA, MOE                  | June 2007-2009    | \$1,500,000        |
| Mainstreaming the three Convention into national development programmes                  | Develop a national strategy for mainstreaming of the Conventions into national development programmes                                   | NDPC, EPA, MES                  | 2007-2010         | \$350,000          |
| Strategy for international cooperation   | Develop programmes and partnerships for international collaboration   | MES, MORI                       | 2008-2010         | \$400,000          |
| Strategy for Financial resource mobilization   | Establish mechanisms for financing environmental programmes   | MES, MOFEP, EPA                 | 2007-2009         | \$200,000          |
| National environmental Data Management Strategy  | Establish national data base for the Conventions.   | EPA, GSS, CSIR, CERSGIS         | 2007-2010         | \$1,500,000        |
| Meeting the Research needs of the three Conventions                                      | Promote R&D in the three thematic areas   | MES, CSIR, Universities         | 2007-2010         | \$1,500,000        |
| Adaptation strategies to deal with vulnerabilities associated with the three Conventions | Develop integrated framework for adaptation.  | MES, EPA, MOFA, MOLFM           | 2007-2008         | \$850,000          |
| Strategy for land use planning and management  | Establish advocacy strategy for development of appropriate land use zones.  | National Coordinating Authority | 2007-2010         | \$150,000          |
| <b>TOTAL</b>   |   |                                 |                   | <b>\$8,100,000</b> |

## F IMPLEMENTATION STRATEGY

The Ministry of Environment and Science (MES) shall be the lead implementing institution of this action plan. For effective implementation of this plan a national coordinating authority established by government, with its composition reflecting all stakeholders. The work of the authority shall be supported by the national technical committees on the three Conventions. Financial support for the implementation of the plan shall be obtained from national and international sources.

Monitoring the implementation of the action plan shall be the task the proposed coordinating body in cooperation with all other stakeholders. The process of monitoring should ensure that the activities are carried out in accordance with the NCSA report, in particular the in-depth analysis done for the three thematic areas in Chapter 4, and the action plan above.

Workshops shall be organized to evaluate the implementation of the action plan. In the workshops, the action plan shall be reviewed and new proposals drawn up to update the action plan on regular basis by incorporating potential new developments.

## G CONCLUSIONS AND RECOMMENDATIONS

### **Conclusions**

- This assessment has led to the identification of the capacity needs and constraints required for the effective implementation of the three Conventions
- The exercise has also enabled the formulation of a strategy and action plan to strengthen the country's prioritised needs for the fulfilment of the common obligations under the three Conventions.
- Opportunities have also been identified for mainstreaming the activities of the Conventions into national development programmes (see section on "Opportunities for Cross-cutting Capacity Building" and Chapter. 5)

### **Recommendations**

It is recommended that:

- Government and its international development partners should as a matter of urgency implement the action plan to enable the nation to maximise the benefits of the efforts made in the implementation of the NCSA process and, above all to effectively implement the obligations under the United Nations Convention on Biological Diversity, United Nations Framework Convention on Climate Change and United Nations Convention to Combat Desertification.
- Government must assess the possibility of bringing all multilateral environmental agreements (MEAs) under the proposed National Conventions Coordinating Authority (see section E above and Chapter 6), based on the experiences gained and lessons learned as a result of the implementation of the NCSA action plan.

# CHAPTER ONE - INTRODUCTION

## 1.0 BACKGROUND

The Government of Ghana with the financial support from Global Environment Facility (GEF) and the United Nations Development Programme (UNDP) has undertaken the National Capacity Self-Assessment (NCSA) aimed at assessing the national capacities for the management of the national environment within the context of the global environmental Conventions, specifically the three Rio Conventions on Climate Change, Bio-Diversity and Desertification. This has led to the preparation of this report, which is referred to as the NCSA Report.

To assess the national capacities to implement the three Conventions, six zonal workshops were organised. The zonal workshops allowed for the consultation with stakeholders on the implications of these Conventions and to identify constraints and capacity gaps needed to be addressed for the implementation of the Conventions at the national level. Participants for the consultation workshops were drawn from relevant ministries, districts assemblies, traditional authorities, non-governmental organisations and civil societies. The workshops discussed the obligations under the Conventions, assessed the constraints facing their effective implementation, and identified relevant capacities with emphasis on cross-cutting/synergistic capacities which are key to the implementation of the three Conventions. The synergies were discussed along three capacity building dimensions, i.e. systemic, intuitional and human/individual levels.

To complete the NCSA report, three national experts on the United Nations Framework Convention on Climate Change, UN Convention on Biological Diversity and UN Convention to Combat Desertification, were engaged to provide in-depth analysis of the key issues of the three Conventions. This NCSA report, therefore provides a synthesis of the three reports by the experts and the outcomes of the zonal consultation workshops. The main objective of Ghana's NCSA process is to assess the national capacities to manage the global environment through the formulation of a strategy and national action plan to strengthen the country's capacities to establish a close link between the management of the global environment and the achievement of sustainable development goals.

## 1.1 UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The climate change portion of this report deals with an in-depth analysis of the capacities needed to ensure the effective implementation of the United Nations Framework Convention on Climate Change (UNFCCC), by exploring the synergies between the UNFCCC and the other Rio Conventions.

The Framework Convention on Climate Change was drafted at the Rio Earth Summit in 1992 and entered into force globally in 21 March 1994, and specifically for Ghana in 1995. The ultimate objective of the UNFCCC is to achieve stabilization of greenhouse gas (GHG)

concentrations in the atmosphere below a level that would present dangerous anthropogenic interference with the global climate system. The level of GHG achieved within a time frame should be sufficient to permit ecosystems to adapt naturally to climate change, to ensure that food security is not threatened and to enable economic development to proceed in a sustainable manner.

Relevant for discussion under the UNFCCC are the capacity needs arising from the subsidiary legal instrument – the Kyoto Protocol and also the need to participate in the Intergovernmental Panel on Climate Change (IPCC) processes.

### **The Kyoto Protocol**

The Kyoto Protocol was opened for signature on 16 March 1998 and entered into force on 16 February 2005. At its 25<sup>th</sup> sitting, (26 November, 2002), the Parliament of the Republic of Ghana passed a resolution to ratify the Kyoto Protocol. The final document of ratification was deposited at the United Nations Headquarters in New York in March 2003, thus allowing Ghana to accede to the Kyoto Protocol and hence becoming a party to it.

The main focus of the Kyoto Protocol is the establishment of legally binding emission limitations or reduction commitments for the six main greenhouse gases, (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC<sub>2</sub>, PFC<sub>8</sub>, SF<sub>6</sub>), for developed country Parties under the UNFCCC. To help achieve these legally binding commitments in a cost effective manner, three flexibility mechanisms were put in place. The most relevant of these mechanisms to Ghana is the Clean Development Mechanism (CDM).

### **Intergovernmental Panel on Climate Change (IPCC)**

Another important body working in close collaboration with the UNFCCC is IPCC. The IPCC was jointly established by the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP) in 1988. The terms of reference of IPCC include:

- i to assess available scientific and socio-economic information on climate change and its impact and on the options for mitigating climate change and adapting to its effects and
- ii to provide on request, scientific/technological / socio-economic advice to the conference of parties to the UNFCCC.

The IPCC provides guidelines for the various climate change projects on inventory and other programmes. As a party to the UNFCCC, Ghana is required to use the IPCC guidelines in meeting all reporting requirements under the Convention.

#### **1.1.1. Obligations under the UNFCCC**

The articles of the UNFCCC stipulate general commitments and specific obligations that Parties must fulfil. In addition, the governing principles of the Convention impose further

responsibilities on Parties. The under listed UNFCCC obligations come with a wake of capacity needs, including:

- Development, updating and publishing of inventory of anthropogenic emissions by sources and removal by sinks.
- Formulation, implementation and regular updating of national programmes containing measures to mitigate or adapt to climate change.
- Promotion and cooperation in the development, application, diffusion and transfer of technologies.
- Promotion of sustainable management and enhancement of sinks and reservoirs for Greenhouse Gases.
- Mainstreaming or integrating climate change into national development.
- Promotion and cooperation in scientific technological technical, socio-economic and other research, systemic observation and development of data achieves.
- Promotion and cooperation and prompt exchange of relevant scientific, technological, technological, socio-economic and legal information
- Promotion and cooperation in education, training and public awareness in issues relating to climate change.
- Preparation of National Communication
- Financing, mitigation and adaptation options and other enabling activities.
- Participation in the development and periodic refinement of comparable methodologies for preparing greenhouse gas inventories and for evaluating the effective methods to limit the emissions and enhance the removal of the greenhouse gases.
- Assessment of the implementation of the Convention
- Participation in the subsidiary meetings and sessions of the conference of Parties.

#### **1.1.4. Status of Implementation of UNFCCC**

Ghana has continuously strived to fulfil her commitments mainly through the implementation of some climate change projects co-funded by the government with support, both technical and financial, from bilateral and multi-lateral agencies. An overview of such project activities/studies undertaken in Ghana during the period 1996-2005 aimed at meeting the country's commitment under the UNFCCC is provided below.

- Inventory of national greenhouse gas emissions by source and removal by sinks for period 1990-1996 (UNDP/ GEF Project).
- Vulnerability and adaptation Assessment of water resources and Coastal Zone under the Netherlands climate change Assistance Programme Phase I (NCCSAP, Completed in year 2000.)
- Vulnerability and adaptation assessment for Agricultural Sector (Cereal Production) (UNDP/GEF Project)
- Mitigation Assessment for Energy, Land use change, and Forestry (UNDP/GEF Project)
- Guidance for climate change policy Framework (UNDP/GEF Sponsored)

- National Climate Change Scenario Development ( CNCCSAP 1)
- Capacity Building Programme for Clean Development Mechanism (UNEP/RISO Project)
- UNIDO Industrial CDM Capacity Building Projects (UNIDO Project)
- Climate Change Enabling Activities
  - i. Preparation of Ghana's Initial National Communication (UNDP/GEF Project)
  - ii. Climate Change Technology Needs and Needs Assessment (UNDP / GEF)
- Preparation of Ghana's initial national communication
- The Netherlands Climate Change Assistance Programme Phase 2 (NCAP 2)
- Impacts of climate change on:
  - i. human health
  - ii fisheries
  - iii agriculture (Cocoa Production and Root Crops)
  - iv land Management (biodiversity, land degradation/erosion/landuse)
  - v. women's vulnerability to climate change
  - vi. linkages between Ghana Poverty Reduction Strategy and Climate Change
- UNEP Project Support for Article 6 of the Convention – Education, Training and Public Awareness

#### **1.1.5. Capacity Constraints to the Implementation UNFCCC**

The capacity constraint for the implementation of the climate change Convention can be discussed in terms of systemic, institutional and human or individual levels.

At systemic level, the lack of political will to enact relevant legislations, promulgate and establish standards and lack enforcement of existing legislation and standards have been the main constraints. These have arisen principally because of low level of awareness of the policy maker on the Framework Convention on Climate Change issues, the complexity and lack of understanding of the science of climate change and ineffective communication of climate change issues to the layman. Lesser national budgetary allocation made for environmental management in general and climate change activities in particular is also a contributing factor.

The lack of willingness to establish and/or strengthen of relevant national institutions to address various commitments under UNFCCC is systematically affecting the level of delivery, even though Parties under the UNFCCC have been encouraged to put in place climate change secretariats. Very little attention has so far been paid to the implementation of climate change at the national level making the mainstreaming of climate change into national development virtually impossible.

Effort to engage more people even within the existing leading climate change institution – the Environmental Protection Agency (EPA), to work specifically on climate change has never received the required attention even though there is the recognition within the EPA of the relevance of climate change for national sustainable development. As climate change is multidisciplinary and multi-sectoral in nature, training and building of individuals' capacities and the provision of skills are critical for the success of the implementation of the UNFCCC at the



national level. A more detailed analysis of the capacity constraints is provided in Chapter 4 of this report.

## 1.2 UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY

The concept of Biological Diversity refers to the number, variety and arrangement of living organisms on the planet earth. Because of the importance of biological resources for the economic and social development of humankind, the United Nations Environment Programme (UNEP) convened the Adhoc Working Group of Experts on Biological Diversity in November 1988 to explore the need for an International Convention on Biological Diversity. In May 1989, the Adhoc Working Group of Technical and Legal Experts was established to prepare an international legal instrument for the conservation and sustainable use of biological diversity.

By February 1991, the Adhoc Working Group had become known as the Intergovernmental Negotiating Committee (INC). the work of the INC culminated on 22 May 1992, with the Nairobi Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity.

The Convention was opened for signature on June 5, 1992 at the Rio 'Earth Summit'. It was opened for signature until June 4, 1998. The Convention entered into force on December 29, 1993. The first session of the conference of the parties was scheduled for November 28 – December, 1994 in the Bahamas.

### 1.2.1 Commitments / Obligations Under UNCBD

The obligations of the contracting parties are to achieve three main objectives:

- Conservation of Biodiversity
- Sustainable use of Biodiversity
- Equitable sharing of the benefits arising from the utilization of biodiversity resources.

The objectives are to be achieved under the guidelines of the following commitments by contracting parties.

- Development of national strategies for the conservation and sustainable use of Biodiversity (Article 6)
- Identifying and monitoring the components of biodiversity (Article 7)
- Establishing in-situ and ex-situ conservation measures (Articles 8&9)
- Integration of such measures into national policies and development plan (Article 10)
- The use of national scientific and capabilities in the conservation of biodiversity (Article 12)
- Research and Training in biodiversity (Article 17)
- Exchange of information among contracting parties (Article 18).

The Convention implies that these commitments can be addressed through technical and scientific cooperation in capacity building involving:

- Development and strengthening of human resources.
- Development and strengthening of institutions
- Provision of facilities and funding for the protection, management and utilization of natural resource sustainably.

### **1.2.3 Status of Implementation of UNCBD**

National technological capabilities for biodiversity conservation are largely articulated in several national as well as private institutions charged with mandates for undertaking respective expert roles in conservation activities. Some of these institutions and their roles are the following:

#### **i. Forest Biodiversity**

- Forestry Commission with Forestry and Wildlife Divisions under the Ministry of Lands and Forestry.
- Ministry of Local Government, Parks and Gardens Division, has established Botanical Gardens e.g. Aburi in the Eastern Region.
- Forestry Research Institute of Ghana (FORIG) of Council for Scientific and Industrial Research (CSIR) carries out research in conservation and sustainable utilization of forest resources.

#### **ii Agro-biodiversity**

- Biotechnology and Nuclear Agricultural Research Institute (BNARI) of Ghana Atomic Energy Commission under Ministry of Environment and Science (MES) undertakes Tissue culture of yam, cassava and plantain.
- The various institutes under CSIR
  - ❖ Oil Palm Research Institute (OPRI) Kade
  - ❖ Crop Research Institute (CRI), Kumasi
  - ❖ Animal Research Institute (ARI), Accra
  - ❖ Plant Genetic Resources Centre (PGRC) Bunso

All undertake genetic resources conservation through establishment of gene banks.

- The Cocoa Research Institute of Ghana (CRIG) under the Ghana Cocoa Board contains museums of cocoa, coffee, cola and sheabutter.
- The Agricultural Research Centres of the University of Ghana at Kade, Kpong and Nungua are involved in genetic resources conservation.
- The Botany Departments of University of Ghana have established Botanical Gardens, Herbarium and Plant Tissue Culture Facilities for bio-diversity conservation.

#### **iii Conservation of Medicinal Plants**

- National Centre of Plant Medicine, Mampong/Akwapim in the Eastern Region has established Arboretum/Herbarium of Medicinal Plants.

- NGOs like Centre for Biodiversity Utilization and Development (CBUD) established in 1999, links conservation and development of bio-diversity through a series of projects aimed at developing different Non-Timber Forest Products (NTFPs) and their markets.
  - Other NGOs like Conservation International and Green Earth Organisation are all concerned with bio-diversity conservation and development.
- iv Ghana also manages her genetic resources through in-situ conservation indigenous strains of plants breeds of animals and micro-organisms in their natural habitats through establishments of Forest Reserves, Nature Parks and Sacred Groves.
- vi Government of Ghana (GoG) has designed an instrument for implementing the 1994 Forest and Wildlife policy, Forestry Development Master Plan (1996-2020) and Forestry Protection and National Environmental Action Plan through the implementation of the Natural Resource Management Programme (NRMP). The overall aim of NRMP is to protect, rehabilitate and sustainably manage national lands, forests and wildlife resources in collaboration with rural communities who own the resources. As a component of NRMP a project was designed to support bio-diversity conservation in the High Forest Ecological Zone. The project is being funded by the Global Environment Facility (GEF) Convention.

#### **1.2.4 Constraints Facing the Implementation of UNCBD**

At the systemic level, legislation to institutionalize biodiversity strategy and create multi-disciplinary oversight to coordinate the plants and programmes and mainstream biodiversity into all sectors is the key constraint.

At the institutional level, establishment of well funded secretariat to manage and regulate all programmes and projects under the Convention is the key constraints.

At human level, training and creating awareness for individuals to adopt the right attitudes and practices more conducive to sustainable use and development of biodiversity, through formal and informal education can be a major constraint.

### **1.3 UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION**

Recurrent drought coupled with inappropriate management of natural resources and the Sahelian drought of 1968-1973 and its tragic impact on the people in these regions, prompted the General Assembly, in its resolution of 1<sup>st</sup> May, 1974 to initiate, measures to arrest desertification and assist the economic development of the affected areas. Thus a United Nations' Conference on Desertification (UNCOD) was convened in 1977 in Nairobi, Kenya to initiate concerted international action to combat desertification.

The question as how to combat desertification was a concern at the 1992 Rio Earth Summit. Therefore, an Intergovernmental Negotiating Committee (INCD) was established in 1992 to prepare by June 1994 a Convention to combat Drought and Desertification in those arid and semi-arid countries prone to drought /desertification particularly in Africa. The Convention came into force on June 17, 1994 and was opened for ratification in October, 1994. it entered into force on 20<sup>th</sup> December 1996. Ghana became a signatory to the Convention on 26<sup>th</sup> December 1996 and subsequently ratified it on 27<sup>th</sup> December 1996.

### **1.3.1 Objectives and Principles of the UNCCD**

the main objective of the Convention is to combat desertification and mitigate the effect of drought in countries prone to drought and or desertification particularly in Africa, through effective actions at all levels supported by international co-operation and partnership arrangements, using an integrated approach, with the view to achieving sustainable development.

The Convention shall be guided by the following principles:

- i. Parties should ensure that decisions on the design and implementation of programme to combat desertification and or mitigate the effects of drought are taken, with the participation of populations and local communities, and that an enabling environment is created at higher levels to facilitate action at national and local levels.
- ii. Parties should in principle in the spirit of international solidarity and partnership, improve cooperation and coordination at sub-regional and international levels, and better focus on financial human organisational and technical resources, where they are needed.
- iii. Parties should develop in spirit of partnership cooperation among all levels of government, communities, non-governmental organisations and land holders to establish a better understanding of the nature and value of land and scarce water resources in affected areas, and to work towards their sustainable use.
- iv. Parties should take full consideration of the special needs and circumstances of affected developing country parties, particularly the least developed ones.

### **1.3.2 Commitments under UNCCD**

African Countries (including Ghana) to the Convention have the following commitments or obligations:

- Adopt the combating of desertification and or mitigation of the effects of drought as a central strategy in their efforts to eradicate poverty.
- Promote regional cooperation and integration, based on mutual interest, in programmes and activities to combat desertification and or mitigate the effects of drought.
- Rationalize and strengthen existing institutions concerned with desertification and drought and involve other existing institutions as appropriate in order to make them more effective and to ensure more efficient use of resources.

- Promote the exchange of information on appropriate technology, know-how and practice among parties.
- Develop contingency plans for mitigating the effects of drought in areas degraded by desertification and or drought.
- Make appropriate financial allocations from national budgets consistent with national conditions.
- Sustain reforms currently in progress towards decentralization and resource tenure as well as reinforce participation of local population at the grass root level.
- Identify and mobilize new and additional national financial resources and expand as a matter of priorities, existing national capabilities and facilities to mobilize domestic financial resources.
- Continually provide the UNCCD Secretariat with an update of progress made in the implementation of the Convention at the country level.
- The affected country parties are to prepare a National Action Programme (NAP) to combat desertification, with the aim to identifying the factors contributing to desertification and put in place practical measures necessary to combat desertification and to mitigate the effects of drought.

### **1.3.3 Status of Implementation of UNCCD in Ghana**

Before the Rio Summit in 1992, Ghana initiated the process of preparing her first National Plan of Action to combat Desertification (NPACD) in 1987. under the NPACD, the emphasis was on assessment and monitoring of the country's natural resources and the drawing up of a National Environmental Action Plan (NEAP) . NEAP was a ten-year action plan which gave birth to the Ghana Environmental Resource Management Project (GERMP) designed to implement and operationalize the NEAP.

- The GERMP (1993-1998) was implemented with support from the World Bank DANIDA, ODA (DFID) and the Government of Ghana. Coordinated by the EPA. It was aimed at institutional development and strengthening and capacity building for administration, information management, plan formulation, environmental monitoring and reporting.
- Savanna Resource Management Project (1999) was a component of the Natural Resource Management Programme, with the main objective to alleviate poverty in the three Northern Regions of Ghana through promotion of community, management of natural resources using integrated watershed management approach.
- Northern Savanna Biodiversity Project (2002).  
This project is on-going and covers the three northern regions of Ghana. The primary objective is to improve the environment, livelihoods and health of people through the conservation sustainable use of natural resources. this is part of Ghana Poverty Reduction Strategy (GPRS) and Forestry (MLF)
- The National Action Programme to combat Desertification (NAP) was finalised in 2003. The NAP was funded by the World Bank as part of the (GPRS). The emphasis was on sound integrated development programmes for drought-prone semi-arid areas based on

participatory approach. The NAP focused on sector programmes in Forestry Agriculture, health, industry and water supply in the efforts to combat the effects of drought.

#### **1.3.4 Constraints to the Implementation UNCCD**

At the systemic level, national policies strategies and regulatory measures to alleviate poverty do not adequately address desertification concerns. Also, the national policies and programmes do not eventually result on reduced pressure on natural resources so as to attain sustainable development in a sound friendly environment.

At the institutional level, the National Desertification Secretariat (EPA) and its collaborating institution are constrained by inadequate human resources with appropriate scientific and technical skills and financial resources to implement the issues and strategies of the NAP and the general requirement of the Convention.

At human level, inadequate trained Ghanaians in various disciplines of land degradation is a major constrains. Also, the unwillingness of individuals to change their attitude towards unsustainable use of their natural resources base is one of the key constraints.

# CHAPTER TWO – THE NCSA PROCESS AND CONTEXT

## 2.0 INTRODUCTION AND BACKGROUND

The Government of Ghana with the support of the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP) implemented the National Capacity Self Assessment Project, within the context of the three main Rio Conventions which Ghana has signed and ratified. These are the United Nations Convention on Biological Diversity (UNCBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD). Specifically, these Conventions are fashioned to address the challenges and threats to the management of the global environment.

The chapter outlines the general principles of capacity development which was applied in the NCSA, the rationale and context of the NCSA, (including the objectives of the NCSA project, the methodology used), a discussion on the zonal consultations that were held, and the linkages between the NCSA, the Ghana Poverty Reduction Strategy and the Millennium Goals.

### 2.1 GENERAL PRINCIPLES OF CAPACITY DEVELOPMENT

An assessment of Ghana's capacities needed to meet her obligations toward the management of the global environment through the collective implementation of the three Rio Conventions was undertaken through the holding of six zonal consultation workshops and in-depth analysis of the thematic areas. In examining the existing capacities, identifying capacity gaps and constraints as well as barriers removal strategies, due regard was paid to the three dimensions of capacity development (systemic, institutional and human) as illustrated in Figure 2.1, and the interplay between them. In all cases the dynamic nature of capacity development (i.e. changes in capacity needs with time) was borne in mind.

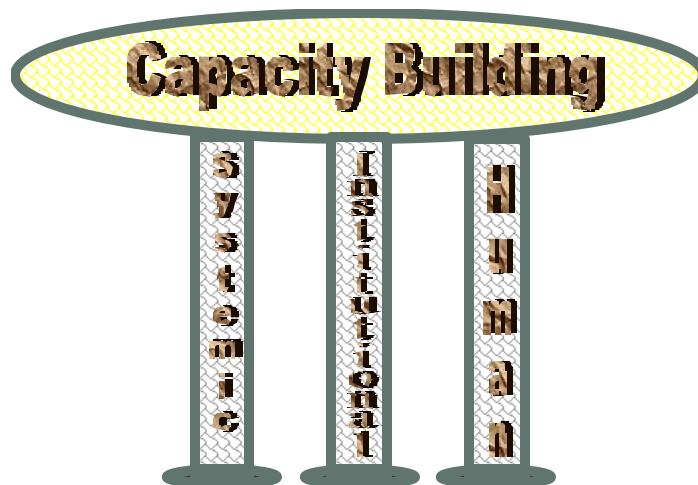


Figure2.1: Pillars of Capacity Building

### **2.1.1 Systemic Level**

*The systemic capacity building needs refer to national systems, capacity gaps and weak links in legislation, policy formulation, setting of standards, enforcement of laws and regulations, coordination mechanisms and generally the intangibles that go into creating and sustaining an enabling environment in which sustainable development and global environmental management are enhanced.*

It thus extends to the environment in which institutions; organizations and individuals operate and interact formally and informally. This includes:

- Political frame – is there any political support, does the relevant political frame and set of policies exist to aid in the implementation of the requirements of the Conventions
- Legislative framework – do the relevant legislations exist, are acts of legislation enforced, have the necessary responsibilities been identified and correctly assigned, do the relevant institutions/organizations exist;
- Economic framework – does the market function efficiently and effectively;
- System level resources – are the necessary human, financial and information resources available /they can be anywhere – national or local authorities, private sector, civil society, (such as NGOs).
- Public support – is the public aware and supportive;
- Coordination – are there mutual relations between the institutions/organizations and the processes occurring there; do they work together.

### **2.1.2 Institutional Level**

*The focus is on the institutional structures that must be established and/or strengthened to ensure good environmental governance and stewardship.* It concerns the overall organization activity and functional abilities of the institutions and the organizations, and their ability to adapt to change. The institutions/organizations are considered as a uniform system that includes various specialists and groups, and the organization itself in general, particularly:

- Structure – are the institutions/organizations structured efficiently to fulfill the commitments under the Conventions, are there specialized units, are they managed well;
- Human resources – are they adequate in the institution/organization, are they adequately qualified and skilled as a whole, is the work distributed adequately;
- Financial resources – are any available, are they managed efficiently in the institution/organization, are they distributed adequately;
- Information resources – is the necessary information available and reliable, and is it distributed and managed efficiently within and outside the organization;
- Technical resources – are the necessary buildings, facilities, vehicles, computers and specialized equipment available; are they distributed and managed adequately.



### 2.1.3 Human Level

*This refers to the availability of personnel with requisite expertise, and/or what training and skill development needs are required to adequately respond to the numerous obligations imposed by the Conventions.* It relates to individual persons who are or should be involved in activities contributing to the fulfilling of obligations under Conventions. It should address:

- Staff training – do individual people possess the necessary knowledge and skills for their work in relation to the Convention;
- Motivation of the personnel – are people motivated to carry out this work;
- Motivation of the personnel for training – are people interested in increasing their skills for the work related to the Conventions;
- Interrelations/cooperation among the staff – do people interact efficiently among themselves in the work related to the Convention; do they cooperate; do they exchange information with their colleagues.

### 2.1.4 Capacity Building Cycle

The analysis of the key capacity building issues is guided by the principle that capacity building is a dynamic, continuous, progressive and interactive process, (as illustrated in Figure 2.2). It involves assessment of needs, prioritization and implementation of prioritized needs (through learning by doing and through demonstration projects, especially those linked to skill and expertise development), monitoring, evaluation and further refinement. The outcome of this in-depth analysis should therefore be seen in the context of meeting today's capacity development needs; since the future will dictate its own needs also.

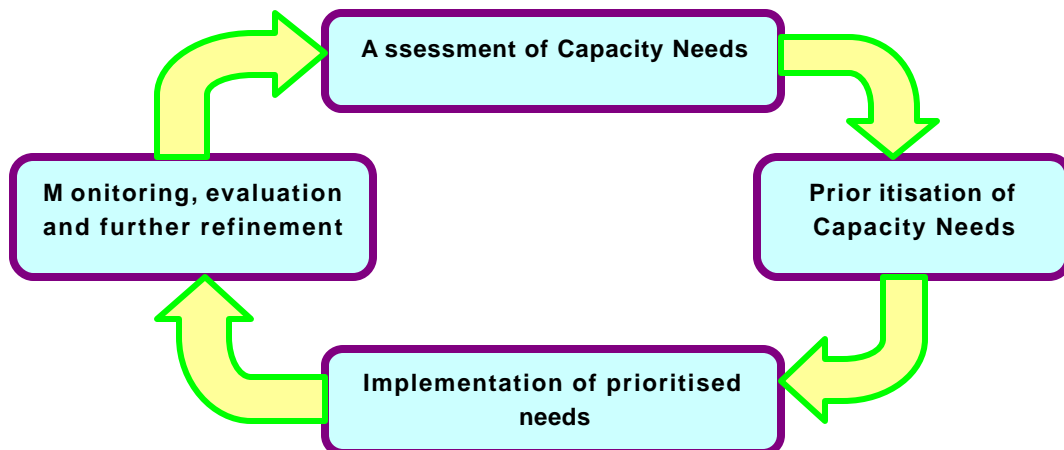


Figure 2.2 – Capacity building cycle

## 2.2 RATIONALE AND CONTEXT OF THE NCSA

There is the general recognition that energy and environment are essential for sustainable development and the poor are disproportionately affected by environmental degradation and lack of access to clean affordable energy services. These issues are also global as climate change, loss of biological diversity and ozone layer depletion cannot be addressed by countries acting alone. International cooperation is of paramount importance; the allocation of adequate resources to countries that cannot carry the financial burden for global environmental management on their own is part of that.

Ghana is a party to a number of international environmental Conventions that have been fashioned to meet the challenges and threats to the global environment. Among these are the Conventions on Biological Diversity, Climate Change and Desertification. As a Party to these Conventions, Ghana has assumed specific legal obligation, which must be met. In this light, Ghana has implemented several enabling activities under the different Conventions, but it has never done an assessment of the synergies between them and the cross-cutting capacity building needs to enhance these synergies, as well as their incorporation into broader sustainable development policies, plans and programmes. In response to the GEF Capacity Development Initiative, this NSCA process has been embarked upon by Ghana.

### 2.2.1 The Objectives of the NCSA

The ultimate objective of the NSCA Project is to identify common capacity needs (in a synergistic manner) to help Ghana to effectively meet her obligations under the three Rio Conventions through the establishment and/or strengthening existing institutions, development networks, and strengthening of dialogue, information exchange and cooperation among all stakeholders. In addition, the Preparing a Plan of Action and Strategy for developing Ghana's capacity to meet its global environmental management commitments

The specific objectives of the NCSA project are to:

- Assess Ghana's national capacity to manage the global environment;
- Enable the country to formulate a strategy and an action plan to strengthen its capacities for meeting its global environmental management commitments;
- Establish a close link between global environmental management and the achievement of sustainable development goals especially as it relates to Ghana Poverty Reduction Strategy, the Johannesburg Plan of Implementation, the MDG and NEPAD
- Identify the capacity needs and associated constraints within the three thematic areas covered by the Conventions on biological diversity, climate change and desertification.
- Enhance the national capacities to mobilize information and knowledge
- Strengthen national capacities to monitor, evaluate, report and learn from the implementation of global environmental commitments

### 2.2.2 Methodology

The NCSA project consists of a number of activities including the planning and launching of the NCSA process, review of background information and data, thematic/in depth analysis and cross-cutting capacity assessments, priority setting, and validation of priority actions and monitoring and evaluation (Figure 2.3). Figure 2.3 mimics the the capacity building cycle shown in Figure 2.2, which clearly illustrates the cycle and dynamic nature of capacity development.

A national workshop to launch the NCSA project was organised after the project management groups had been put in place. A major component in the NCSA project implementation exercise was the organization of six sub-national or zonal consultations workshops. The country was divided into six zones based more on their geographical location, contiguity, similarities in vegetation and also convenience in logistical organization.

This process brought together stakeholders representing the broad spectrum of constituencies who contributed to the realization of the stated objectives of the NCSA. Particular attention was paid to engaging the District Environment Management Committees so as to initiate the integration of the NCSA process into district development plans.

At the zonal workshops, experts from thematic areas made presentations at the meetings to introduce the stakeholders to the issues at stake. The workshop material provided for all participants also included hard copies of the three Conventions and a synthesis of all relevant studies and assessments on the capacity needs of Ghana in the three thematic areas of the Conventions. The Senior Technical Advisor developed and presented the guidelines for the syndicate group discussions (Appendix 1 of the NCSA Zonal Consultation Workshops Report). Participants were later divided into syndicate groups to discuss the issues as provided in the guidelines. This procedure was replicated at all the workshops held in Bolgatanga, Sunyani, Kumasi, Takoradi, Koforidua and Dodowa

Following the zonal workshops, the three experts engaged for the thematic areas conducted in-depth analysis into the capacities required to effectively implement the there Conventions at the national level.

The thematic reports were used by the project coordinating committee as input for the writing up of the NCSA report and the priority/action plan development. In addition, the outcomes of the zonal workshops were used as input into the identification of priority actions. The priority actions were then validated at a national stakeholder workshop. The thematic reports have also been produced as stand-alone reports.

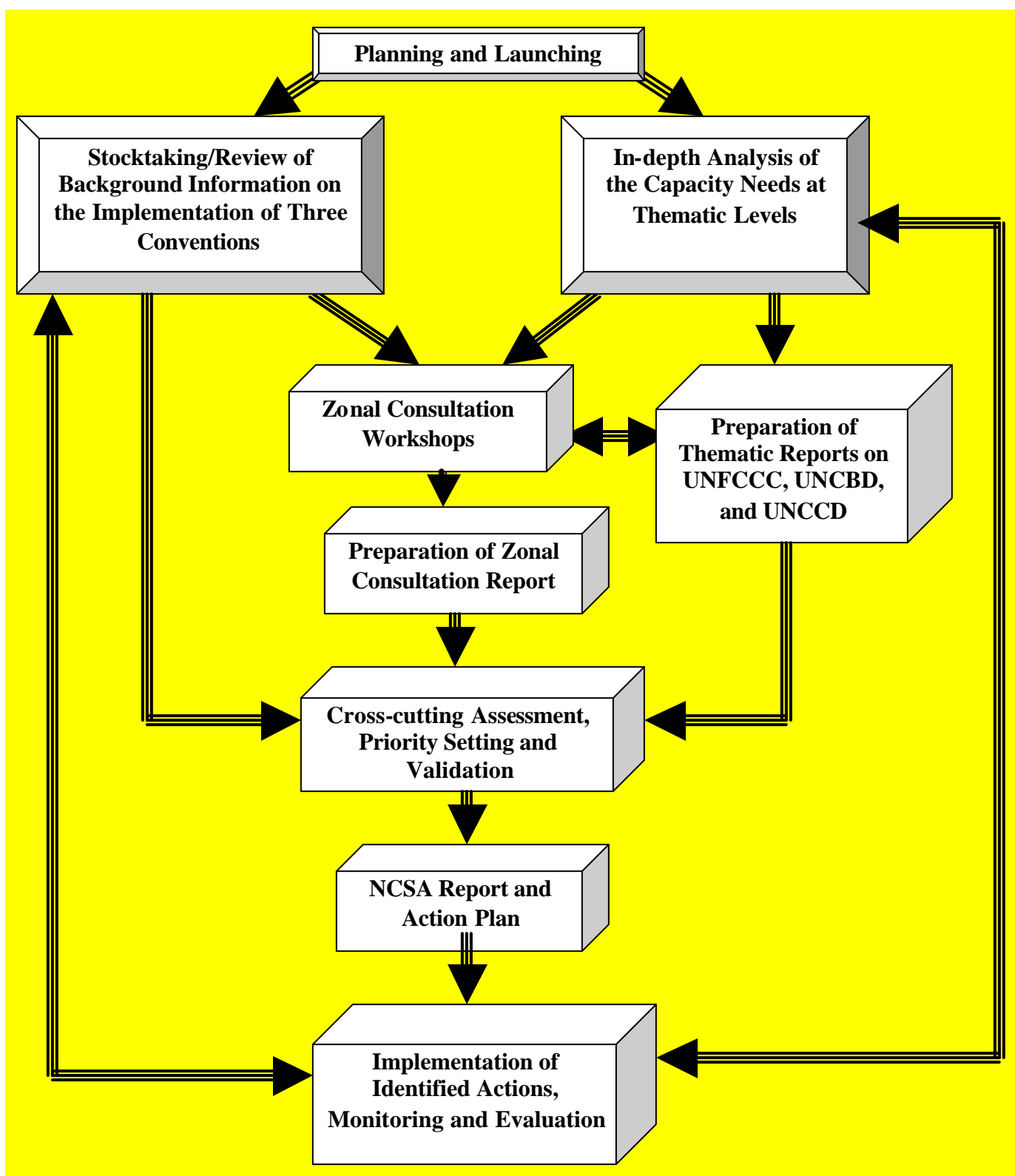


Figure 2.3 Applied Methodology

## **2.3 ZONAL STAKEHOLDER CONSULTATION WORKSHOPS**

To assess the capacities to implement these Conventions at the national level, six zonal consultation workshops were organized throughout the country to sensitize stakeholders on the implications of these Conventions and to identify indicators of the extent of the capacities and gaps available and needed to implement the Conventions. Participation was drawn from Ministries, District Assemblies, Traditional Authorities and civil society. In all a total of 180 persons benefited from these workshops

Throughout the workshops, common crosscutting issues and synergies between the Conventions in terms of capacity needs were identified that are key to the thematic areas under review. These issues were grouped under systemic, institutional and human resource development levels.

At the systemic level, the cross cutting issues identify are:

- The need to introduce, strengthen, enforce and implement environmental laws so as to make them more effective.
- The need to create awareness of all the issues

At the institutional level, there is the need to

- clarify the roles of institutions responsible for managing the environment
- provide adequate resources
- improve technologies for the effective functioning

At the human resource development level there is the need to

- effect attitudinal change
- motivate and increase the number of relevant personnel (skill enhancement)

The natural resources which are influenced by these three thematic areas are land, water and air. A number of challenges/ issues were identified to influence these. These challenges are: human activities that subject the land to various forms of degradation leading to destruction of the soils and vegetation.

The objectives of the zonal workshops were to:

- Identify common and related issues to the three thematic areas (climate change, biodiversity and desertification) covered by the NCSA process,
- Assess local (zonal) and national capacity needs and associated constraints within and across the three thematic areas, including those associated with strengthening existing institutions and mechanisms, particularly the District Environmental Management Committees (DEMCs),
- Identify ways through which dialogue, information exchange and collaboration could be strengthened among the stakeholders,
- Identify indigenous practices that impact positively on the three thematic areas, and
- Suggest ways of improving community participation in environmental management programmes

The geographical coverage of the six zonal workshops were:

- **Zone one** comprised Upper East and Upper West Regions. The workshop took place at the Conference Hall of the SSNIT Complex, Bolgatanga on the 17<sup>th</sup> and 18<sup>th</sup> November 2003.
- **Zone two** comprised Northern and Brong Ahafo Regions. The workshop took place at the Conference Room of the Regency Resort Hotel, Sunyani on the 20<sup>th</sup> and 21<sup>st</sup> of November 2003.
- **Zone three** comprised participants from the Ashanti Region, and was held at the Conference Room of Hotel Lavikus, Kumasi from 23<sup>rd</sup> to 24<sup>th</sup> November 2003.
- **Zone four** comprised participants from the Western and Central Regions. The workshop was held at Hillcrest Hotel, Takoradi from 29<sup>th</sup> to 30<sup>th</sup> June 2004.
- **Zone five** comprised participants from the Eastern and Volta Regions. The workshop was held at St. James Hotel, Koforidua from 5<sup>th</sup> to 6<sup>th</sup> July 2004.
- **Zone six** comprised participants from the Greater Accra Region. The workshop was held at Marina Hotel, Dodowa from 13<sup>th</sup> to 14<sup>th</sup> July 2004.

Through the syndicate group discussions, it was established that there are close and inextricable crosscutting linkages that connect Climate Change, Biodiversity and Desertification. It had also been identified that the effective management of these and other environmental resources, both at the local and regional levels, is closely linked to the achievement of sustainable development goals.

Participants at each zonal workshop identified local and national capacity needs, and assessed existing capacities to meet the challenges of the Conventions. Presentations were made on the identified capacity needs and gaps for each zone, and these are summarised in the next section. Expectedly, there were significant variations in the outcomes of the various workshops, as each zone had unique environmental challenges and capacity needs. These are captured under *Specific Zonal Capacity Needs* after each thematic capacity needs assessment. Largely, however, there were wide areas of overlap and commonality in their capacity needs.

The zonal workshops also sought to sensitize the local people and key stakeholders, including relevant Ministries, Departments and Agencies, CBOs, District Assembly, NGOs, traditional rulers, academic and research institutions, private sector, local traditional authorities, and other identifiable groups, about their:

- Perceptions, appreciation and uses of biodiversity within the different ecological zones of Ghana from the high forest zone, forest transition, savannah woodland and Sudan/Sahel in the North East Ghana.
- Role in promoting biodiversity planning and conservation at the Regional/District levels and integrate biodiversity conservation goals into national policies and economic sectors so as to address current threats biodiversity
- Role in the mitigating and adapting to adapting to the impacts of climate change and how climate change affects the livelihood as well as implication of climate change on the socio-economic development
- Role in combating and reducing the increasing rate of deforestation and exacerbation of the rate of desertification

The details of the outcomes of the zonal workshops, including specific capacity building needs and projects that were identified for the various zones are provided in the NCSA Zonal Consultation Workshops Report.

## **2.4 LINKAGES BETWEEN NCSA, GPRS AND MDG.**

Ghana's National Environmental Action Plan (NEAP) which was formulated in 1989, predates the Earth Summit in 1992. Ghana subsequently went on in the ensuing years to sign the Rio Declaration and three Multilateral Environmental Agreements at this Summit that have since been ratified. It is within this context that the National Capacity Self-Assessment Process has been initiated to assess the capacities needed to implement the climate change, biological diversity and desertification Conventions.

The key objective of NCSA is to enhance the capacity for sustainable environmental management. There can be no poverty reduction, if there is no environmental sustainability. Restoring environmental quality therefore creates the required conditions for creating wealth and reducing poverty. Hence the implementation of the outcomes of NCSA should lead to the attainments of the Ghana's Poverty Reduction Strategy (GPRS) as well as the achievement of the Millennium Development Goals (MDG) as illustrated three thematic reports. .

Similarly, the MDG seeks to address poverty issues, gender equality and environmental sustainability in a systematic manner that can lead to achieving sustainable development. There is thus a clear linkage between the NCSA, the GPRS and the MDGs (see Section 2.2 on Context and Rationale for NCSA above).

## CHAPTER THREE – IN-DEPTH ANALYSIS OF THEMATIC ISSUES

This chapter looks at the in-depth analysis carried out under the three Conventions/thematic areas. The thematic analyses examine the historical, cultural, political, social and economic factors that have contributed and continue to contribute to the capacity gaps in and constraints facing the implementation of the Conventions at the national level.

The analyses are done by identifying and using the various Conventions obligations (see Chapter 1) as basis for the identification of capacity needs. The three pillars for capacity development, as illustrated in Figure 2.1, were employed in performing the in-depth analyses. From the outcome of these in-depth thematic analyses, the priority capacity needs have been identified in Chapter 4. The chapter also forms the basis for the cross-cutting capacity needs identified in Chapter 5, and which have been filtered into NCSA action/strategy plan provided in Chapter 6.

### 3.1 CLIMATE CHANGE

#### 3.1.1 Greenhouse Gas Inventories

Article 4.1 (a) obliges Parties to the United Nations Framework Convention on Climate Change *to develop, periodically update, publish and make available to the Conference of the Parties national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies. The extent and frequency of developing, updating, publishing and reporting depend on the national circumstances and capabilities.*

Greenhouse gas emissions and removals are to be accounted for under the energy, industrial process, solvent and other product use, agriculture, land use change and forestry and waste sectors. The extent of greenhouse gas reporting requirement indicates that national institutions and experts of diverse mandate and expertise respectively, will be required to effectively develop, update, publish and report these emissions. Moreover, systems should be put in place to ensure that the available institutional and individual expertise is put to effective use.

Hitherto, the preparation of greenhouse gas inventory in Ghana has being based on individual experts and not properly institutionalised. There is no sustainable national institutional arrangement or system in place to ensure that there is periodic development, updating, publishing and reporting of emission.

During the preparation of Ghana's Initial National Communication, certain individual experts were used. Some of these experts have change jobs, died or have assumed certain positions at their work places that do not allow them to perform the functions of a national inventory compiler.

The use of comparable methodologies for greenhouse gas inventory compilation and reporting further imposes additional capacity requirements on the country. The IPCC 1996 National Greenhouse Gas Inventory Guidelines provides for which sectors and types of greenhouse gases



and emissions categories Parties are to report on. This gives an indication of the extent of capacities and expertise required for the estimation of emissions for each sector.

An efficient national institutional arrangement or system for greenhouse gas inventory preparation should, at least, address on a sustained basis, the capacities for:

- Activity data gathering for all sectors – energy, industrial processes, solvent and other product use, agriculture, land use change and forestry and waste
- Development, choice and use of appropriate methodology, including modelling
- Development, choice and use of emission factors
- Uncertainty estimation and management
- Quality assurance and quality control and
- Reporting and archiving

A national institutional arrangement for estimation of greenhouse gas emissions and removals is therefore an important need that Ghana would have to consider for immediate action.

The national institutional arrangement or system must ensure and clearly define the responsibilities of all institutions engaged in the greenhouse gas inventory preparation, and must indicate the lead institution. It should be also set out clear time lines for reporting by all institutions to the lead institution and also give guidance on how other institutions, NGOs or industrial establishment could provide relevant activity data.

Clear improvement schedules for the greenhouse gas inventory need to be developed and which should aim at calculating and reporting inventory so that the inventory fulfils the quality objectives set for it to produce reliable estimates of total emissions of greenhouse gases for different emission categories. From the aforementioned facts, it is clear that there exist a large capacity gap that has to be filled in order for the country to meet its obligation as far as greenhouse gas inventory compilation, reporting and archiving are concerned.

### **3.1.2 Formulation and Implementation of Mitigation and Adaptation Measures**

The Article 4.1 (b) of the Convention requires Parties to the Convention *to formulate, implement, publish and regularly update national and where appropriate, regional programmes containing measures to mitigate or adapt to climate change*. Box 1 provides a summary of the national programmes implemented so far.

#### **3.1.2.1 Mitigation Measures**

Whilst some of the national programmes implemented so far are purely for mitigation of greenhouse gases others are geared towards addressing the country's capacity to adapt to the impacts of climate change. Other programmes have been formulated and implemented within the country but not directly under the ambit of the climate change enabling activities. For example, the Renewable Energy Services Project (RESPRO), implemented by the Ministry of Energy resulted in the installation of close to 1800 stand alone solar home systems. The RESPRO project benefited, among others, from the Global Environment Facility, the financial mechanism for the Climate Change Convention.

As a renewable energy project, implemented in some remote areas of the country, the RESPRO project sought to provide clean energy to communities that were far removed from the national grid. By implementing this project, greenhouse gas emissions that would have resulted from generating the same amount of energy from the thermal plant were avoided.

The formulation and implementation of renewable energy and energy efficiency projects could help reduce or avoid greenhouse gas emissions, but due to limited capacities within the country to develop bankable projects, (i.e. projects that meet international project financing requirements), most of such opportunities go untapped.

This capacity gap exists, in part, as a result lack of proper institutional coordination; coupled with weak and ill-motivated staff and lack of information exchange both at the institutional and individual levels.

In addition, the constraints at the individual level include inadequate trained staff and inability of most government and non-governmental experts in performing carbon accounting. This has resulted in experts not been able to take advantage of the opportunities made available through development and implementation of greenhouse gas mitigation projects. This capacity gap can be addressed if targeted capacity building programmes for greenhouse gas mitigation projects including greenhouse gas reduction cost assessments is implemented. The programme could also be designed to include the preparation of “*finance-ready*” greenhouse gas emission reduction projects in some selected sectors of the economy.

At the institutional level, the problem is more with organizational culture, failure, for instance, in accepting new initiatives and challenges and often times insufficient allocation of funds from the national budget for implementation. At the systemic level, lack of support from decision makers, has been the main barrier.

Box 1: Overview of Climate Change Projects/Studies 1996 - 2005

- Inventory national greenhouse gas emissions by sources and removals by sinks for period 1990-1996 (UNDP/GEF Project), from 1996 - 1998
- Vulnerability and Adaptation Assessment for Agriculture Sector (Cereal production) (UNDP/GEF Project completed in 1999)
- Mitigation Assessment for Energy Land Use Change and Forestry (UNDP/GEF Project, 1998-1999)
- Guidance for Climate Change Policy Framework (UNDP/GEF sponsored, 1998)
- National Climate Change Scenarios Development (NCCSAP 1 1998 - 2000)
- Vulnerability and Adaptation Assessment of water resources and coastal zone under the Netherlands Climate Change Assistance Programme, Phase 1 (NCCSAP, from 1998- 2000)
- Climate Change Enabling Activities
  - Preparation of Ghana’s Initial National Communication (UNDP/GEF Project)
  - Climate Change Technology Needs and Needs Assessment (UNDP/GEF) (1998 – 2001)
- Capacity Building Programme for Clean Development Mechanism (UNEP/RISØ Project, 2000)
- UNIDO Industrial CDM Capacity Building Projects (UNIDO Project, 2000 -2001)
- The Netherlands Climate Assistance Programme, Phase 2 (2004 – 2007), Impacts of Climate Change on:
  - Human Health
  - Fisheries
  - Agriculture (Cocoa production and root crops production)
  - Land Management (biodiversity, land degradation/erosion/land use)
    - Technical papers on
      - Women’s vulnerability to Climate Change
      - Linkages between Ghana Poverty Reduction Strategy and Climate Change
- (UNEP) Project Support for Article 6 of the Convention - Education, Training and Public Awareness (2005).

### **3.1.2.2 Adaptation Measures**

Through a number of bilateral activities, especially under the Netherlands Climate Assistance Programme, the Ghana's vulnerability to the impacts of climate change has been assessed.

There is clear evidence that the coastal zone, agriculture (including fisheries, cocoa, cereals, and root crops production), and water resource sectors as well as human health, poverty and women's livelihood are all affected by climate change and climate variabilities. The results so far obtained from various vulnerability and adaptation assessments indicate that the country is very vulnerable to climate change. However, no concrete programmes or projects have been implemented with the aim to specifically address these vulnerabilities.

The constraints here are not very different from those for mitigation. However, what makes it even worse, is the difficulty in attracting funding for adaptation activities, especially under the Global Environment Facility where countries are to justify the global significance of the adaptation projects.

It is also generally true that most people from both governmental and non-governmental organisations are not aware of the climate change problem and as a result can neither understand nor appreciate its implications. Therefore awareness creation at all levels is very paramount if the impacts of climate change are to be appreciated to allow for the mainstreaming of climate change in national programmes.

It is proposed to have high level /decision-makers awareness programme that will target Ministers, Parliamentarians and Chief Directors of relevant ministries and intensive education of the civil society is urgently required. In addition, there is the urgent need to develop a climate change adaptation policy framework, similar to the least developed countries national adaptation plans of actions (NAPA). This plan should consider addressing the impacts of climate change at both sectoral and ecosystem levels and the integration of them.

### **3.1.3 Development and Transfer of Technologies**

The Article 4.1 (c) urges Parties *to promote and cooperate in the development, applications and diffusion, including transfer of technologies practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases in all relevant sectors including the energy, transport, industry, agriculture, forestry and waste management sectors.*

The Article 4.5 also highlights and commits the developed country Parties *to take all practicable steps to promote, facilitate and finance as appropriate, the transfer, or access to, environmentally sound technologies and know-how to developing country Parties; to enable these Parties to implement the provisions of the Convention. It further states that the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing countries Parties, and other organisations in a position to do may assist in facilitating the transfer of such technologies.*

The development and transfer of technologies has been recognised as critical if the objectives of the Convention are to be achieved. As a result several decisions have been made by the

Conference of Parties (COP); important among them is the forth decision of the Conference of Parties at its Seventh Session (i.e. Decision 4/CP7).

The decision 4/CP7 defines a framework for meaningful and effective actions to enhance the implementation of the Article 4.5 of Convention, which deals with development and transfer technologies. Within the framework five themes have been identified to provide effective actions to implement Article 4.5. These are:

- Technology Needs and Needs Assessment
- Technology Information
- Enabling Environment
- Capacity Building
- Mechanism for Technology Transfer (including both institutional and financial)

None of the five themes is mutually exclusive, and the actions to address any normally requires that other themes are either simultaneously addressed or, at the least, addressed at a later stage.

In spite of this recognition, the technology needs and needs assessment theme has been accepted as the critical niche for the effective implementation of the framework by developing countries. Therefore as a first step Ghana has completed its initial climate change technology needs and needs assessment and was among the first developing countries to officially report to the UNFCCC. This feat was achieved due to Ghana's role in shaping the technology development and transfer discussions under the UNFCCC, by being the first Vice Chair of the Expert Group on Technology Transfer (EGTT) and in fact the first developing country to **chair** the EGTT.

The technology needs and needs assessment was, however, done for only the energy and waste management sectors, even for these two sectors, it was recognised that there is the need to regularly update the needs assessment report. This implies that other sectors as mentioned in Article 4.1 (c) are yet to be covered. More so, the technologies that were assessed were only towards mitigating greenhouse gas emissions.

There is the need to assess, at the national level, technologies for adaptation in all relevant sectors. – energy, agriculture, water resources, coastal zone, human health, tourism, infrastructure, etc.

The technology needs and needs assessment carried out brought to the fore a number of barriers that hinders the development, deployment, diffusion and transfer of technologies in Ghana. In principle these barriers can be classified under the three broad capacity development pillars – systemic, institutional and human. It is also evidenced by the outcome of the assessment that for effective technology transfer, the international community would have a role to play in conformance to their obligation under Act 4.5 and Article 4.7.

The extent to which the international community, (i.e. developed country Parties and other intergovernmental organisations), is able to fulfil that role would determine the effective of actions aimed at meeting Ghana's commitment under the Convention. This further emphasizes

the point that some of the capacities needed for effective implementation of the Article 4.1 and 4.5 go beyond the national borders.

The extent to which Ghana will effectively implement her commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to provision of financial resources and transfer of technology recognising that economic and social development and poverty eradication are the first and overriding priorities for the country.

Since the development, application and diffusion of environmentally sound technologies (ESTs) hold the key to meeting the ultimate objective of the Convention as well as the emission reductions or commitments under the Kyoto Protocol, the extent of engagement of Ghana in collaborative partnerships for both adaptation and greenhouse gas mitigation efforts through research, development, deployment, diffusion and transfer of ESTs will help the country to meet its obligations under the UNFCCC and the Kyoto Protocol.

In particular capacities needed for the development, deployment and diffusion of ESTs will span from technical skills development – through the engagement of native Ghanaians in the collaborative research, the creation of enabling environment, which will include systemic and institutional capacities development and strengthening, and the provision of financial resources.

#### **3.1.4 Promotion of Sustainable Management, Conservation and Enhancement of Sinks and Reservoirs**

The UNFCCC Article 4.1 (d) urges Parties to *promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems.*

This is the first obligation under the UNFCCC that recognises the enhancement of sink and reservoirs for greenhouse gases with emphasis on ecosystems approach. It provides the basis for the drawing on the synergies among the three Conventions, especially the inter-linkages between Climate Change and Biological Diversity Conventions

The Government of Ghana continues to undertake afforestation and reforestation projects in the country but not with recourse to meeting the commitments under the Article 4.1 (d). However, undertaking these programmes while given the recognition to this article could provide additional resources to the country.

The implementation of this Article goes far above only carbon dioxide sequestration through forestry programmes. It includes for example the use other and emerging technologies such the carbon capture and storage, which looks at both geological and ocean storage.

Implementing existing policies and enforcing the already existing legislations for forest management and intensification of current and ongoing reforestation and afforestation

programmes through the provision of additional financial resources and also using existing mechanisms under the Convention and the Kyoto Protocol could help to address the capacity gap.

The enactment of an omnibus national legislation that focuses on the implementation of these three Conventions in a synergistic manner and proper institutional coordination and information sharing, coupled with general awareness creation and involvement of relevant stakeholders would be needed to ensure the promotion, sustainable management, conservation and enhancement of sinks and reservoirs for the purposes of climate protection, biodiversity conservation and reduction in land degradation.

### **3.1.5 Mainstreaming Climate Change into National Development**

Article 4.1 (f) indicates that Parties shall *take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change*, however, developing country Parties including Ghana are still not able to fulfil this obligation. This is due to the very simple reason that climate change is not seen as an important issue by most developing country governments who are saddled with other development priorities such as poverty reduction, provision of education, health, good drinking water and access roads.

To forestall this Ghana would need to be assisted in various ways, including the provision of funds, technology development and transfer, and capacity building; so as to recognise climate change as purely a development issue. The provision of support for the strengthening of existing institutions and establishment of the competent climate change authority in the country is one of such action that will address this imbalance.

Ghana will need to develop national and sector specific climate change policies, legislations, programmes and strategies. Currently a draft national legislation for climate change has been developed. Section 3.1.14 discusses this institutional arrangement. The adoption of this legislation should assist with the mainstreaming of climate change in national development agenda.

National capacities for mainstreaming climate change could be developed and implemented as a national programme. Under the draft legislation an institutional structure for the Climate Change Commission has been proposed. The nature of the Commission reflects the key issues been discussed under the Climate Change Convention and the Kyoto Protocol. Evidently the Climate Change Commission once established, will address significantly the current gap in institutional capacity.

### **3.1.6 Promotion and Co-operations in Scientific, Technological, Technical, Socio-Economic and Other Research, Systemic Observation and Development of Data Achieves**

According to Article 4.1 (g) of the UNFCCC, Parties are to *promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies.*

In addition Article 5 of the UNFCCC, which deals with research and systematic observation, specifies that, *in carrying out their commitments under Article 4, paragraph 1(g), the Parties shall: a) Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort; (b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and (c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above.*

Obviously, the requirements of these Articles go to confirm the need to be fully engaged in the Intergovernmental Panel on Climate Change (IPCC) work. That is Ghana should participate in the assessment activities carried out by the IPCC in all sectors, especially in the preparation assessment reports and some special reports. Section 3.1.13 further provides the details of capacities needed for the engagement in IPCC.

All of the dimension of capacity building will be required in the area of research needs under the Convention. Institutionalising climate change research for both mitigation and adaptation through the passage of the relevant legislations and development of appropriate policies will be needed. These legislation and policies could set out the framework for collaborative research among national institutions and between national, sub-regional, regional as well as international research organisations.

The framework could also provide for the guidance for climate research work and provision of financial resources through allocation of portions of the national budget. Endogenous adaptation capacities could be strengthened and/or enhanced especially in the agriculture sector, where traditional knowledge has played significant role in adapting climate change and climate variabilities.

Some already existing institutions such as the Savannah Research Institute (SARI), Crops Research Institute and other research institutions under the Council for Scientific and Industrial Research (CSIR) needs to be strengthened. Experience has also shown that some capacities already exist with most research institutions in the country, but what is required is to link the research focus to climate change.

The capacity of the country to provide early warning to climate related disaster is very inadequate. This will require the strengthening of the Ghana Meteorological Agency (GMA) to be able to perform this function, by collecting the relevant data and also be engaged in sub-regional, regional and global observations.

### **3.1.7 Promotion and Cooperation on Information Exchange**

Parties to the Convention are to promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies. *The Article 4.1 (i) of the Convention emphasizes the need to promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations;*

Moreover, the Article 6 of the Convention provides that, *in carrying out their commitments under Article 4, paragraph 1(i), the Parties shall: (a) promote and facilitate at the national and, as appropriate, sub-regional and regional levels, and in accordance with national laws and regulations, and within their respective capacities: (i) the development and implementation of educational and public awareness programmes on climate change and its effects; (ii) public access to information on climate change and its effects; (iii) public participation in addressing climate change and its effects and developing adequate responses; and (iv) training of scientific, technical and managerial personnel. (b) cooperate in and promote, at the international level, and, where appropriate, using existing bodies: (i) the development and exchange of educational and public awareness material on climate change and its effects; and (ii) the development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field, in particular for developing countries.*

Inadequate assess to and limited flow of information to and among stakeholders within the country has hampered the climate change work nationally. The general public is not very much aware of the climate change problem and so are unable to appreciate the implications of climate change on their livelihoods. Institutions that should plan their work, taken into consideration the impacts or otherwise of climate change, do not do so due the simple fact that they lack knowledge and information about the consequences of climate change.

For example institutions like the National Development Planning Commission, that lead the planning processes of the country and charged with the preparation of Ghana's development blue print, for example the Poverty reduction Strategy, is unable to appreciate the implications of climate change and therefore do not see the need to incorporate climate change concerns in the poverty reduction strategies it develops. Other institutions like the Ministry of Food and



Agriculture, Ministry of Lands and Forestry, Ministry of Energy, Ministry of Health, Ministry for Women and Children's Affairs, Ministry of Tourism, Ghana Ports and Harbours Authority, Volta River Authority, Water Resources Commission and the Local Government, etc., who should shown keen interests and incorporate climate change in their medium to long term planning processes are not doing so for the same reason as above.

There is the urgent need therefore to embark on massive education, training and public awareness creation in line with the demands of Article 6 of the UNFCCC. In this regard, the media houses will need to be educated on the climate change problem.

Awareness creation and sensitisation of the high level officials in the country will also be needed. Policymakers including the executive, the judiciary and legislature, ought to be provided with targeted capacity building on climate change.

To help address the numerous capacity building needs for the Climate Change Convention, institutionalised training will be required. Various tertiary institutions within the country should be encouraged to have taught courses and also be actively engaged in climate change research.

### **3.1.8 Preparation of National Communication**

Pursuant to Article 4.1 (h) and Article 12, Ghana is to communicate to the Conference of the Parties information related to implementation of the Convention, by providing following elements of information; (a) a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, to the extent its capacities permit, using comparable methodologies to be promoted and agreed upon by the Conference of the Parties; (b) a general description of steps taken or envisaged by the Party to implement the Convention; and (c) any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication, including, if feasible, material relevant for calculations of global emission trends.

In response to this demand Ghana has prepared and submitted her initial national communication to the COP. The preparation and submission of the national communication is, however, to be on a continuous basis and in line with specific guidelines and decisions the COP may adopt from time to time.

Hitherto Ghana has resorted to ad hoc working groups for the preparation of the national communication. This working group concept though laudable, does not allow for continuous update of, for example, the compilation of national inventories. This does hamper the frequency and early submissions of the national communication to the COP.

The proposed institutional arrangement for the preparation of the national communication as part of the Climate Change Commission will respond to the capacity need. In addition, other national

institutions like that Ghana Statistical Services could be strengthened to support the compilation and collection of relevant activity data for the greenhouse inventory.

As discussed in section 3.2.5 a national institutional arrangement or system for greenhouse gas emissions inventory should require an urgent attention. Other capacities needs identified under this chapter will also aid the preparation of the national communication.

### **3.1.9 Financing Mitigation and Adaptation Options and Enabling Activities**

Financing climate change activities from domestic sources is virtually non-existent in Ghana since climate change, as a development issue, has not be fully recognised by policy makers and thus integrated into national budgeting.

In spite of this shortfall in the Convention Article 4.3 developed country Parties and other developed Parties included in Annex II are to provide new and additional financial resources to meet the *agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1*, which obligates countries to prepare their national communication. Developed country Parties are also to provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of Article 4 and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, the Global Environment Facility, the financial mechanism for the Convention.

*Article 4.3 further stipulates that the implementation of these commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties.*

According to Article 4.4 the developed country Parties and other developed Parties included in Annex II to the Convention shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.

It is even more apparent in Article 4.7. *This Article states that the extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.*

From the foregone provisions of the Convention, the extent and frequency of financial flows to Ghana will depend on the capacity of Ghanaians to develop projects and programmes that attract these available financial resources.

Clear strategies within existing institutions and proposed/upcoming ones to draw on these financial resources will be worthwhile. The identification of unit for finance and investment under the propose Climate Change Commission (Appendix 2) should be able to rectify this anomaly. Government must also allocate funds from the core budget for climate change activities in support of those that can be obtained from sources directly under the Convention. Aggressive financial sourcing should also be made, by contacting, on bilateral basis, donor institutions that have specific programmes for climate change.

### **3.1.10 Assessment of the Implementation of the Convention**

Article 7 of the UNFCCC establishes the Conference of Parties (COP) and entrust it with a number of obligations, in particular the paragraph (e), which states that the *COP shall assess, on the basis of all information made available to it in accordance with the provisions of the Convention, the implementation of the Convention by the Parties, the overall effects of the measures taken pursuant to the Convention, in particular environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the Convention is being made.*

No national system has been put in place to undertake the assessment of the implementation of the Convention at the national level, even though Ghana, as Party, does participate at the COP level in the general evaluation of progress made on implementation. The monitoring and evaluation of the policies and measure taken by governmental and non-governmental and as well as the civil society to address the issue of climate change has to be formalised to ensure continuity by enacting the necessary legislation and strengthening/establishing the relevant national institutions for the assessment of the implementation and the effectiveness of the actions taken.

Effective participation in the international negotiations on climate change should also help to ensure that countries, especially developed country Parties are complying with their commitments under the Convention. This will mean that a crop of experts should be put together within Ghana that can follow the level of compliance of the Annex I countries to their commitments.

This will also require that these national experts are active and participate in the Convention processes in particular participation in the UNFCCC Secretariat's greenhouse gas inventories review processes.

### **3.1.11 Participation in Subsidiary Bodies Meetings and Sessions of the Conference of Parties**

Governmental experts are expected to participate in the Subsidiary Bodies meeting. It expected of the experts to (a) provide assessments of the state of scientific knowledge relating to climate

change and its effects; (b) prepare scientific assessments on the effects of measures taken in the implementation of the Convention; (c) identify innovative, efficient and state-of-the-art technologies and know-how and advise on the ways and means of promoting development and/or transferring such technologies; (d) provide advice on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity building in developing countries; and (e) respond to scientific, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may have.

As indicated earlier on there is the need for Ghana to have a core competent to respond to the expectations from the Subsidiary Bodies. This implies that Ghana will need to training and have specialized persons in the various spheres of climate change, from scientific, technical, technological and socio-economic stand points.

It would be worthwhile having postgraduate training programmes in the tertiary institutions to ensure that the relevant skills are developed within the country. Currently Kwame Nkrumah University of Science and Technology is taken steps to develop climate change tailored postgraduate programmes, and governmental must support that effort. It could also mean that Ghanaian experts could be sponsored either by government or through donor support programmes to participate in climate exchange programmes in institutions outside Ghana.

### **3.1.12 Analysis of Key Issues Under the Kyoto Protocol**

As a developing country Party to the Kyoto Protocol, what is required of Ghana is to develop its capacity to participate in the clean development mechanism (CDM) under the Article 12 of the Protocol.

As a participation requirement, Ghana must designate a CDM national authority. The designated national authority (DNA) for CDM requires that promulgation of appropriate legislation and for the establishment of the institution. Even though a DNA has been put in September 2005, through a Ministerial decree, it will be necessary to have a legal basis for the work that the DNA does.

The DNA must have the capacity to

- (a) Issue letters of approval to enable CDM projects to be registered;
- (b) Ensure that all stakeholders have a clear point of contact that is familiar with national policies and procedures relating to the CDM;
- (c) Develop procedures and criteria to ascertain that a particular CDM project activity assists Ghana in achieving sustainable development;
- (d) Assisting potential investors in CDM projects to understand the applicable laws and rules in the relevant sectors, including the energy and forestry sectors, and in relation to other relevant laws including investment and taxation;
- (e) Monitor and ensure that approved CDM projects continue to meet established sustainable development criteria,

- (f) Provide eligibility criteria which Designated Operational Entities (DOEs) must comply with in order to conduct verification and certification of CDM projects;
- (g) Report on CDM programmes and providing recommendations to entities which attend international meetings of the COP/MOP on changes or additions that should be made to CDM procedures; and
- (h) Develop portfolio of priority CDM projects and networking information that can be used for implementing CDM project activities.

It is necessary that as a CDM participating country Ghana develops a national registry (an electronic database) for CDM project to ensure easy tracking of the approved projects, accurate accounting of the issuing, holding, transfer, acquisition, cancellation, retirement and carry over of emission units.

### **3.1.13 Analysis of Capacity Needs Relevant for Participation in the IPCC**

The Article 7.2(d) urges the COP to *promote and guide, in accordance with the objective and provisions of the Convention, the development and periodic refinement of comparable methodologies, to be agreed on by the Conference of the Parties, inter alia, for preparing inventories of greenhouse gas emissions by sources and removals by sinks, and for evaluating the effectiveness of measures to limit the emissions and enhance the removals of these gases.*

The development of these methodologies fall squarely in the within the mandate of the IPCC. Participation in the IPCC work is purely voluntary and experts that undertake responsibilities are not paid for the contribution they make. However, with the developed countries, experts that are nominated by the governments are engaged on contract basis and are hence paid for the participation in the IPCC.

There has been low participation in the development of methodologies for greenhouse gas inventories from Ghanaian experts, particularly in the IPCC processes. Even though a couple of experts have been involved in the IPCC work, it would be important for the Ghana to make financial provisions that will ensure that Ghanaian experts are engaged in the development of these methodologies. In this regard Government could set aside financial resources that will ensure the active engagement of these experts in the IPCC work. Experts must be motivated and in fact paid for the time they spent working.

### **3.1.14 Bringing All Together – Institutional Arrangement**

This section of the report attempts to set a stage by analyzing the institutional capacity needs which must be met. It does so by that proposing an institutional arrangement that is capable of delivering on all of the identified capacity needs (indicated in section 3.2), if it is effectively implemented.

The analysis looks at the past, present and future practices as well as the Convention and its Protocol capacity needs in the light of other national scenarios. It attempts to put them into a single unit, here referred to as the climate change commission. Some of the expected functions of this commission are listed in section 3.5.3.

### 3.1.14.1 Current Situation

The institutional arrangement hitherto being utilized in Ghana is as portrayed in Figure 3.1. The national GEF Focal Point resides in the Ministry of Environment and Science (MES). The Chief Director of MES is the chairman of the National Climate Committee.

The Environmental Protection Agency (EPA), under MES, is the country implementing institution and the operational focal point of climate change activities. All activities that have been carried out so far were done through a Climate Change Desk Officer, who acts as the National Coordinator. Four main sectoral country-working groups (CWG) were set up for the purpose of the preparation of Ghana’s initial communication.

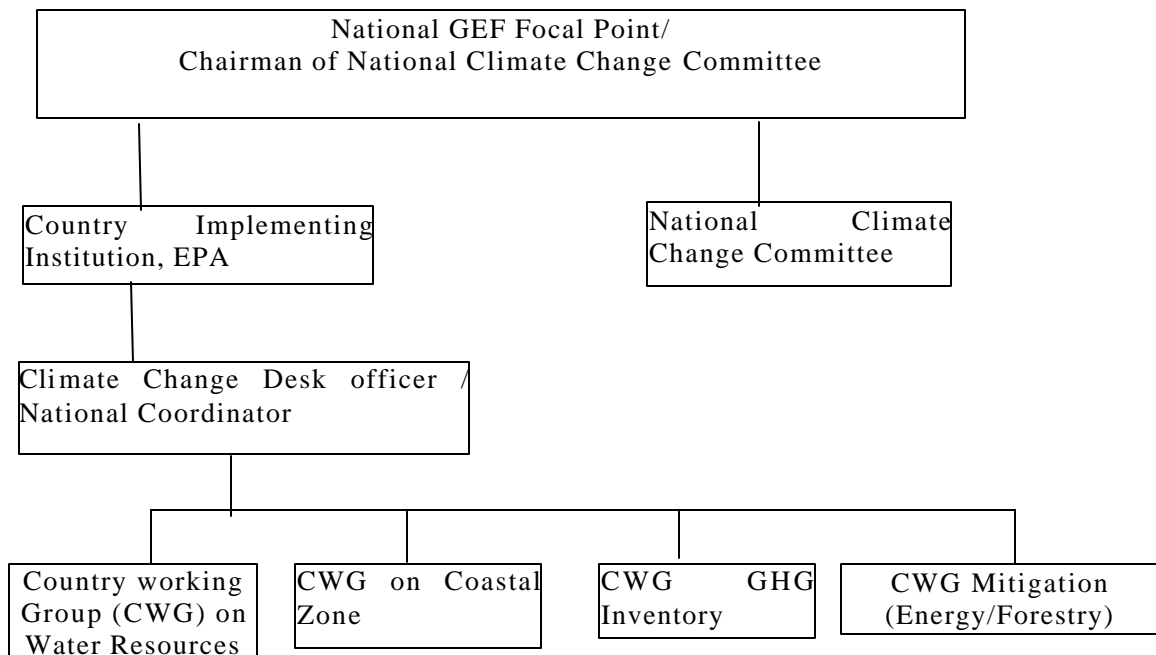


Figure 3.1 Current Climate Change Management Structure

### 3.1.14.2 Proposed New Institutional Set-up

The current institutional set-up has been found to be technically and administratively flawed, since part of the structure was build around certain individuals/persons drawn together as consultants. As the individuals/persons change jobs, especially jobs outside the country or in multi-lateral organisations within the country, the current structure does allow for easy

replacement, since no other person(s) are attached to these consultants purposely to understudy them. The commitment imposed on the country through periodic and regular updating of reported information, requires that some core persons be maintained to serve as both institutional memory and as substitute technical persons. Moreover, the existing structure does not lend itself to exploring the full range of climate change impacts, adaptation and mitigation measures because most the work are left to a single person (National Climate Change Coordinator).

### 3.1.14.3 National Climate Change Commission

The National Climate Change Commission (NCCC) is expected to have the structure as shown in Figure 3.2 below. The NCCC is proposed to be directly under the Ministry of Environment and Science. This is to ensure easy access to the executive arm of government; robustness of climate change programmes implementation and to further facilitate the integration of climate change issues in national development planning. It is also to ensure that the right legal framework (enactment of a parliamentary act) is put in place to enhance the implementation of national climate change programs and to allow for legally established designated national authority for CDM – a requirement that must be met because Ghana has ratified the Kyoto Protocol<sup>1</sup>.

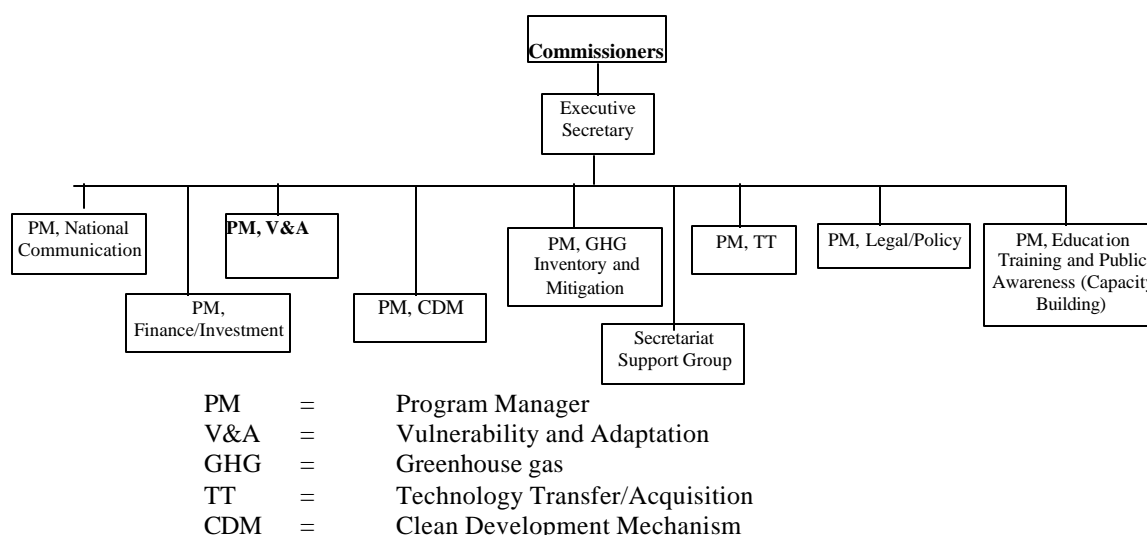


Figure 3.2: Structure of the Proposed National Climate Change Commission (NCCC)

The NCCC will be headed by an executive secretary under the supervision of nine-member commissioners. Eight program managers will be appointed to administer and implement at the following issues:

- Preparation and updating of Ghana's national communication to the UNFCCC
- Vulnerability and Adaptation Assessment
- Greenhouse gas (GHG) inventory compilation and GHG mitigation assessment

<sup>1</sup> The Parliament of the Republic of Ghana at its Twenty-Fifth sitting on Tuesday, 26th November 2002. passed a resolution to ratify the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

- Clean Development Mechanism Transactions
- Technology Transfer and Acquisition
- Legal and policy development and integration
- Education, Training, (Capacity Building) and Public Awareness
- Finance and Investment

It is expected that these eight programme areas will have additional technical staff.

A secretarial supporting group (maximum three persons) will be required to assist the Commission.

It is also anticipated that the national climate change committee shall continue to be operational, meeting and reporting, as appropriate, to the Executive Secretary of the Commission instead of what pertains in the existing structure (Figure 3.1).

The team of Commissioners will meet quarterly to assess the progress of work by the Commission and recommend areas/issues for further consideration leading to implementation by the Commission. The team of nine commissioners will consist of nine members drawn from the following institutions in addition to the Executive Secretary of the NCCC:

- Ministry of Environment and Science
- Environmental Protection Agency
- Ministry of Finance
- Ghana Meteorological Agency
- National Development Planning Commission
- Ministry of Energy
- Ministry of Trade and Industry
- Ministry of Local Government
- Ministry of Food and Agriculture

The Executive Secretary shall serve as the National Climate Change Operational Focal Point and as the Chairman of the National Climate Change Committee. In addition, the Executive Secretary shall oversee to the day-to-day running and implementation of programs at the Commission.

#### **3.1.14.4 Functions of the Climate Change Commission**

The NCCC shall perform, inter alia, the following functions:

- compile, prepare, update and archive the greenhouse gas inventory and submit same to the COP as part of the national communication
- ensure that quality assurance and quality control of greenhouse gas emissions are done by national institutions or experts;
- prepare and update the Ghana's national communication;
- serve as the climate change technological transfer information clearinghouse and update national climate change technology transfer action plan;



- facilitate and lead, as appropriate, the transfer of climate change relevant technologies
- serve as the designated national authority for CDM, with the responsibility for CDM project evaluation, approval, capacity building and marketing in the country;
- prepare national climate change mitigation and adaptation plan of actions;
- ensure the integration of climate change issues in national development agenda;
- initiate and develop relevant policy recommendations for government;
- assist in capacity building programs and country capacity needs assessment under the Convention and the Protocol;
- ensure and coordinate climate change related education, training and awareness creation;
- encourage private sector participation in climate change activities;
- participate, as appropriate, in IPCC, Subsidiary Body for Implementation (SBI), Subsidiary Body for Scientific and Technological Advice (SBSTA) and Conference of Parties (COP) and meeting of Parties;
- monitor and report on the extent of technology transfer under Article 4.5 of the Convention and Article 12 of the Protocol;
- develop and maintain a national web site on climate change;
- be involved in the development of synergies between multilateral environmental agreements; and
- coordinate, as appropriate, programs and projects under climate change and ensure dissemination of project findings

If this institutional arrangement is put in place, it is expected to ensure better climate change information dissemination, better coordination of climate change work at the national level and thus fostering the easy integration of climate change into national development planning.

## 3.2 BIODIVERSITY

The United Nations Convention on Biological Diversity was conceived in the 1980's, and was negotiated under the leadership of UNEP during 1992 Rio de Janeiro Earth Summit. The conservationist primary concern has been the protection of the many elements of biological diversity of life (microbial, plant, animal, aquatic, and massive species), and ecosystems (habitats).

The second concern was the move to incorporate the goal of sustainable use of biological resources into conservation policy, recognizing the needs and benefits to local people living amidst Biodiversity for sustainable development.

The international debate on biodiversity has also revolved around the terms of exchanging and for sharing benefits from genetic resources for use in agriculture, and are the subject of multiple treaties, international laws, regulations, and policy.

Parties to Conservation of Biodiversity are to take legislative, administrative or policy measures with “the aim of sharing in a fair and equitable way the results of research and development, and the benefits arising from the commercial and other utilization of genetic resources.

### 3.2.1 Trinity of Objectives of UNCBD

- I) the conservation of biological diversity (BD)
- II) the sustainable use of its components
- III) the fair and equitable sharing of its benefits

The UNCBD is the primary International legal instrument for advancing the conservation of BD, the sustainable use of its components and a fair and equitable sharing of benefits arising out of the use of genetic resources. The subject of biodiversity should be approached as a multi-sectoral issue and the mutually supportive relationship between biodiversity and sustainable development

Multidisciplinary groups consisting of ecologists, natural history experts, oceanographers, economists, sociologists, anthropologists are needed to address the issue of conservation of biological diversity. Identification and targeting of ecological processes and functions are to be the basis for conservation and sustainable use of BD and its components.

The implementation of the three objectives of the Convention and the achievement by 2010 of a significant reduction in the current rate of loss of biodiversity will require a systematic strengthening of existing institutions and systems within and outside government, and the provision of new and additional financial and technical resources.

This legally binding agreement had 188 Parties as of February 1<sup>st</sup>, 2004 (CBD, 2004)

Biological resources play a critical role in overall sustainable development and poverty alleviation. How biological resources are managed and accessed from community-led decisions to state policies, from practices of conservation by public institutions to those of extraction by individuals and private sector – will determine how much and in what conditions those natural resources will be available to future generations.

Conservation of biological resources over the long term will not succeed unless resource users have the social, technical, political, and economic capacity to regulate access to and disposition of those resources.

The 2002 Johannesburg World Summit on sustainable development made the following commitments on Biodiversity and Ecosystem Management.

- Commitment to reduce biodiversity loss by 2010
- Commitment to reverse the current trends in natural resources degradation

- Commitment to restore fisheries to their maximum sustainable yields by 2015

### 3.2.2 Biodiversity Defined (Article 2 of UNCBD)

Biological diversity covers the number, variety and arrangement of living organisms, i.e. all of life on planet earth. It is typically described, quantified, managed and used at several levels.

First, it includes heritable genetic variation within and between populations of a given species; extent and pattern of population variation, the variation of genotypes and the frequencies; effects of flows of alleles (the different mutational forms of a given gene, and the unit upon which selection works to result in genetic diversity: of particular interest to geneticists, and breeders).

Second, it refers to variation among species, which is of special concern to taxonomists, ecologists, and conservationists and includes the number, abundance or rarity and endemicity, of species

Third, it concerns the variation among ecosystems and the way in which species interact among themselves and with their environment; of interest to ecologist, foresters as it includes the global and local importance of the composition, structure, and function of ecosystems, and existence of so-called “hot spot” of biological diversity.

Forest Biological diversity refers to the diversity within forests at the three levels. It includes all species of plants, animals and microbes occurring in the forest. Tropical forest alone contains some 50% of all known vertebrates, 60% of plant species and possibly 90% of world’s total species.

The optimum management systems should at best maintain these different levels of Biodiversity and their characteristics that must be known before adequate evaluation and conservation can be developed.

Table 3.1: Levels of Biodiversity and Information Required

|             |  |
|-------------|--|
| Ecosystem   | Global and local importance  |
| Species     | Number, abundance/rarity, endemicity<br>identification of some key-stone/ importance |
| Populations | Extent and patterns of variation   |
| Genotypes   | Variation, propagation   |
| Genes       | Frequencies, effects, flows  |

### 3.2.3 Interdependence on Global Biodiversity

Countries in Southern Africa fall between 65% to 100% in their dependence on main food crops that originated outside the Region; Ghana has a dependency level of 70-80%. A growing population makes increasing demands for new sources of income, food and employment, more lands are being opened up for cultivation and settlements – thus multiplying the risk of deforestation, land degradation, attendant loss of biodiversity and desertification.

### 3.2.4 Living with Biodiversity

Biodiversity is defined as the total variety of life on this planet, consisting of 5-10 million species, each with considerable variation, as well as the ecosystems they make up.

We as Homo sapiens are a part of this rich inheritance. We depend on it, because it is the human life-support system:

- The source of our food, medicines, timber, fibre and many other products
- It is the gene pool from which crop breeders take new varieties
- It is the living system of mangrove, marsh, dune that shelter coastal communities
- It is the forest that regulates the flow of the rivers from the hills
- It is the life forms that exist in the whole range of Earth's habitats
- It is the natural beauty that uplifts the human spirit
- It is our human self-interest and moral responsibility to protect the Earth's biodiversity
- No country is fully self-sufficient in genetic resources; all must rely to a greater or less extent on materials originating outside their borders
- Access to and sharing of both genetic resources and technologies to use them are recognized by CBD.

### 3.2.5 Cultural Diversity

Traditional communities tend to have profound and detailed knowledge of the ecosystems in which they live. Cultural diversity (over 6,000+ languages) provide the human intellectual “gene pool” needed for adapting to local environmental resources and using them sustainably.

Genetic diversity is a ubiquitous feature of indigenous agriculture, leading to natural resilience in the face of pests and diseases. A high diversity of biological resources and resource use systems have evolved and quite characteristic of the life cycle of local communities. Every species is used in many different ways, several different species are used and within species, genetic diversity is maximized; hence local community systems display a high level of sustainability and equity with regard to the use and management of biological resources.

### 3.2.6 Status of Biodiversity in Ghana

Ghana ranks among the top 25% of African countries for number of species in all the major groups (WCMC, 1992). This is because it spans both the high forest and savannah zones, and includes marine and coastal habitats. Ghana's biological resources are used for agricultural, construction, clothing, medicinal and ornamental products, and have significant economic values.

Biological diversity encompasses all species of plants and animals and micro organisms and the ecological systems. The wild tree species, and agro-crop species and the variation within them, constitute significantly to a viable forest industry and the agricultural economy as a whole. But human activities over the last century have reduced the abundance and distribution of species.

### 3.2.7 Categories of Land-Use

In Ghana, major categories of land-use including agriculture, forestry, mining, urban development, hunting, tourism, transportation and infrastructure, energy, grazing and fishing have impact on biodiversity.

Perhaps the most important area where human activities with biodiversity are intrinsic is agriculture, - reducing species level through forest clearing for agriculture field and through such clearings create a mosaic of micro-ecosystems.

Agriculture land use types Ghana include:

- Cultivated annual crops (Cereal, root crops nuts and vegetables, bush fallow
- Cultivated tree crops: Cocoa, Coffee, oil palm, rubber, bananas, cashew.
- Unimproved pasture; natural grasslands.
- Commercial Tree Logging over the past 100 years has resulted in rapid loss of Biodiversity; some have been endangered and include: chloropora, Afromorsia, mahoganies and Sapeles.
- Fuelwood gathering and Charcoal Production are putting severe pressure to forests – especially transition forests without replanting.
- Gathering of Wild Plants (NTFPs); Commercialized chewing stick, pestles, fruits, nuts, palmwine, Rattan & Canes, wild animals.
- Depletion of medicinal plant species include the rauworfia species for hypertension mahogany bark as blood tonic wild yams rich in steroids used in pharmaceuticals.

Ghana provides a refuge for a significant number of plants and animals considered to be globally threatened with extinction. These “Red Data Book” species include 34 plants, 17 mammals, 10 birds, 5 reptiles and a butterfly (GWD, 1998). The highly endangered species which include “flagship” species such as Waldro: Red Colobus, Diana Monkey – are heavily dependent on the rain forest/high forest habitat which is fast disappearing, being cleared for agriculture and other uses.

Marine and freshwater ecosystems face serious degradation and loss. Freshwater, estuaries, coastal and lagoon ecosystems are heavily polluted with industrial and domestic wastes, and a threat to biodiversity in those ecosystems.

The Diversity for Crop Plants is being threatened and eroded in several ways including:

- Improved varieties of crop plants (high yielding) from local research Institutes are increasingly displacing local land races; land races are more adapted to local conditions and therefore resistant to endemic pests, diseases, droughts etc.
- Yearly bushfires in the country during the harmattan dry season threaten the Biodiversity of the country. The droughts of 1983 and attendant fires which swept through both the savannah woodlands and the high forest; after 20 years, scars of the bushfires are still visible in the high forests
- Construction and other human activities invariably threaten and often destroy several Biodiversity
- Conservation of biodiversity has also recognized that agricultural biodiversity is a focal area in view of its social and economic relevance and the prospects offered by sustainable agriculture for reducing the negative impacts on biodiversity, enhancing the value of biodiversity and linking conservation efforts with social benefits (socio-benefit sharing).

It is equally evident that humans are the major driving force in causing changes in biodiversity over the ages through agriculture, trade, transportation, urbanization, mega-construction of dams, hydro-electric dams, surface mining and market forces.

Fundamental are the different ways in which nature and the elements of its diversity – plants, animals, forests, and other elements – are viewed, respected and valued by the different ethnic groups of the country, who have utilized and conserved a vast diversity of plants, animals and ecosystems since the dawn of Homo sapiens.

The conservation of nature and the landscape is not for them an issue separate from their own survival as individuals, as society or as cultures. Conservation of biodiversity also enshrines the importance of customary practices in Biodiversity Conservation and calls for its protection and for equitable benefit sharing from the use of and appreciations of traditional technologies.

Another important area in which local knowledge plays a major role is in traditional medicines and health systems. The indigenous and traditional health care system that serves more than 80 - 90% of the population is based on the rich diversity of medicinal plants and animals and associated knowledge.

### **3.2.8 Biodiversity Thematic Areas**

The major ecosystems provide a complex web of interacting natural processes that provide the multiplicity of goods and services that have guaranteed human survival and development

throughout history – water, food, shelter, fuel, clothing, medicines, building materials, aromatics, dyes, means of transport (canoes), power generation. But rising population and unsustainable consumption of components of Biodiversity, industrialization etc. have put pressure on natural processes resulting in land degradation and genetic erosion.

The major ecosystems in Ghana include:

- Marine and Coastal Biological Diversity
- Inland Freshwater Biological Diversity
- Forest Biodiversity
- Agro-Biodiversity
- Dryland and sub-humid Lands

### **3.2.8.1 Marine & Coastal Biological Diversity**

Convention on biodiversity was signed in June, 1992; Ghana ratified the Convention of Biodiversity in 1994; since then, Ghana has made several commitments:

Undertaking baseline surveys/inventories of its biological diversity to provide fundamental information on the distribution and abundance of biodiversity to enable long-term management, use and conservation of the country's biodiversity, provide scientific understanding of ecosystem structure, function, and productivity and evolution as basis for managing resources

Baseline studies have been undertaken under the Coastal Wetland Management Project. These provided information on five Ramsar Sites (Wetlands), Mumi – Pomadi Lagoon, Densu Delta, Sakumo Lagoon, Songor Lagoon, Keta Lagoon Complex Ramsar Site

The wetland landscape generally shows large areas of degraded vegetation and farmlands, and encroachments from developments (housing, roads, salt-mining, hydrological changes)

**The Keta Lagoon Ramsar Site** is the most-important site for shore birds in Ghana (about 80% of all listed bird species in Ghana). Over 72 species of shore birds with estimated population of well over 100,000. The bird community consists of terns, plover, waders, herons, and ducks. The site supports internationally important populations of waders. Fish fauna include about 38 species including Tilapia, mud fish, 14 species of crabs, prawns and molluscs, mammals and reptiles, in particular common rodents, manates, turtles, pythons. The general flora include red/white mangrove, reeds, grasses.

Generally coastal habitats are being reduced through uncontrolled physical developments, siltation; salinization of soils due to irrigation, pollution, hydrological changes (climate change), damming, overharvesting of resources and introduction of alien species.

As international trade increases the number of both accidental and intentional exotic introductions is likely to increase.

All the above habitat degradation are negative by impacting on coastal ecosystems/wetlands, and already having serious effect on the quality of life and geopolitical stability of local communities.

Mangrove Ecosystems have limited number of heliophilic species (e.g. Rhizophora, Avicennia etc); these forests are exposed to strong ecological limitations due to cyclical tidal flooding and consequently, mangroves represent one of the most vulnerable ecosystems on earth. Paradoxically, conservation of coastal wetlands has lagged behind measures to safeguard terrestrial ecosystems (Forest Reserves, and Protect Areas). The Game and Wildlife Department is on record to have spearheaded programmes during the past decade designed primarily to protect the ecological integrity of the Ramsar Sites, and to make positive socio-economic impact on livelihoods of the local people (lagoon and marsh fishing, salt collection, crop production, animal rearing, handicrafts from reeds, palms, grasses).

### **3.2.8.2 Inland Water Biological Diversity**

Inland water biological diversity can be located principally in lakes and fresh water bodies. The major lakes in Ghana are the Bosomtwe (natural lake) and the Volta Lake (man-made).

Lake Bosomtwe is threatened by siltation from logging and farming on the steep slopes, and pollution from household sewage. High levels of DDT used in fishing during the 1980s virtually destroyed the indigenous fish stock. The Volta Lake Basin has been affected profoundly as a result of rapid growing population, clearance of natural vegetation along the banks resulting in erosion and silting, disappearance of several fish species native to the lake due to over-fishing and use of chemicals often used for fishing, prolific growth of algae, water hyacinths and dumping of untreated effluent. The very livelihood of the communities around the Lake Basin is threatened due to the threat to the lake itself.

Inland water ecosystem are also threatened as a result of countrywide illegal small scale mining activities called “galamsey” and dredging of some major river bodies (such as river Offin at Dunkwa) for precious minerals which cause pollution of these water bodies. In addition accidental cyanide spillages by major mining companies into water bodies pose danger to health of local people in the mining communities and attrition of macro and micro biodiversity in the streams

Surface mining including quarrying, sand and stone winning resulting in drastic reshaping of the surface, altering the surface and subsurface drainage patterns, destroying protective vegetation cover and altering hydrological regime of the area and habitat of wild fauna

### **3.2.8.3 Forest Biodiversity**

More than 3,600 plant species have been identified in both the closed forest and savannah woodlands of Ghana. J. B. Hall (1978) made a check list of the vascular plants of Bia National



park and Bia Game Production Reserve (in the transition area between the moist evergreen and the moist semi-deciduous zone) within a 300km<sup>2</sup> area (from tall trees >8m to shrubs, climbers, lianas epiphytes, parasites to tree-living ground herbs), the results indicated that; Closed Canopy Rain Forests amounted to 504 species, Secondary forestry had 109 species and Swamp riparian forestry consisted of 27 species, totalling 640 species.

The Bia National Park provides a classic example of deforestation and weak legislation and institutional structures in protecting strategic conservation areas in 1974, 33,560 hectares were originally constituted, by the end of the year (1974) 22,790 hectares were granted for timber concessions until up 1992. In 1985, 7,800 hectares were put made a biosphere reserve. Economic pressures/market forces to increase exports have resulted in over-harvesting of timber resources. Forest exploitation and agricultural encroachment have led to genetic depletion (loss of genetic diversity) especially among valuable traditional export species (Ref. Table 3.2 showing General Land-use).

The rate of attrition of the forest and savannah woodlands is compounded by high human population growth and widespread poverty and over dependence on natural resources, especially the Non Timber Forest Products (NTFPs).

**Table 3.2: Land Use (General)**

| <b>Land Use</b>        | <b>Area (000km<sup>2</sup>)</b> | <b>% of Total</b> |
|------------------------|---------------------------------|-------------------|
| Savannah Woodland      | 71                              | 30                |
| Bush fallow and others | 60                              | 25                |
| Unimproved Pasture     | 36                              | 15                |
| Forest Reserves        | 26                              | 11%               |
| Wildlife Protect Areas | 13.5                            | 5.6               |
| Tree Crops             | 17                              | 7                 |
| Annual Crops           | 12                              | 5                 |
| Unreserved Forest      | 3.5                             | 1.4               |
| <b>Total</b>           | <b>239</b>                      | <b>100</b>        |

Source: (PPMED/MOFA 2000)

Between 1950 and 1990, Ghana's Forest cover had been rapidly depleted both in terms of quantity and quality. Land clearing for cocoa farming and uncontrolled timber harvesting had reduced the country's closed forests from 145,000km<sup>2</sup> (61% of the total land area in 1900 to 15,800km<sup>2</sup> (6.6%) in 1990.

The roles of forest genetic resources include those used to improve the performance of trees grown for timber, wild relatives of crops and livestock used by plant and animal breeders in agriculture and horticulture, forested drainage basins provide spawning habitat for fish and sustain major fisheries, providing the micro-climate for the optimum production of major agric crops such as cocoa, oil palm a big part of the resource base of eco-tourism and inestimable cultural value: Sources of beauty, for contemplation, recreation, amenity, religion (in Achimota Park worshipping grounds, Sacred groves), art, music and poetry.

#### **3.2.8.4 Biological Diversity of Dryland and Sub-Humid Lands**

Land degradation continuous to intensify (Figure 3.3). Impact of degradation on dryland diversity is not well documented but substantial changes have resulted from livestock grazing, deforestation, savannization of transition forest zone, incipient desertification of savanna and Sudan/Sahel zones. The UNCCD entered into force in 1996 and aims to promote effective action through local programmes and international/sub-regional partnerships

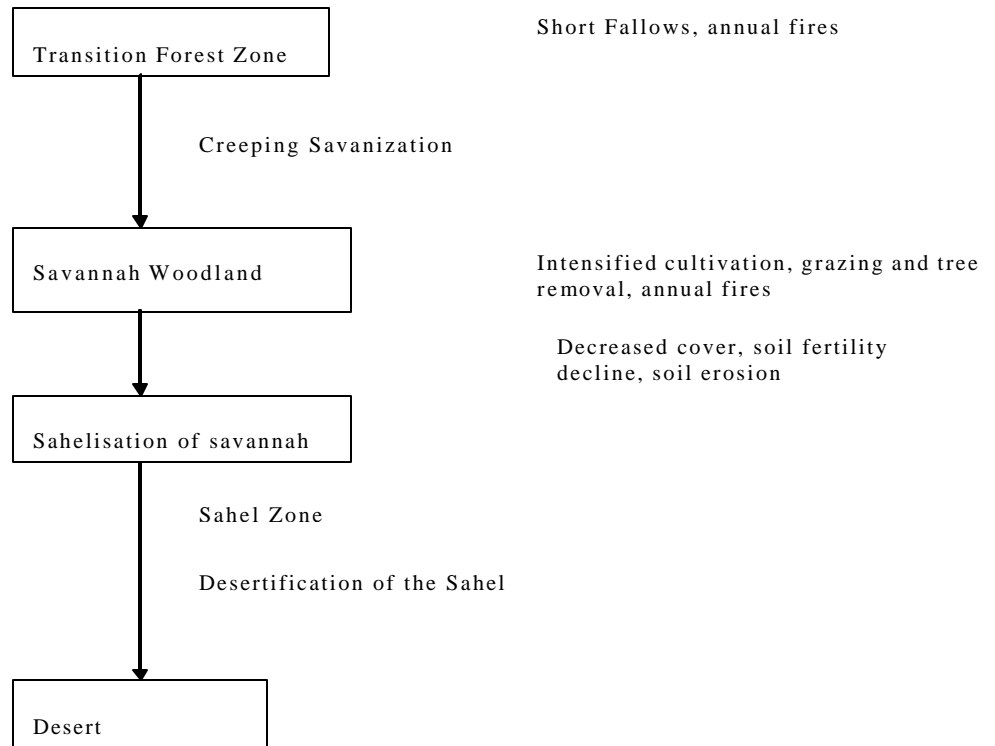
#### **3.2.9 Forest Land Degradation and Loss of Biodiversity**

Gyasi/Enu-Kwesi (2000) in a study of transitional forest zone chlorophora Association of Taylor (1962) and southern marginal forest (SM) of Hall and Swaine (1981) concludes as follows:

1. Vegetation of the forest-savannah zone is undergoing degradation including loss of floristic diversity (various species of both crop plants indigenous especially local yams and wild animals were mentioned as having disappeared or becoming rare)
2. There are only traces of Chlorophora/Milicia excelsa (Odum), and Antiaris toxicaria/africana, reflecting the extent of deforestation in that eco-zone
3. Tendency towards savannization – transformation of a once forested land into a grassland accompanied by invasion by opportunistic herbaceous species
4. Invasive species: Chromolaema odorata (Acheampong weed) a noxious weed found in impenetrable masses associated with deforestation
5. Floristic changes are attributed to
  - a. Bushfire,
  - b. High population growth
  - c. Demand for fuelwood and poles for construction
  - d. Agricultural expansion through the slash – burn peasant farming system with attendant loss of biological diversity and reduction of fallow periods, resulting in decline in soil productivity and increase in soil erosion, which are symptomatic of environmental degradation (Figure 3.3)

- e. Overexploitation of the land by the hoe, in combination with the usurious share cropping and land renting systems whereby the tenants usually have access to farming land.
- f. Production capacity of land is undermined by the inheritance system, whereby the land is progressively sub-divided among succeeding generations into small non-economic narrow plots.
- g. Lack of coordination and weak law enforcement, existing regulations have been largely ineffective in preventing widespread resource degradation
- h. The capacity for multi-sectoral planning and coordination weakens as each Ministry struggles to respond to the demands of its own constituency (e.g. mining in forest resources undervaluing forest biodiversity)

**Figure 3.3 Effects of Forest/Woodland Degradation**



### 3.2.10 Threats to Forest Biodiversity in Ghana

The principal threat to forest biodiversity in Ghana is deforestation. The deforestation rate in Ghana is 22,000ha/year or 1.3% . Deforestation is associated with

- Population and economic development i.e clearance for farming, fuelwood,
- Timber extraction destroying forest habitats – diminution of species diversity (both fauna and flora)
- Desertification resulting from poor farming practices, fuelwood collection in forest transition/semi-arid savannah zones 35% of land area subject to desertification (UNSO, 1982)
- Mining and Quarrying – and Mining Pollutants. Mining for gold, diamonds, bauxite, iron ore.
- Bushfires (community used in Agric farmland preparation
- Grazing (with fire) – important for determining the structure of the surviving ecosystems
- Unregulated Hunting for bush meat
- Weak Legislation and Institutional Structures
- Lack of recognition of indigenous knowledge and property rights

### 3.2.11 Implications for Loss of Forest Biodiversity

1. Threatened/Endangered species increase in the number of threatened species to be added to “Red List” at turn of century. In secondary forests, the floristic structure (number of species, species mix, species range) does not approach that of primary forests. Secondary forest characteristically has a large proportion of light-demanders (pioneers) and reduced biodiversity as well.
2. Loss of native genetic material for future development of crops, medicine and industrial products. Genetic loss within and between populations due to overexploitation of prime economic species, fragmentation and reduction of its populations, is a critical factor to value the conservation of tree populations.
  - a. loss of the best individual trees were cut for the export trade
  - b. the residual stands are badly degraded, deformed, and different from the original populations. SFM is that management that preserves productivity, the forest structure; can contemporary forest management in Ghana claim to fulfil the criteria for “sustainability”
3. Loss of Species:
  - a. Loss of medicinal plants
  - b. Threat to economic trading of primary timber species overexploited and unmanaged. Ghana is already importing logs from Central Africa for furniture manufacturing
  - c. Uncontrolled hunting
4. Ecological communities are impacted.
  - a. Threatening predator/prey relationships
  - b. Removing agents of pollination, seed dispersal or germination e.g. insects, elephants, primates.

## 3.3 DESERTIFICATION

### 3.3.1 The Convention at the Global Perspective

The Convention to combat desertification defines “*desertification as land degradation in arid and semi-arid and dry land sub-humid areas resulting from various factors, including climatic variations and human activities*”. Combating desertification therefore includes activities which are part of integrated development of land in arid, semi arid and dry sub- humid areas for sustainable development which are aimed at;

- i. Prevention and/or reduction of land degradation
- ii. Rehabilitation of partly degraded land; and
- iii. Reclamation of desertified land;

Currently more than 6.1 billion hectares, nearly 40% of the earth's land area is dry land. About 0.9 billion hectares are hyper-arid, the remaining 5.2 billion hectares are arid, semi and dry sub-humid lands, part of which have become deserts through human degradation. These lands are the habitats and the source of livelihoods for about one fifth of the world's population. Recurrent drought in these areas coupled with inappropriate management of natural resources and the Sahelian drought of 1968 – 1973 and its tragic impact on the people in these regions drew the

attention of the global community to the problems of human survival and development particularly in the marginalized areas.

In its resolution 3202 (S-VI) of 1<sup>st</sup> May 1974, the General Assembly recommended that the international community undertake concrete and speedy measures to arrest desertification and assist the economic development of affected areas. Resolution 1878 (LXVII) of 16<sup>th</sup> July 1974 adopted by the Economic and Social Council requested all the concerned organizations of the United Nations System to pursue a broad attack on the drought problem.

By 17<sup>th</sup> December 1974, the General Assembly decided by its resolution 3337 (XXIX), to initiate concerted international action to combat desertification and in order to provide impetus to this end to convene a United Nations' Conference on Desertification (UNCOD) in 1977 in Nairobi, Kenya.

After series of extensive global, regional and local studies and consultations involving scientists, decision and policy makers on relevant institutions at the international level, the UNCOD adopted the Plan of Action to Combat Desertification (PACD), which was endorsed by the United Nations General Assembly in 1977 as one of the major World Programmes.

The prepared of Plan of Actions to Combat Desertification (PACD) had problems in implementation at the national levels as resources are limited and actions depended on national priorities and Ghana was no exception to this. The acute economic crises in the 1980s forced governments to concentrate on such affairs as energy provision, unfavourable trade balances and terms of trade, indebtedness and debt rescheduling. The attention of governments to these concerns of structural adjustments plans led to increased pressure on natural resources as emphasis was now on export production and foreign exchange earnings without any conscious effort to assess the impact on the environment. Although countries affected by desertification had national actions plans adapted to specific natural, economic, social and cultural conditions, were confronted with and other pressing economic and social problems.

The end result is preference of short term investment with immediate returns rather than long-term and low- yield investments. The lack of financial resources to undertake major large-scale activities as those proposed by PACD was a major cause of failure of combating desertification at the national level. Land degradation as a development issue cuts across many ministries however the absence of coordination and participation of people at the local level has also led to dissipation of efforts at the national level. This practice led to further degradation of the natural resource base, and thus desertification.

The question of how to tackle desertification was still a major concern at the 1992 United Nations Conference on Environment and Development (UNCED) held at Rio de Janeiro, Brazil. The conference therefore supported a new integrated approach to the problem emphasizing action on to promote sustainable development to the community level.

An intergovernmental Negotiating Committee (INCD) was therefore established in 1992 to prepare by June 1994 a Convention to Combat Drought and Desertification in those countries experiencing Serious Drought and/or Desertification, particularly in Africa.

The Convention came into force on the 17<sup>th</sup> June 1994 and on was opened for ratification in October 1994. It entered into force on 26<sup>th</sup> December 1996 to date about 199 countries are signatories to the Convention.

### **3.3.2 Objectives and Principles of the Convention**

The main objective of the UNCCD is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective actions at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach which is consistent with Agenda 21, with the view to contributing to the achievement of sustainable development in affected areas.

Achieving this objective involves long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land and water resources, leading to improved living conditions, in particular at the community level.

2.1.1 Principles of the Convention  
The Convention shall be guided by the following principles

- I. The Parties should ensure that decisions on the design and implementation of programme to combat desertification and/or mitigate the effects of drought are taken with the participation of populations and local communities and that an enabling environment is created at higher levels to facilitate action at national and local levels.
- II. The parties should in principles, in a spirit of international solidarity and partnership, improve cooperation and coordination at sub regional, regional and international levels, and better focus financial, human, organisational and technical resources where they are needed.
- III. The Parties should develop, in spirit of partnership, cooperation among all levels of government, communities, non-governmental organisations and land holders to establish a better understanding of the nature and value of land and scarce water resources in affected areas and to work towards their sustainable use and.
- IV. The parties should take full consideration the special needs and circumstances of affected developing country parties, particularly the least developed among them.

### **3.3.3 Historical Back Ground to the Implementation of the UNCCD in Ghana**

Following the severe drought in 1981-1983, Ghana applied to the UN General Assembly in December 1983 to be included in the list of countries which should benefit from United Nations Sudano –Sahelian (UNSO) assistance. On the basis of decisions adopted by the Governing council of UNEP and UNDP and duly endorsed by the UN General Assembly in its resolution 39/68B of December 1984, Ghana was added to the list of countries eligible to receive assistance through UNSO in combating desertification.

As a follow up to this decision, the Environmental Protection Council organised a number of activities as a step to the preparation of a National Plan of Action to combat desertification in the country which was completed in 1987.

Thus, with Ghana put in the limelight of anti desertification activities, the country participated in the negotiations for the need to have global Convention to combat desertification after the 1992 Earth Summit in Rio de' Janeiro, Brazil. The Convention was adopted in June 1994 in Paris, France and it entered into force on the 26<sup>th</sup> December 1996. Ghana became a signatory to the UNCCD on 26<sup>th</sup> December 1996 and subsequently ratified it on 27<sup>th</sup> December 1996.

From the UNCCD definition of desertification “as land degradation in arid, semi and arid dry sub humid areas resulting from various factors including climatic variations and human activities”. Aridity index is defined as the ratio of the annual precipitation to the mean annual evapo transpiration in a region. The Convention to combat Desertification (CCD) considers arid and, semi arid sub-humid and dry regions and dry lands with aridity indices ranging from 0.05-0.65. In Ghana, the gro- ecological zones which fall within this range of aridity are the Sudano, Guinea and Coastal Savannah Zones with their respective aridity index of 0.60, 0.60 and 0.54. The regions within these agro-ecological zones are the Upper East, West, Northern, Greater Accra, Central and Volta.

Ghana has an area of 238,537 square kilometers and a current 2000 Population figure of about 18.4 million, of which 51.4% live in the relatively dry areas, which are subject to moderate to high levels of desertification. These dry areas are found mostly in the Northern and Upper Regions and also in the coastal savanna zone. It is also now established that the transition zone between the forest and savanna ecological zones and some parts of the forest zones are under threat of desertification. Overall, approximately 30-40% of the total land area of Ghana is subject to desertification.

Current trend in forest destruction in the forest belt through farming, logging, mining, bushfires, firewood and charcoal production, shows that the area could face the wrath of desertification if remedial measures are not put in place. In the savannah zone (covering about 15.6 million hectares), as much as 14.7 million hectares are unreserved and are being destroyed at an estimated rate of 22,000 hectares per annum.

### **3.3.4 Measures to Mitigate Desertification Effects**

Measure to mitigate desertification effects in Ghana include:

1. Integrated catchment management for drought mitigation
2. Improved irrigation technologies in areas vulnerable to droughts and crop failures
  - a. Through effective soil and water conservation and improved water harvesting techniques
  - b. Maintaining and improving the integration of trees in land-use systems
  - c. Better control and management of grazing and livestock densities

In areas with marked climatic fluctuations from year to year, local germplasm is therefore preferred to improved varieties because of its greater tolerance to severe biotic and abiotic stresses. Moreso, with ongoing climatic changes national plant breeding programmes and biotechnology should help to achieve adaptation and yield targets, i.e. using plant material with increased tolerance to prevailing biotic and abiotic stresses.



### 3.3.5 Status of Implementation of the UNCCD in Ghana

One of the obligations under the UNCCD is for affected country parties to prepare a National Action Programme (NAP) to Combat Desertification.

Ghana therefore initiated the process by preparing her first national Plan of Action to Combat Desertification in 1987. The NPACD made several proposals but the emphasis was on assessment and monitoring of the country's natural resources and the drawing up of a National Environmental Action Plan (NEAP). The NEAP was a ten (10) year action plan which saw the coming into being of a five- year project- the Ghana Environmental Resource Management Project (GERMP) designed to implement and operationalise the National Environmental Action Plan. Other projects also came into being before and after the GERMP.

The GERMP project was launched in June 1993. The project was based on:

- i. The inter sectoral nature of many environmental concerns;
- ii. The fact that many areas of government are being decentralised to district Assemblies
- iii. The need to ensure that communities are involved in decisions about the use of environmental resources; and
- iv. The fact that significant portions of the EAP are to be implemented through planned or on-going sector-specific projects supported by the international community.

| project/plans   | Objectives  | relevance with other programmes  |
|-----------------|---|--|
| NEAP 1991       | To review large sectors of the country's economy including land management, forestry and wild life; water management; marine and coastal ecosystems; mining, manufacturing man industries hazardous, chemicals and settlement   | Adoption of a National Environmental policy  |
| GERMP 1993-1998 | Multi sectoral project with support from the World bank, DANIDA ODA, and the government of Ghana coordinated by EPC. It was aimed at institutional development and strengthening and capacity building for administration, information management, plan formulation, environmental monitoring and reporting. An environmental information systems was developed under this project. Five framework and core digital data were produced. | The establishment of National Development Commission by Act 479 of 1994<br>Passing of the National Development Planning Systems Act 1994 (Act 480) |

| project/plans  | Objectives   | Relevance with other programmes                               |
|--|--|---|
| <p>1999</p> <p>Savannah Resource Management Project</p> <p>This was one of the components of the Natural Resource Management programme</p> <p>The project not go beyond the first phase of implementation.</p> | <p>The objective of the project was to alleviate poverty in the three northern regions through the promotion of community management of natural resources including; The project had the following components;</p> <p>A. Integrated watershed management. Management plans for integrated watershed management of six pilot reserves in the three northern regions were developed.</p>   | <p>Implementation of the Ghana Poverty Reduction Strategy</p> |
|  | <p>B Sustainable woodland Development and Use</p> <p>The object of this programme is to ensure the efficient and reliable product and use of fuel wood in the savannah zone of Ghana. The programme involved issues relating to efficient and sustainable harvesting of fuel wood and charcoal production.</p> <p>C. Over Seeding of Stylosanthes in severely Degraded areas This intervention involves the seeding and planting of areas that have been severely over-graded as a result of livestock/over-grazing with stylosanthes and mucuna. These two plats are leguminous and have the added advantage of out-competing weeds and other undesirable plants on degraded lands.</p> |   |

| project/plans | Objectives | Relevance with other programmes |
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| <p>2002<br/>Northern Savannah Biodiversity Project<br/>This is an on-going project that covers the three northern regions of Ghana.</p> | <p>The Primary objective is to improve the environment, livelihoods, and health of the people of northern savannah zone through the conservation and sustainable use of natural resource.</p>   | <p>GPRS<br/>The LAP coordinated by MLF</p>  |
| <p>2003<br/>The preparation and finalisation of the NAP document</p>  | <p>The objective of NAP is to emphasise environmentally sound and sound integrated local development programmes for drought prone semi-arid and areas, based on participatory mechanism, and on integration of strategies for poverty alleviation and other sector programmes including forestry, Agriculture, health, industry and water supply into efforts to combat the effects of drought.</p> | <p>The GPRS was subjected to an assessment to ensure that future national development programmes are subjected to strategic environmental assessment.</p> |

### 3.3.6 Analysis of the Implementation of UNCCD in Ghana

Since the signing of the Conventions, projects related to the Convention to combat desertification have been implemented, however there has been problems related with the sustainability and these could be associated with the following;

- the lack of coordination of programmes/projects at the sectoral level
- Non involvement of the people at the grass root level
- Projects are merely implemented on pilot basis coupled with lack of resources to replicate.
- Implementation of projects without considering the synergies among the three Conventions to enhance maximization of resource use.
- Most projects implementations are departmentalised which makes it difficult to collaborate.
- National development plans of governments do not consider the implications of government policies on the environment.
- Non enforcement of be-laws and lack of incentives for people who manage and conserve natural resources.
- Duplication of efforts at the ministerial and Agency level.
- Inadequate public awareness
- Lack of resources for implementers to effectively work.
- Long gap between phase out of projects
- Projects most often do not take in consideration the socio economic situation of the rural population therefore creating alternative livelihood for them.

### 3.3.7 Commitments Under the Convention

African country parties to the Convention of which Ghana is one among others have the following commitments and obligations;

- Adopt the combating of desertification and/or the mitigation of the effects of drought as a central strategy in their efforts to eradicate poverty
- Promote regional cooperation and integration, in a spirit of solidarity and partnership based on mutual interest, in programmes and activities to combat desertification and/or mitigate the effects of drought;
- Rationalize and strengthen existing institutions concerned with desertification and drought and involve other existing institutions as appropriate, in order to make them more effective and to ensure more efficient use of resources
- Promote the exchange of information on appropriate technology, know-how and practice between and among them;
- Develop contingency plans for mitigating the effects of drought in areas degraded by desertification and/ or drought;
- Make appropriate financial allocations from national budgets consistent with national conditions.
- Sustain reforms currently in progress towards decentralisation and resource tenure as well as reinforce participation of local population at the grass root.
- Identify and mobilise new and additional national financial resources and expand as a matter at the priorities, existing national capabilities and facilitate to mobilise domestic financial resources.
- Continually provide the UNCCD secretariat with an update of progress made in the implementation of the Convention at the country level.

In addition to the above commitments, affected country parties are to prepare a National Action Programme (NAP) to combat desertification. The purpose of the NAP is to identify the factors contributing to desertification and put in place practical measures necessary to combat desertification and mitigate the effects of drought.

The NAP put in place sixteen key projects which have been grouped into short term of up to 5 years, medium term 5-10 years and over 10 years as long term project.

The proposed projects are grouped in the following categories;

- Land Use and Soil management
- Management of vegetative cover
- Water resources management
- Rural infrastructure
- Wild life and Biodiversity management
- Improvement in socio economic environment and poverty reduction

The implementation of these projects will however not be possible except with the coordinated resource and proper mechanism for resource mobilisation. The donor conference was therefore held to strategise.

### **3.3.8 Coordination and partnership Agreements**

Ghana is committed to having partnership arrangement with developed country parties in the implementation of the Convention. This is in line article 18 of the Convention In order to have a lead country to play a lead role in the mobilisation of resources and coordinating with other development partners, Ghana approached Canada to act as the Chef de File. Canada in collaboration with the Global Mechanism facilitated in the organisation of a donor conference to help identify possible donors to implement the NAP. The meeting also saw the need to establish a national desertification fund where national resources could be channelled to combat desertification.

## CHAPTER FOUR – PRIORITY CAPACITY NEEDS

This chapter presents the priority capacity needs of the three Conventions as identified in the thematic reports. It does so by building on the in-depth analysis performed in Chapter 3 and provides also a basis for the identification of the cross-cutting capacity needs and the action plan discussed in Chapter 5 and 6 respectively.

The priority capacity needs identified consider the systemic, institutional and human resource requirements and the inter-linkages between them, along the lines of three Conventions. In a tabular form the chapter identifies the prioritized thematic capacity needs by considering the strategic and specific objectives to be set in order to address the capacity gap(s), barriers, the reasons why these barriers do exist, possible actions (activities) that need to be taken to be overcome these barriers and an assessment of available resources that could be useful in the attempt to address these capacity gaps.

### 4.1 CLIMATE CHANGE

The current capacity needs for the effective implementation of the UNFCCC in Ghana are discussed taken into consideration the obligations imposed by the Climate Change Convention and the Kyoto Protocol on Parties as well as the capacity needs arising from some of the decisions the Parties have made since the entry into force of the UNFCCC. This section does not intend, however, to exhaust all the issues but rather it considers and provides a list of priority needs, assesses the barriers and provides some actions to overcome these barriers.

Table 4.1 lists the various priority capacity needs, associated barriers and the underlining causes, prioritized set of actions and strategies as well as specific objectives. The table also provides a list of available resources. The need for financial resources is obviously not listed in the table, but it should be emphasized that without the provision of adequate financial resources none of the listed capacity needs is attainable.

**Table 4.1 Capacities Needs, Barriers and Removal Strategies and Assets.**

|  |   |
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| <b><u>PRIORITY NEED 1</u></b><br>Proper institutional arrangement for formulation, preparation, presentation, reporting, implementation, monitoring and evaluation of the national and international climate-change policy | <b>Strategic objective 1:</b><br>Setup of a national climate change commission/authority with full legal mandates for the successful formulation, preparation, presentation, reporting, implementation and evaluation of the national and international climate-change policy |
| <b><u>Barrier 1.1:</u></b><br>Lack of a national climate change  | <b>Specific objective 1.1</b><br>Development of legislation for the establishment of a  |

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| strategy and sectoral level climate-change activities   | national climate change authority and climate change related policies (strategies and sector programs) and establishment of conditions for their implementation  |   |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>• Climate change is not a priority for the country even though it is a development issue</li> <li>• Most institutions have no specialized climate-change structures (units), and the existing ones are inefficient, with limited rights and responsibilities</li> <li>• Contradictory interests, lack of policy or coordination between the ministries</li> <li>• No financing by the state for development of a national strategy and sector programs on climate change</li> </ul> | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>• Hold top-level climate change capacity building and training workshops for Parliamentarians and chief directors of line ministries to discuss climate change issues and their implications for national development</li> <li>• Source financing from the state, the financial mechanism of the Convention (GEF) and other donors for development of a national strategy and sector programs</li> <li>• Design and elaborate climate change strategy and sector programs</li> <li>• Establish climate change units in relevant sector ministries</li> <li>• Improve coordination between the stakeholders and coordination between various agencies/ministries</li> <li>• Foster dialogue between national organization by establish a system for exchange of information on climate-change related activities and their results between all stakeholders</li> <li>• Ensure permanent climate change training and capacity for national experts in various MDAs and research institutions.</li> </ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>• Ghana's Initial National Communication (2000)</li> <li>• Draft legislation for establishment of Climate Change Commission</li> <li>• Very supportive national climate change focal point</li> <li>• Competent national climate change coordinator</li> <li>• Available competent scientific community/research institutions</li> <li>• Climate change recognized as a priority issue in the current G8 policy on Africa</li> <li>• Existence of WSSD Committee with sustainable development indicators</li> <li>• Existence of some NGOs with capacity for climate change related work</li> <li>• An informal and enthusiastic country working groups of experts established as a result of the implementation of various climate change projects.</li> </ul> |

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| <p><b><u>PRIORITY NEED 2</u></b><br/> A well-functioning system for the estimation of anthropogenic greenhouse gas emissions.</p>  | <p><b>Strategic objective 2:</b><br/> Functional national anthropogenic greenhouse emission inventory system created.</p>  |  |
| <p><b><u>Barrier 2.1:</u></b><br/> Lack of awareness of institutions that could constitute the national system and no clarity about the structure, management and functioning of a national system for the estimation of anthropogenic emissions</p> | <p><b><u>Specific objective 2.1</u></b><br/> Prepare memorandum of understanding (MOU) to be signed by the respective sectoral institutions for the establishment of a national system</p>   |  |
| <p><b><u>Main causes:</u></b></p> <ul style="list-style-type: none"> <li>• Climate change is not a priority for the country</li> <li>• The subject is not known by the stakeholders</li> </ul>   | <p><b><u>Actions:</u></b></p> <ul style="list-style-type: none"> <li>• Hold a national stakeholders meeting to explain the UNFCCC greenhouse gas inventory reporting requirements and institutionalise the greenhouse gas inventory work</li> <li>• Constitute country working groups for the six inventory categories and appoint lead national institutions to ensure clarity on the structure, management and functioning of a national greenhouse gas inventory system</li> <li>• Mainstreaming GHGI in lead institutions, especially the Ghana Statistical Services, which conducts annual surveys</li> </ul> | <p><b><u>Available Resources:</u></b></p> <ul style="list-style-type: none"> <li>• GHGI for 1990 – 1996 has been prepared</li> <li>• Ghana is participating in the regional project for 14 West and Francophone Central Africa on GHGI</li> <li>• Existing experience in review of Annex I GHGI by at least two national experts</li> <li>• National Climate Change Coordinator served on the editorial board for the IPCC greenhouse gas emissions database.</li> </ul> |
| <p><b><u>Barrier 2.2</u></b><br/> Difficulty in obtaining activity data and other information necessary to prepare national inventories of greenhouse</p>  | <p><b><u>Specific objective 2.2</u></b><br/> Establish a system for collection, formatting and presentation of data and information required in planning and preparation of national inventory</p>   |  |



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| emissions   |  |  |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>• Lack of proper GHGI legal framework/provisions or voluntary agreements between institutions for provision and submission of GHGI data.</li> <li>• The data from the Ghana Statistics Services are gathered without the intension of responding to UNFCCC and hence data collected do not fully meet the data needs for GHGI and the format for reporting under the UNFCCC</li> <li>• Different institutions gather data in different formats leading, sometimes, to inconsistency in the data gathered.</li> <li>• Lack of financial resources for GHGI work</li> </ul> | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>• Adopt a legislative framework to ensure that necessary information for GHGI are collected on a continuous basis</li> <li>• Streamline administrative procedures for data gathering and dissemination</li> <li>• Establish MOUs and/or regulations for coordination of the gathering and submission of information and data from each institutions</li> <li>• Develop standardized data gathering formats for relevant institutions</li> <li>• Train inventory compilers in the use of IPCC 1996 Guidelines and IPCC 2000 GPG</li> <li>• Source funding from within Ghana, and from UNDP/GEF and other development partners.</li> </ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>• The Ghana Statistical Services is experienced in data gathering and verification</li> <li>• Existing Environmental Desk Officer at the Ghana Statistical Services</li> <li>• Existing agro-statistics unit at the Ministry of Food and Agriculture</li> <li>• Current vehicular emissions data gathering exercise at EPA</li> <li>• Use of the EPA Act 1994, Act 490 for the collection of data</li> </ul> |

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| <b><u>PRIORITY NEED 3</u></b><br>Effective participation in the Clean Development Mechanism   | <b><u>Strategic objective 3</u></b><br>Functional Designated National Authority (DNA) for Clean Development Mechanism in compliance with the Article 12 of Kyoto Protocol                    |  |
| <b><u>Barrier 3.1</u></b><br>Lack of vision and political direction regarding the participation in CDM  | <b><u>Specific objective 3.1</u></b><br>Strengthen national decision processes in relation to the CDM projects implementation Ghana  |  |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>• Unawareness and lack of appreciation and political will for CDM projects</li> <li>• Low national project development capacity within</li> </ul> | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>• Establish and strengthen a designated national authority with full legal backing.</li> <li>• Train experts in CDM</li> </ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>• GTZ capacity building support for CDM</li> <li>• Draft legal framework for the establishment of</li> </ul> |

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| <p>industry and the research institutions</p> <ul style="list-style-type: none"> <li>• High transaction cost for CDM project development</li> <li>• Absence of an accredited institutions to serve as designated operational entity</li> </ul>   | <p>projects identification development</p> <ul style="list-style-type: none"> <li>• Develop national criteria for CDM project development</li> <li>• Establish a registry for CDM projects and emission trading transactions</li> </ul>   | <p>climate change commission with provision for the DNA</p>  |
| <p><b><u>Barrier 3.2</u></b></p> <p>No justified long-term vision about participation in the flexible emission trading mechanism under the Kyoto Protocol</p>  | <p><b><u>Specific objective 3.2</u></b></p> <p>Establishment of emission trading policy to take advantage of the Kyoto Protocol mechanisms</p>  |  |
| <p><b><u>Main causes:</u></b></p> <ul style="list-style-type: none"> <li>• Unawareness and misunderstanding of emission trading</li> <li>• Insufficient understanding of the benefits from participation in the mechanism</li> <li>• No established mechanism for the use of financial revenue from CDM</li> </ul> | <p><b><u>Actions:</u></b></p> <ul style="list-style-type: none"> <li>• An emission trading policy included in future national climate change strategy</li> <li>• Create climate change fund for accumulation of emission trading revenue and rules for its management and disbursement</li> </ul> | <p><b><u>Available Resources:</u></b></p> <ul style="list-style-type: none"> <li>• Implementation of a GTZ and UNEP/RISØ assisted study of the possibility to implement CDM in Ghana</li> <li>• Experience from introduction of such systems in other developing countries.</li> </ul> |
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| <p><b><u>PRIORITY NEED 4</u></b></p> <p>Stakeholder and public involvement in national climate change activities.</p>   | <p><b><u>Strategic objective 4</u></b></p> <p>Active participation of stakeholders and the general public in the climate change decision making processes including the formulation, implementation, monitoring and evaluation of climate change related policies, plans and programmes</p> |  |
| <p><b><u>Barrier 4.1</u></b></p> <p>Limited access to climate change information</p>  | <p><b><u>Specific objective 4.1</u></b></p> <p>Increased availability and access to information on climate change</p>   |  |
| <p><b><u>Main causes:</u></b></p> <ul style="list-style-type: none"> <li>• Ineffective national program on public education, training and awareness about climate change</li> <li>• Lack of sufficient journalists specializing in the subject</li> </ul> | <p><b><u>Actions:</u></b></p> <ul style="list-style-type: none"> <li>• Develop and adopt a national program for public education, training and awareness about climate change</li> <li>• Train a number of</li> </ul>   | <p><b><u>Available Resources:</u></b></p> <ul style="list-style-type: none"> <li>• Publish national climate change literature</li> <li>• Initial work on Article 6 supported by UNEP</li> <li>• Existing NGOs experienced in public</li> </ul> |

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| <ul style="list-style-type: none"><li>• Limited media coverage on climate change issues</li><li>• Unfamiliar terminologies, which render translation of these terminologies into local languages very difficult</li><li>• Limited of coordination among individual agencies in presenting information to various users</li><li>• Lack of efficient system for provision of information on the work, results and achievements in the various fields of climate change</li><li>• Lack of targeted financing for activities defined in the New Delhi Program concerning Article 6 of the UNFCCC</li></ul> | <ul style="list-style-type: none"><li>journalists and experts for the preparation and presentation of climate change related information</li><li>• Create mechanism for exchange of information on the causes for climate change and its impacts on various sectors of the Ghanaian economy</li><li>• Improved coordination between institutions for complete and timely presentation of information</li><li>• Engage experts (linguistics) to translate climate change terminologies into local languages</li></ul>  | <ul style="list-style-type: none"><li>education and awareness</li><li>• Existing public relations departments in ministries and agencies</li></ul>  |
| <b><u>Barrier 4.2</u></b><br>Limited climate change educational curriculum exists  | <b><u>Specific objective 4.2</u></b><br>The subject of climate change is integrated in all levels of education  |   |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"><li>• Lack of structured courses on climate change</li><li>• Lack of sufficient teaching aids and materials in Ghana</li><li>• Lack of specialized teaching aids on climate change</li><li>• The teaching aids on natural and social science subjects do not include climate change and its impact on the relevant areas</li></ul>  | <b><u>Actions:</u></b> <ul style="list-style-type: none"><li>• Develop course modules for all educational levels</li><li>• Prepare education and information aids and materials in Ghana</li><li>• Prepare specialized climate change training programs for teachers and trainers</li><li>• Source financing for activities in the national curriculum and for scientific research in the secondary and tertiary education</li><li>• Develop teaching aids for natural and social sciences that include climate change and its impact on the relevant</li></ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"><li>• A national coordinator of activities under Article 6 of the UNFCCC has been proposed under the Climate Change Commission</li></ul> |

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|  | sectors   |  |
| <b><u>Barrier 4.3</u></b><br>Insufficient expert capacity in businesses, local authorities, NGOs and the academia  | <b><u>Specific objective 4.3</u></b><br>Created expert climate-change capacity in businesses, local authorities, NGOs and the academia  |  |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>• Insufficient orientation of scientific research toward implementation of the UNFCCC requirements</li> <li>• Lack of sufficient financing for research on the subject</li> <li>• Ignorance of the seriousness of the climate change problem</li> <li>• Unforeseen and untapped opportunities for research, professional growth and development</li> </ul> | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>• Discuss the inter-relationships between climate change various key sectors</li> <li>• Highlight the research potential inherent in climate change issues and the availability of funding for climate change research</li> <li>• <i>Promote the establishment of national institute for climate change research either as a stand alone research institution or attached to one of the existing universities</i></li> <li>• Create a financing window under the proposed national climate change fund</li> <li>• Secure some form of financing under existing educational funds such the Ghana Educational Trust (GET) Fund for scientific research on the climate change</li> <li>• Undertake specialized forms of training (seminars, courses, information campaigns)</li> <li>• Improved mutual relations between businesses and the academia for promotion and financing of research on the subject</li> </ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>• Available highly qualified specialists and scientists interested in climate change related work</li> <li>• Existing teams with experience from climate-change related projects</li> <li>• Existing limited number of experts with good knowledge on the subject of UNFCCC</li> <li>• Existing experience in the drawing up of municipal energy efficiency programs</li> <li>• Existing regional and local energy efficiency centres and bureaus</li> </ul> |

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|  | <ul style="list-style-type: none"> <li>Undertake targeted capacity building for financial institutions especially in the area of CDM, technology development and transfer and clean energy financing</li> </ul>  |  |
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| <b><u>PRIORITY NEED 5</u></b><br>Access to environmentally sound technologies for climate change mitigation and adaptation   | <b><u>Strategic objective 5</u></b><br>Create the enabling environment for research and development of new technologies and capacities to assimilate and use transferred technologies  |  |
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| <b><u>Barrier 5.1</u></b><br>Lack of technology transfer policy framework  | <b><u>Specific objective 5.1</u></b><br>Develop a comprehensive national technology development and transfer strategy  |  |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>Lack of strategic state vision on technology development and transfer</li> <li>Misunderstanding of the “technology” at the political level</li> <li>Insufficient attention paid to research and development</li> <li>Inadequate financing options for relevant national climate change technologies research opportunities</li> <li>Lack clear guidance on the issue of intellectual property rights (IPRs)</li> </ul> | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>Review existing policies and legislations on technologies</li> <li>Evaluate existing gaps in policies and legislations for the development and transfer of technologies to meet the objectives of the UNFCCC and the Kyoto Protocol</li> <li>Hold consultations with relevant stakeholders identify legislative elements that must form part of draft law to address the identified gaps</li> <li>Assess incentive packages as part of the technology development and transfer strategy</li> <li>Hold national fora on the issue of intellectual property rights and develop a national position/white paper on IPRs and part the technology transfer</li> </ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>Ghana’s Climate change technology needs and needs assessment (TNA) report – 2003, published by EPA (The TNA lays out the priority list of technologies, within the energy and waste sectors, that Ghana stakeholders chose as the most important ones that can reduce the country’s greenhouse gas emissions while at the same time addressing critical national economic and development goals)</li> <li>Identified need for technology transfer policy framework and initial work in that direction as part of Ghana’s TNA report</li> <li>Existence of other countries’ experience in development of</li> </ul> |

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|   | <p>strategy</p> <ul style="list-style-type: none"> <li>• Prepare draft law and/or strategy</li> <li>• Liase with relevant government institutions for the adoption of the strategy</li> <li>• Present the draft law and/or strategy in stakeholder workshop on the subject</li> </ul>  | <p>technology transfer strategies (e.g. Thailand)</p> <ul style="list-style-type: none"> <li>• Existence of Ghana Investment Promotion Centre (GIPC)</li> </ul>  |
| <b><u>Barrier 5.2</u></b><br>Limited capacity to assess technologies needed   | <b><u>Specific objective</u></b><br>Institutionalise technology needs assessment by building capacities of relevant institutions for regular needs assessment  |  |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>• Lack of understanding of the UNFCCC technology transfer process</li> <li>• Limited capacities within relevant lead/sectoral institutions to conduct technology needs</li> </ul>   | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>• Explain the technology transfer process under the UNFCCC, especially the Fourth Decision of the Seventh Conference of Parties (decision 4/CP.7) as part of the Marrakech Accords, by holding national and targeted stakeholder fora</li> <li>• Build the capacities of relevant institutions for climate change technology needs assessment</li> </ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>• The national climate change coordinator is a member of the Expert Group on Technology Transfer (EGTT) under the UNFCCC</li> <li>• Ghana's first TNA report</li> <li>• Core expert teams established for the first TNA exist</li> </ul> |
| <b><u>Barrier 5.3</u></b><br>Lack of information on climate friendly technologies   | <b><u>Specific objective 5.3</u></b><br>Establish a national technology development and transfer information clearinghouse   |  |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>• Lack of access to scientific and technical information on some technologies</li> <li>• Lack of infrastructure for storage and archiving of technology information</li> <li>• Limited scientific and technical research journals</li> <li>• Limited capacity to assess technology needs</li> </ul> | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>• Create and/or designate a lead national institution for the hosting of technology information centre</li> <li>• Create a national technology development and transfer website</li> <li>• Resource and link website of the lead</li> </ul>  | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>• Existence of TT-CLEAR of the UNFCCC Secretariat</li> <li>• Existence of EPA's iACTT (Information on Climate Technology Transfer) web page</li> <li>• The existence of INSTI at CSIR</li> </ul>   |

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|   | <p>institution with other international technology clearinghouses</p> <ul style="list-style-type: none"> <li>• Carry out an outreach programme for the website at the national level</li> <li>• Promote the population of this website by encouraging the publication of indigenous technology information on the site</li> </ul>   |  |
| <p><b><u>Barrier 5.4</u></b><br/>Limited capacities for technology development and transfer</p>   | <p><b><u>Specific objective</u></b><br/>Develop adequate capacities for technology development and transfer</p>   |  |
| <p><b><u>Main causes:</u></b></p> <ul style="list-style-type: none"> <li>• Insufficient institutional capacities for climate change technology research and development</li> <li>• Limited individual interest in research and development due to poor remuneration</li> <li>• Lack of capacity to prepare, disseminate, and apply climate change data in research on adaptation</li> <li>• Inadequate research grants</li> </ul> | <p><b><u>Actions:</u></b></p> <ul style="list-style-type: none"> <li>• Create clean energy centres to address energy efficiency and renewable energy technologies</li> <li>• Seriously promote and undertake joint research and development through the formation of and engagement in national and international technology development partnerships</li> <li>• Join ongoing international efforts for technology development</li> <li>• Government to give more attention to research institutions by providing adequate research grants and properly remunerating research staff.</li> <li>• Build individual capacities for the development of finance ready project proposals</li> <li>• <i>Create and national</i></li> </ul> | <p><b><u>Available Resources:</u></b></p> <ul style="list-style-type: none"> <li>• Proposal has been developed for the establishment of the clean energy centres and the need to be encouraged.</li> <li>• Ghana could join the International Partnership on Hydrogen Economy</li> </ul> |

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|  | <i>technology development fund</i> |  |
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| <b><u>PRIORITY NEED 6</u></b><br>Inadequate participation in international climate change discussions   | <b><u>Strategic objective 6</u></b><br>Develop Ghana's position papers for effective participation in international climate change processes   |   |
| <b><u>Barrier 6.1</u></b><br>Lack of the existence of a national team and efficient procedure for preparation towards and participation of Ghana in international climate change debate and negotiations presentation   | <b><u>Specific objective 6.1</u></b><br>Created teams and efficient procedure for preparation, presentation and defending of Ghana's position on international negotiations with the UNFCCC authorities  |   |
| <b><u>Main causes:</u></b> <ul style="list-style-type: none"> <li>• No financing is secured for participation of experts in the negotiations</li> <li>• No systematic studies regarding the future commitments that could be undertaken during international negotiations</li> <li>• Insufficient number of independent experts and consultants on climate change issues</li> <li>• No training on climate-change related negotiations</li> </ul> | <b><u>Actions:</u></b> <ul style="list-style-type: none"> <li>• Make administrative decision for creation of a team taken</li> <li>• Secure funding for participation of experts in international activities</li> <li>• Secure funding for studies and consulting in relation to negotiation and future commitments</li> <li>• Negotiation training</li> <li>• Develop and build a roster of experts for climate change, especially for participation in the UNFCCC and IPCC processes.</li> </ul> | <b><u>Available Resources:</u></b> <ul style="list-style-type: none"> <li>• Established National Climate Change Committee</li> <li>• Existing experts and teams with experience from climate-change related projects</li> <li>• </li> </ul> |
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## 4.2 BIODIVERSITY

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| <b>Goal 1:</b> | <b>Capacity Needed to Protect Critical Ecosystems against harmful Effects or destructive practices for Conservation of Biodiversity (Article 10)</b> |
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| Goal/Objective | Status | Interventions/ Capacities Needed | Collaborating Agencies |
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|                |        |                                  |                        |



| Goal/Objective  | Status  | Interventions/ Capacities Needed   | Collaborating Agencies  |
|---|---|--|---|
| G 1.1 Protect Coastal/<br>Marine/Ramsar Sites   | Degradation through<br>deforestation, sand<br>winning, siltation;<br>demographic<br>pressure  | Protection programme for<br>communities, CBOs, management<br>committees formed; coast guard<br>trained and capacity improved to<br>undertake regular patrols   | Wildlife<br>Department (WD)<br>Forestry<br>Commission (FC),<br>Local<br>Communities   |
| G 1.2 Mangroves/<br>Wetlands rehabilitation<br><br>Protecting breeding<br>grounds of bird species of<br>global conservation<br>importance<br><br>Send winning along<br>Beaches and Inland | Degraded wetlands<br>due to demographic<br>pressure<br><br>Breeding ground for<br>migratory birds<br><br>Causing massive land<br>degradation  | A rehabilitation programme<br>(regeneration) of degraded<br>Wetlands in 5 Ramsar Sites<br><br>Intensive public awareness<br>campaign executed during period<br>of migration<br><br>Productivity, ecology and<br>reproductive biology of birds of<br>Ramsar Sites studied<br><br>Enforcement of legislation to<br>protect migrant birds<br><br>Control measures to regulate sand<br>winning; coconut trees planted<br>along beaches | WD/FC, Water<br>Research Institute<br>(WRI)/Water<br>Resources<br>Commission<br>(WRC)<br><br>District<br>Assemblies/Local<br>Chiefs, CBOs<br><br>District<br>Assemblies |
| G 1.3 Agro Biodiversity<br><br>G. 1.3.1 Conservation of<br>local genetic materials  | In situ reposition of<br>genetic diversity<br><br>Loss of indigenous<br>land races adopted to<br>local soils with less<br>external inputs<br><br>Loss of traditional<br>intercropping<br>systems<br><br>Loss of soil<br>microbes, pollinators,<br>carnivores insects<br>through agro- | Storage facilities acquired in ten<br>regions<br><br>Personnel trained in storage<br>techniques  | PGRI, CRI, SRI  |

| Goal/Objective   | Status   | Interventions/ Capacities Needed  | Collaborating Agencies       |
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|  | chemicals  |   |                              |
| G 1.3.2. Local genetic material collected and characterized, stored in the Regions               |  | Planting material needs identification for each region and supplied to farmers accordingly  |                              |
| G 1.3.3. Nature Races of chemicals, sheep, rabbits, vulnerable through uniformity                | Dwindling land races   | Document significant land races (types of seeds used in traditional agric   |                              |
|  |  | Providing farmers with local genetic materials cassava, yam sorghum, millets, pigeon peas, vegetables   |                              |
| G 1.4 Forest Biodiversity<br>1.4.1 Gathering Baseline information on taxonomy of flora and fauna | Habitat and species loss; genetic erosion through logging of prime species, monocultures need lead to biological deserts. Spatial configuration altered. | Recruitment of botanists, zoologists, foresters and taxonomists. Relevant equipment acquired and put to use.<br><br>Inventory results catalogued and accessible   | UG, PGRC,<br><br>OF/WD of FC |
| G 1.4.2 Gathering socio-economic data of Pas/FRs   | On-going   | Recruitment of sociologists, social foresters, protected and maintenance of traditional knowledge established. Survey team recruited and trained to conduct survey of Traditional Knowledge/Practice in Biodiversity Conservation Sacred Groves/Traditional Healers | UG, FD<br><br>Green Earth    |
| G 1.4.3 Creation of New PAs to cover representative ecosystems in the country                    | On going activity  | Additional WD personnel recruited legislation enacted to gazette suitable Ecosystems Types by 2007  | WD, FSD of FC<br><br>MLF     |
| G. 1.4.4 Preparation of Management Plans for Pas and Forest Reserves                             | On going   | Participatory/consultative local stakeholders/ communities' perceptions incorporated  |                              |
| G. 1.4.5 of Review existing  |  | Consultative workshop to review   | MLF, MOFA,                   |

| Goal/Objective   | Status               | Interventions/ Capacities Needed   | Collaborating Agencies   |
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| Legislation to cope with current realities   |                      | existing legislation on PA management/ Forest Reserves   | NGOs coalition<br>Justice Ministries                                   |
| G 1.4.6 Establishing Botanical Gardens in three ecological regions High Forest/Coastal Northern Savannahs  |                      | At least 20 ha earmarked for each site in Northern Region, Brong Ahafo, Ashanti, Western Region and Greater Accra  | DA/Regional Coordinating Council<br>UDS, KNUST<br>UG, PGRC<br>MLF, MES |
| G 1.4.7 Herbaria   | On going but relaxed | To upgrade Herbaria infrastructure at legon, FSD (Kumasi), Botanists and taxonomists employed  | FSD<br>UG<br>PGRC  |
| G 1.4.8 Species-based conservation (hotspots) species richness and endemism)   |                      | Key store species inventories, survey of indicator species<br><br>Identification of endangered/threatened species & species at risk  | FSD, WD  |
| G 1.4.9 Area-based Conservation  |                      | Identification of areas of indicator species of particular significance  | FSD, WD  |
| G.1.4.10 Ecosystem/Landscape Conservation Approaches   |                      | Classification of ecosystems/Ecozones, THF, SM   | Biogeography of dominant ecosystems                                    |
| <b>Ecosystem</b>   |                      |  |  |
| G 1.5 Bio Safety<br><br>G. 1.5.1 Reinforcing Quarantine Laws for entry of undesirable alien plants and animals<br><br>G. 1.5.2 Monitoring system for introduction of alien species | On going             | Quarantine laws widely known in local languages. Public education and awareness of chemicals/ explosions in fishing/agriculture and quarantine laws implemented<br><br>Quarantine staff reinforced<br><br>Airports and Seaports have environmental inspectors and customs officers join in monitoring team<br><br>Staff trained in tracking down | BNARI, UG  |

| Goal/Objective   | Status           | Interventions/ Capacities Needed   | Collaborating Agencies |
|--|------------------|--|------------------------|
|  |                  | alien species  |                        |
| G. 1.5.3 Bio-Safety Policy Guidelines formulated<br><br>The use and release of MOs | On going studies | Necessary administrative set up on Bio safety activities at Atomic Energy. Coordinated/in collaboration, with relevant national institutions “Vision on national Bio safety identified | BNRI, UG               |
| G. 1.5.4 Monitoring and enforcement of legislation on LMOs, GMOs                   |                  | Heighten Public Awareness of issues on Bio-Safety  | MOFA, BNRI, UG         |

**Goal 2: To Create Biodiversity Awareness among Stakeholders and Promote International Cooperation**

| Goal/Objective  | Status                          | Interventions/ Capacities Needed   | Collaborating Agencies                           |
|---|---------------------------------|--|--|
| G 2.01 Creating Public Awareness on Importance of Ghana’s genetic resources/importance of ecosystems conservation | Minimal environment information | Information disseminated through media Print leaflets, brochures on importance of Genetic Resources. use of folk drama, TV/Radios, televisions to inform stakeholders and public<br><br>Create media strategy for Biodiversity conservation<br><br>Advocate higher National Budget for Biodiversity conservation | MES, MOFA, MOI                                   |
| G 2.02 Supported Law enforcement in Pas   |                                 | Information brochures designed for PAs law enforcement   | MLF Ministry of Judiciary, Information, Agric    |
| G 2.03 Flora and Fauna cultural linkages  |                                 | Compile catalogue of totems of birds and other animals of cultural significance  | Ministry of Culture & Tourism, MLF, FSD/WD of FC |
| Conducting survey of Traditional knowledge/ practices in Biodiversity   |                                 | Conduct survey of Traditional knowledge/ practices related to Biodiversity conservation  | Ministry of Culture & Tourism, MLF, FSD/WD of FC |
|   |                                 |  |  |

| Goal/Objective  | Status       | Interventions/ Capacities Needed   | Collaborating Agencies       |
|---|--------------|--|------------------------------|
| G 2.04 Biodiversity Education   |              | More people trained in areas of Biodiversity conservation through graduate fellowship awards   | UG                           |
| G 2.05 Upgrade Department of agriculture and Wildlife in local universities                               |              | Curricula upgraded for aquaculture and fisheries, and wildlife<br><br>Community fish pond programmes in areas of high hunting pressure   | UG, KNUST                    |
| G 2.06 Establish National Committees of Interdisciplinary Experts for Bio Safety, Plant Genetic Resources |              | Inter-Agency teams for experts on Biodiversity   | MES, BNRI, MOFA, CSIR        |
| G 2.07 Creating Media Strategy for Biodiversity conservation  |              | Conduct training for Environmental journalists in Biodiversity conservation<br><br>100+ environmental Journalist identified and trained by 2010.<br><br>Information Brochure for dissemination on documentation in local languages, Radio, TV. | MES, Ministry of Information |
| G 2.08 Supporting Environmental Education in School Curricula   | Slow process | Teachers trained in environmental education<br><br>Teaching materials and textbooks on environmental education procured  | EPA, Min. of Education (GES) |
| G 2.09 Technological Transfer   | Slow process | Establish programme for transfer of technology in Agribiodiversity/ Forest<br><br>Biodiversity<br><br>Local farmers trained to adapting technological transfers  | MES, CSIR BNRI               |

**Goal 3: To Commit People to Sound and Sustainable Use of Biodiversity to bring about Socio-Economic Development**

| Goal/Objective         | Status            | Interventions/ Capacities Needed | Collaborating Agencies |
|------------------------|-------------------|----------------------------------|------------------------|
| G 3.01 Bio Prospecting | On going but slow | Empower Association of           | Ministry of Health     |

| Goal/Objective  | Status   | Interventions/ Capacities Needed  | Collaborating Agencies                |
|---|----------|---|---------------------------------------|
| for Promotion and Development of Herbal Medicine<br><br>Complementary Medicine          | process  | Traditional Healers<br><br>Intensify survey of animals/plants of medicinal values and establish Database accordingly<br><br>Conduct training in improved methods of medicinal plants extraction and packaging<br><br>Ethno botanical information to target collection and development of plant genetic resources of medicinal plants<br><br>Improve support for Centre for Scientific Research into plant medicine<br><br>Traditional Healing Association | MLF, MES, CSIR                        |
| G 3.02 Development of Alternative sources of Energy/Eco-Stoves energy saving mechanisms | On going | Human capacity development for generation of alternative sources of energy – <u>Bio Gas</u> Digester, <u>Saw Dust</u> , <u>Eco-Stoves</u> developed for rural families<br><br>Bio mass – cogeneration eg. Sawdust for electricity   | Ministries of Energy, Agric, MES, MLF |

#### **Goal 4: To Promote Rational Utilization and Conservation of Biodiversity**

| Goal/Objective  | Status                    | Interventions/ Capacities Needed  | Collaborating Agencies   |
|---|---------------------------|---|--|
| G 4.01 Strengthening of capacities of Biodiversity institutions | On going                  | Biodiversity institutions inventoried and create forum for collaboration existing Biodiversity institutions capacitated and upgraded. Agricultural gardens at Aburi, KNUST, UG, arboreta of FORIG reactivated | UG/Botany Department<br><br>IRNR/UST<br><br>CRI, FORIG<br><br>PGRC |
| G 4.02 PGRC Re-capacitated                                      | On going but slow process | Developing national Regulations for Germplasm collection and characterization   | PGRC/SCIR, CRI   |

| Goal/Objective  | Status                                  | Interventions/ Capacities Needed  | Collaborating Agencies |
|---|---|---|------------------------|
|   |   | Exchange of Research fellows between PGRC and other Institutes  |                        |
| G 4.03 Building human capacities in Environmental Impact Assessment in related Biodiversity disciplines                   | On going                                | Training workshop on Environment Impact Assessment techniques conducted periodically; graduates trained in environmental risk assessment. Impacts on customary use of biological resources established<br><br>Impacts on Sacred Sites/Groves          | EPA, MES               |
| G 4.04 Building human capacities at several levels in Genetic conservation, with emphasis on local crop genetic materials |   | Post-graduate training in agronomy<br><br>Adequate scientific personnel deployed within CRI, PGRC, SRI, ARI.<br><br>Incentive packaging for post-graduate on environmental sciences, salary review and incentive schemes for environmental scientists | GU, KNUST, CSIR        |
| G 4.05 Support for timber certification for promoting sustainable forest management (model Forest Management Plan)        | On going but slow process               | C & I for sustainable forest management advanced; local certifiers trained. Consultative meeting with certification methodology and Field Testing   | MLF, FSD/FC            |
| G 4.06.1 Harvesting of NTFPs qualitative/ quantitative information in NTFPS   | Minimal information on NTFPs management | NTFPs assessed in sample reserves<br><br>Legislation on harvesting of key NTFPs   | MLF, MOFA, NGOs        |
| G 4.06 Indigenous animal breeding conservation  |   | Characterization, utilization and preservation; education, training, Research and communication.<br><br>Regional Network for orderly use of animal genetic resources  | CSIR, ARI              |
| G 4.07 Guidelines on logging/logging code along water ways  | On going process                        | Logging Code for forest promulgated concessions by 2007   | EPA, MLF, MOFA         |
|   |   |   |                        |

| <b>Goal/Objective</b>  | <b>Status</b>            | <b>Interventions/ Capacities Needed</b>   | <b>Collaborating Agencies</b>                               |
|--|--------------------------|---|---|
| G 4.08 Appropriate legislation on bushmeat trade                                 | On going                 | Trade in bushmeat regulated by law by 2007 and hunting during breeding season reduced by 70% by 2010  |   |
| G 4.09 Baseline Information for Policy Formulation of sensitive keystone species | Slow process             | Collection, conservation and sustainable use of germplasm from the wild under-utilized crops. Adoption of Team Work   | PGRC, FSD/WD  |
| G 4.10 Training in Risk Assessment and Management for Bio – Technology           |                          | Graduates trained at post-graduate level in Biological sciences/ chemistry identified and<br><br>Technicians trained<br><br>Handling of LMOs, GMOs.   | UG/KNUST, SCIR<br>BNRI                                      |
| G 4.11 Composite study of protection of traditional knowledge (TK)               |                          | Nation-wide study of traditional knowledge; reviewed and documented and legal protection sought   | Ministry of Local Government, lands and Forestry            |
| G 4.12 Survey of Endangered and Endemic Plants and Animals                       | On going                 | Survey to produce endangered Flora and Fauna manuals.<br><br>Develop data base for endangered species by 2010.<br><br>Database experts trained to manage data base/websites of endangered species<br><br>Bio-monitoring of large animals populations within Parks and Nature Reserves | WD/FSD<br>PGRC  |
| G 4.13 Support Land Use Planning for Biodiversity hotspots                       | Ongoing but slow process | Preparation of Soil Capability Maps through Research and National Soil Surveys<br>CIS/Remote Sensing to monitor land use changes<br><br>Land Use Plans  | MOFA, SIR,<br>CRI/CSIR<br><br>MDLG<br><br>Survey Department |
| G 4.13.1 Reclamation of Mine Spoils  |                          | Reclamation of mine spoils through appropriate technology   | EPA, MES, Min. of Mines, MLF                                |
| G 4.13.2 Regulations for Mining in Forests                                       |                          | Invoke existing regulations<br><br>Environment monitors employed  | EPA, MES, MLF   |



| <b>Goal/Objective</b>  | <b>Status</b> | <b>Interventions/ Capacities Needed</b>  | <b>Collaborating Agencies</b> |
|--|---------------|--|-------------------------------|
|  |               | to ensure compliance with regulations on use of toxic and hazardous substances in mining |                               |
| G 4.14 Building Capacities for Local Communities for Biodiversity conservation |               | Income generating activities e.g. Domestication of cane rat, grass-cutters, Ostrich      | MES, MOFA, NGOs               |

### Goal 5 – Legislative Instrument on Access to Sharing of Genetic Resources

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|---|---|---|---|
| G. 5.01 Legislative Instrument on access to and sharing of benefits from use of genetic resources | Forest Resources Management Act 1998 on Timber Allocation | Consultative meetings with stakeholders on Laws and Access to genetic resources<br><br>Improve resource allocation (Ownership/Tenure Rights) procedures in transparent manner   | MLF, MOFA, Min. of Justice/Local Government |
| G 5.02 Promoting Eco-tourism  |   | Tourist sites identified<br><br>Eco-tourism management personnel trained  | MLF, Min. of Tourism                        |
| G 5.03 Economic Value   |   | Develop capacity for natural resource valuation to facilitate proper pricing of environment goods and services  | EPA, MES, MLF                               |
| G 5.04 Application of Biotechnology   |   | Capacity Building to focus on collection, storage, characterization of Germplasm/Awareness<br><br>Use of under-utilized species<br><br>Capacities for building policies and mechanism to equitably share the benefits and cost of germplasm enhancement | BNRI, PGRC                                  |

### Goal 6: National and International Support for Biodiversity Conservation

| Goal/Objective   | Status  | Interventions/ Capacities Needed   | Collaborating Agencies     |
|--|---|--|----------------------------|
| G 6.01 International Mechanisms  | Genetic erosion increases<br><br>Susceptibility to Climate Change | Guidelines to promote ecosystem and landscape approaches to conservation   | UN Agencies, EPA, MES, MLF |
| G 6.01.1 Legal Mechanisms<br><br>Conservation of Biodiversity, UNFCCC<br>UNCCD<br>Ramsar Convention<br>CITES |   | Transboundary cooperation<br><br>Promote Regional Networks and partnerships to conserve agro biodiversity, backbone of livelihoods of rural poor | Gross-Sectoral             |

| Goal/Objective   | Status                    | Interventions/ Capacities Needed   | Collaborating Agencies           |
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| G 6.01.2 Implementation of provisions of IPF/IFF/ UNFF   |                           | Countries committed to sustainable forest management and adoption of NFPs for cyclic policy planning, implementation.<br><br>Adoption of C & I to assess sustainable forest management<br><br>NFP to reduce deforestation, poverty   | MLF<br><br>Min of Finance        |
| G 6.01.3 Financial Mechanism   | On going                  | Adoption of GEF financial mechanism for sustainable development of environmental resources   | MES, UN Agencies                 |
| G 6.02 Adoption of Cleaner Technologies  |                           | Promote Research and improve enforcement of emission standards and regulations   | EPA/MES                          |
| G 6.03 NEPAD Initiatives<br><br>To reduce poverty<br>Catalysing food production<br>Promotion of good governance<br>Political will and Support of participatory/decision making for sustainable development | On going but slow process | GPRS for sustainable development to reduce poverty from 39 to 32% in 2005; Improve GDP from 5 to 8% by 2010<br><br>Catalyzing private sector in job creation, food security<br><br>Application of GMO biotech to reduce poverty<br><br>Setting up sustainable development indicators and targets | Min. of Finance, MOFA, BNRI      |
| G 6.04 Ratifying International Treaties on Plant Genetic Resources for food and agric  | On going                  | Awareness workshop conducted for public and legislative and decision makers  | UNDP, FAO, MOFA, MLF<br><br>NGOs |
| G 6.05 Sub-Regional Legal Instrument for Transboundary Conservation of Genetic Resources   | Slow start                | Develop sub-regional legal framework for transboundary conservation for ECOWAS countries   | GAEC<br><br>CSIR<br><br>UG       |

| Goal/Objective                          | Status   | Interventions/ Capacities Needed   | Collaborating Agencies                   |
|---|----------|--|--|
|   |          | <p>Support consultative meetings of Biodiversity Conservation institutions in ECOWAS to check illegal trade in wildlife/ bushmeat</p> <p>Establishment of “peace parks” as corridors</p> <p>Building capacities to assess risks relating to release of GMO, Alien species and ensure their safe transfer across borders</p>  | <p>FORIG</p> <p>EPA/MES</p>              |
| G 6.06 Promoting Science and Technology | On going | Accelerate efforts to gain access to new technologies- ICT, and development of indigenous technologies to enhance economic development   | MES, Universities                        |
| G 6.07 Processes of Globalization       | On going | <p>Creation of legal and policy environment affecting conservation; use, development and management of plant genetic resources</p> <p>The need for resource professional in law and policies of relevance to genetic resources</p> <p>Trend towards expansion of scope and/or application of patents and plant breeders rights to bio-materials and control of commercial seed by few private seed companies</p> <p>Harmonization of IPR</p> | <p>UN Agencies, MES, MLF</p> <p>PGRC</p> |

### Goal 7: Promoting Cross-Cutting Actions

| Goal/Objective  | Status   | Interventions/ Capacities Needed   | Collaborating Agencies   |
|---|--|--|--|
| G 7.01 Fragmentation in policy and institutions   | Contradictory policies to be reconciled and mediated |  |  |
| G 7.01.1 Biodiversity Policies and Planning   |  | Cross-sectoral/ participatory policy planning; Biodiversity mainstream into national economic policy and planning; adaptive strategies with continual revaluation of all goals and Actions<br><br>Building capacity for greening development plans at National and sub-National levels     | MES, MLF, Min. of Finance & Economic Planning<br><br>NDPC<br><br>NPPC, MLG |
| G 7.01.2 Externally Proven Projects<br><br>Synergies Among National Projects Supporting Key environmental Conventions |  | MES Centre with key Intersectoral staff in Biodiversity development issues with network of Biodiversity experts<br><br>Develop capacities to monitor and development of field applicable indicators for systematic appraisal of forest and land Resources/Land use changes, climate change | MES, MOFA etc.   |
| G 7.01.3 Cross-Sector Human Resources Needs   | Slow start   | Build cross-sectoral institutional capacity to monitor, coordinate and supervise environmental management; capacity for policy analysis and policy failure<br><br>Build capacity of NGOs, CBOs   | MDPC, Min. of Finance  |
| G 7.02 Externally driven projects   |  | Domesticate priorities for Biodiversity projects   | MES, Min. of Finance, MDPC   |

### Goal 8: To Contribute to the Fulfilment of the Millennium Development Goals (MDGs) about Poverty Reduction, Food Security and Gender empowerment in Biodiversity

| Goal/Objective                                       | Status                    | Interventions/ Capacities Needed   | Collaborating Agencies            |
|--|---------------------------|--|-----------------------------------|
| G 8.01 National awareness campaigns about Millennium | On going but slow process | Effective governance regime for sustainable development/equitable sharing of benefits from utilization | MLG/DAs<br>MLF, MES<br>NGOs, CBOs |

| <b>Goal/Objective</b>   | <b>Status</b>                              | <b>Interventions/ Capacities Needed</b>   | <b>Collaborating Agencies</b>                        |
|---|--|---|--|
| Development Goals   |  | of natural resources<br><br>Full participation of rural poor and key stakeholders in environmental management   |  |
| G 8.02 Empowering women through micro-projects and women's productivity enhanced  | On going                                   | Women groups and individuals engaged in micro credit projects   | Min. of Women Affairs<br>Min. of Finance<br>MOFA/MLF |
| G 8.03 Supporting production of industrial crops – cassava, oil palm, rice citrus | On going<br>PSI for Cassava, Oil Plam etc. | Improved seeds and planting materials processed for distribution to farmers coops.  | MOFA,<br>CRI/SRI/CSIR                                |
| G 8.04 Food Security Improved   | On going                                   | Introduce forest tree planting along highways and around villages and towns   | MLG/DAs,<br>MOFA, CBOs,<br>NGOs, MLF                 |
| G 8.4.1 Planting Fruit Trees  | On going                                   | Seedlings of fruit trees (mangoes, citrus, oil palm) produced and distributed through agric extension services  | MLG/DAs,<br>MOFA, CBOs,<br>NGOs, MLF                 |
| G 8.04.2 Adopting Agroforestry  | On going                                   | Adopt Agroforestry interventions in plantation development<br><br>Establish micro-credit schemes to enhance agric -forestry productivity, targeting the women | MLG/DAs,<br>MOFA, CBOs,<br>NGOs, MLF                 |

|  |          |   |                                     |
|--|----------|---|-------------------------------------|
| G 8.04.3 Domestication NTFPs as source of protein and income generation                  | On going | Empowerment of women in Biodiversity projects:<br>Domestication of NTFPs: herbal gardens, domestication of snails, cane rat grass cutter etc. | Min. of Women Affairs, MES,<br>MOFA |
| G.805 Training requisite personnel for taxonomic, ecological and ethno botanical studies |          | Training manuals produced and distributed to farmers ethno botanical information  | UG, MOFA, DAs,<br>CBOs, NOGs        |

## 4.3 DESERTIFICATION

**Table 4.3 Capacity Needs for Priority Issues in UNCCD**

| Issues  | Capacity Needs   |   |  |
|---|--|---|--|
|   | Human Resource Needs   | Institutional   | Systemic   |
| <b>Issue 1 The lack of human resources capacity for sustainable development</b>           | Train personnel in appropriate professional disciplines such as taxonomy, environmental economics, wildlife management | Increase staffing level of institutions and increase the cooperation and collaboration  | Review the mandate of technical agencies to include cooperation among counterpart agencies   |
| <b>Issue 2 Rampant bush fire has been identified as a critical issue</b>                  | Train CBOs and NGOs in bush fire management  | Strengthen the operational capacity of DA. For. Increase the staff strength of the Department appropriately to expand and intensify surveillance activities   | Strengthen the capacity of CBOs on bush fire management. Sensitize local authorities to enforce an enact bye-laws where appropriate. Equip the village fire fighting committees  |
| <b>Issue 3 Dwindling supply of fuel wood in the face of an increasing demand</b>          | Raise the awareness of communities on alternative energy sources through training and sensitization                    | Strengthen forest research programmes. Encourage NGOs, CBO and DAs to intensify and expand their community woodlot programmes   | Increase number of community reserves. Develop alternative income generating activities for the rural communities. Encourage increased planting of trees on farm lands. Develop alternative source s of energy. Promote the use of biogas. |
| <b>Issue 4 Over-grazing and poor range land management practices are important issues</b> | Train Range Management experts. Train personnel of NGOs and CBOs on range management practices                         | Strengthen the capacity of the MOFA to carryout studies; develop range management strategy and plan and grazing management systems. Strengthen the organizational capacity of CBOs to assume increasing role in community | Formulate and implement range management policies and legislation which emphasize community ownership of rangeland, destocking efficient management and  |

|  |   |  |   |
|--|---|--|---|
|  |   | range management   | utilization of range resource through the adoption of improved range management strategy and plan and grazing management system.  |
| <b>Issue 5 Lack of comprehensive baseline data, criteria and indicators against which the status, trends and threats to desertification</b>  | Train personnel in survey techniques, monitoring and assessment and other relevant professional discipline.       | Increase the staffing level, equipment and operational budget of institutions to undertake effective resource research and monitoring & evaluation and surveying work  | Develop a national desertification baseline survey project and implement the survey as a matter of urgency.   |
| <b>Issue 6 Lack of effective enforcement of laws, especially with regard to forestry and wildlife and poor understanding of natural resource conservation and sustainable issues and practices</b> | Train line Agency staff in rural extension methods and PRA techniques.<br>Increase the will and capacity of staff | Strengthen the capacity of line agencies and NGOs to intensify its regulatory activities and education/extension programme and develop and disseminate improved conservation practices   | Develop effective implementation tools to implement the new wildlife policy and legislation including the will to enforce the law.  |
| <b>Issue 7 Employment of destructive methods of mining</b>   | Up-grade the skills o small scale miners on improved mining methods.  | Strengthen the capacity of regulatory institutions to carry out extension educational programme on the need to mine in an environmentally sustained manner.  | Trained and ensure that miners use methods that do not destroy the environment. Ban all destructive methods as a matter of policy. Develop alternative income-generating activities.                                      |
| <b>Issue 8 Low institutional capacity of Public NGO, CBO, DAs agencies has been identified as a major capacity constraint</b>  | Train Assembly members, line agencies, NGOs, CBOs personnel in appropriate professional disciplines.              | Appropriately define the mandate institutions organization structure to include an outreach programme of support to NGOs, CBOs and traditional rulers involved in desertification control. Increase the staff and operational budget of DAs to | Formulate and adopt a systematic policy and administrative guideline for the involvement of NGOs, CBOs and other stakeholders agencies in natural resource conservation and allow them access to scientific and technical |



|  |  |  |  |
|--|--|--|--|
|  |  | be able to undertake an effective extension/education/training programme for NGOs, CBOs, and other stakeholders  | infrastructure for research and conservation   |
| <b>Issue 9 The absence and/or lack of understanding of the ecosystem approach to forest management including its sustainable management issues</b> | Awareness creation.  | Training for all stakeholder institutions.   | Develop an IEC methodology and strategy.   |
| <b>Issue 10 Poorly managed protected areas</b>   | Train personnel of the concerned departments in requisite professional disciplines   | Strengthen the capacity of decentralised depts and DAs to implement protected area management systems  | Develop and implement protected area management plans with local communities. Adopt a policy of involving local communities in the management of protected areas. Enforce bye laws |
| <b>Issue 11 Poorly land use practices</b>  | Training of personnel of all stakeholder institutions in sound management practices of land resources. Build the capacities of regulatory agencies | Strengthen the capacity of DAS to intensify its extension education in promoting improved cultural practices. Strengthen the capacity of Town and Country Planning Dept. provide resources | Enforce land use planning systems  |
| <b>Issue 12 Poor planning database</b>   | Train economist, statisticians and monitoring and evaluation specialists   | Strengthen the capacity of TCPD to collect, analysis and provide good planning data and build up a reliable database   |  |
| <b>Issue 13 Inappropriate crop production practices.</b>   | Provide regular in-service training for extension workers in   | Strength DAS to intensify and expand its extension programme in promoting sustainable crop production  | Co-ordination of approaches, and/or policies and programmes.   |

|  |   |   |  |
|--|---|---|--|
|  | principal of crop production  | techniques through low input approaches such as green manure, organic manure, crop residues, animal dung and composting   |  |
| <b>Issue 14 Poor protection of water resources</b>   | Train people at the local level to manage resources.  | Increase the staffing level, budget and equipment of DAs and other relevant institutions.   | Review the role of local government authorities in natural resource management and establish the CEMCs, DEMCs and reactivate existing ones.  |
| <b>Issue 15 A deteriorating national forest cover has been identified as an important issue in desertification control</b> | Train personnel in appropriate professional disciplines   | Increase the staffing levels, operational budget, equipment and transport facilities for FSD and DAs  | Mainstream and implement environmental issues alongside with poverty strategy programme.   |
| <b>Issue 16 Low level of community and private participation in forest management.</b>                                     | Develop the skills of personnel of all stakeholders collaborators, DAs to PRA techniques and extend education methodologies | Increase the staffing levels and budgetary allocations of DAs to facilitate and regulate the involvement of communities and private sector in management natural resources. | Adopt a policy of involving communities and private individuals in the management of natural resources and promote eco-tourism ventures etc. |
| <b>Issue 17 Poor and deleterious agricultural practices</b>  | Conduct regular in-service training for Agricultural Extension officers.  | Strengthen the capacity of DAs to intensify its extension education in promoting improved cultural practices  | Introduce legislation, policy including incentives to encourage the adoption of improved agricultural practices                              |

# CHAPTER FIVE - CROSS CUTTING CAPACITY NEEDS AND SYNERGIES

## 5.1 SYNERGIES AMONG THE CONVENTIONS

Synergies among the obligations under the Conventions were identified through the analysis of the text of the Conventions, their protocols, and decisions by the Conferences of the Parties, as well as recommendations received during the stakeholder consultations. These synergies are presented in Table 5.1

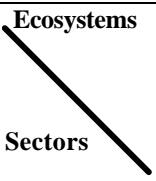
| <b>TABLE 5.1 – SYNERGIES BETWEEN THE UNCCD, UNCBD AND UNFCCC</b>   |  |            |            |               |
|--|--|------------|------------|---------------|
|  |  | <b>CCD</b> | <b>CBD</b> | <b>UNFCCC</b> |
| <b>1. Principles and approaches recommended/required for the implementation of the Conventions</b>                                 |  |            |            |               |
| 1  | Prevention/protection/conservation   | X          | ?          | X             |
| 2  | Policies and measures consistent with sustainable development                                      | X          | X          | X             |
| 3  | Equal responsibilities and differentiated obligations of the countries                             | X          | ?          | X             |
| 4  | Fair distribution of benefits and losses   | X          | X          |               |
| 5  | Incentives for sustainable use of resources  | X          | ?          | X             |
| 6  | Complex approaches   | X          | ?          | X             |
| 7  | Integration of the objectives of the Convention into development policies/programs                 | X          | ?          | X             |
| 8  | Application of an ecosystem approach   | X          | ?          | ?             |
| 9  | New employment and new skills and behaviour  | X          | ?          | X             |
| <b>2. Obligations/recommendations for the political, legislative and economic framework</b>  |  |            |            |               |
| <b>2.1. Specific policies, strategies, programs and plans to fulfil the commitments under the Conventions</b>                      |  |            |            |               |
| 1  | Long-term strategies, programs   | ?          | ?          | ?             |
| 2  | Action Plans   | X          | ?          | X             |
| 3  | Legislation  | X          | ?          | X             |
| 4  | Management plans (for regions, resources, and sectors, for the purpose of applying the Convention) | X          | X          | X             |
| <b>2.2. Use of market mechanisms, economic efficiency measures and measures encouraging affordable and accessible technologies</b> |  | X          | X          | X             |
| <b>3. Obligations/recommendations for international cooperation</b>  |  |            |            |               |
| 1  | Exchange of information and good practices   | X          | X          | X             |
| 2  | Transfer of technologies, know-how   | X          | X          | X             |
| 3  | Financial support  | X          | X          | X             |
| 4  | Regional programs  | ?          | ?          | ?             |
| 5  | Collaborative Research   |            |            | X             |
| <b>4. Obligations/recommendations to build management systems/structures/functions</b>   |  |            |            |               |
| 1  | Special regime and control over sectors/products/resources/facilities                              |            | ?          | ?             |
| 2  | Inter-agency coordination  | X          | ?          |               |
| 3  | Early warning and response   | X          | ?          |               |
| 4  | Support by science   | X          | ?          | ?             |
| 5  | Dissemination of information to the public   | X          | ?          | X             |
| 6  | Public involvement   | ?          | ?          | ?             |
| 7  | Trading  |            | X          | X             |
| 8  | Selection of investment projects   |            | X          | ?             |
| 9  | Environmental impact assessments   |            | ?          | ?             |
| 10   | Training and capacity building   | X          | ?          | X             |

|   |  |   |   |   |
|---|--|---|---|---|
| 11  | Systematic Observation   |   |   | X |
| <b>5. Obligations/recommendations for information and scientific resources</b>  |  |   |   |   |
| <b>5.1. Obligations/recommendations for collection of data and monitoring</b>   |  |   |   |   |
| 1   | Land use (by type)   | X | ? | X |
| 2   | Vegetation (by type)   | X | ? | X |
| 3   | Forests (by type, condition, density)                          | X | ? | X |
| 4   | Forestry and logging   | X | ? | ? |
| 5   | Soils (by type)  | X | ? | ? |
| 6   | Agriculture (by type)  | X | ? | X |
| 7   | Use of nitrous compounds, fertilizers and other agro-chemicals | ? |   | ? |
| 8   | Livestock numbers (by species)                                 | X | ? | X |
| 9   | Wetlands   |   | ? |   |
| 10  | Marine ecosystems  |   | ? |   |
| 11  | Coastal areas  |   | ? | X |
| 12  | Weather (temperature, precipitation, etc.)                     | X | ? | ? |
| 13  | Topography (heights, slopes, etc.)                             | X | ? |   |
| 14  | Hydrological characteristics/water resources                   | X | ? | ? |
| 15  | Assessment of areas endangered with desertification            | X |   | X |
| 16  | Flora, fauna, mushrooms (species, density, populations)        |   | ? |   |
| 17  | Habitats of endangered species                                 |   | ? |   |
| 18  | Protected areas (type, condition)                              |   | ? |   |
| 19  | Demographic characteristics (population, settlements, etc.)    | X | ? | ? |
| 20  | Technical infrastructure (roads, power lines)                  | X | ? | X |
| 21  | Industry   | X |   | X |
| 22  | Fuels and energy consumption (by type)                         | X |   | X |
| <b>4.2. Obligations/recommendations for analytical products for implementation monitoring and control</b>                             |  |   |   |   |
| 1   | Indicators   | X | ? | ? |
| 2   | Maps   | X | ? |   |
| 3   | Geographic information systems                                 | ? |   | X |
| 4   | Scenarios  | X |   | ? |
| 5   | Trends and forecasts   | X | ? | X |
| 6   | Inventories and inventory lists                                | X | ? | X |
| 7   | Costing/evaluation of benefits/damages/losses/emissions        | X | ? | X |
| 8   | Assessment of implementation                                   | ? | ? | ? |
| <b>4.3. Requirements for the quality and format of information to COPs (requirements for the national communications/inventories)</b> |  |   |   |   |
| 1   | Periodicity  | X | X | X |
| 2   | Margin of error  |   |   | X |
| 3   | Format set by the Secretariat                                  | X | X | X |
| <b>6. Participants in the implementation of the Convention.</b>   |  |   |   |   |
| 1   | Government agencies and organizations                          | X | ? | X |
| 2   | Regional authorities   | X | ? |   |
| 3   | Local authorities  | X | ? | X |
| 4   | Private business/enterprises, trade organizations              | X | ? | X |
| 5   | The scientific community                                       | X | ? | X |
| 6   | Citizens/the public  | X | ? | X |
| 7   | Non-Governmental Organizations                                 | X | ? | X |
| 8   | Media  | X | ? | ? |

The identification of these synergistic requirements shows the possibilities for joint or synergistic activities that aid the concurrent fulfilment of the commitments under the three Conventions, or at least two Conventions without any detriment to the third. The Table 5.1 above suggests the

relevance of some common principles and approaches to sectors and ecosystems that are common to the three Conventions; management of information and scientific resources, so that they can serve the needs of the three Conventions; the use of economic and financial instruments to achieve objectives common to the three Conventions.

Therefore, the sectors and ecosystems common to the three Conventions and significant for Ghana are defined so that the agencies, organizations and groups whose capacity should be built can be identified and their capacity building needs, prioritized. Table 5.2 illustrates the common sectors and ecosystems whose management and development affects the fulfilment of the commitments under the three Conventions. This table has been design to indicate the need to pay attention to ecosystem services in order to achieve national development goals.

| <b>Table 5.2: Interrelation between the economic sectors, ecosystems and the Conventions</b>                             |                                      |                      |                          |  |  |                                |                   |
|--|--------------------------------------|----------------------|--------------------------|--|--|--------------------------------|-------------------|
| <b>Ecosystems</b><br><br><b>Sectors</b> | <b>Marine and coastal ecosystems</b> | <b>Arable lands</b>  | <b>Forest ecosystems</b> | <b>Inland fresh-water ecosystems (rivers, lakes)</b> | <b>Mountain and semi-mountain ecosystems</b> | <b>Arid and dry ecosystems</b> | <b>Rangelands</b> |
| <b>Forestry</b>  |                                      |                      | UNFCCC<br>CBD<br>CCD     | CBD  | UNFCCC,<br>CCD                               | CCD                            | UNFCCC<br>CCD     |
| <b>Agriculture</b>   |                                      | UNFCCC<br>CBD<br>CCD | CBD                      | CBD  | UNFCCC<br>CBD<br>CCD                         | UNFCCC<br>CBD<br>CCD           | UNFCCC<br>CCD     |
| <b>Land transport</b>  |                                      | UNFCCC               | UNFCCC                   |  | UNFCCC                                       | UNFCCC                         | UNFCCC            |
| <b>Energy</b>  |                                      | UNFCCC               | UNFCCC                   | UNFCCC   | UNFCCC                                       |                                |                   |
| <b>Industry</b>  |                                      | UNFCCC               | UNFCCC                   |  |  |                                |                   |
| <b>Collection, treatment and distribution of water</b>   |                                      | CCD                  |                          | UNFCCC,<br>CBD                                       | CBD<br>CCD                                   | CBD<br>CCD                     | CCD               |
| <b>Waste collection and treatment</b>  |                                      | UNFCCC<br>CCD        |                          | CCD  | UNFCCC                                       |                                | UNFCCC            |
| <b>Land use</b>  | UNFCCC                               | UNFCCC<br>CBD<br>CCD | UNFCCC<br>CCD            |  | UNFCCC<br>CBD<br>CCD                         | UNFCCC<br>CCD                  | UNFCCC<br>CCD     |
| <b>Tourism</b>   | CBD                                  | CBD                  | CBD                      | CBD  | CBD  | CBD                            |                   |
| <b>Fisheries and aquacultures</b>  | CBD                                  |                      |                          | CBD  |  |                                |                   |
| <b>Water transport</b>   | UNFCCC                               |                      |                          | CBD  |  |                                |                   |

## 5.2 CROSS CUTTING CAPACITY NEEDS

In-depth analysis of the capacity needs of the three Conventions revealed the following common and cross-cutting issues which offer themselves for complementary and synergistic implementation actions. Listed below are some of the common features.

1. The principles and implementation of the Convention involves prevention, protection and conservation of natural resources in consistence with common policy for sustainable development. The country parties have common responsibilities, but differentiated obligations and they have to integrate the objectives of the Conventions in development programmes.
2. As an obligation under the Conventions, specific long-term policies, strategies and programmes need to be formulated by the parties. These programmes should include action plans backed by legislation for their implementation under the Conventions.
3. Fulfilling the obligations and the recommendations under the three Conventions requires international cooperation through exchange of information and good practices, transfer of technologies and financial support for local and regional programmes.
4. The three Conventions stipulate that there should be inter-agency coordination, supported by science through public dissemination of information.
5. Implementation of the activities under the Conventions should be subject to environmental impact assessment (EIA) and must build the capacity for effective implementation through training and awareness creation.
6. The three Conventions have common obligations in respect of land use, utilization of forest products and sustainable soil management for agriculture and forestry. All three (3) Conventions are influenced by climatic variables and water resources.
7. The Conventions deal with demographic characteristics, such as population density, poverty and encroachment of settlements which can result in natural resource degradation and emission of greenhouse gases.
8. The Conventions stipulate that there should be an efficient technical infrastructure for assessing the current situation and future implementation of improvements.
9. All the three Conventions require the establishment of indicators for monitoring and control, and trends and forecasts for predicting the occurrences of events that hinder sustainable management of natural resources.
10. Under all three Conventions, parties are to keep records of inventories of changes and also provide assessment of costs and benefits.
11. It is a requirement of all three Conventions to establish a National Secretariat to oversee the activities under the Conventions, such as development of national communications, mitigation and adaptation projects and action plans.
12. The implementation of the Conventions requires the participation of stakeholders such as governmental agencies and organisations, local authorities, the private sector the academic and scientific community, NGOs and civil society and the media.
13. The overall vision for capacity development for successful implementation of the three Conventions is to provide a sound environment for socio-economic development of the respective countries, with the guiding principles being the development of capacities at the systemic, institutional and human levels.
14. Provision of financial support through the national budget and international sources for the implementation of the Conventions.

15. The approach to monitoring should be based on systematic field studies and observations as required under the three Conventions.

### **5.2.1 Common Needs for Implementation**

Based on the list provided above which emanates from the in-depth thematic assessment and priority needs identified in Chapters 3 and 4 respectively, the following five common areas for capacity development which are required for the implementation of the three Conventions have been identified:

- a) Institutional and legal arrangements to ensure the effective implementation of the three Conventions.
- b) Access to and development, diffusion and transfer of environmentally sound technologies and know how.
- c) Development of a national policy/strategy for integrating the objectives of the Conventions into national development programmes to enhance inter-agency coordination
- d) Effective national programmes to support public education, training, sensitization and awareness creation.
- e) Provision of funding through national and international sources.

These capacities could be developed based on the opportunities offered for capacity development across the areas of the three Conventions as identified under the ongoing national programme of activities and potential government policy reforms listed under section 5.2.2 below.

### **5.2.2 Opportunities for Cross-Cutting Capacity Building**

The three Conventions have a lot of common constraints and common. Opportunities exist in Ghana to address these constraints as revealed through zonal consultations as part of the NCSA process. Some of these opportunities are:

#### **i. Government Policy of Decentralisation**

The aim of the decentralisation policy is to regionalise the activities of the sector ministries, while at the same time providing institutional linkages between them which will foster the easy implementation of the identified institutional gaps. The NCSA took advantage of the decentralised governance system of administration by ensuring that representatives from the District Assemblies made inputs into the NCSA process. The follow up activities of the NCSA process could address specific zonal or district capacity needs as identified in the outcome of the zonal consultation report. (PCC 2005).

#### **ii. The Ghana Poverty Reduction Strategy (GPRS)**

The GPRS is aimed at providing alternative means of livelihood instead of total dependence on natural resources, with the sector ministries working as a team. It provides a window for mainstreaming environmental issues into the development planning process. A strategic environmental assessment of GPRS has been conducted and results

have been used to update the existing GPRS. The NCSA follow up activities could build up on the identified capacity needs of the revised GPRS. (PCC 2005)

**iii. Ghana Government Educational Reform**

The aim is to make basic education free and compulsory. This should help create attitudinal change and ensure the understanding of environmental issues leading to good environmental stewardship. The government white paper to this reform has been produced. The thematic assessment reports identified education, training and public awareness as a priority area. The NCSA follow up activities could ensure development of course modules for all the educational levels, preparation of education and information aids and materials; institution of specialised training programmes for teachers and trainers.

**iv. National Environmental Action Plan (NEAP)**

The main objective of the NEAP should be updated to reflect the obligations under the Conventions. The outcome of the NCSA could contribute to this updating process.

**v. Development of the Second National Communication for Climate Change**

Preparation of the Second National Communication for climate change has capacity building as a core activity which is intended to cut across the areas of Industry, Agriculture, Health, Energy, Gender and Poverty etc., making it much easier in exploring the synergies between these Conventions.

**vi. Proposals for the Establishment of Climate Change Commission**

The EPA's has prepared a proposal to establish climate change commission to oversee the activities under the UNFCCC and presented to the Cabinet through the Ministry of Environment and Science. A workshop to educate and inform sections of the Members of Parliament has been organised for five select committee of Parliament, namely the Parliamentary Committees on Environment and Science; Legal, Constitutional and Parliamentary Affairs; Lands and Forestry; Energy and Mines; and Finance. It is believed that such an over-sight authority will build the needed capacities for climate change mitigation and adaptation as well as addressing common key issues that cut across the three Conventions. The NCSA could build on the proposal to include the Conventions on Desertification and Biodiversity to establish a common secretariat for the three Conventions..

**vii. Establishment of Environmental Science Departments and Programmes in the Country's Universities**

The three leading universities in Ghana, Kwame Nkrumah University of Science and Technology, University of Ghana and University of Cape Coast have established Department of Environmental Sciences to produce graduates with skills in environmental science and management. This should in the short medium and long term address most of the capacity needs if these institutions are strengthened. The human resource needs identified under the NCSA process could be met by strengthening these programmes.



# CHAPTER SIX – NATIONAL STRATEGY AND ACTION PLAN

## 6.1 INTRODUCTION

This chapter provides the NCSA Action Plan. The Action Plan is based on the assessment of some cross-cutting issues as identified in Chapters 3, 4 and 5 and prioritised through stakeholder consultations. To meet these cross-cutting capacity needs there will be the need to jointly address the identified systemic, institutional and human capacity needs.

The following cross-cutting capacity needs or synergies pertain to all three Conventions and thus provide the basis for the activities identified in the action plan.

### **Systemic synergies**

- Legislation to ensure the integration of environmental challenges into national developmental efforts
- Formulation and implementation of a national strategy for the development and transfer of environmentally sound technologies
- Public education and awareness creation about the need to protect the environment.
- National co-ordination and networking and information exchange on the approaches to combat environmental degradation
- Management of ethnic conflicts which are barriers to common approaches to environmental conservation.
- Provision of new, additional and adequate financial resources in the government budget to deal with environmental matters

### **Institutional Synergies**

- Establishment of secretariats to implement the Conventions.
- Effective networking for co-ordination among the various sectors and institutions to adopt common policies for sustainable development.
- Promotion of international corporation and collaboration on the implementation of the Conventions.

### **Individual Synergies**

- Comprehensive public education programmes (both formal and informal) to address attitudinal change and disseminate environmental information.
- Training of trainers to build effective human capacity to manage the environment
- Provision of incentives for trainees in the field of environmental science, e.g. Scholarships
- Integration of human resource development with poverty reduction strategy to enhance the capacity for the management of the environment.

These synergies have been reformulated as activities of the action plan as shown in Table 6.1 below

## 6.2 PRIORITY SETTING FOR IMPLEMENTATION OF THE THREE CONVENTIONS

To meet the competing resource needs of the three Conventions, a stakeholder meeting was organised to assess and prioritise the numerous needs identified in the three thematic reports and summarised in the Chapters 3, 4 and 5.

The prioritisation exercise was done at a stakeholders' meeting. Stakeholders were tasked to provide indication of what they perceived as immediate (short term), medium and long term needs in the light of the prevailing national circumstances, bearing in mind the national development priority of eradicating poverty by 2015. In undertaken the prioritisation exercise, the stakeholders were also given the option to further assess the needs as identified by the thematic experts and provide any additional needs that could compliment the realization of the identified needs. The additional issues/needs raised by and the stakeholders were also captured as part of the final action plan.

Based on the five major cross-cutting capacity needs identified (See Section 5.2.1) the stakeholders ranked the needs according to the criteria; short, medium and long term. Immediate/short term needs were given the highest priority followed by the medium and long term needs in that order. .

The outcome of this stakeholders priority exercise was further evaluated by the Project Coordinating Committee (PCC). The PCC then provided some time lines and indicative budgets for the prioritised actions.

## 6.3 ACTIONS TO BE IMPLEMENTED

Table 6.1 shows the priority actions to be implemented within the specified time frames, the responsible agencies and their corresponding indicative budgets. It is anticipated that the priority actions shall be implemented with funds made available from both the national budget and international sources in line with the general provisions under the Conventions. Detailed financial proposals shall be developed as these priority actions are developed into concrete project proposals.

**Table 6.1 NCSA Action Plan**

|   | <b>Priority Capacity Needs</b>   | <b>Activities</b>  | <b>Responsible Agency</b>       | <b>Time frame</b>  | <b>Budget</b>    |
|---|--|--|---------------------------------|--------------------|------------------|
| 1 | Legally supported and well resourced institutional framework                             | Create a National Conventions Coordinating Authority for the three Conventions   | MES, EPA                        | June/06.- June /07 | \$450,000        |
|   |  | Set up institutional network of government agencies, sectors and civil societies to adopt common policies for sustainable development. | EPA                             | June/06.- June /07 | \$350,000        |
| 2 | Education, training and public awareness   | Develop and implement a national strategy for education, training and public awareness on the three Conventions...                     | EPA, MOEdu, MOI, Universities   | 2007-2010          | \$850,000        |
| 3 | Access to environmentally sound technologies   | Develop and implement a national strategy for technology development and transfer.   | CSIR, EPA, MOE                  | June 2007-2009     | \$1,500,000      |
| 4 | Mainstreaming the three Convention into national development programmes                  | Develop a national strategy for mainstreaming of the Conventions into national development programmes                                  | NDPC, EPA, MES                  | 2007-2010          | \$350,000        |
| 4 | Strategy for international cooperation   | Develop programmes and partnerships for international collaboration  | MES, MORI                       | 2008-2010          | \$400,000        |
| 5 | Strategy for Financial resource mobilization   | Establish mechanisms for financing environmental programmes  | MES, MOFEP, EPA                 | 2007-2009          | \$200,000        |
| 6 | National environmental Data Management Strategy  | Establish national data base for the Conventions.  | EPA, GSS, CSIR, CERSGIS         | 2007-2010          | \$1,500,000      |
| 7 | Meeting the Research needs of the three Conventions                                      | Promote R&D in the three thematic areas  | MES, CSIR, Universities         | 2007-2010          | \$1,500,000      |
| 8 | Adaptation strategies to deal with vulnerabilities associated with the three Conventions | Develop integrated framework for adaptation.   | MES, EPA, MOFA, MOLFM           | 2007-2008          | \$850,000        |
| 9 | Strategy for land use planning and management  | Establish advocacy strategy for development of appropriate land use zones.   | National Coordinating Authority | 2007-2010          | \$150,000        |
|   | <b>Total</b>   |  |                                 |                    | <b>8,100,000</b> |

## 6.4 IMPLEMENTATION STRATEGY

The Ministry of Environment and Science (MES) shall be the lead implementing institution of this action plan. For effective implementation of this plan a national coordinating authority established by government, with its composition reflecting all stakeholders. The work of the authority shall be supported by the national technical committees on the three Conventions. Financial support for the implementation of the plan shall be obtained from national and international sources.

Monitoring the implementation of the action plan shall be the task the proposed coordinating body in cooperation with all other stakeholders. The process of monitoring should ensure that the activities are carried out in accordance with the NCSA report, in particular the in-depth analysis done for the three thematic areas in Chapter 4, and the action plan above.

Workshops shall be organized to evaluate the implementation of the action plan. In the workshops, the action plan shall be reviewed and new proposals drawn up to update the action plan on regular basis by incorporating potential new developments.

## 6.5 CONCLUDING REMARKS AND RECOMMENDATIONS

### **Conclusions**

- This assessment has led to the identification of the capacity needs and constraints required for the effective implementation of the three Conventions
- The exercise has also enabled the formulation of a strategy and action plan to strengthen the country's prioritised needs for the fulfilment of the common obligations under the three Conventions.
- Opportunities have also been identified for mainstreaming the activities of the Conventions into national development programmes (see section on "Opportunities for Cross-cutting Capacity Building" and Chapter. 5)

### **Recommendations**

It is recommended that:

- Government and its international development partners should as a matter of urgency implement the action plan to enable the nation to maximise the benefits of the efforts made in the implementation of the NCSA process and, above all to effectively implement the obligations under the United Nations Convention on Biological Diversity, United Nations Framework Convention on Climate Change and United Nations Convention to Combat Desertification.
- Government must assess the possibility of bringing all multilateral environmental agreements (MEAs) under the proposed National Conventions Coordinating Authority (see section E above and Chapter 6), based on the experiences gained and lessons learned as a result of the implementation of the NCSA action plan.