Aichi Biodiversity Target 12: Reducing risk of extinction

The Gambia's biological resources are vital to the populations' economic and social development. As a result, there is a growing recognition in the Gambia that, biological diversity is a global asset of tremendous value to present and future generations.

Species extinction caused by human activities continues at an alarming rate. Recognizing the need to conserve its biological resources, the Government of the Gambia has made a commitment to conserve 10% of the land area and eventually hectares of coastal and marine habitats as conservation areas. Although in-situ conservation must be the first priority, the protected area network alone will not be sufficient to secure all of Gambia's biodiversity for future generations. The risk of extinction of threatened species has been significantly reduced and their conservation status, particularly of those most in decline, Water bird, *Pteracarpus erinaceous, Khaya sengalensis, Badius tarminck , Eland Dabby, Roan Antelope, Zebra,Kobus kob,Ardvark etc.*

The ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced through conservation and restoration actions, including restoration of at least 5% of degraded ecosystems, prioritizing the most degraded Areas in the Gambia, hydrographic regions, thereby contributing to climate change mitigation and adaptation and to combating desertification.

The protected areas could be justified on socioeconomic grounds alone yet their multiple goods and services are largely unrecognized in national accounting. This paper argues that there is a convincing case for greater investment in expanded and better- connected protected area systems, under a range of governance and management regimes that are specifically designed to counter the threats of climate change, increased demand and altered patterns of resource use. The new agenda for protected areas requires greater inclusivity of a broader spectrum of actors and rights holders, with growing attention to landscapes and seascapes protected by indigenous peoples, local communities, private owners and other actors which complement conservation areas managed by state agencies. Greater attention also needs to be focused on ways to integrate and mainstream protected areas into sustainable development, including promotion of "green" infrastructure as a strategic part of responses to climate change.

Protected areas are an efficient and effective means to address biodiversity loss, help buffer society from the effects of climate change, and maintain the critical ecosystem services on which all societies depend.

In the last decade climate change has emerged as the key development and environmental concern of the new millennium. Climate change will exacerbate the other sources of environmental degradation and may generate new threats with devastating consequences for both biodiversity and human welfare, especially for the poorest and most vulnerable communities of the Gambia. Protected area systems expansion coverage was designed to appropriately and

managed effectively, that can make a valuable contribution to overall efforts to address direct and indirect challenges.

Achieving ABT 12: Key Challenges

The Habitat loss, fragmentation, overexploitation of natural resources, pollution, and the spread of invasive alien species have long been recognized as the most of wildlife threats to Gambian biodiversity. One of Challenges in the Gambia is the demand for biofuels has led to more rapid deforestation and agricultural expansion for new verities of rice called Narica and cashew plantation. The clearance and burning of peat swamp forests for rice cultivation and cashew plantation in the country forest regenerated vegetation.

Linkages to the UN Sustainable Development Goals

Is to achieve the conservation and sustainable management of the country's biological diversity loss, and implementation of the Convention has been geared towards the implementation of the programme of work on PAs that has been established to reflect the various ecosystems in the country.

These PAs and their management strategies and plans support the Convention's 3 objectives. Reference can be made to all the seven goals of the biodiversity target, namely:

- protection of biodiversity components; promotion of sustainable use; threats to biodiversity;
- maintenance of goods and services from biodiversity to support human wellbeing;
- protection of traditional knowledge, innovation and practices; ensuring the fair and equitable sharing of benefits arising from use of genetic resources; and
- provision of adequate resources, from which one can easily appreciate and understand the kind of contribution that have been made so far by the government and more importantly by through donor funded projects, on the protected areas to strengthen the monitoring and inventory mechanism of the country.

SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

By 2020, The Gambia effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based

management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.

- Protected areas contribute to adaptation strategies by: protecting and enhancing vital ecosystem services such as water flows and water quality; conserving habitats that maintain nursery, feeding and breeding areas for fisheries, wildlife and other species on which human societies depend;
- Reduced land degradation and protecting water sources by preventing, and controlling, invasive alien species;
- reduced pollution and maintaining coastal protection and natural mechanisms of flood control; and protecting reservoirs of wild crop relatives to enhance agricultural productivity and crop resilience
- The value of ecosystem-based approaches to adaptation was recognized by the UNFCCC at the 16th Conference of the Parties in Cancun in 2010 but discussions still continue as to how to best put this into practice.

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss

- Adaptation to climate change has, and will, become an increasingly important part of the development agenda of the Gambia and address most at risk from climate change.
- Protected areas can complement other adaptation responses by maintaining ecosystem integrity, buffering local climate, and reducing risks and impacts from extreme climatic events such as storms, droughts and sea-level rise. For example wetlands, mangroves restoration, barrier beaches and sand dunes protect coasts against storms and flooding.
- Annual tree planting, mangrove restoration and protected areas coverage through establishing of International Community Conservation Areas (ICCA) across the length and breadth of the country play a significant role to increase and overcome the challenges biodiversity loss.

Assessing National Contributions to Achieving ABT 12

The Gambia has embarked on the tree planting and mangrove restoration past four years in order to reduce the direct pressures on biodiversity and promote sustainable use of available natural resources.

By 2020, Maintain integrity and functioning of vulnerable ecosystems impacted by climate change minimized at least 30% .

Geographic areas with a high numbers of mangrove species at elevated risk of extinction are likely to exhibit loss of ecosystem function, especially in areas of low mangrove diversity. Globally, the highest proportion of threatened mangrove species is found along the stretch of River Gambia on the inland estuaries play significant roles in the ecosystem.

The primary threats to all mangrove species are habitat destruction and removal of mangrove areas for conversion to aquaculture, agriculture, urban and coastal development, and

overexploitation. Of these, clear-felling, aquaculture and over-exploitation of fisheries in mangroves are expected to be the greatest threats to mangrove species.
Climate change is also considered a threat to all mangrove species, particularly at the edges of a species range where sea temperature and other environmental changes may be greatest. With a rise in sea level, the habitat requirements of each species will be disrupted, and species zones will suffer mortality in their present tidal zones and attempt to re-establish at higher elevations in areas that were previously landward zones Mangrove species with a habitat on the landward margin are particularly vulnerable to sea-level rise if, owing to coastal development, their movement inland is blocked. Species that occur at the landward edge, or upstream in tidal estuaries include , *Lumnitzera racemosa*, *Lumnitzera littorea*, *Sonneratia caseolaris*, *Sonneratia lanceolata*, and *Xylocarpus granatum. Occurs within the mangrove forest biodiversity in the Gambia.*

Department of Parks and Wildlife Management (DPWM)

The DPWM is the only government agency responsible for the protection and the management of the nation's wildlife resources. Wildlife being a national asset, Departmental staff are likewise deployed in all regions of the country. The Department has operational links with other Government Departments, Units and NGOs in both the natural resources and agricultural sectors. With reference to the aforesaid, the country is a fully fledged partner of the Reseau des Aires Marines Protégées d'Afrique De L'Ouest (RAMPAO) with four registered and active Marine Protected Areas (MPA's) members. This is a sub regional network of MPA's established to assist in the improvement of the day-to-day management of the Marine Parks and Reserves.

Forest biodiversity

The Government of the Gambia recognizes the importance of forest resource management in view of the economic and environmental values of forest resources and the forest ecology. Major products harvested from the Gambia forest include fuel wood (19 percent, plant food (17percent), construction material (15 percent)., tea and herbs (11 percent) and medicinal plants (10 percent). The services provided by the forest ecosystem range from windbreak, grazing and improved soil facility and water conservation. The forest area is 26.6 percent of the Gambia landscape. More than 53.2 percent is deciduous while 30 percent is semi- deciduous and only 4.5 percent is evergreen. Mangroves constitute 12 percent of total land area while less than 10 percent is palm. However a comparison of the forest inventory initiatives conducted reveals a declining forest cover. From 505,300 ha of total forest area in the 1981/82 inventory the 2009/2010 inventory indicates a total area of 423,000 hectares. This 7 percent loss has severely affected the mangrove ecosystem, mangroves occupied approximately 67,000 hectares in 1981/82 and this has been reduced to 37,700 hectares, a total loss of 47 percent of the 19 previous cover. Correspondingly the average wood volume of forest per hectare was 46.1m in 1997/98 and in 2009/2010 it stands at 34.2m. The density of the forest has also declined as the 1997/98 inventory recorded 106 trees per hectare as against the 2009/2010 finding of 42 trees per hectare.
The Gambia forest management concept introduced as a blue print for participatory forest management has undergone some modifications in response to changing realities. Forest management concepts that have been applied include community forestry, community based forestry enterprise development using the market analysis and development approach,

community controlled state forest management and co-management of forest parks with communities. It also includes private plantations and natural forest management. Participatory forest management has been conducted in all regions and involve fire-fighting, tree planting, sensitization and nursery establishment.

The 2011-2021 Forest Policy and current Forestry Act 2018 .update the 1998 Forest Act aim at consolidating these achievements and making further progress in the greening of the forestry sector. The measures that will be put into effect include:

- Concentration in protection and afforestation in areas with low forest cover rates, sensitization of communities and closer collaboration with 20 the Ministry of Agriculture to minimize conversion of forest to agricultural land and to monitor livestock grazing
- Improved utilization of mangroves byproduct particularly oysters
- The expansion of the regional fire management approach to all regions to help reduce the occurrence of bush fire which affects 79 percent of the population each year.
- More vigorous promotion of the participatory forest management concept to fulfill the policy objective of encouraging private participation in forest resource management and transferring of 200,000 hectares of forest land to the communities by 2019.
  As at 2006, only 18,000 hectares were under community forestry. Currently, the state owns 88 percent of the forest and 70 percent of other wooded lands.
- The heightening of conservation efforts for some species in areas low in species diversity
- The discouragement of commercial fuel wood harvesting in areas low in fuel wood stock density
- The discouragement of permits for timber tree harvesting to maintain timber species for the future
- Pursuit of alternative energy sources for fuel wood and charcoal.
- Strengthening the use and adoption of new intervention on energy saving stoves within the rural and urban areas
- Increasing the use of the mass media for awareness creation on the current state of the forest involving simplification for the understanding of the rural communities.

Agricultural biodiversity

Agriculture, being the backbone of the Gambian Economy, is the most important activity supported by government and occupies nearly 70% of the active population. The decline in crop yield such as groundnuts, cotton, sesame and others, constitute serious reduction in productivity. Some crops have had their diversity enhanced as a result of introduction of other varieties from outside the country such as NERICA. For livestock, some cattle breeds are on the decline. The West African short horn cattle which used to constitute about 80% of the national cattle population in the 1990s now constitutes about 47% of the national cattle herd. Poor soil fertility, habitat destruction/degradation, reduced rainfall, drought, disasters/flooding of agricultural fields, animal diseases, water and animal feed shortages etc are responsible for the decline in productivity and cattle population.

Fisheries Biodiversity

The Government of The Gambia places high importance on the artisanal fisheries sub-sector as it provides all the fish for domestic consumption, substantial employment and foreign exchange earnings through fish exports. The artisanal subsector employs 1,410 head fishermen and 4,694 assistant fishermen and over 200,000 fish processors who are mostly women. Government's support is in the form of credit, training, organizational support and infrastructure with significant donor assistance. The aquaculture subsector has not been as vibrant as the artisanal yet it has potentials to improve fish consumption in the rural areas which is estimated at 9 kg/ per person /year vis-a vis 28 kg/person/year in the coastal area. This prompted the government to attempt to diversify fish production for improved food security and the reduction of poverty through acquacultuire development with the assistance of the Taiwanese Technical Mission in the Gambia and the FAO. This led to the development of a National Aquaculture Strategy and its successful implementation in pilot sites with the intention to expand the national program to other suitable areas. Fish production in the industrial sector recorded by the Fisheries Observer Program (each vessel carries an observer) through its annual series indicates that fish production of the high value demersal species has been on the decline. The Demersal Working Group of FAO's Committee for Eastern and Central Africa Fisheries (CECAF) also has reported that major demersal fish stocks have been fully or over exploited and advised that the effort be reduced by both industrial and artisanal operators. The FAO Working Group on Small Pelagic Fish of 22 Northwest Africa in collaboration with the Institute of Marine Research of Norway has also revealed fluctuating levels of biomass of small pelagics: 212,000 tons in 2004, 284,000 in 2005 and 153,000 in 2006; whilst the Department of Fisheries considers the pelagics under exploited. The conclusion of the working group and institute is that the pelagics are also over-exploited. The institutional framework of the fisheries sector is defined in the Fisheries Policy 2007, the Fisheries Act 2007, the Fisheries Regulations 2008 and the Fisheries Strategy and Management Plan 2009. The Department of Fisheries is the implementing and oversight agency.

The Gambia is also has the opportunity to benefit from support to integrate principles of sustainable development of the marine and coastal resources through the second phase of the World Bank 2007-2011 GEF GIRMAC 1 and 11. (Integrated Management of Coastal and Marine Resources).The support is in the area of conservation of vulnerable species and habitats and the promotion of comanagement and the development of fisheries management plans. Similarly, the West African Regional Fisheries Project (2009) involving Senegal, The Gambia, Guinea Bissau, Guinea Conakry, Cape Verde and Mauritania is the source of support to eliminate illegal fishing activities, damage to coastal resources; and to implement access rights agreements and fishing capacity control, as well as governance and management structures to control marine fish resources to effect transition to management plans based on the ecosystem approach.

Continuity of support in the provision of capacity to enforce the regulatory instruments and resource management measures in accordance with the partnership principles of common and differentiated responsibilities will enhance the greening of the fisheries sectors through addressing its constraints and challenges. These include limited experience and understanding of resource comanagement and sustainable fishing practices, increasing incidence of by-catch in the shrimp fisheries and the catching, landing and marketing of juvenile fish; ecosystem degradation caused by industrial and artisanal processing practices with negative impact on seabed habitats and subsequent loss of critical recruitment mass and biodiversity, illegal industrial fishing and

conflict with artisanal fisheries as well as resource-use conflicts within artisanal fishers using different fishing gears.

To what extent is the extinction of known threatened species being prevented? (Include success Stories of projects and measures)

In the Gambia human activities contribute to species becoming threatened, includes habitat destruction, fragmentation, and degradation, pollution, introduction of non-native species, disease, climate change, and over-exploitation. In many cases, multiple causes act in concert to threaten populations. Though the causes underlying population declines are numerous, some traits serve as predictors of whether species are likely to be more vulnerable to the causes listed. For example, many species that have become endangered exhibit large body size, specialized diet and/or habitat requirements, small population size, low reproductive output, limited geographic distribution, and great economic value.

The Gambia have signed MOU with "FATALA" private investor in conservation of species and venture into captive breeding of certain species in danger of extinction in the wild are brought into captivity to either safeguard against imminent extinction or to increase population numbers. The primary goals of captive breeding programs are to establish populations via controlled breeding that are: a) large enough to be demographically stable. These objectives ensure that populations will exhibit a healthy age structure, resistance to disease, consistent reproduction, and preservation of the gene pool to minimize and/or avoid problems associated with inbreeding. Successful captive breeding programs include species like Lion, Black Rhino, Roan Antelopes, Kobus kob, Loepards and Girraf.

Establishing captive populations is an important contribution of restocking other protected areas to the conservation of endangered species. Protected Areas have limited space, however, so to maintain healthy populations, they cooperate in managing their collections as breeding populations from international to regional levels.

Perhaps the most important tools in managing these programs are studbooks, which ensure that captive populations maintain a sufficient size, demographic stability, and ample genetic diversity. All information pertinent to management of the species in question is included (e.g., animal registration number, birth date, parentage, behavioral traits that may affect breeding). These studbooks are used to make recommendations regarding which individuals should be bred, how often, and with whom in order to minimize inbreeding and, thus, enhance the demographic and genetic security of the captive population.

Another goal of some captive breeding programs is to reintroduce animals to the wild to reestablish populations. Examples of successful introductions using captive-bred stock include National Parks, Reserves and community conservation Areas in the country.

Reintroductions can also utilize individuals from healthy wild populations, meaning individuals that are thriving in one part of the range are introduced to an area where the species was extirpated. Reintroduction programs involve the release of individuals back into portions of their historic range, where they are monitored and either roam freely (e.g., Roan Antelope will be release in National Park) or are contained within an enclosed area (e.gAbuko nature reserve/ Tanji Bird Reserve. However, reintroduction is only feasible if survival can be assured.

Biologists must ascertain whether: a) the original threats persist and/or can be mitigated; and b) sufficient habitat remains, or else survival will be low upon release.

To what extent is the conservation status of those species most in decline improving or being sustained?

The Gambia have committed to preventing the extinction of threatened species and improving their conservation status by 2020. However, biodiversity is not evenly distributed across space, and neither are the drivers of its decline, and so different regions in the country face different challenges. Here, we quantify the contribution of regions towards recent trends in vertebrate conservation status.

In the Gambia assessments and priority-setting exercises have a common trait: The institution responsible for conservation of remaining wildlife population of the country focus on relatively large spatial areas or regions inhabited by hundreds of species and tenths of identifiable natural communities. To implement conservation actions on priorities identified in these coarse-scale assessments requires a practical yet science-based planning framework for the conservation of biodiversity *within* these regions. Recognizing that most conservation efforts are reactive and that its own conservation investments needed to be more strategic, The Nature Conservancy has been developing such a framework for conservation planning in terrestrial, and marine environments wildlife.

Several categories of species have been identified as being useful for management or conservation purposes (e.g., threatened or endangered, endemic, flagship, indicator, landscape, focal, keystone). Because of their rarity, habitat specificity, or area needs, the majority of species in these categories are unlikely to be conserved by a focus on either community or ecosystem or abiotic targets.

Have any known species gone extinct or have been extirpated from their range in your country since you adopted the Strategic Plan for Biodiversity 2011-2020?

Department of Parks and Wildlife Management, Research and Development Unit, studies/baseline studies clarify where the vulnerable species live, where and how humanity changes the ecology and how this drives extinctions. The RDU assess key statistics about species, their distribution, and status. Those we know best have large geographical range and are often common within them. Most known species have small ranges. The numbers of small-range are increasing quickly, even in well-known taxa. They are geographical concentrated and disproportionately likely to be threatened or extinct. Future rates depend on many factors and are poised to increase. Although there has been rapid progress in developing protected areas.

Over-utilization of biological resources is a major threat, contributing to degradation of rangelands, forest ecosystems, aquatic ecosystems and associated species. Therefore, sustainable management is required to biodiversity conservation and to derive benefits in such forms as soil

fertility, erosion control, the well-being and sustainable livelihoods of local communities engaged in the management of natural resources.
Criteria for sustainable management of resources have been adopted by Agriculture and Natural Resources working group and there are many efforts by the Government, local communities and CSOs geared towards promoting good practices and applying diverse governance mechanisms. There is a need to enforce the legal norms that are designed to ensure sustainable management of natural resources for posterity. The stakeholders have experience in developing by-laws to control access and use of local biological resources but also require the understanding of the resources for subsequent up-scaling.

How is the conservation status of species changing? Do you have information on mean species abundance?

In the Gambia conservation status of threatened species, and in the quality, extent and connectedness of habitats are of increasing concern. Identifying the attributes of declining populations will help predict how biodiversity will be impacted and guide conservation actions. However, the drivers of biodiversity declines have changed over time and average trends in abundance or distributional change hide significant variation among species. While some populations are declining rapidly, the majority remains relatively stable and others are increasing. We find weak evidence for ecological and biological traits being predictors of local decline in range or abundance, but stronger evidence for the role of local anthropogenic threats and environmental change. Biodiversity decline is of concern for several reasons. Most immediately, many people depend directly on biodiversity for food, fibre, fuel and medicines.
The components of biodiversity that contribute to these different roles will not necessarily be the same, but all are important and together they provide strong reasons to be concerned about the continuing high rates of biodiversity loss.
The results from the inventory and studies in the Gambia , reveal the conservation status have better understanding of biodiversity loss and change is necessary for developing and implementing conservation policies, most notably because it is unlikely that declining biodiversity trends can be reversed while the processes responsible are still in place.
As well as the direct effects that people have on species, we are in a period of rapid environmental change, with land-use change, the impact of people on the oceans, and climate change underway at higher rates than at any other time in human history. Environmental changes affect species viability, leading to local of certain species in the country wildlife biodiversity.

Many of the current trends may be hard to reverse quickly because both the processes driving biodiversity declines and many features of natural systems have significant barriers to change and time lags. For example, efforts to reduce the impact of fisheries on marine fish populations are hindered by both the time and effort needed to change the behaviour and activities of fishing communities as well as to accommodate the long generation times of some commercially fished species . In other kinds of threats to species, such as over-exploitation, the impacts of invasive species, habitat loss and land-use change and, of increasing importance and relevance, climate change which is one of the key issue driving force that lead to extinction and threatened of certain species in the country both marine and terrestrial.

How have the main threats to species changed since your country adopted the Strategic Plan for

Biodiversity 2011-2020?

2011-2020 Biodiversity Strategic Plan and Aichi Targets

The NBSAP recognizes the CBD Strategic Plan for Biodiversity 2011-2020 and its Aichi Targets adopted in October 2010 (Decision X/2) as an ambitious new plan that provides an overarching framework for all the biodiversity–related conventions and biodiversity issues at national level. Setting the National Biodiversity vision, the five strategic goals, 20 General Targets, In translating the provisions to national realities the NBSAP provides an appropriate national orientation for effective response to the increasing loss of biodiversity, land degradation and climate change.

• Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across Government and society
• Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

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Species Abundance

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Biodiversity decline is of concern for several reasons. Most immediately, many people depend directly on biodiversity for food, fibre, fuel and medicines. While more developed societies are buffered from such direct dependence, everyone ultimately relies on healthy ecosystems that will continue to function and support ecosystem services even in the face of rapid environmental change

To a greater or lesser degree, ecosystem functions depend upon biodiversity. Beyond these utilitarian and functional roles, biodiversity matters for ethical and aesthetic reasons. The richness and diversity of nature are valued for its own sake by people everywhere. The components of biodiversity that contribute to these different roles will not necessarily be the same, but all are important and together they provide strong reasons to be concerned about the continuing high rates of biodiversity loss.

Status of Species Diversity

Wildlife resources form an important component of the country's biotic assets from both ecological and economic viewpoints. According to the available data, there are 117 species of mammals, 47 species of reptiles and 30 species of amphibians making a total of 194 species of wild animals in The Gambia. However these figures are by and large estimates, the number could be higher than this if detail inventory is undertaken. The Gambia is also endowed with a rich avifauna estimated at a total of over 570 species and one bird species every 21.0 km2. It has no endemic and only 2 species - the puff-back shrike (Dryoscopus gambiensis) and the spur-winged Goose (Plectropterus gambiensis) bear its specific Epithet.

Freshwater Species

The River Gambia and inland water bodies such as flood plains and wetlands are considered to be rich in terms of species abundance and diversity of freshwater species. This is due to the fact that the productivity of the waters is enhanced by the high level of nutrients in the River and its tributaries. These waters are also habitats for a number of mammals such as hippos (*hippotamus amphibus)*, West African Manatee (*trichechus senegalensis)* and clawless otter *(anonys capensis)* and reptiles such as crocodiles. However, there is need for collection of specific statistical data and information on the status of the various fish and other aquatic species present in these freshwaters.

Marine Species

There is limited information available on marine species diversity in The Gambia reflecting somehow the situation at the global level. However, marine species whose diversity is threatened include marine mammals, sharks, Molluscs, shrimps and lobsters. And there is growing evidence that many of these marine species are becoming less abundant and less widely distributed, and therefore more vulnerable to extinction. It is pertinent to note that the protection and sustainable use of marine resources and biodiversity are governed by several international conventions, including the Convention on Biological Diversity (CBD). In this framework, sustainable use is defined as "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations" (CBD, 2001).

STATUS OF FUNGI SPECIES

Although the biodiversity of fungi in The Gambia is not well studied, yet fungi (mushrooms and the microscopic fungi) constitute one of the most outstanding kingdoms comprising highly assorted and numerous species. Therefore, this and many other reasons, the inclusion of fungi in in-situ and ex-situ conservation and projects of environmental and biodiversity dimensions should be quite necessary. A baseline needs to be developed to measure changes and abundance of fungal species at particular sites as relates to natural or artificial environmental derangements (*e.g.*, global warming, air, water, and soil pollution as well as forest fragmentation). It is quite necessary to consider and understand the diversity, the role in nature and the potential utility of fungi. However, due to the destruction of the ecosystem in many areas, numerous fungal species will perish and will be difficult to retrace, or will never be described. Fungal biodiversity in The Gambia has numerous challenges. Of these, some occurred as a result of the injudicious exploitation of the agricultural systems. Subsequently, the biodiversity of fungi has unknowingly been deranged. Further, the reduction or loss of the fauna and flora also due to such malpractices has negatively impacted on the biological status of fungi in many ecologies of The Gambia.

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What percentage of species is threatened in the Gambia

Threatened and Declining Species

There is little hard data on threatened and declining species in The Gambia. There has been a considerable decline in the diversity of large mammalian species, which commenced during the latter part of the nineteenth century. From the species in The Gambia in the late 1960s, it was estimated that of the 67 species of mammals listed, 13 had become extinct and a similar number

were threatened with extinction (DPWM 1991). A number of species of mammals still migrate into The Gambia including Roan antelope (Hippotragus equinus) and Campbells Mona monkey (Cercopitheocus Mona Campbell), Wild dogs (Lycoon pitus) and Lio (Panthera Leo) still infrequently enter the eastern end of The Gambia, invariably as vagrants from Niokolokoba National Park in Senegal.

Several of the remaining large mammals including hippopotamus (Hippopotamus amphibins), Sitatunga (Taegelaphus splekei) and West African manatee (Trichecus senegalensis) are present in scattered and small populations and are threatened with extirpation. Leopards (Panther pardus) are extremely rare and breeding may not occur within The Gambia anymore. The major factors, which led to the loss of a large proportion of the large mammalian species, include the heavy hunting pressure and habitat destruction.

Proportion of terrestrial and marine areas protected There are eight wild life areas in The Gambia namely: Abuko Nature Reserve, River Gambia National Park, Niumi National Park, Kiang West National Park, Tanji River Bird Reserves, BaoBolong Wetland Reserves, Tanbi Wetland Complex and Belong FenyoCommunity Wildlife Reserve. According to the Department of Parks and Wildlife Management out of the 180 species of wild animals that existed in The Gambia, 13 species are extinct1 and a similar number is threatened for extinction. The degradation of the ecosystem results in the degradation of species and genetic diversity.

The current situation of biodiversity indicates the resources are declining and the situation is likely to worsen, unless appropriate regulatory and management measures are undertaken. Status and Trends The proportion of terrestrial and marine areas under protection rose from 3.7 per cent in 1990 to 4.1 in 2010 and according to World Bank the proportion has increased to 4.8 per cent in 2012. However, with a national target of 10 per cent protection of terrestrial and marine areas and given the countdown to 2015, it is not likely that the country will meet the set target by 2015.

Challenges The challenges in meeting the national target of 10 per cent of terrestrial and marine areas protected are multidimensional. Key among them is the rapid population growth resulting to increased deforestation due to the expansion in human settlements. Due to the fragmented nature of the habitat, it is not suitable to delineate animal track routes to protect forest against degradation by animal's especially large animals.

The demand for agricultural production is also another challenge and has resulted in the expansion of farming into forestland. The increase livestock population has also led to over grazing. The impact of all these is the reduction of forest cover and impoverishment of biodiversity. Other challenges relate to inadequate enforcement of land laws governing land use and preservation of the flora and fauna, low awareness of the importance of biodiversity, uncoordinated policy response to environment issues and unmitigated socio-infrastructural. This is attributed to loss of forest cover and environmental degradation resulting from the destruction of the natural habitat of most of these species.

Status and Trends

The proportion of species threatened with extinction was not reported on in the previous national MDGs status reports of The Gambia. Furthermore, there are no national targets set for this indicator, which makes it difficult to discuss trends in this report; rather the focus is on current status. However, the proportion of species threatened with extinction had no baseline data in 1990 but as of 2010, 75 percent of the wild life species are either extinct or almost disappeared. These threaten our well acknowledged flora and fauna.

Status of Gambia's large mammals and primates Scientific name Common name Status

Scientific name	English Name	Status
Phacocherusaethiopicus	Warthog	Locally common
Potamocherusporcus	Red-river	rare
Hippopotamusamphibious	Hippopotamus	Locally common
Girrafacamelopardalis	Giraffe	extinct
Ourebiaourebi	Oribi	extinct
Tragelaphusscriptus	Bushbuck	Locally common
Tragelaphus spekii	Sitatunga	rare
Hippotragus equines	Roan Antelope	extinct
troglodytes	Waterbuck	extinct
Kobusellip siprymnus Kobus	kobuskob	rare
Damiliscus lunatusa	Western korrigum	rare
Tragelaphus oryx derbianus	Derby eland	extinct
Syncerus caffer	Buffalo	extinct
Loxodonta Africana	Elephant	extinct
Trichechus senegalenis	West African Manatee	rare
Lycanonpictus Aonyxcapensis	Wild dog	extinct
Crocutacrocuata Hyaena	Spotted hyaena	Locally common
hyaena Panthera	Stripped Hyaena	rare
leo Panthera	Lion	extinct
pardus Leptailurus serval	serval	rare
Panthera pardus	Leopard	rare
Caracal caracal	caracal	rare
Profelisaurata	Golden cat	rare
Gazelles thomsonii	Gazelle	extinct
Equusgrevyi	zebra	Re-introduced
Damaliscuslunatus	Topi	Extinct
Papio papio	Western baboon	Locally common
Damaliscuscorrigum	Heterbeast	extinct
Cercopithecus aethiops	Green vervet	Locally common
Piliocolobus badius badius	Western Red colobus	Locally common
Cercopithecusmitis Galo	Bush baby	Locally common
senegalensis Erthrocebuspatas	Red patas	Locally common
Pan troglodytes	Chimpanzee	Re-introduce
Osteolaemus tetraspis	Dwarf crocodile	rare
Crocodylus niloticus	Nile crocodile	Locally common
Mecistops cataphractus	Slender snouted crocodile	rare

Status of the large mammals and primates of The Gambia

Thirty-seven (37%) of these species are known to be extinct while (25%) of them are on the verge of extinction. This situation requires urgent attention to conserve the remaining ones and reverse the situation of those indicated to be on the verge of extinction. Pressure and the scarcity of land have forced farmers to intensively cultivate a piece of land year after year. This exhausts the soil nutrients and ultimately leads to decline in crop yields. Land placed under continuous cultivation further becomes eroded with the eroded materials transported to low land areas resulting to sedimentation.
With the recent introduction of fast growing upland rice in pursuit of food self-sufficiency policy compounds the continuing threats of agricultural activities on biodiversity.

Challenges Conservation is still faced with the challenges of increasing demand for environmental goods and products such as food, water, housing materials and land.
The major challenges are:

- Forest and agricultural farming
- Bush fires
- Over grazing
- Fuel wood extraction
- Poaching and uncontrolled hunting
- Over fishing of marine products

Forest and agricultural farming : Agricultural production systems employed in crop farming consist of intensive land used types, characterized by low level of input. Shifting cultivation is still widely practiced in The Gambia, even though fallow periods have considerably reduced as land becomes scarce in most farming communities. The compounding effect of high population pressure and the scarcity of land have forced farmers to intensively cultivate a piece of land year after year. This exhausts the soil nutrients and ultimately leads to decline in crop yields. Land placed under continuous cultivation further becomes eroded with the eroded materials transported to low land areas resulting to sedimentation. With the recent introduction of early maturing upland rice in pursuit of food self-sufficiency policy compounds the continuing threats of agricultural activities on biodiversity.

Bush Burning: During the long Gambian dry season, bush fires are a common feature of the rural landscape. Bush fires are major threat to species diversity. According to estimates, at least 80% of the standing biomass is consumed by fires in a given year (Forster, 1983). The inability to regulate and control wild forest fires are influenced by persistent old fashioned policies being pursued which completely lack clear-cut measures. There is an urgent need for a new policy that recognizes and adapts current thinking and practices as relates to early-dry-season control burning that has proven successful in Niokolo koba National Park, and in the Kiang West National Park both in Senegal and the Gambia.

Overgrazing: The Gambia has a high livestock population with high stocking density. Livestock are reared on an extensive free range system in open grasslands and in rangelands. Due to the high stocking density and the incidence of annual bush fires which consumes most of the feed resources, there is always a scarcity of livestock feed during the dry months of the year. The

convergence and concentration of livestock in and around isolated pockets of remaining grazing areas leads to observed range degradation with proliferation of unpalatable species and eventually loss of top soil.

Fuel Wood Extraction: The cutting of trees for fuel wood is among the leading causes of deforestation in the Gambia. It is reported that forest in the Gambia provides 85% of the country's domestic energy needs in the form of fuel wood for over 90% of the population. As the population continues to increase, the fuel wood demand continues to increase 27 unprecedentedly and put more pressure on the country's remaining forest resources. Currently, many part of the country are facing shortage as the population of preferred fuel wood species decline. The market demand for certain species of fuel wood compelled wood vendors to harvest green wood.

Poaching/ illegal hunting: Hunting is an important economic and social activity in the rural areas as bush meat provides important supplement to local diet. Hunting is practice for generations for domestic consumption of meat at household level, using dogs. With the proliferation of guns, hunters are capable of killing per hunting trip, several individuals of different species. Bush meat for domestic consumption gradually became commercialized as returns per hunting trip increases. Unlike traditional practices, modern hunting practices are very destructive, with hunters targeting animals at watering points where success rates are high. Insufficient information on population of species hunted and inability to conduct regular monitoring of hunting activities do not permit the setting of quota system for species being hunted.

Over fishing of fish stocks: Although the Gambia is reported to be endowed with adequate fish stocks, certain activities in the fishing sector such as use of wrong mesh size gill nets and industrial fishing trawlers are of concern. It has been established that The Gambia is harvesting only 40% of the Maximum Sustainable Yields (MSY) for the demersals fish species (Saine *et al*. 1997). There are however real dangers of over exploitation. The previous fishing agreement between The Gambia and the European Union (EU) had contributed to over exploitation as a result of weak regulatory measures. In the inland waters, fish stocks have been observed to have declined based on returns per fishing effort. Use of illegal fishing gears and intrusion by foreign trawlers has been considered responsible for such state of affair.

Coastline Sand Mining: The burgeoning construction industry has always been a major user of beach sand. In the quest to meet this ever increasing demand, sand mining has become a highly disorganized and chaotic local industry. Although there are attempts by Government to control the activity, illegal sand mining is still common on much of the coastal stretch. Species of marine turtles and water birds habitats have been degraded or totally lost in certain localities. Mining activities along the coast contributes to the process of coastal erosion, threatening many protected ecosystems such as Tanji Bird Reserve, and consequently, the economic and social livelihood of coastal communities.

Coastal Erosion: Sand mining coupled with the effect of steady removal of vegetation in respect of infrastructural development, settlements and cultivation compounded by sea-level rise climate change erode much of the coastal habitat important for marine and coastal biodiversity.

Species are endemic Policies, legislation and Action Plans relevant for management A number of international conventions and other intergovernmental policy frameworks exist that provide a framework for tackling the main threats to wildlife populations as set out ,for example poisoning, mortality caused by power grid infrastructure, decline of food availability, habitat loss, degradation and fragmentation and human disturbance. Yet these conventions, with the exception of work through the Convention on Migratory Species (CMS) and the associated agreements and task forces on poisoning, grid collision and infrastructure, provide little or no reference to wildlife species, even in the national plans of Parties (e.g. the Convention on Biological Diversity (CBD) and the International Union for the Conservation of Nature (IUCN)).
This section will briefly outline the obligations that international conventions and goals of relevance place on countries, before looking in more detail at the frameworks (and often substantial gaps) that exist in international policies to deal with two of the greatest threats to wildlife species, i.e. poisoning (through its different pathways) and impacts from power grid infrastructure (with specific reference to wind energy collision risk, transmission line electrocution and collision risk, both from existing and planned developments). In the Gambia analysis of policy and legislation is beyond the scope of wildlife species MsAP, although range states are encouraged to undertake such reviews.
While necessarily broad, these targets cover areas of specific relevance to the existence and conservation of wildlife species, notably Targets 8 and 12 (Secretariat of the Convention on Biological Diversity undated) which adopt IUCN classifications as their metric. Indeed Target 12 explicitly states: “

Actions are being taken to address these trends
Though some extinction are the result of natural processes, human action have greatly increased current extinction rates. Reducing the threat of human-induced extinction requires action to address the direct and indirect drivers of change..... However, imminent extinctions of known threatened species can in many cases be prevented by protecting important habitats (such as Alliance for Zero Extinction sites) or by addressing the specific direct causes of the decline of these species (such as overexploitation, invasive alien species, pollution and disease).”
Specific reference to species in National Action Plans is, however, unusual (though, for example, Gambia’s National Biodiversity Action Plan (Republic of the The Gambia 2015) includes the following wording:
“Regulate use of DDT and ban the veterinary use of diclofenac and other non-steroidal anti-inflammatory drugs known to kill wildlife species”) but the CBD is increasingly promoting the mainstreaming of biodiversity into areas such as agriculture. The Cancun Declaration (Parties to the Convention on Biological Diversity 2016) from COP13 in December 2016 specifically calls for:
• The prevention of agricultural pollution, and the efficient, safe and sustainable use of agrochemicals, fertilizers and other agricultural inputs.
• The promotion of the use of biodiversity in agricultural systems to control or reduce pests and diseases.

Main threats to species changed in the Gambia

Another direct impact of non sustainable utilization of natural resources in the Gambia relates to poverty among the general population. Since the vast majority of the populations are dependent on the exploitation of natural resources for their livelihood, there is a strong linkage between degradation of these resources and poverty levels. In the absence of exploited non-renewable natural resources such as oil, diamond and other precious metals despite the speculation of their existence, the country depends entirely on the exploitation of renewable natural resources for development. Agriculture, fisheries and tourism continue to be important sectors of the national economy.

Some of the related impacts are listed as follows:

- Impact on fisheries productivity making fish resources scarce;
- Ecosystem services for Flood control/ erosion/wind-storm breaks destroyed;
- Declining wood and timber sources;
- Loss of livelihoods for rural people who directly depend on natural resources;
- Potential impact on wildlife based tourism as result of degradation;
- Potential loss of income because of cessation of livelihood activities;
- Increase in poverty levels as a result of loss of biodiversity.

Adopted the Strategic Plan for Biodiversity 2011-2020?

The Government of the Gambia have committed to establishing national targets in support of the Aichi Biodiversity Targets. The development of national targets and their incorporation into updated National Biodiversity Strategies and Action Plans (NBSAPs) is a key process in fulfilling the commitments set out in the Strategic Plan. National Biodiversity Strategies Action Plans reflect how the Gambia intend to fulfill the objectives of the CBD and the concrete actions it intends to take. The Strategic Plan for Biodiversity is comprised of:

The vision: “By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.”

The mission:“Take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet’s variety of life, and contributing to human well-being, and poverty eradication.

To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of genetic resources are shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary approach.”

Main threats to the threatened species in The Gambia

The natural resources base of The Gambia has been subjected to a wide variety of adverse human-induced impacts. Consequently, the resources have degraded considerably to their present undesirable state. The three most persistent threats on protected area resources (National Parks and Nature reserves) includes logging, infrastructural developments and land conversion. Demand for timber and non timber products from protected areas are high. Most of the protected area surroundings are being degraded. Road construction and other infrastructural developments to some extent have caused major disruption in the process and functions of key ecosystems such

as wetlands. Annual burning of the forest presents a major threat to biological resources both within and outside protected areas. Non-sustainable utilization of natural resources has been in existence since time immemorial as a result of religious and cultural beliefs. The wrong perception of natural resources as free goods for the poor and resources for the commons generally, that are replenished by God, has proved to become a catalyst for continued overexploitation, posing serious challenges and threats to biodiversity in a fast growing nation like the Gambia. Until now conservation of critical and unique entities remains an unwelcomed affair. Conservation is still faced with the challenges of increasing demand for environmental goods and services such as food, water, housing materials and land, just to name but a few. In the absence of any significant improvement in livelihood of many rural Gambians, continued exploitation of the natural resource base with the current population growth rates becomes highly inevitable. Non sustainable utilization practices including mangrove cutting as an alternative for fuel wood in much of the Greater Banjul area and for fencing and roofing purposes in the North Bank Region points to a grim future for biodiversity and its dependent human populations. Unregulated and illegal hunting practices are common throughout the entire country.

Spatial distribution and intensity of these threats

Over the past 3 decades, biological resources have been the subject of misuse and overexploitation by man. Recent population trend accelerates and deepened the process of overexploitation and consequently, the degradation of natural resources in the Gambia. With a fast growing population, the demand for sustained food production system, to provide shelter, water, clothing and better education compelled many poor rural and urban dwellers to venture into extractive harvesting methods that only further constrained future livelihood potential for the poor. The daily demand for fuel wood, for construction material and for income clearly underpinned the increase in illegal hunting, fishing, harvesting of wild fruits for food and medicine, among other non-sustainable practices.
Proliferation of “Chain Saw Machines” further advances human ability to destroy indigenous woody tree species such as Khaya senegalensis, Pterocarpus erinaceus, *Cordyla pinnata, Prosopis africana, Terminalia macroptera, Diosphyrusmes piliformis, Danielia oliveri* in many parts of the Gambia.

What measures are being taken to address these threats?

The most important opportunities to protect, restore and sustainably manage ecosystems in order to decrease the decline of species populations and to avoid extinctions?

In discussing parks, we often think of landscapes, but the biodiversity crisis affects aquatic systems as well. Protection of the oceans requires safeguards against overfishing and networks of marine reserves that include rich nearshore habitats (such as coral reefs and upwellings) as well as deep-sea vents and abyssal plains. As on land, these protected areas should range from strict nature reserves where fishing and extraction are forbidden to seascapes that are managed for their cultural and ecological value. Areas that are open to exploitation should be managed sustainably to meet the long-term resource needs of local communities, while providing natural services such as recreational opportunities and water purification.

Such parks, in effect, would celebrate and honor the evolutionary heritage reflected in biological diversity, just as traditional national parks and monuments preserve special geological features or honor important historical events in human affairs. Rather than merely constructing museums that memorialize biocide, biodiversity parks would offer explicit protection for endangered species and evolutionarily distinctive ecosystems. The task is not as insurmountable as it might appear. By preserving and endowing just 25 biodiversity hotspots (less than two percent of the earth's land area) we could help protect 44% of vascular plant species and 35% of all species of mammals, birds, reptiles and amphibians

Ecologically Reclaimed and Restored Habitats

Humans need to play conservation offense as well as defense. Beyond the immediate concern with the loss of a particular population, species, or ecosystem, a focus on long-term recovery and biological revival is also essential. Scientific research can inform the restoration of local habitats and help renaturalize entire ecosystems by uniting scattered fragments.

In The Gambia Department of Parks and wildlife Management with collaboration of NEMA project and communities' participation and involvement in conservation are able to established 13 communities conservation areas in the country. l forest system—an area assaulted by ranching, hunting, logging, and fires for almost 400 years. They purchased large tracts of land, stopped the farming and fires, and let nature take back its original terrain. Restoration relying on succession recovery is not always so predictable, however. The woody vegetation was resistant to the fire regime. For that reason, restoration ecologists are often needed to ensure the recovery of degraded lands. Dozens of federal grants support restoration projects such as prairie streams for the Topeka shiner in Iowa, aquatic systems for Arctic grayling in Montana, grasslands for a threatened milk-vetch and other plant species in Oregon, and habitat for sage grouse in Colorado.[13]

The reintroduction of individual species can play an important role in rewarding parks and their surrounding ecosystems. Large animals are especially prone to extinction, yet they are often key to ecological dynamics. The return of a megafaunal species to its historic range can yield many benefits: undo population extinction, make habitats more interesting and exciting for locals and visitors, and restore ecological interactions (often with positive system-wide consequences).

Community

The Fabric of Local Communities

As the research made by foreign and national researchers in the country on primates, amphianns, birds mammals and sea turtles have come up with results that are relevant for biodiversity conservation of the country and pave way forward. They build models, experiment, and—on good days—make new empirical or conceptual connections: the effects of pesticides on egg development, the role of disease in amphibian declines, or the effects of biodiversity on ecosystem function. To ameliorate the extinction crisis, though, science must move beyond such focused analyses—important and fascinating as they are—and attempt to draw broader connections between species conservation and ecosystem roles in sustaining human communities and well-being.

How can we promote awareness of the many values of nature? In urban areas, mounting evidence links the health of city dwellers to biodiversity and green spaces. In rural areas, the old

idea that conservation displaces people, putting fences between nature and people, seems increasingly outmoded. Businesses have thrived in the local farmers, even as environmental protections have increased.

Where local populations increase around protected areas, a key challenge will be to mitigate the inevitable impacts by weaving the protected areas into the fabric of local communities, thereby promoting traditions way of conservation. In the Gambia, villagers are literally weaving palm branches from palm and rhuns trees into baskets for sale in markets. The goal is to make conservation productive, bettering the lives of local weavers while shifting communities away from large-scale consumption. The establishment of biological reserves can be tied to training for local and professional park staff, taxonomists, research assistants, and tourist guides. Even basic contributions such as Internet access and local-language publications of park reports and wildlife guides can be tremendously valuable in the Gambia. Ecotourism has helped promote conservation efforts in the country.

Legislations

Present laws, and treaties, when fully enforced, may be best able to handle the direct exploitation of wildlife species. Treaties such as the Convention on International Trade in Endangered Species and the International trade on timbers have helped lower trade in rare and declining species. Domestic laws, such as the Biodiversity/wildlife Act, Fisheries Act, Forestry Act and NAMA Act in the Gambia, are explicitly designed to stop anthropogenic and other species extinctions. The act has been successful in reducing the extinction rate and recovering several high profile species, such as the crocodile, bald eagle, Marine turtles and remaining antelope such as Sitatungas.

Ecological Economics

In the seventeenth and eighteenth centuries, economic relationships were seen as a reflection of the natural world. The scholar and philosopher David Hume regarded economic processes as part of nature. His contemporary Carl Linnaeus praised the “economy of nature” in a treatise on self-regulation in animals and plants. Thomas Malthus worked within the tradition of the natural sciences. For these and other thinkers of the Enlightenment, human reason was understood as a derivative of natural instincts; nature was a benevolent force in creating wealth.

The relatively new field of ecological economics is a grand synthesis of human activity and the natural world. Within this sphere, there is plenty of room for discourse on individual human behavior, economic activity, ecology, and global change. For those working in this discipline, nature is seen as benevolent: the provider of goods and services, a protector against catastrophes such as, droughts, and floods.

Biodiversity Trust Fund

One innovative way to establish and maintain protected areas is by creating conservation trust funds. There is an urgent need for such endowments, especially in the tropics, where human numbers and consumption are burgeoning and populations of many wildlife species are in decline. In these case, money to maintain national parks is often short. In many cases, expenditures are less than five percent of those deemed necessary to establish and maintain a

viable reserve network. Unlike taxes, user fees, and debt swaps, endowments provide sustained funding and are relatively resilient to the fluctuations of power and promote ecotourism and communities around National parks and reserves to enhanced village development projects, Permanent funds, ideally administered by a board of qualified trustees, will be critical in maintaining conservation areas in perpetuity.

CITES

Convention on the International Trade of Endangered Species of Wild Fauna and Flora CITES regulates the international trade in wild animals and plants, alive or dead and including body parts, to ensure that this practice does not threaten their survival. It is an international agreement to which States adhere voluntarily, but is legally binding on the Parties, providing a framework under which each Party adopts its own domestic legislation to ensure implementation at the national level. The species covered by CITES are listed in Appendices, according to the degree of protection they need. Appendix I includes species threatened with extinction; trade in specimens of these species is permitted only in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival. *Pteracarpus erinaceous* are covered by Appendix II. Were quotas should be set up to control the trade to the international markets and domestic untilization of the species under this category.

The objectives of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade are:

- To promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;
- To contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.
- The Convention regulates the international trade of chemicals and currently regulates 43 chemicals, including 32 pesticides and applies to:
- Banned or severely restricted chemicals; and • severely hazardous pesticide formulations.

Convention on Migratory Species

The Convention on Migratory Species (CMS) provides a number of resolutions, Memorandum of Understanding (MoUs), agreements and task forces that have the most direct relevance to vulture conservation.

These can be summarised as follows:

The MoU on the Conservation of Migratory Birds of Prey in Africa and Eurasia, concluded in October 2008, has an Action Plan which contains activities with specific references to poisoning and power lines and their impact on birds of prey. The Action Plan mentions the following activities that are of relevance in relation to power lines and are quoted below in full:

- Review relevant legislation and take steps where possible to make sure that it requires all new power lines to be designed to avoid bird of prey electrocution.
- Conduct risk analysis at important sites

- to identify and address actual or potential causes of significant incidental mortality from human causes (including fire, laying poisons, pesticide use, power lines, wind turbines).
- Conduct Strategic Environmental Assessments of planned significant infrastructure developments within major flyways to identify key risk areas.
- Where feasible, take necessary actions to ensure that existing power lines that pose the greatest risk to birds of prey are modified to avoid bird of prey electrocution.