Foreword

By Alfred A. Oteng-Yeboah, Chairman, National Biodiversity Committee of Ghana

Any effort made to assess and document the state and trends of biodiversity (renewable natural resources) in any location anywhere in the world is worthy and must be appreciated at every level of decision making in the use of these natural resources. It provides an opportunity to assess and re-assess sustainability of the resources, create awareness about the thresholds of the resources, make predictions into the future and recommend solutions to any unintended difficulties in resources use. The final output of the Millennium Ecosystem Assessment (MA) in 2005 illustrated how the natural capital of the world's resources, especially the renewable ones, had been overdrawn for human welfare by over 50% and indicated how the resilience of these resources had reached a tipping point beyond which the vital ecosystems of which they are composed will begin to decline unless something was done immediately. These ecosystems generate life giving services that provide support and sustenance to the environment for human wellbeing.

In the study of the natural resources of the Okyeman (or the Akyem Abuakwa Traditional Area), there is evidence of the application of the ecosystem approach, and this has provided a glimpse of the ecological, economic and social situation of the landscape. On record, this is the first of such study in Ghana and can be easily considered as constituting a case study which is replicable, referable and citation.

The choice of Okyeman as the location for the study is not surprising. Apart from being one of the richest areas in Ghana in terms of abundance of renewable and non-renewable natural resources, it has a growing population of over 2 million in which there is an active adult population within the ages of 20 to 54 years who are unemployed or self employed and whose dependence on the natural resources for their livelihoods is predictable. A majority of the self employed adults are farmers and many of them earn their livelihoods by extensively utilizing the natural resources in the area. Many of the unemployed youth as well as those who are self employed, easily get onto the band wagon of exploiting the natural resources, albeit in a manner that degrades the environment of the landscape and creates ecological disasters which are very difficult to overcome in the long term.

The Okyeman area has huge deposits of mineral resources, including gold, diamond and bauxite. The former two are heavily exploited both legally and illegally but the latter is not yet exploited. However, reports indicate that these bauxite deposits, will soon be exploited and this, together with the mining of the other minerals, is expected to change the ecosystem structure of the area for ever.

The landscape of Okyeman has varied elevations, the peak of the highest gradient being 842 m above sea level and forms the Atewa mountain range with a series of plateaus and an

extensive net work of valleys and plains that are drained by three major rivers and their tributaries. These three rivers and their tributaries constitute the Ayensu (1709 km), the Birim (3875 km) and Densu (2564 km) basins. The Atewa mountain ranges from the water shed for the three rivers, and therefore the future flow of these rivers is dependent on the health of the mountain ranges. The three rivers are the most important sources of domestic water and industrial water for local communities within their respective basins and catchments as well as for more than half of residents of Accra metropolis. The rivers and their tributaries constitute an important freshwater ecosystem in Ghana with various forms of inland water biodiversity including fish, insects, aquatic free floating and/or sedentary macrophytes and microphytes. As a result of extensive agricultural, mining and urban activities including indiscriminate water disposal and livestock grazing at certain portions of the river, the two of the three rivers, namely Densu and Birim, are heavily polluted. Much of the pollution materials are chemical based showing pH values from 6.5–8.5 and various levels of chemical constituents such as Ammonia - Nitrogen or Nitrate through to Nitrogen. Water quality is one index that shows the usefulness of water for human consumption, and there is evidence that there is a change of this index along the stretch of the three rivers.

The vegetation of the mountain ranges is special, being one of only two upland evergreen forest type in Ghana, the other represented by Tano-Offin Forest Reserve. The mountain ranges and their valleys are known to be home for a number of very important and or rare species of biodiversity. The plant and faunal species richness in this vegetation type is spectacular and unique for Ghana. This diversity appears to have been enhanced by the diverse topography and the misty conditions of hill summits. It is a conclave of endemism, a Ghanaian biodiversity hotspot and a unique natural place of beauty.

For an ecosystem assessment of an area such as the Okyeman that has started experiencing severe pressures or has already experienced serious drivers for habitat degradation from all categories of society including the government, the traditional authorities, the local communities and other groups in small to medium scale entrepreneurial engagements, the data so far obtained easily transform into a benchmark information,. It is important that this information is made available to the public. In making it available to the public through any form of publication in part or in full, the aim should be to create awareness in sustainable use and the need to conserve nature for the services it provides for human wellbeing. The caution is that the services of water generated from the clouds and mist atop the mountains and the rains that fall in the area with their runoffs which eventually also influence soil fertility in the valleys and plains downstream and create conducive environments for all kinds of biodiversity including plants and animals, will cease if degradation is not stopped. When biodiversity is used sustainably and there are efforts to conserve biodiversity, then the benefits from the ecosystem services will continue to be available to the Okyeman and also to Ghana.

For us in the National Biodiversity Committee, this is vital information in our armory while we

engage the Ghanaian public in attaining the goals and targets of the revised national biodiversity strategy and action plans (NBSAPs) for the international biodiversity decade of 2011 to 2020.

I congratulate all the researchers who participated in the project and made their observations available in this volume. I also thank the Defra of the UK Government who made funds available through the Darwin Initiative for the project.