



## REVIEW ARTICLE

### FOREST MANAGEMENT IN CÔTE D'IVOIRE: ISSUES AND CHALLENGES

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#### ARTICLE INFO

##### Article History:

Received 07<sup>th</sup> June, 2016  
Received in revised form  
18<sup>th</sup> July, 2016  
Accepted 18<sup>th</sup> August, 2016  
Published online 30<sup>th</sup> September, 2016

##### Key words:

Planet earth, Deforestation,  
Sustainable development,  
Reforestation.

#### ABSTRACT

Forests are terrestrial, which concentrates the largest number of life forms and species. Forests play an essential role in the cycles of water, carbon and oxygen. They help to produce, enhance and protect the soil. Hundreds of millions of people derive their livelihoods. They are also the source of much of our medicines. For centuries, men exploit forests, resources and territories to meet their needs. Like other ecosystems, we must now consider how to balance human activities and forests that are essential to the very existence of both companies in industrialized than those of developing countries. Indeed, deforestation and degradation of forest ecosystems weigh both on the conditions of collective life on Climate Change - the destruction of forests is responsible for a significant share of global emissions of greenhouse gases - and that the loss of biodiversity. As the basic functions and services that assure complex and forests are becoming better understood and recognized, they are subject to new forms of protection and management consistent with the objectives of sustainable development.

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Citation: Mamadou SANOGO, 2016. "Forest management in côte d'ivoire: Issues and challenges", *International Journal of Current Research*, 8, (09), 39088-39096.

## INTRODUCTION

The Earth, our planet goes wrong, and it's our fault. Yet it is the only planet where life is possible today. People in rich countries, like France, consume and waste a lot. Today, we no longer even the difference between want and need. Consume more and more is always more loot the natural resources that the planet has taken millions of years to create (air, water, oceans, forests, arable land, biodiversity, oil), which are not renewed fast enough to meet growing demand. And always reject more pollution and waste in the environment, which is beginning to be saturated. This situation can not last: the environmental and health disasters already show the limits of the system. And it is only going to get worse: the Earth has 7.35 billion inhabitants on July 1, 2015 according to the United Nations; in 2050, we will be 3 billion more. Today, the vast majority of humanity still lives in poverty. Millions of men, women and children have no drinking water, no electricity, no education, nor enough to eat. But if all the inhabitants of the

earth lived like people in rich countries, it would take two more planets to meet their needs! However, we did not spare planet. So, how to improve the living conditions of all citizens of the world without permanently depleting the Earth? How to meet the needs of people today while bequeathing the Earth in good condition to the generations who will live after us? How to preserve forests, essential links in the food chain? By learning to save and share equitably the resources, using technologies that reduce pollution, waste less water, less wood and less energy, and above all changing our consumption habits and behaviors. This is what sustainable development. This is not a step backwards, but progress for humanity: to consume not less, but better. It has become urgent. We have all the means. And above all, the duty may precipitate the extinction of the planet earth and therefore the fauna and flora.

### Major forest types

Tree forest called a large area covered (to a smaller extent, we speak of wood; wood is called a small grove). The trees that form forests and other plants that we find vary depending on the climate, specifically heat and precipitation. Depending on the climate and the type of vegetation, there are four major types of forests:

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**The Boreal Forest:** This is the largest forest in the world; it covers one third of the total forest area. It contains only tree species adapted to long winters and also has a very rich fauna.

**The rainforest:** the rain forest contains a wide variety of trees and other plants, and has a very high number of animal species. Experts estimate that tropical forests contain them all to 50% of all plants and animals on Earth. The Amazon rainforest in South America is the best known example of rainforest.

**The temperate forest** grows in areas of the world where a temperate climate. It is less rich in species than the rainforest.

**The Mediterranean forest** is a typical forest area around the Mediterranean Sea. It is much higher than the temperate forest and consists of species adapted to drought: shrubs, oaks and cork trees.

The forest is a complex environment where animals and plants feed on each other. This set of living beings forms a food chain. Plants are the first link in that chain. To grow, plants capture sunlight and use water and carbon dioxide to produce organic substances. This process, called photosynthesis, produces a large amount of oxygen which humans and animals need to breathe. Herbivores forest animals like deer or hare, feed on plants. Herbivores are used to turn their food to carnivorous animals, such as foxes or weasels. The last link in the chain is formed by decomposers. These worms, bacteria and fungi that live in soil. They transform the dead matter in the forest (leaves, branches, animals) minerals, which in turn are used to feed the plants. The forest nurtures itself. The group consisting of plants, animals and decomposers is called ecosystem. All these elements are essential for the forest continues to exist. The balance of this ecosystem is very fragile and can be broken by natural factors (such as drought) or humans (eg arson, deforestation, etc.).

### **Biodiversity reduced by way alarming**

Biodiversity refers to the diversity of life on our planet. The word is a contraction of "biological diversity". Today, we are witnessing the depletion and the loss of a very high number of species worldwide: biodiversity decreases.

This is due directly or indirectly to human activity: the overexploitation of natural resources, deforestation, the expansion of cultivated land, the expansion of cities and industries, pollution, hunting, etc.

Biodiversity decreases dramatically especially in tropical forests, victims of rampant deforestation. Experts estimate that in these ecosystems, habitat destruction leads to the extinction of about 17 000 species (plant and animal) annually. At this rate, it is estimated that half of the world's species will disappear before the end of this century.

### **Biodiversity is a survival of pledge**

Biodiversity is essential to all natural balances. Ecosystems and food chains, for example, are in equilibrium systems: if one link disappears, the whole network is threatened. For humans, the loss of biodiversity means the irreparable loss of a

unique heritage created by millions of years of evolution of life on Earth, but also reduce the number of edible species (eg, if industrial fishing cod continues at the current pace, this fish will soon no longer exist), or the final disappearance of molecules which are of major interest in medicine. Thus, the Madagascar periwinkle, a plant grown, but endangered in the wild, contains substances that are components of a treatment against certain cancers. Many species still unknown tropical forest scientists certainly contain valuable substances. Some are also used by traditional medicine of the Native Americans, but have not yet been studied. Thus preserving biodiversity of the Earth is an imperative: when biodiversity is collapsing, the human species itself is in danger. But it is also a duty (priesthood): men are morally responsible for what their natural heritage bequeathed by nature; they do not have the right to deprive future generations. Given the gravity of the degradation of environments on our planet, many countries came together in 1992 in Rio de Janeiro, for the first Earth Summit. Among the different texts adopted to try to find solutions, these countries have established a Convention on Biological Diversity, which aims to protect biodiversity globally. This agreement marks an international awareness: the protection of biodiversity is one of the major challenges of the twenty-first century. Unfortunately, it has so far not really been followed by concrete actions.

## **Exploitation of forests and deforestation**

### **Drivers of deforestation**

Each year, the men cut or uproot million hectares of forests is deforestation, also called deforestation. It allows to make a cultivable area to build homes or to exploit timber. Many factors can explain this gradual disappearance. First, the forest sometimes suffers climatic events such as drought or storms. Human actions also reduce their extent. Fire of criminal origin, for example, can destroy in minutes the trees that have grown for hundreds of years. The man is also required to be cleared forests to cultivate the soil, build homes for mining or exploit timber. In a number of countries, it operates without the forest to disappear. But in some parts of the world, the exploitation of the forest has caused the extinction of many animal and plant species. This is called deforestation. This process is particularly severe in tropical forests like the Amazon rainforest. Soils become poor and we are witnessing in places a comprehensive climate change. These areas are transformed into deserts sometimes (this is called desertification).

### **What happens deforestation rate?**

From 2000 to 2005, 25 hectares of forest, equivalent to 50 football fields, disappeared every minute worldwide. It is thus 13 million hectares (the size of Greece) that are destroyed each year. Meanwhile, some courses are also planted new forests. But reforestation does not compensate for deforestation: in all, the "net loss" of forests represent 7 million hectares each year. Deforestation is rampant especially in tropical areas, where logging and agriculture are among the only wealth. For example, in South America, including the Amazon, 4.3 million hectares (about the size of Switzerland) of forests are lost every year. If deforestation continues at this rate, the rainforest

could have disappeared in less than 100 years. Africa is also affected by the loss of forests (4 million hectares each year).

### **What are the consequences of deforestation?**

#### **The disappearance of plants and animals**

Without forests, the Earth would not be habitable. Indeed, by the mechanism of photosynthesis, plants and forest trees produce oxygen that allows men to breathe. Forests also absorb carbon dioxide, removing a source of pollution. Moreover, forests, particularly tropical forests, home to thousands, even millions of species of plants and animals: experts estimate that all forests contained 50% of living beings on the planet. So she puts deforestation endangered many species of plants and animals living in or in relation to the forest. For example, in Madagascar, all lemur species (mammals that live only in the rainforests of the island) are threatened with extinction. In the Amazon forest, hundreds of plant species disappear every year.

#### **Erosion and natural disasters**

Deforestation also affects the type of soil and climate. Indeed, trees and forests play a very important role in the water cycle and soil stability. On the one hand, reducing the runoff on soils, trees allow it to seep into the earth; so they keep the soil moist. Without trees, water runs on the soil without restraint. In the tropics during the rainy season, too much water suddenly comes to rivers, which come into flood. Deforestation therefore promotes flooding. On the other hand, tree roots hold the soil, slowing erosion. Without trees, the soil is no longer maintained and no longer resists erosion; the earth is washed away and the rocks are exposed. On the slopes, there may be landslides and mudslides. Deforested areas can eventually turn into deserts (desertification that is). Finally, the water vapor that rejects forests contributes to increase the humidity of the air and promotes the rains. Deforestation can therefore reduce the amount of rain and cause drought. The man, through its activities (such as deforestation), and significantly alters many ecosystems. The consequences of these actions are dwindling and the disappearance of many species of animals and plants, and the loss of biodiversity.

#### **Endangered Species**

Many animals and many plants are becoming scarce: If the process continues, these species are likely to more or less short term, disappearing off the face of the Earth. A threatened species is a species (an animal, a plant, a fungus) for which there is a danger of extinction (that is to say, extinction of all its representatives).

#### **All endangered were they as much risk of disappearing?**

The various endangered species are in danger more or less serious or more or less imminent. There are so many levels of risk and different categories of threatened species. These categories were defined by an environmental protection organization, the World Conservation Union. The two levels of higher risk species correspond to «extinct in the wild» species and «critically endangered»

- Species extinct in the wild are species that do not exist in nature. We do not find that in zoos or nature reserves. This is the case for example of the Przewalski horse (the last wild horse) Central Asia and the ferret Black-footed from North America.
- Critically endangered species at high risk of extinction in the wild in the short term (a few years or decades). Among them, we find the monk seal in the Mediterranean, the mountain gorilla or leatherback turtle.

#### **Thousands threatened species are today**

Worldwide, thousands of species of animals and plants are threatened today. The World Conservation Union in lived the end of 2004, some 15 500 of a specific list, the red list of endangered species. But this figure is already huge, is far below the reality. First, the level of risk of many species (including insects, fish, plants, etc.) has not been evaluated. Thus, more than 1.5 million known species, the World Nature Union has assessed "only" 38 000 (endangered species account for 41% of species assessed). Moreover, we know that we only know a small part of our planet home to species that: many species that have not yet discovered (especially tropical forests) are probably not in danger as is known.

#### **The causes of species loss**

The causes of the depletion or disappearance of species are manifold. Often, endangered species are several reasons for both. In addition, more a species is rare or present only in a small area (endemic to a region), it is more sensitive to all threat factors.

#### **The different threats to the species**

##### **Habitat destruction**

When a habitat (forest, swamp, and river) is destroyed or damaged, animals and plants that live there are mostly doomed to disappear. This is the case when a forest is cut (i.e. deforestation), when a marsh dried up, when groves and grasslands are converted to pasture when cities expand, etc. For example, in the forests of Madagascar, who are suffering from intensive deforestation, all lemur species are threatened. The forest is the natural habitat of many animal and plant species extinction leads inevitably to that of several links in the food chain. Because of human activities, the habitat available to the species becomes fewer and less extensive; they are fragmented into isolated patches. The territory of animals is cut by roads; the rivers are interrupted by dams.

##### **Excessive hunting**

Overhunting caused the depletion or disappearance of many species. For example, in the forests of North America, lived in the nineteenth century millions of migratory birds. These birds have been slaughtered by hunters: the species has disappeared permanently in Nature in 1900 (the latest migratory pigeon in the world died in a zoo in 1914). Another example whales hunted to the death for centuries, they have all passed very

close to extinction, and are still threatened. Similarly, the African and Asian rhinos were killed for their horn (which alleged miraculous medicinal properties): the five known species (two in Africa and three in Asia) are now in serious danger of extinction.

### **The capture of wild animals and gathering plants**

The wildlife trade (eg parrots and parakeets, spiders, butterflies and rare plant species bulbs) also accounts for much in the loss of biodiversity. Picking flowers of plants threatened them also prevented from reproducing and increasing their risk of extinction.

### **The introduction of new species or diseases**

Ecosystems are fragile balances. When the man entered, voluntarily or not, a new species or a new disease in a medium, it threatens the balance of the entire ecosystem. Indeed, animals and plants in an ecosystem are adapted to the conditions of their habitat, and have mostly no defense against an imported disease or a new predator. Indeed, faced with a predator that previously did not exist in their communities, prey has no weapons or defense strategy. Faced with a new disease, species are often depleted because they have never met and their body is not protected against it. For example, there are in South America big voracious toads, marine toad. It was introduced into Australia in the nineteenth century to fight against insects and rodents that attacked the plantations. But it quickly became a scourge, devouring indiscriminately and in large quantities all kinds of animals (rodents, birds, beetles, amphibians, reptiles, etc.). At the same time, an insect pest of the vine of North America, phylloxera arrived accidentally in Europe: it devastated European vineyards, which were saved by transplants with an American species.

### **Pollution**

Many chemicals are now present in food chains. Examples are the fertilizers used in fields, factories discharges or insecticides. DDT, for example, is an insecticide that has been banned in many countries because of its toxicity. Indeed, filed on crops, it enters the body of rodents that eat the stems and seeds. The product accumulates in the body of these predators that hunt rodents. Among the birds of prey (like hawks, buzzards and eagles), the accumulated DDT causes malformations of the chicks and the weakening of egg shells and therefore the reduction of populations of these birds who have trouble reproducing. Pollution and warmer water also decimated many species of freshwater fish.

### **Global warming**

Because of polluting gases released into the atmosphere by human activities (industries, from car exhaust, etc.), the climate of the Earth is warming. That climate change is happening very quickly (it is thought that the average global temperature will rise by 1.4 to 5.8 ° C by the end of this century). Combined with other threats that weaken the plants and animals it threatens many ecosystems and species. Not having time to adapt, or find new areas that suit them, many

species of plants and animals are probably doomed to disappear if it fails to curb global warming.

### **Chain reactions**

The depletion or extinction of a species has an impact on other species in the food chain and, in the longer term, on the whole ecosystem. Indeed, all the links of the food chains are linked to each other. Touch a link, is to touch one or more other, directly or indirectly. For example, in the early twentieth century in the United States, wolf, hunted too, disappears completely Yellowstone natural park (in western countries). In the absence of this predator, elk (large deer), their main prey, have multiplied without restraint. Or, elk feed on tree shoots. Become too numerous, then they have caused the extinction of some species of trees, preventing to push. Fought enough trees to gnaw, beaver became scarce, then disappeared from the park in the 1950s. Without beavers, certain aquatic plants growing on bodies of water behind their dams have disappeared in their turn. Now these plants were food for exiting hibernation bears ... The extinction of a species can thus lead to scarcity or loss of species with which it has no direct connection. Since the reintroduction of wolves in Yellowstone Park in 1995, the situation of this ecosystem is being restored (fewer elk, trees grow back, beavers reappeared, etc.).

### **The extinctions due to man**

Since becoming sedentary, there are about 12 000 years ago, the man, who was previously a predator like any other, has profoundly changed the natural vegetation and animal distribution areas. Since the eighteenth century (with the start of the Industrial Revolution), and even more since the mid-twentieth century, its action on ecosystems has worsened, due to the development of industry, intensive agriculture and the expansion of cities and roads. Thus, during its history, man has been directly responsible for the disappearance of many species such as aurochs (the ancestor wild ox), the dodo (a large pigeon of Mauritius), or the quagga (a cousin of the zebra). Today, the environments are changing too quickly, and a large number of species are unable to adapt to these changes. The list of endangered and extinct species definitively quickly extends in most parts of the world, which poses a serious threat to biodiversity. According to experts, the rate of extinction of species that the Earth is experiencing is 1 000 to 10 000 times higher than the natural rate by region of the planet. It is in tropical forests, which undergo intensive deforestation, as more species are extinguished. Human activities and threaten the ecological balance of the planet. The situation is so alarming that experts believe that we are experiencing the start of the sixth great extinction in the history of life on Earth. While the disappearances of species continue at this rate, 50% of the species we know today could be gone by 2050.

### **Deforestation in the world**

The area of forests worldwide is decreasing every year. The comparison of the extent of forests in the world there are 12 000 years before today and shows that the human species does not become sedentary, there are 12 000 years, much of the lands of our planet was covered in thick forests. When humans

stopped being nomadic, he began to cut or tear out trees to clear fields to farm, build houses or boats, or have firewood for heating and cooking. In recent decades, deforestation (or deforestation) accelerated, in particular because of the multinationals. Each year, millions of hectares of forest disappear around the world. For example, in the Amazon rainforest in America. South, 4.3 million hectares of forest are destroyed each year. If deforestation continues at this pace, this rainforest might have disappeared in less than 100 years. Tropical rainforests are veritable sanctuaries of biodiversity. They are home to a rich fauna (varied). The dense forest contains flora and fauna particularly rich. Many plants have medicinal properties used by local people for treatment. 25 % of modern medicines are derived from composite found in tropical forests. The forest is home to many treatments against many diseases. Deforestation and destruction of these ecosystems by human activities pose the risk of extinction of many species.

### **Deforestation in Sub-Saharan Africa**

A serious threat to tropical forests, including African forests. The environmental NGO Greenpeace publishes report "Threats to African forests," a survey of plantations of rubber Financial Corporation (Soc Fin), owned 38.75% by the Bolloré group, and urges its CEO Vincent Bolloré to s' immediate commitment against deforestation. The report emphasizes that the plans for expansion of plantations of Soc end in ten countries, mostly African, threaten dense forests, ecosystems that preserve the climate balance, preservation of biodiversity and the maintenance of living conditions of local people (otherwise the rural exodus and emigration to Europe). Oil palm plantations, cocoa, coffee and rubber trees are one of the main drivers of deforestation. (Agriculture, abusive exploitation of forests (deforestation), bush fires,) are responsible for the disappearance of African forests. Forest loss is the main threat to wildlife (lynx). The main threat is human activity (man). Africa still represents a small percentage of the production of palm oil and rubber in the world, but we are currently witnessing a rush on African forests. Foremost among the growers in Africa, Financial Corporation Rubbers (Soc Fin) is a construction company for more than a century on the continent, whose main shareholders are the French group Bolloré and Belgian businessman Hubert Fabri (via direct or indirect investments). Greenpeace Vincent Bolloré must use its influence to end the Soc fin agrees on zero immediately plantation policy credible and respectful deforestation of the rights of local communities (CSR). At the same time, the Bolloré group must itself make public a zero deforestation policy covering all of its investments in the sector. Our goal is that African forests do not know the fate of Indonesian and Malaysian forests. Investors must commit today to adopt zero deforestation policy and the Bolloré group can not shirk its responsibility in respect of Soc practices end. Deforestation alters the climate there is little rain, the rainy seasons are short, and the agricultural calendar goes awry. The Ivorian economy is based on agriculture and particularly on the production of coffee and cocoa. The destruction of forests impact rainfall and therefore agricultural production which affects much the national economy (as the success of the Ivory Coast is mainly based on agriculture). In Ivory Coast, the

Cocoa belt was in the east of the country, 20 years ago there were heavy rains due to the forest and therefore agricultural production was high but since the forest is gone, rainfall and fell with the cocoa belt has shifted to the west of the country where the forest is still abundant and rainfall: thanks to the reserve Tai forest that exists. The main natural resource of the Ivory Coast is wood but its overuse exposes the country to the risk of deforestation.

### **Deforestation in Ivory Coast**

There is something to be alarmed. The beginning of the century to today, the Ivory Coast, which had nearly 16 million hectares of forests, lost nearly all of its natural cover. Estimated at 2 million hectares today, the Ivorian forest cover would be well below the norm, according to experts. Every day, nearly 77 times the size of a football field we lose in terms of forests. At this rate, the country risks losing its natural forest remaining capital very quickly given current trends. Deforestation is progressing in many poor countries due to samples taken regularly for cooking. To avoid this, since 2011, Côte d'Ivoire is strongly committed to the international mechanism of reduction due to deforestation and forest degradation (REDD +). The REDD + program in collaboration with the World Bank is implemented. The success of this program depends on identifying the causes of deforestation and forest degradation and the implementation of measures such as the decoupling of agricultural production and deforestation, i.e. produce more without destroying the forest, the development of sustainable domestic energy, restoring degraded forests and reforestation popular. The experience of Côte d'Ivoire for reducing deforestation could be an example for other countries (classified forests, nature reserves). REDD + is a global mechanism proposed to mitigate the adverse effects of climate change, while mobilizing financial resources for the socioeconomic development of forest countries.

### **Forest protection**

#### **Responsibility with respect to the quality of life and the environment**

Protecting the environment is a concern shared by most countries (citizens). Heritage under the concept we group all that must be protected and passed on to future generations. Each of us has to preserve for example through the creation of parks. The environment is increasingly considered a heritage to be protected i.e. as a form of law: right for all to enjoy a preserved setting and a healthy environment, right for future generations inherit without it being degraded. The environment is threatened by the effects of lifestyle and economic development that we all enjoy. A citizens' attitude towards the environment is to change our behavior, for example in terms of waste treatment, carry out waste sorting (throwing his garbage into different bins depending on their nature) in energy saving and reduction of greenhouse gases. In Japan, people have integrated waste sorting in their lifestyle separated combustible waste non-combustible waste. Fuels include paper and organic waste, mainly food. Non-combustible include leather, broken glass, and ceramics, spray bottles, plastic food, and chemical plastics (bottles produced dishes or detergents for example).

Then come the recyclable waste: metal objects (cans, cans, and caps), cardboard packaging (which must bend and tie), newspapers (he must also tie) and advertising leaflets (which stifle the boxes letters), glass bottles ...).

Recyclable waste must be sorted by material (metal, paper and cardboard, glass,) for reuse. It should also prohibit the use of plastic bags with environmental consequences are incalculable. Then deposit the garbage on the curb in place for this purpose. To do before the time of crossing the road. It is progress in building a society based on a cycle of environmentally sound materials, as the 3Rs (reduce, reuse and recycle).

The combustible waste is transported and treated appropriately (spray and separation) to combustible waste treatment center, which is an intermediate treatment facility. In particular, thanks to the energy recovery of plastic waste. 21 waste incineration plants are stable and secure operation in central areas of cities where many homes and offices are concentrated. Incineration reduces the volume of waste by 95 %, and contributes to solving the shortage of landfill sites. Tokyo was facing various difficulties in the management of waste, but efforts have been made by the Japanese government to deal with waste management.

All cities in the world should learn from the Tokyo model to solve waste management. Natural heritage: we realized that how to exploit our planet could irreparably impoverish (cure) or make it uninhabitable. Most countries and recognize the need to preserve natural resources (air, water, energy, soils, etc.) and the major balances that make life possible on earth. The increase in world population and industrial or agricultural activity (especially in emerging countries such as China) results in further pollution and destruction of natural habitats and climate change, a consequence of consumption energy (greenhouse effect). Since the 1980s, governments of the world are looking for a model of economic development that balances economic growth and environmental protection (natural heritage): sustainable development. Economic and social development model to ensure the sustainability of the natural heritage of the land. The current development model faces two types of limits:

**Ecological limits:** depletion of natural resources (fossil energy, fresh water, air, forests,) and global warming. This phenomenon is due to human activities: burning oil, gas coming from the air conditioning of buildings and cars. Agricultural (plantations in Côte d'Ivoire cash crops), intensive livestock, infrastructure work or forestry activities, mining activities are causing the destruction of much forest (primary forests of Amazonia suffer the largest losses with 6 million hectares per year).—

**Social limits:** on a planet which annually produces more wealth, inequalities continue to widen between countries but also within developed societies (known as social divide).—

At the Ivorian forest heritage, the dense forest area which was 12 million hectares in 1960 represents only 2.802 million ha in 2007, a loss of more than 75% of assets in less than half a century. In 2007, he counted 0.672 million hectares of protected forests, 1.728 million ha to national parks and

reserves and 0.400 million hectares for the rural area estimated at 7,117,000 ha. This heritage does not take into account the sacred forests of the rural area. Ivory Coast in 2007 has 382 areas of forest holdings with an area of 14,096,471 hectares, emphasized by more than a hundred wood industries represented by 139 approved processing units. Log production increased from 1,669,998 to 1,576,362 m<sup>3</sup> in 2005 and the charcoal from 35,100 tons to 29,780 tons over the same period. The volume of logs processed in 2007 was 1,506,984 m<sup>3</sup>. This business regularly employs nearly 40,000 people and accounts for nearly 70% of household energy needs. In 2008, 77.5% of households use charcoal or firewood as an energy source for cooking. The advanced degradation of forest resources due to a combination of several factors, including the dynamics of extensive farming based on the technique of slash and burn shifting cultivation, logging, mining types, samples of wood for cooking, demographic pressure, seepage clandestine in classified forests and national parks and similar reserves, hunting, farming and frequency of bushfires. Degradation due to agricultural occupations covers about 40 to 50% of the forest area. This land pressure has negative consequences not only on the rural area but also on the classified forests. Faced with these difficulties, urgent measures from the Forestry Master Plan helped to reorganize the forest estate management structures through the strengthening of the status of SODEFOR, the creation of the Ivorian Parks and Reserves (OIPR) the creation of a Foundation for the funding of parks and reserves, the ongoing creation of a National Agency for Forestry Development of rural area (ANDEFOR). The last comprehensive inventory of terrestrial and aquatic biodiversity reveals the presence of 16 034 plant and animal species, including 712 species of birds and 163 mammals. The erosion of biodiversity is continuing, jeopardizing the activities they support. Thus, poaching is the main cause of the decline in numbers of large wild animals that primarily affects chimpanzees, elephants, buffalo, hippos. This is aggravated by strong hunting traditions of the populations near some national parks like Comoé and Marahoué. The loss of biodiversity is also linked to excessive extraction of elements such as timber, fisheries, the various wild foods, the use of hazardous substances for fishing.

### The challenge of the Ivorian economy

Africa needs a "green revolution" to feed its population. It will increase the yield per hectare while respecting its natural resources in arable land, pastures, forests and waters, which are abundant but fragile. In 2005 the Ivorian industry is only 23.1% of gross domestic production (against 24.5% in 2000). It shows a structural imbalance characterized by the dominance of digital SMEs. However, despite the difficulties it faces, it remains the most diversified in the West African sub-region and represents 40% of the industrial potential of the UEMOA. Given the loss of arable land and low prices of key commodities (coffee, cocoa), Côte d'Ivoire began a few years the shift to industrialization, convinced that this is how it can get out of poverty. Since then, she started the exploitation of these mineral and oil resources, also encouraging local processing of agricultural products (coffee, cocoa, and cashew nuts) through the opening of new processing units said products. The Ivorian economy is less and less based on

agriculture and increasingly on industry operating using renewable energy. This is possible especially as the country has many rivers and dams. It takes political will to meet this challenge. Not only the energies called "fossil" is finite, but also their intensive use causes significant emissions of greenhouse gases, responsible for global warming. This is why many countries have committed to reduce their emissions of greenhouse gases. France would like to go even further by dividing by four emissions. This effort involves reviewing the way we produce, consume, move us, and build our buildings or designing our cities. While generally using less energy, we will increase the share of renewable energy such as solar or wind power. This is a formidable technical and economic challenge. Humanity today is facing an unprecedented energy problem: the needs of 6.7 billion people while protecting the environment. Together, put all our energy for the planet, its future and the future generations!

### **Environmental protection**

In 1974, hunting was outlawed. In 1982, Tai National Park was inscribed on the UNESCO list of World Heritage. In 1994, Côte d'Ivoire signed the Convention on Biological Diversity and the Convention on International Trade in Endangered Species of wild flora endangered. Until 1995, management was centralized, independent of local contingencies. In 1996, the protected area management framework project was launched to enable effective protection of areas. The creation and management of protected areas are part of the will of the Ivorian government to protect the environment, including forest cover in sharp decline and some rare species or endangered. The Ivorian Ministry of Environment, Water and Forestry ensures the implementation of environmental policy and management of protected areas. Plans to reintroduce animals, including the black rhino and giraffe that had disappeared from some areas have been completed, for example in the new Abokouamekro Game Reserve. The government must also face, as elsewhere, the problem of animal trafficking which, in the opinion of some observers, a satisfactory solution has yet been found. In 2002, in fact, there were 1554 kg of ivory in tourist shops to Abidjan. In 2008 there are eight national parks and almost 300 nature reserves of various types including fifteen botanical reserves. Six protected areas are included in the Ramsar Convention; three are World Heritage of UNESCO and two biosphere reserves. Among the parks listed national park Comoé is the largest (1,150,000 ha and 500km of dirt tracks); it was founded in 1968 after long existed under the name of the reserve Bouna National Park

Tai (350 000 ha), extended the north by the Wildlife Area N'Zo (70 000 ha), is located along the western border south of Guiglo and a hundred kilometers north of Tabou, and focuses primarily on preserving the primary forest. National Park Marahoué (100 000 ha) is located north of the paved road coming from Yamoussoukro and Daloa. Next to Duékoué, in the west, Mount Peko Park (34 000 ha) is best known for its vegetation mountain flora and primary forest. The Assagny National Park extends on the ocean at the mouth of Bandama. Its 30 000 ha are essentially made of swampy savannah with palm trees, and there see herds of elephant and buffalo. The

wildlife area of Upper Bandama (123 000 ha) covers a savannah north of Katiola and is home to elephants, buffaloes and antelopes. The 95 000 ha of the National Park of Mount Sangbe north of Man and west of Sassandra river located entirely in mountainous areas. Park Koussou, born of the need to relocate the endangered animals from drowning by the rising waters, is considered with its 5000 ha as may become one of the main attractions of the central region. Banco National Park, near the capital, along Highway (3000 ha) is another example of primary forest with mahogany, framirés, avodirés, niangons become very rare. Finally a marine park, one of Ehotilés Islands, established in 1974 and located near Adiaké on the Aby lagoon, east of Abidjan, especially intended to allow conduct historical and archaeological research in peace. The Ministry of Water and Forestry is responsible for all protected areas. Comoé National Parks and Azagny, which are open to tourists and are endowed with administrative infrastructures and guardianship, are relatively well protected. In other parks and reserves in the level of protection varies from zero at the bottom. National parks are subject to essentially two types of threats: poaching and the search for gold. Other dangers derived from forestry and land by the local population. The destruction of the national park (and more generally of forests) impact on rainfall and therefore agricultural production which affects much the national economy (as the success of the Ivory Coast is mainly based on agriculture. In Côte d'Ivoire, cocoa loop was to the east of the country, 20 years ago there were heavy rains due to the forest and therefore agricultural production was high but since the forest is gone, the rains fell and with the cocoa belt has shifted to the west of the country where the forest is still abundant and rainfall: thanks to the reserve Tai forest that exists (hence the interest to multiply nature reserves, national parks, protected forests)

### **Interest of Conservation**

There are many conservation organizations nature, national or international, that are trying to put in place measures to protect species and ecosystems. But why is it important to save our environment?

### **A moral obligation**

The living world is part of the natural heritage, a common wealth for all inhabitants of the Earth. Diversity, beauty and richness of the natural world have survived through generations. Today, respect and protect this heritage to leave it unimpaired for future generations are a moral duty. Also, why the man occupying the planet just like all living species, would he have the right to vandalize and destroy other species?

### **A matter of survival**

But the preservation of nature is simply for humanity, a matter of survival. Without plants and animals, without the ecosystems as a whole, the Earth would not be livable for humans. Our planet gives us breathing air, drinking water, animals, mushrooms and edible plants, all kinds of raw materials, etc. If, for example, the great forests of tropical regions (called "the lungs of the planet") were completely

destroyed, there would be much less oxygen in the air. In the seas, fish are becoming scarce due to overfishing: there will be a day not to fish and more fish on our plates (for even farmed fish are mostly fed fish caught in the seas). Save the living world and its diversity, so the safeguarding of our own species. This necessarily involves the preservation of forests, first link in the food chain.

## Conclusion

Thousands of species on the entire planet, have already disappeared, and thousands more are threatened with extinction because of pollution caused by man: destruction of the natural environment in which they live; overexploitation that is to say, hunting, gathering, fishing or catching too important for the species can reproduce and maintain its population. The history of the Earth shows that before the appearance of man, many species have become extinct. But extinctions caused by humans are not comparable to those "natural" extinction: they are occurring at a much faster rate (a few decades against several hundred), and there are fears that they irreparably destroy ecological balances. The diversity of living organisms, or biodiversity, is now seen by most countries of the world as a heritage. Wildlife (non-domesticated by man) are a natural resource. From the nineteenth century, the French Rural Code has established the management rules for animal resource. These rules were initially concerned that the game, so that hunting is prevented from reproducing (opening dates). When some species were endangered, they were protected by the ban on hunting them any time of year, sell the products of their hunting, removing animals from their natural habitat (for example, capture them into pets). But sometimes it was too late (the monk seal in the Mediterranean, for example, has received full protection when he had already disappeared). This regulation applies to wildlife was taken from the flora. It is forbidden to pick, even for transplants, rare plant species in some areas, particularly mountain areas (edelweiss, orchids, etc.). Hunting and gathering are often only aggravating factors: the main cause of species extinction is the destruction of the environment where they live namely forests, and the most massive destruction currently occurring outside Europe (Amazon, Africa, for example). Most texts that protect species today are international conventions. The list of endangered species, established by these conventions applies to all States that have signed them. The threat of extinction ivory trade elephants: the sale of ivory is now banned in Europe, which makes it less interesting poaching. International conventions signed since 1970 are no longer limited to the prohibition of hunting or sale they insist on preserving the habitat of the species, the only natural environment where they can live. The most vulnerable areas and the richest in species must become sanctuaries of biodiversity, protected from human disturbance. Sometimes we put a case that threatens to disappear completely, protected in zoos or reserves, where it will happen again: then we try to reintroduce it in its natural environment. But this operation is very delicate. The reintroduction may also involve a species that disappeared in a region of the world, but not in others. Thus we reintroduced in France, bears, beavers, wolves and vultures.

If we think today that we must preserve landscapes is that we see more and more in them a heritage, something we inherited from past generations, and we must pass on to future generations. This is a very recent idea: only a few landscapes were first received protection, those who showed exceptional interest. But since the 1960s, residents are trying to defend their living environment against the risk of degrading: pollution of all kinds poorly controlled urban development, too intensive agriculture, etc. This landscape is not a natural space: how man has transformed also part of its heritage. The sites of exceptional interest are not the only ones protected: they are simply more than the others, so that we can speak to some of them, true sanctuaries. When animal species are threatened by hunting or wildlife catches (eg for the pet market), we can regulate (by setting quotas or hunting periods), or prohibit such practices. These measures may concern any region or country, or be commonly adopted by many countries around the world. For example, whaling has been banned since 1986 by the International Whaling Commission («the catch limits for the killing for commercial purposes in all populations are zero»). Some countries, however, continue to hunt under the guise of "scientific reasons". Similarly, the protection of endangered wild plants through the regulation or prohibition of collection. For some endangered species, we can also keep animals in captivity and then released into the wild. Through this method, the number of California condors, for example, rose from 27 in 1987 to 52 in 1992. This large raptor remains the most threatened bird in North America. Such programs are also made, for example, the red wolf and the ferret Black-footed. It is also difficult to fight against the pollution that affects many species and prevent it from spreading. Finally, the ban on hunting, catch animals or picking plants is not always sufficient because it is not always respected: poachers continue their activities to supply an illegal trade, often international. This is what happens, in particular, to elephants and rhinos in Africa and Asia, which continue to be hunted for their tusks or horns.

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