STRATEGY FOR THE CONSERVATION OF WEST AFRICAN ELEPHANTS

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Revised version - March 2005

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TABLE OF CONTENTS

GOAL OF THIS STRATEGY:

TO ENSURE THE CONSERVATION OF ELEPHANTS

AND THEIR HABITATS IN WEST AFRICA

1. EXECUTIVE SUMMARY

West Africa lost more than 90% of its elephant range during the 20th century, and today most elephant populations are small and isolated. A sub-regional approach to elephant conservation is needed because the problems are common to all countries and some important populations straddle international frontiers.

Elephants have long played an important role in traditional West African culture and are still important symbols representing power and strength. Elephants are important in the development of tourism because they attract overseas tourists. Elephants are also thought to play an important ecological role in both savanna and forest ecosystems. Some elephant populations have already disappeared yet there is much we still do not know about their taxonomic status in the sub-region and their genetic and behavioural diversity.

Elephants are still found in 54 separate ranges in West Africa, 35 in the forest zone and 19 in the savanna and Sahel. Most of the current estimates of elephant numbers are guesses rather than the results of scientific surveys. These estimates suggest that most populations are small, with almost two-thirds consisting of no more than 100 elephants. Only one population exceeds 1,000 individuals (Blanc *et al*. 2003, see table 3). Little is known about the current status of elephants in countries that have suffered recent civil wars.

The goal of this strategy, which will be implemented over ten years, is to ensure the conservation of elephants and their habitats in West Africa. To reach this goal, three objectives that address the most urgent problems have been set:

1. There are few good estimates of elephant numbers, and there is no data on age structure, sex ratio, natality or mortality rates for any population. There is almost no information on the domestic and international ivory trade and its effects on wild elephants. Thus it is essential to initiate surveys **to evaluate the status of elephants in the sub-region.**

2. The once-widespread elephant population is now fragmented into many small populations, and numbers have been declining for several centuries. Small populations have a higher risk of extinction, and so it is essential **to maintain and where possible increase elephant populations.**

3.   A major cause of the decline of elephants has been the dramatic loss of habitat and the degradation of remaining habitats. Therefore there must be investment in habitat management, rehabilitation, and protection or parks and reserves **to improve habitats for elephants.**

The strategy identifies seven results or outputs that are needed to achieve the three objectives: information necessary for management; better understanding and control of the ivory trade; enhanced institutional capacity for elephant management; reduction in rate of loss of elephant range; illegal killing of elephants contained; elephant conservation issues better understood at all levels; and sub-regional understanding and cooperation strengthened. For each of these results/outputs a number of activities are specified.

Given the broad range of activities that are necessary and the lack of resources, the activities must be prioritised. Efforts will first concentrate upon populations that have more than 100 elephants. Later, as more information becomes available, other criteria reflecting the long-term viability of each population will be used.

2.   INTRODUCTION

The African elephant (*Loxodonta africana*) is the planet's largest terrestrial mammal. It fascinates us and stimulates our curiosity because of its huge size, behaviour, social organisation and intelligence. It is a majestic symbol of the African continent. It occupies a range of habitats in West Africa, from humid forest to the arid Sahel. Even though a much higher proportion of the original elephant population has been lost in this sub-region than elsewhere, a big effort must be made to conserve the remaining elephants because of their value to West Africans. Elephants are important in the realms of culture, art, economics, ecology, and land use.

At the sociocultural level, a multitude of historical relationships link people and elephants in West Africa. These relationships remain strong and are evident even today in West African communities. Thus, in the Moaga society (one of the largest ethnic groups in Burkina Faso), the elephant is a symbol of strength and power for traditional chiefs. Indeed, chiefs who were the most popular and powerful fighters against the colonial invasion always chose to bear the name of "Naba Wobgo" (meaning Chief Elephant) to replace their family name. Even nowadays, some chiefs still bear this "warrior" name. In many places it is believed that a man's bravery is measured by his ability to kill an elephant; elephant hunters are feared and respected because they possess mysterious powers.

Because of its strength, the elephant has become an emblem to identify certain political and sporting organisations. The first political party established right after independence in French West Africa, *le Rassemblement Démocratique Africain*, had an elephant as its logo to highlight the party's strength, wisdom, and conquering spirit. Nowadays, in both Côte-d'Ivoire and Burkina Faso, the picture of an elephant is still the party's logo. In the realm of sport, some national teams have chosen the name of the elephant. For example, the national football team of Côte-d'Ivoire is called "*Les Elephants de Côte-d'Ivoire*". Indeed, the elephant is the national emblem of Côte d'Ivoire.

There are many beliefs associated with elephants. They feature in fairy tales and they are a source of inspiration for sculpture and painting and for many traditional ceremonies (Ravenhill, 1992; Ross, 1992; Blackmun, 1992; Drewal, 1992; Cole, 1992). Sculptures sold in craft markets in the main West African cities frequently depict elephants. Elephant products are used by traditional healers to cure many diseases and are commonly offered for sale in markets. For example, elephant hide is a well-known and effective remedy for diseases like measles and jaundice. In the Sahel, plants that are swallowed and then regurgitated by elephants are used to cure a number of diseases (diarrhoea, chickenpox, rheumatism, etc.).

In certain societies, the direction of elephant movements is a portent of particular events. For example, in the northern part of Mali, people believe that elephants moving from north to south signify the beginning of the rainy season in the Sahel (Niagate, 1998). Elephants are also considered symbols of good luck in Mali. The elephant is therefore a powerful and ubiquitous symbol and its disappearance would represent a great loss to West African traditional culture.

The elephant is a species of great economic importance. The demand for ivory caused precipitous population declines across the continent (e.g. Milner-Gulland & Beddington, 1993) and there are now strict controls upon the international ivory trade. Elephants' economic importance as ivory producers has been superceded in West Africa by their ability

to attract tourists. Tourism is now one of the world's most important industries and an effective tourist industry is essential for expanding the economies of developing countries (OMT, 1997; WTO, 1998). Although elephants are the animal species that overseas tourists most wish to see (Brown & Henry, 1993), elephant numbers are dwindling at the same time that most countries in the sub-region are expanding their tourism industries.

The ecological importance of elephants in the West African savannas has been largely ignored, although it has long been recognised in East Africa, for example in opening up bush and reducing the abundance of tsetse fly, and in increasing the diversity of plants and herbivorous mammals (Ford, 1971; Western, 1989). Elephants are also thought to play a key role in maintaining the diversity of plants and animals in the forest environment: they create a patchwork of forest types by opening up the understory, slowing down the closure of canopy gaps caused by falling trees, carrying seeds long distances, and influencing the age and size structure of the plant populations (Alexandre, 1978; Carroll, 1988; Western, 1989; Martin, 1991; Struhsaker, 1997). These ecological relationships are subtle and difficult for the layman to comprehend, but they could have economic consequences. For example, some tree species important to the timber industry have large seeds, which are disseminated by elephants (Martin, 1991; Feer, 1995). If these animals disappear, then the natural regeneration of these trees may be in jeopardy (Janzen & Martin, 1982; Hall & Swaine, 1981; Struhsaker, 1987). The lack of regeneration of the tree Calvaria *major* on Mauritius after the dodo's extinction (Temple, 1977) should be a warning.

Elephants roam over large expanses of forest and savanna. By protecting this species, one will also protect other less charismatic species. In other words, preserving elephants is another way of conserving biodiversity in general. Furthermore, protecting the habitat of forest elephants will slow the rate of deforestation.

Scientists are still debating the taxonomic status of elephants. While most biologists have considered there to be two sub-species of elephant in West Africa, the forest elephant *Loxodonta africana cyclotis* and the savanna elephant *Loxodonta africana africana* or *Loxodonta africana oxyotis*---there is some evidence suggesting that they are not sub-species but rather two separate species: *Loxodonta cyclotis* and *Loxodonta africana* (Frade, 1955; Georgiadis, 1996; Barriel *et al*., 1999, Roca et al., 2001). Some elephant populations have already disappeared, such as the last one of Mauritania and those that were lost in Cote d'Ivoire during the 1980s (Merz & Hoppe Dominik, 1991), yet we are ignorant of the effect of these disappearances on the sub-region's gene pool. We lack data on the genetic relationships between forest elephants in West Africa and those in Central Africa, or between the savanna elephants of West Africa and those of eastern and southern Africa. Biologists recognise that a species' genetic diversity must be preserved if it is to retain its evolutionary potential to adapt to a changing world. Therefore, with the current dearth of information on this topic, it would be prudent to preserve the full range of elephant genetic material in West Africa. Elephants also have behaviour patterns that have evolved in different environments. Until we understand more about the variations in behaviour patterns in different parts of the sub-region, and how they change as human pressures increase and habitats shrink, it would again be wise to conserve the full range of behavioural diversity. However, elephant numbers declined dramatically in West Africa during the 20th century, and the remaining populations are small and isolated. Elephant conservation in West Africa is hindered by a lack of data on numbers, population dynamics, and seasonal movements. The institutions responsible for wildlife management are weak and individual governments cannot by themselves undertake the challenge of elephant conservation. A sub-regional approach is needed because the problems

of elephant conservation are common to all countries and the largest elephant ranges in both savanna and forest span international frontiers. Cooperation between countries will enable scarce resources to be pooled for maximum benefit.

The goal of this strategy is to ensure the conservation of elephants and their habitats in West Africa. To attain this goal, the strategy has three main objectives: to better understand the status of elephants, to maintain and if possible increase elephant numbers, and to improve elephant habitats. The strategy is designed to be implemented over ten years; a new one will be drawn up in 2010.

3.   HISTORICAL BACKGROUND

In classical times elephants were found throughout West Africa, from the coastal forests to the fringes of the Sahara (Scullard, 1974). They have long been hunted for their ivory, which for centuries was traded across the Sahara to the ports of North Africa (Wilson & Ayerst, 1976). Later, ivory was carried towards the Atlantic coasts and sold to European traders. Hunting for ivory increased during the 19th century, especially after 1870 when the colonial powers moved inland and established roads and railways that facilitated the transport of ivory (Alpers, 1992). Ivory exports continued to grow in volume until about 1910 when the elephant population collapsed as a consequence of over-hunting (Roth & Douglas-Hamilton, 1991). Elephant numbers did not recover in West Africa after World War I as they did elsewhere (Spinage, 1973).

During the 20th century human populations grew exponentially. Expanding roads, villages, towns, and farms have caused a rapid loss of the natural vegetation cover and widespread disturbance to remaining habitats. The growth of the logging industry opened up forests to settlement and other forms of human disturbance (Roth & Douglas-Hamilton, 1991; Dougherty, 1994). Between 1900 and the mid-1980s the range of elephants is estimated to have decreased by 93% (Roth & Douglas-Hamilton, 1991). During the 1980s ivory poaching increased in the sub-region, as it did also in Central and East Africa. There are few data illustrating the impact on West African elephants, but Côte d'Ivoire lost half its forest elephants during that decade (Merz & Hoppe-Dominik, 1991). Ivory export records reflect the steep decline in elephant numbers during the last century: during 1979-88 the average volume of ivory exported annually from the countries of the former *Afrique Occidentale Francaise* was less than 1% of that recorded during 1890-1914 (data from Douglas-Hamilton (1979) and Luxmoore *et al*. (1989)).

4.   CURRENT STATUS

4.1.   Distribution and Numbers

Elephants are distributed unevenly in West Africa. They occupy a tiny part of Guinea, Guinea Bissau, and Niger, but until recently were found in a large area of Liberia (Table 1). The African Elephant Status Report 2002 (Blanc *et al*, 2003) records 86 sites with elephants in 13 countries (Table 1). Such sites may be national parks, game reserves, forest reserves, or other categories of protected areas, but some are simply unprotected lands occupied by elephants. Burkina Faso has 16 sites with elephants, and there are 24 in Cote d'Ivoire (Table 1).

Estimates of elephant numbers are available for 56% of elephant range in West Africa, making it the region with the largest proportion of range with population estimates. However, 53% of the range covered by estimates is in the form of guesses, leaving the area covered by systematic surveys at just over 26% of total elephant range (Blanc *et al*, 2003. See table 6).

Most sites are isolated from other places where elephants occur. On the other hand, some are neighbours and form one large expanse of elephant range. For example, nine sites in eastern Burkina Faso are clustered with two in northern Benin and one in Niger, making the largest elephant range (29,102 sq km) in the sub-region. If one considers each isolated site as an elephant range, and if one also considers each cluster of adjacent sites as a single elephant range, then there are 54 ranges in West Africa (Fig. 1): 35 are in the forest zone (as defined by White [1983]), and 19 in the savanna zone (which in this document will mean the Guinea and Sudanian savannas and the Sahel). They are listed in Tables 2 and 3.

Most populations are small; for example, two-thirds of those in the forest zone consist of 50 or fewer elephants (Tables 2 and 4), and only ten hold more than 100. Only three populations in the forest zone may exceed 500 elephants: Bia/Goasa/Djambamakrou, lying on the border between Ghana and Cote d'Ivoire, Gola forest on the border of Liberia and Sierra Leone and Cross River-Korop-Banyang-Mbo area between Nigeria and Cameroon.

Half the populations in the savanna zone consist of 100 or fewer elephants (Tables 3 and 4), and only four exceed 500: Mole, Gourma Mali/Sahel Burkinabè, Nazinga-Sissili-Zabre-NE Ghana-Dough and the Parc W-Arly-Pendjari complex. The latter is the population straddling the borders of Burkina Faso, Benin, and Niger and is the only one in the sub-region that exceeds a thousand individuals.

Some of the Liberian and Sierra Leone populations shown in Fig. 1 and Tables 1 to 5 may have been reduced significantly in numbers, or even wiped out, during the recent civil wars. Elephants usually suffer during wartime because of the widespread availability of firearms and because ivory is traded for arms.

The estimated densities (Tables 2 and 3) are much lower than those seen elsewhere on the continent and probably reflect heavy hunting in the past.

The high proportion of guesses among the population estimates is only one example of the general lack of information for managing elephants. There is not a single population in the sub-region with data on age structure, sex ratio, mortality, and natality that would allow us to predict trends in numbers. There is no information on how animals that once roamed over large areas use their habitat when restricted to small reserves. We also lack data on the optimum number a given area can support (the carrying capacity).

The ivory trade has played a key part in the decline of the West African elephant, and will always pose a potential threat. Certain countries have long been important entrepôts for the ivory trade (Allaway, 1989; Roth & Douglas-Hamilton, 1991; Dublin *et al*., 1995).

In 1996 six countries reported that they held ivory stocks (Milliken, 1997). Inevitably these stocks will grow as found ivory (tusks from elephants that die naturally) and seized ivory is added. The domestic trade in ivory is still permitted in some countries (TRAFFIC, 1999) and continues under cover elsewhere. There is an urgent need to learn more about the dynamics of ivory smuggling within West Africa (Milliken & Sangalakula, 1996).

The lack of basic information needed for management means that an effective strategy must put heavy emphasis on collecting data on numbers, population parameters, habitat trends, general ecology, and the ivory trade. Therefore the first major objective of the strategy is **to evaluate the status of elephants in West Africa.**

4.2. Trends

The current estimates of elephant abundance, even though they are mostly guesses, illustrate how the formerly widespread elephant population has been split into a number of small-scattered populations. There are no estimates for the decline in numbers during the last century but it probably of a similar magnitude to the 93% loss in range (Roth & Douglas-Hamilton, 1991).

The smaller a population, the greater the chance of its extinction (Shaffer, 1987). Small numbers are more vulnerable to chance events like an epidemic or drought, or to an outbreak of poaching. For example, a small number of elephants in an isolated forest may lose all the adult males to poachers and then be unable to reproduce.

The plight of West African elephants is similar to that of the Asian species (*Elephas maximus*). Data from Indian elephants were used in a computer simulation by Sukumar (1993) to conclude that each population must have between 100 and 200 elephants (depending upon the initial age distribution and sex ratio) to ensure a high probability of surviving the next 100 years. West African elephants are likely to have birth and death schedules similar to those of the modelled Asian elephants (Sukumar, 1993) because they have suffered similar hunting pressures and fragmentation, and so we may use Sukumar's results as a guide. His estimate of 100 to 200 as a minimum viable population is cause for concern, given that Table 5 shows that only 22 West African populations exceed 100 animals and only 15 are larger than 200 animals. Furthermore, when the age structure and sex ratio have been seriously distorted by heavy hunting, the population must exceed 200 so as to have a reasonable chance of surviving a century (Sukumar, 1993).

Inbreeding and loss of genetic variation are potential problems for small isolated populations (Lande & Barrowclough, 1987). In the long term (one or two centuries) it may be necessary to formulate a genetic management plan. However, at present there is no evidence that inbreeding has a deleterious effect in the medium term (i.e. over a period of decades) for elephants. These populations are more likely to be adversely affected by habitat loss, ivory poaching, drought, and disease in the early decades of the 21st century.

Elephant numbers have been declining for several centuries, at least since Europeans started trading on the Atlantic coast. This strategy must arrest the long-term downward trend in range and numbers, and so the second major objective is **to maintain and where possible increase elephant populations in West Africa.**

4.3. Habitat Management

Habitat is lost as a consequence of expanding human activities: when existing villages and farms grow or new ones are created; when new roads encourage settlement in remote areas; when development projects create mines, dams, or commercial agriculture (such as oil-palm plantations); and when forest concessions are given out. Whereas vegetation disturbed by

logging is preferred by elephants (Merz, 1981), hunting may increase in timber concessions because of greater accessibility.

Elephant habitat may be degraded by burning in the dry season, domestic livestock grazing, woodcutting, or encroachment by farmers. Scattered farms and other types of human activity may act as foci of disturbance that discourage elephants from using the whole area that would otherwise be available.

Most populations listed in Tables 2 and 3 are found in protected areas. On the continental scale, the most important variable determining elephant densities is the degree of protection (Burrill & Douglas-Hamilton, 1987). However, many West African parks and reserves are not effectively protected because of lack of resources or poor staff morale. Elephants in a small reserve will always be vulnerable to an upsurge of poaching, because there are no remote places where they can find refuge every part of a small reserve may be within a day's walk of a village. On the other hand, a small area can be more effectively protected (Leader-Williams & Albon, 1988; Parker & Graham, 1989).

Because so many habitats have already disappeared, it is essential that no more are lost and that the remainder be effectively managed. Therefore the third major objective **is to improve the habitats of elephants in West Africa.** This implies habitat manipulation in the traditional sense (fire management, etc), habitat restoration or rehabilitation, and protection.

5.   ACTION TO BE UNDERTAKEN BY THE STRATEGY

In order to achieve the three objectives described above, seven results (or outputs) are needed. These desired results were identified by the logical framework procedure adopted by the workshop that developed this strategy (see Appendix 1). Each desired result is described below, with the activities required to produce that result. Each result may contribute to one or more of the three main objectives (see Appendix 1). It is expected that various projects will be developed for the implementation of the activities highlighted in the strategy.

Since resources for conservation are scarce, we must ensure that efforts are concentrated on those populations having the highest probability of long-term survival. The first stage of prioritisation distinguishes between populations that are estimated to be greater or smaller than 100 elephants, the minimum needed to ensure a reasonable chance of surviving the next century. More effort should be invested in the larger ones, of which there are currently 22 (Tables 2 and 3). At a later stage, having collected new information about each range, each government will have to prioritise its elephant populations using additional criteria. Such criteria should reflect each population's potential: population parameters (age-structure, sex ratio, natality, and mortality), inferred trend in numbers, extent of available range, threats from poaching or agricultural encroachment, and standard of management. It may then be necessary to prioritise at a sub-regional level, for instance deciding which populations are top priority---i.e. critical to the survival of elephants in West Africa.

6.   RESULTS TO BE OBTAINED DURING IMPLEMENTATION OF THE STRATEGY

6.1.   Result 1: Information Necessary for Management

6.1.1. Rationale

Management decisions must be based on information, but few data are available for most sites. Efforts should concentrate on the larger populations, i.e. those thought to exceed 100 individuals. Twenty-two populations are listed as larger than 100 individuals (Tables 2 and 3). However, some of these may have fallen below that number (e.g. those in Liberia), and others that are currently listed as smaller than 100 may in fact be larger. Therefore a major survey effort must be undertaken to estimate numbers so that the sites in both forest and savanna can be prioritised. The seasonal movements and use of different habitats need to be better understood. For the priority sites, data on age structures, sex ratios, and birth and natural mortality rates need to be estimated so that trends can be predicted and compared with the results from consecutive population estimates. Mortality rates due to poaching must be monitored. Population viability analyses (PVA) need to be conducted.

6.1.2. Activities

Refine and standardise current methods for estimating forest elephant numbers, and develop new techniques.

Investigate the potential of infrasound as a means of surveying elephant numbers and distribution.

Initiate surveys to estimate population numbers in sites thought to have >100 elephants and others which may have been incorrectly classified as smaller than 100 elephants.

Update Tables 2 and 3 using the new estimates, and then rank the sites in order of size. In the first instance, prioritise by population size; when more information becomes available, the priority list should be revised using other criteria than reflect potential for long-term survival.

For priority sites (confirmed to have more than 100 elephants), organise counts at regular intervals (e.g. every other year, every 5 years) to elucidate trends.

Initiate programmes to estimate age structures and sex ratios in priority sites. Refine field methods for estimating age in forest elephants.

Estimate natality rates and natural (i.e. non-poaching) mortality rates and construct models to predict trends and effects of different management options.

Estimate survival probabilities of small populations with the age structures and sex ratios determined from field studies (PVA).

Full use should be made of new technologies such as the use of Geographical Information Systems to monitor and manage elephant habitats.

Study seasonal movements, especially those crossing international frontiers, either by ground observations or radio-tracking.

Study habitat use by populations that once ranged over large areas but are now restricted to small reserves.

Evaluate habitat/range conditions for each site and prepare habitat management plans.

Initiate habitat-monitoring programmes.

Monitor spatial and temporal distribution of illegal activity and their trends in gazetted areas.

Ensure MIKE (Monitoring Illegal Killing of Elephants, a pan-continental scheme recommended by the CITES conference in 1997) is implemented rapidly at the sites officially selected for that programme ('official' MIKE sites); implement similar programmes elsewhere ('unofficial' MIKE sites).

Develop techniques for determining the genetic relationships and evolutionary histories of elephants.

Conduct genetic studies to determine the taxonomic status of forest and savanna elephants; determine whether they are sub-species or separate species.

Conduct genetic studies to determine relationships between forest elephants of the Upper Guinea forests and those of the Central African (Congolian) block, and relationships between savanna elephants of West Africa and those of East and southern Africa.

Ensure that all data on numbers and distribution, with details of survey methods, are passed on to the African Elephant Database.

Make available to managers results of elephant research.

Develop a database on organizations, projects and experts involved in elephant conservation and management in the sub-region.

6.2. Result 2: Better Understanding and Effective Control of the Ivory Trade

6.2.1. Rationale

It is the domestic ivory trade in each country that feeds the international trade. The domestic ivory trade consumes ivory obtained from elephants that are killed illegally both within and outside West Africa. Certain countries and cities within the sub-region are known to be trans-shipment points for illegal ivory flowing from Central Africa. It will be impossible to control the illegal international ivory trade while the domestic trade flourishes. Since the dynamics of the domestic trade are not properly understood, studies in each country are an essential first step. The international trade must also be further investigated. Effective controls of both the domestic and international trade must be put in place.

6.2.2. Activities

Reinforce existing policy initiatives, e.g. at the level of ECOWAS, concerning elephant conservation and the ivory trade in the sub-region, and establish new ones where none exist.

Urgently implement the CITES Action plan for the control of trade in African elephant ivory adopted in CITES Decision 13.26.

Encourage the participation of customs services in the struggle to control ivory smuggling. Train customs and police in law-enforcement techniques with respect to ivory.

Ensure ivory marking and registration systems have been established in each country for government-held stocks and for individually-owned ivory, and seize all unmarked ivory.

Conduct studies on the domestic ivory trade in each country.

Establish intelligence networks to combat smuggling.

In accordance with the CITES Decision 13.26, inform and sensitize trophy merchants and ivory jewellery merchants, and the public at large, about legislation relating to trade in elephant products.

Establish mechanisms for feeding West African data quickly to the Elephant Trade Information System (ETIS), which provides a method for monitoring illegal ivory flows.

Engage TRAFFIC to coordinate all activities concerning the regulation of the ivory trade.

Support the African Elephant Specialist Group (AfESG), which coordinates and promotes the technical aspects of elephant management.

6.3.   Result 3: Enhanced Institutional Capacity for Elephant Management

6.3.1. Rationale

Institutional weakness prevents the establishment and efficient functioning of elephant management programmes. Most government wildlife departments in the sub-region lack the personnel needed to carry out their mandate, and the existing personnel frequently do not have the necessary technical or professional training. Junior staff, such as game guards, may be poorly motivated. Equipment in the form of vehicles, radios, camping and field gear, and personal gear such as binoculars, compasses, and field guides, are also lacking. Finally, in most cases running costs (e.g. fuel and maintenance for vehicles, night allowances for field staff) are inadequate. Consequently, parks and reserves are not effectively protected from poachers and agricultural encroachment, elephant management plans cannot be drawn up or implemented, surveys cannot be conducted, and there are no monitoring programmes.

6.3.2   Activities

Organise training courses at the sub-regional and national levels for officers in the field.

Provide scholarships to enable wildlife officers to obtain university degrees in wildlife management

Organise training courses at the national level for game guards.

Organise training courses at the national level for village or community game guards.

Organise training for local community leaders and NGOs.

Provide field equipment for game guard staff at all sites with >100 elephants.

Develop a system to improve the morale and motivation of game guard forces, such as incentives for making arrests, ensure promotion prospects, and improve leadership by officers.

Establish intelligence networks to combat poaching.

Support the African Elephant Specialist Group (AfESG), which coordinates and promotes the technical aspects of elephant management and assists government wildlife agencies and NGOs in developing national policies and planning projects.

6.4. Result 4: Reduction in the Rate of Loss of Elephant Range

6.4.1. Rationale

Habitat loss has been an important cause of the decline of elephants, especially during the 20th century. The shrinkage of elephant habitats must be arrested by securing the boundaries of current ranges and by reducing the pressures that nibble away at their edges. Further encroachment onto elephant habitats must be prevented. Human disturbance that degrades remaining habitat or disturbs elephants (such as logging, farming, mining, and hunting) must be curtailed. Measures must be taken to reduce the antagonism of local people who come into contact with elephants. The need for fair and effective compensation for crop damage must be addressed by each state. In arid areas it may be necessary to control fires and provide water to reduce competition with livestock.

6.4.2 Activities

All logging activities to be stopped in priority protected areas (i.e. protected areas with >100 elephants) to stem habitat degradation.

Evict illegal settlers from protected elephant habitats to stem habitat degradation due to human activities and prevent human/elephant conflict.

Demarcate and secure the boundaries of protected elephant habitats to prevent encroachment.

Forge a linkage between elephant conservation and the local people, by encouraging them to assume responsibility for elephant management or for activities that generate income from protected areas.

Reduce human/elephant conflict by engaging communities in activities that do not require them to encroach upon protected areas.

Reduce human/elephant conflict by reducing the frequency and intensity of crop damage. Develop new techniques of deterring elephants from visiting farmland.

Keeping in mind lessons learned from compensation policies implemented in other Range States, investigate the potential for fair systems for compensating farmers adjacent to protected areas for crop and other damages caused by elephants.

Train rapid-response teams to deal rapidly with cases of problem elephants.

Create water points for elephants, where appropriate, within protected areas to draw them away from cultivated areas.

Prepare fire management plans, and ensure their implementation.

Promote the gazetting and effective protection of elephant habitat, especially migration corridors, in cross-border areas.

Establish and manage migratory corridors where agricultural encroachment is prevented.

Protect elephants during their seasonal movements when they are most vulnerable.

Promote national land use planning that secures the future of elephant ranges by giving them importance at the national level. Encourage planning that covers entire ecosystems, even those crossing national boundaries.

Help develop strategies that maximize benefits from elephants to local communities.

6.5. Result 5: Illegal Killing of Elephants Contained

6.5.1. Rationale

Because so many elephant populations are small, only a slight increase in poaching could have a catastrophic effect and cause local extinction. Elephant managers have to work within the legal framework but in some countries the legislation needs to be revised and strengthened. Everywhere the laws protecting elephants must be enforced by improving the flow of information about illegal activities and by making the anti-poaching teams more effective on the ground.

6.5.2. Activities

Review and where necessary revise wildlife and hunting legislation to meet the current needs of elephant conservation.

Increase penalties for killing elephants, possessing ivory, and trafficking in ivory at both the national and international levels.

Strengthen legislation and enforcement to better control the use of firearms.

Legislate to ban internal trade in ivory and elephant products so as to stem the flow of ivory into the international market.

Create a network of informers around each protected area, as this is an efficient way of gathering intelligence on illegal activities.

Establish village or community game guards to control poaching.

Train, equip and motivate anti-poaching teams to make them more efficient.

Train wildlife officers in simple methods of monitoring illegal activity so that they can deploy their forces effectively.

6.6. Result 6: Elephant Conservation Issues Better Understood at All Levels

6.6.1. Rationale

Within each range state there is a general lack of understanding of, or indifference to, elephant conservation. Civil servants, politicians, community leaders and ordinary farmers are often unaware of the legislation governing the hunting of elephants and possession of ivory. Some are aware of the legislation but do not understand the reasons for it and so they ignore it. The solutions to the problems of elephant management must involve various levels of responsibility. Therefore this strategy must promote a greater understanding amongst rural communities, town and city dwellers (especially the middle class), and the civil servants and politicians who will facilitate the adoption of conservation policies and the implementation of field programmes. Media stories about the life of elephants (e.g. their social behaviour) are an effective means of influencing the general public. The public must be reached through schools, villages, radio, television, and newspapers.

6.6.2. Activities

Disseminate information about elephants at the sub-regional, national, and local levels so that the public understands the issues and is more likely to offer its support.

Reinforce the means of, and capacity for, communicating environmental issues to the public. The environment ministry in each country should create a public relations office for promoting wildlife conservation (including waters, soils, plants, and animals) in general and elephants in particular.

Establish public information campaigns focussing on elephants in the countryside by visiting schools, touring film shows, plays and dances.

Building on traditional beliefs and relationships between people and elephants, raise awareness on the importance of conserving elephants.

Target information at civil servants and local government officials to ensure that they understand the issues, as they are often the *de facto* decision-makers.

Publicise and explain the laws concerning the ivory trade and wildlife conservation.

Popularise the results of scientific research in a manner that will stimulate public interest.

6.7.   Result 7: Regional Understanding and Cooperation Strengthened

6.7.1. Rationale

The 13 countries need to work together, because neighbouring countries face similar problems of elephant management, and some elephants move back and forth across international borders. Poachers often cross frontiers at their convenience. Therefore the states that share an elephant population need to coordinate their surveys and anti-poaching activities. Range States must use the political and economic framework provided by ECOWAS (Economic Community of West African States) to increase the profile of elephants. By speaking with one voice on elephant and ivory issues the sub-region will be able to gather more international support. The African Elephant Specialist Group can play an important role in promoting information exchange and contacts between specialists.

6.7.2. Activities

Create contacts and cooperative agreements between states for elephant management.

Facilitate contacts between elephant specialists by means of periodic meetings and regular circulation of information so that lessons learnt in one country can be applied elsewhere.

Facilitate technical exchanges within the sub-region by means of reviews, workshops, and other types of meetings.

Reinforce the operational capacity of the AfESG so that it can better meet the needs of the sub-region concerning elephant management and conservation, and especially so that it can coordinate the implementation of this strategy.

7.   CONCLUSION

Having briefly described the status of elephants in the sub-region and identified the problems, **the emphasis must now be on action**. National and international NGOs must be involved as well as government wildlife agencies. Some of the activities described above will not require extra resources; rather they will demand simply that the activities of government officials or NGO staff be focused in particular directions. Others, especially those concerned with gathering information and law enforcement, will require funds for equipment, running costs, and to support staff in the field. Targets are specified in Appendix 1 to ensure that the required results are obtained and to allow us to evaluate the success of the strategy.

Many small populations in West Africa today are probably not viable. The strategy must focus on those sites with at least the minimum number of elephants needed to ensure a reasonable chance of surviving the next century.

West Africa stands apart from the rest of the continent because it has lost a greater percentage of its elephant range and suffered a greater degree of habitat fragmentation. Nevertheless, there is a strong determination among West African wildlife managers to stem the tide and to ensure that their grandchildren will benefit from elephants.

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TABLES

Table 1. List of West African countries that have elephants, the number of sites with elephants, and the number of those sites for which there is an estimate of the number of elephants (Data from the African Elephant Status Report 2002) (Blanc *et al*, 2003).

Country	Number of Sites With Elephants For Which There is an Estimate	Area of Country Occupied by Elephants (sq km)	Area of Country Occupied by Elephants (%)
Bénin	4	16,195	14
Burkina Faso	16	18,834	7
Côte d'Ivoire	24	34,417	11
Ghana	8	31,796	13
Guinea	2	2,562	1
Guinea Bissau	1	361	1
Liberia	6	21153	19
Mali	2	31,776	3
Niger	2	2,683	<1
Nigeria	11	44,067	4
Senegal	1	8,396	4
Sierra Leone	4	2,894	4
Togo	5	5,834	10
Total	86		4

Table 2. List of elephant ranges in the forest zone. (Data from Blanc *et al, 2003*). The sites are listed in order of increasing elephant abundance (note that many estimates are guesses and some are probably out of date). The data for some ranges are incomplete, for example there may be no estimates for part of a particular range.

COUNTRY	RANGE	AREA (SQ KM)	NUMBER OF ELEPHANTS	DENSITY OF ELEPHANTS (PER SQ KM)
Cote d'Ivoire	Tene Forest	4	5	1,25
Cote d'Ivoire	Bolo Forest	88	5	0,06
Sierra Leone (SL)	Bagbe River Forest	349	5	0,01
Cote d'Ivoire	Duekoue Forest	536	6	0,01
Nigeria	Andoni Island	215	6	0,03
Cote d'Iv/Guinea	Tiapleu & Mont Nimba	380	10	0,03
Cote d'Ivoire	Abokouamekro	135	11	0,08
Cote d'Ivoire	Davo Forest	126	20	0,16
Cote d'Ivoire	Go-Bodienou Forest	600	20	0,03
Ghana	Ankasa Conservation Area	509	21	0,04
Nigeria	Taylor Creek	145	25	0,17
Cote d'Ivoire	Haut Sassandra FC	1 024	30	0,03
Nigeria	Omo FR	1 300	30	0,02
Cote d'Ivoire	Scio FC	1 338	30	0,02
Cote d'Ivoire	Keregbo Forest	213	30	0,14
Cote d'Ivoire	Beki-Bossamatie FC	389	35	0,09
Cote d'Ivoire	Mont Peko NP	340	40	0,12
Nigeria	Okumu GS	1 082	40	0,04
Cote d'Ivoire	Mont Sangbe NP	950	47	0,05
SL/Guinea	Outamba/Kilimi	461	50	0,11
Cote d'Ivoire	Okromodou Forest	945	50	0,05
Cote d'Ivoire	Niegre FC	1 056	50	0,05
Cote d'Ivoire	Marahoue NP	1 010	50	0,05
Cote d'Ivoire	Azagny NP	190	60	0,32
Liberia	Barrobo National Forest	640	100	0,16
Guinea/Liberia	Ziama & NE Forest	1 253	141	0,11
Cote d'Ivoire	Fresco Forest	2 229	150	0,07
Guinea/G-Bissau	Oure Kaba & Sansale & Binasse	1 347	175	0,13
Ghana	Kakum Conservation Area	372	219	0,59
Liberia	Sapo NP	1 292	313	0,24
Cote d'Iv/Liberia	Grebo, Tai & Goin-Cavally	10 810	375	0,03
Liberia	Krahn Bassa National Forest	5 142	500	0,10
SL/Liberia	Gola forests	4 784	610	0,13
Cote d'Iv/Ghana	Bia - Goaso- Djambamakrou	4 313	658	0,15
Nigeria/Cameroun	Cross River & Korup & Banyang-Mbo	1 924	867	0,45
	Total	47 491	4 784	0,10

Table 3. List of elephant ranges in the savanna zone (including the Sahel). The sites are listed in order of increasing elephant abundance (note that most estimates are "definite" but there are still a few estimates that are guesses). Data from Blanc *et al,* 2003.

COUNTRY	RANGE	AREA (SQ KM)	NUMBER OF ELEPHANTS	DENSITY OF ELEPHANTS (PER SQ KM)
Senegal/Guinea	Niokolo-Koba NP & Baliar NP	9 130	2	0,00
Togo	Abdoulaye Faunal Reserve	300	4	0,01
Nigeria	Kambari	2 000	5	0,00
Nigeria	Gashaka-Gumpti	5 860	20	0,00
Cote d'Ivoire	Haut Bandama	1 300	20	0,02
BF/Ghana	Bontioli	420	50	0,12
Togo/Ghana	Fazao-Malfacassar-Kyabobo	1 920	61	0,03
Nigeria	Kwiambana	1 715	80	0,05
Nigeria	Chad Basin (Chingurmi-Duguma) NP	2 160	100	0,05
Niger/Nigeria	Baba N'rafi	430	100	0,23
Nigeria	Madagali & Kopre	5 600	150	0,03
Cote d'Ivoire	Comoe	11 500	200	0,02
Ghana	Digya & Chichibon	3 768	212	0,06
Nigeria	Yankari	2 254	328	0,15
Mali/BF	Gourma Mali + Sahel Burkinabe	32 096	350	0,01
BF	Mohoun PA complex	3 296	541	0,16
Ghana	Mole NP	4 840	589	0,12
BF/Ghana/Togo	Nazinga-Sissili-Zabre-NE Ghana-Doungh		771	
BF/Niger/Benin	Parc W - Arly - Pendjari complex	29 102	3836	0,13
	Total	117 691	7 419	0,06

Table 4. Estimates of the median numbers of elephants, median area occupied by elephants, and median density for the elephant ranges for which there are estimates. The ranges may consist of one isolated site or two or more contiguous sites. Data from the African Elephant Status Report 2003 (Blanc *et al*, 2003). Ranges classified into forest and savanna using White's (1983) vegetation map. 'N' is the number of ranges in each vegetation category.

Vegetation Zone	Median Population Size	Median Area Occupied by Elephants (sq km)	Median Density (elephants/sq km)	N
Forest	40	600	0.08	35
Savanna	100	3,532	0.04	19

Table 5. The distribution of elephant population sizes. The table shows the number of populations that fall into specified size categories, e.g. there are 5 forest elephant populations consisting of between 50 and 99 individuals. This analysis uses the data from Tables 2 and 3 above, i.e. each population may consist of the elephants in one isolated site or in two or more contiguous sites. Note that many of these figures are based on guesses.

Number of Elephants in Population	Number of Forest Populations With That Number of Elephants	Number of Savanna Populations With That Number of Elephants
0 – 49	19	5
50 – 99	5	3
100 – 199	4	3
>200	7	8
Total	35	19

Table 6. Area of range covered by each data category

Data Category	AREA (km²)	% of Total
Total Counts	2,673	1.10%
Direct Sample Counts & Reliable Dung Counts	30,258	12.90%
Other Dung Counts	815	0.30%
Informed Guesses	87,710	37.40%
Other Guesses	20,579	8.80%
Unassessed Known Range	36,212	15.40%
Unassessed Possible Range	41,619	17.70%
Doubtful Range	14,936	6.40%
Total	234,802	

Source: African Elephant Status Report 2002 (Blanc *et al,* 2003)

Fig. 1. Map of Elephants range in West Africa. (Source: The African Elephant Status Report 2002).
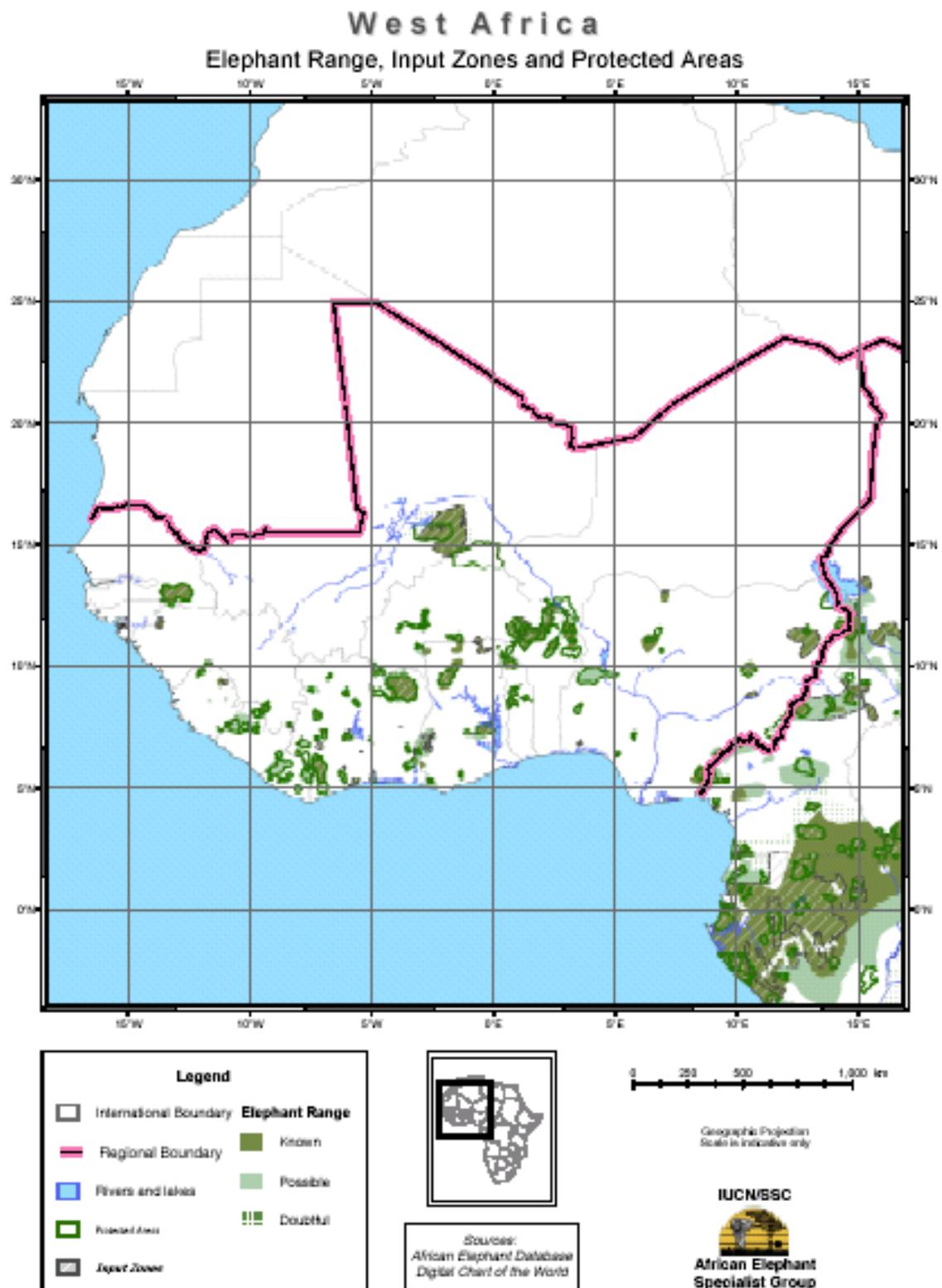
APPENDIX 1: THE LOGICAL FRAMEWORK

In February 1999 a workshop was organised in Abidjan by the African Elephant Specialist Group, with funds from WWF. The workshop brought together representatives from most of the elephant range states in West Africa to discuss a sub-regional strategy for elephant conservation. Elephant conservation is complex and there are usually many different opinions surrounding any particular issue. Therefore the workshop adopted the procedure of the *logical framework* to guide the decision-making process.

Having specified the overall goal or vision, three principal objectives were identified to tackle the most important issues of elephant conservation in the sub-region. Then the problems facing elephant management under each of the three objectives were identified and reformulated as desired **results** or outputs. For example, the lack of information needed for management was seen as a major problem. Therefore a desired result or output of the strategy must be *information necessary for management*. Seven desired results were specified. A number of activities must be undertaken to obtain a desired result. Many activities can only be undertaken as part of a project.

Thus the strategy consists of a hierarchy (Table A1.1): **activities** (some of which are undertaken as projects) which produce results which allow us to attain the three objectives, and the successful achievement of those objectives will ensure that the overall goal is satisfied. At each level, progress is evaluated by **targets**. Each target is something that can be measured and which must be attained with a specified period. The targets for each objective and result are given in Tables A1.2 and A1.3.

Table A1.1: Logical framework of the strategy.

GOAL
TO ENSURE THE CONSERVATION OF THE ELEPHANT AND ITS HABITATS IN WEST AFRICA

OBJECTIVE EVALUATE THE STATUS OF ELEPHANTS	**OBJECTIVE** MAINTAIN AND WHERE POSSIBLE INCREASE ELEPHANT POPULATIONS	**OBJECTIVE** IMPROVE THE HABITATS OF ELEPHANTS

RESULT INFORMATION NECESSARY FOR MANAGEMENT	**RESULT** BETTER UNDERSTANDING AND CONTROL OF THE IVORY TRADE	**RESULT** ENHANCED INSTITUTIONAL CAPACITY FOR ELEPHANT MGMT	**RESULT** REDUCTION IN RATE OF LOSS OF ELEPHANT RANGE	**RESULT** ILLEGAL KILLING OF ELEPHANTS CONTAINED	**RESULT** ELEPHANT CONSERVATION ISSUES BETTER UNDERSTOOD	**RESULT** REGIONAL UNDERSTANDING AND COOPERATION STRENGTHENED
Activity	**Activity**	**Activity**	**Activity**	**Activity**	**Activity**	**Activity**

Table A1.2: Targets for each objective.

Objective 1: **Evaluate the status of elephants in West Africa.**

Target 1:   All populations > 100 surveyed in 5 years.

Target 2:   All populations >50 surveyed in 10 years.

Target 3:   Status of habitat/range of all populations >100 surveyed in 5 years.

Target 4:   Status of habitat/range of all populations >50 surveyed in 10 years.

Objective 2: **Maintain and where possible increase elephant populations in West Africa.**

Target 1:   Three-quarters of the savanna populations >100 are stable or show an increase in 10 years.

Target 2:   Three-quarters of the forest populations >100 are stable or show an increase in 10 years.

Objective 3: **Improve the habitats of elephants in West Africa.**

Target 1:   Stabilise or improve the condition of habitat/range of all populations >100 within 7 years.

Target 2:   Stabilise or improve the condition of habitat/range of all populations >50 within 10 years.

Table A1.3:   Targets for each result.

Result 1:   **Information necessary for management.**

Target 1:   Information on population estimates, trends, and seasonal movements is available for three-quarters of the larger populations (>100 elephants) within 10 years.

Target 2:   Information on population dynamics, trends, and habitat conditions is available for half of the smaller populations (<100 elephants) within 10 years.

Result 2:   **Better understanding and effective control of the ivory trade.**

Target 1:   Studies of the internal ivory trade in each country are to be completed within 3 years.

Target 2:   A system of monitoring and managing ivory stocks, and monitoring ivory trafficking in the sub-region, to be put in place with the support of TRAFFIC, and a mechanism for contributing information to be ETIS, to be established within 5 years.

Result 3:   **Enhanced institutional capacity for elephant management.**

Target 1:   Within one year each country will establish a national training programme for those involved in elephant management, the programme to be completed at the end of the 6th year.

Target 2:   Training and equipping of the personnel at all sites with >100 elephants, and for half the sites with between 50 and 100 elephants, to be completed within 10 years.

Result 4: **Reduction in the rate of loss of elephant range.**

Target 1: Logging, settlements, farming, mining and other human activities in protected elephant ranges with populations >100 to be reduced by 80% within 10 years.

Target 2: All elephant ranges that straddle international borders to be gazetted as protected areas, and effectively protected within 5 years.

Target 3: Complaints of crop raiding by elephants to be reduced by 50% within 5 years, and by a further 25% in the next 5 years.

Result 5: **Illegal killing of elephants contained.**

Target 1: Three-quarters of the savanna populations >100 are stable or show an increase in 10 years.

Target 2: Three-quarters of the forest populations >100 are stable or show an increase in 10 years.

Result 6: **Elephant conservation issues better understood at all levels.**

Target 1: This conservation strategy for West African elephants is adopted at the appropriate government level in all 13 countries within 5 years.

Target 2: Sixty per cent of the human populations surrounding critical elephant sites have been reached by a public information campaign.

Result 7: **Regional understanding and cooperation strengthened.**

Target 1: An elephant information service for West Africa is in place and operational by year 7.

Target 2: At least 2 agreements between states (bi- or multi-lateral) concerning the management of cross-border elephant populations have been signed and implemented within 5 years.

APPENDIX 2:   List of participants at the Abidjan workshop.

NAME	AFFILIATION
Bossou Emmanuel	Direction des Forêts et des Ressources Naturelles, Cotonou, Bénin.
Zéba Souleymane	Fondation Naturama, Ougadougou, Burkina Faso.
Sawadogo Blaise Bobodo	Direction de la Faune et de la Chasse, Ouagadougou, Burkina Faso.
Yaro Yniyé	Ministère de l'Environnement et de l'Eau, Ouagadougou, Burkina Faso.
Moses Kofi Sam	Wildlife Department, Accra, Ghana.
Abaka Haizel	Wildlife Department, Accra, Ghana.
John Mshelbwala	Federal Environmental Protection Agency, Abuja, Nigeria.
Sagnah Satenin	Conakry, République de Guinée.
Diakité Noumou	Sévaré Mopti, Mali.
Moussa Sissoko	Bamako, Mali.
Ben Turtur Donnie	Society for the Conservation of Nature in Liberia, Monrovia, Liberia.
Kouamé Amani Dénis	Direction de la Protection de la Nature, Abidjan, Côte d'Ivoire.
Soulemane Ouattara	Abidjan, Côte d'Ivoire.
Aoussou Fréderic	Direction de la Protection de la Nature, Abidjan, Côte d'Ivoire.
Kobon Kobon Simplice	Direction de la Protection de la Nature, Abidjan, Côte d'Ivoire.
Francis Lauginie	WWF, Abidjan, Côte d'Ivoire.
Ibrahim Thiaw	IUCN, Ouagadougou, Burkina Faso.
Holly Dublin	WWF, Nairobi, Kenya (Chair of AfESG).
Lamine Sébogo	AfESG, Yaoundé, Cameroun.
Richard Barnes	Biology Department, University of California at San Diego, USA.

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