

DEFORESTATION AND AFFORESTATION, A WORLD PERSPECTIVE

With

**Three Case Studies in
Brazil, Nigeria, and Japan**

By

Elijah Kaberia Mujuri

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EXECUTIVE SUMMARY

The world population is slight above 6 billion and is expected to double in the next 50 years. Forests, which act as sinks for carbon and other greenhouse gases are threatened with elimination. Forests maintain conditions that make life possible. Globally, forests cover only 30%. The causes of deforestation are complex. Competitive global economy drives the need for more money in the economically challenged tropical countries, with the most of tropical forests.

Deforestation is has a result of the interaction of environmental, social, cultural and political forces in a given region. The three main causes of deforestation in the world are; agriculture, infrastructure expansion and wood extraction.

Population growth is a major hindrance to attainment of sustainable development. Tropical forests are world's reservoir of ecosystem and biodiversity hotspots. Most of tropical forests are in developing countries and threatened with high rate of deforestation, hence major effect of global climate change, and loss of plant and animal species.

Forests also house indigenous cultures, people with knowledge and information about nature. Transforming forest to wipe out indigenous people is a moral crime.

Carbon trading/avoided deforestation, sustainable forest management and forest certifications are options in the world agenda for discussion as the possible ways of alleviating deforestation.

Brazil Soy Agriculture and Cattle Ranching on Deforestation

Brazil is second in beef production to U.S. and third exporter of beef and veal after

Australia and U.S. Brazil has projected a steady increase of 3.2% per year between 2004 and 2011 with rapid growth from Egypt, Asia and Russia. For every quarter pound hamburger consumed in US from rainforest beef, about 55 square feet of rainforest was cleared. Slash and burn are often employed in clearing land for pasture. As a result of the value attached to land in Brazil, it is used for speculative purposes.

Cattle ranches are leading causes of deforestation, with soy agriculture being the second. They have also bred conflict, corruption, political protection and violence. The soy expansion and cattle ranching has proved to increase deforestation and generation of social, economic and cultural problems to indigenous and landless peasants, but the World Bank through the IFC, has continued to fund these ventures. However, a sustainable cattle grazing is not linked to environmental losses. Sustainable livestock grazing can enhance plant species richness, diversity of grasslands and is widely used as a management tool in conservation programs of natural grasslands, as restoration of grassland reversing decline.

Nigeria Crude oil and Natural gas Industry and their Impacts on the Forests

Since independence from 1960, Nigeria has been rocked by political instability under the military coupes. Nigeria is the most populous in Africa with 135 M people and over 250 tribes. Since independence in 1960, Nigeria has had 14 presidents with 7 military coups. This has had a negative effect on socio-economic, natural resources (crude oil, natural gas), forest, wildlife, and agriculture management.

Oil in Nigeria is found in small fragmented pockets along the Niger Delta. This is channeled into a single flow then to a pumping or shipping station. Within the transportation

lines, crude oil spills are numerous at the Coast waters and streams causing damage and death to the third largest continuous mangrove forest in the world. Increasing crude oil and natural gas discoveries have caused displacements of local residences, violence, murder and destruction of forest forests.

Nigeria has the highest deforestation rate in the world. With the current rate, according to food and agricultural organization of United Nations (FAO), the forest will disappear by 2020. Nigeria original forest cover was 600,000 sq. km in the 20th century but now it is 38,000 sq. km, less than 5%. The World Bank estimates that Nigeria losses US\$750 M annually due to deforestation and more than 484 plant species are threatened with extinction and several species of wildlife are threatened by deforestation. "Nigeria's wildlife is rapidly declining due to habitat loss, increased pressure from hunters, poachers and bush burning," says Vision 2010 report.

Japan and its Impact on Southeast Asia Deforestation

Japan deforestation and afforestation program can be classified as pre WWII, during the war and after the war. Japan has a cool temperate climate to the north and tropical climate to the south. Hills and mountains cover 70% and 2/3 of the country is forested. Traditionally, they have preserved their forests to protect them from landslide, river silting and floods, and thus formed part of their culture.

Most of Japan was destroyed during the WWII after they were defeated by America. During and after war, military build up of homes destroyed led to increased demand of wood leading to massive felling of trees. Government thus embarked on "making the mountains green" with special tree planting days and weeks and fund. This was later turned to annual tree planting

festival that was rotational among the prefectures and attended by Emperor and Empress creating sacred forests. Before these forests mature, construction industry with government support started importing timber from US and Canada. This continued importation has contributed to deforestation of Southeast Asia and Latin American countries where Japan imports most of their timber. The history of “producing nature” is the process of involvement and marginalization of “other nature” within the region. They have been leveled as “ecooutlaw” and an environmental “predator” hence charged with “crimes against Earth”.

INTRODUCTION

World forests cover 30% of the total land area (FAO 2005, UNEP 2007). This is approximately 4 billion hectares corresponding to 0.62 hectares per capita. This is unevenly distributed with 62 countries of combined population of approximately 2 billion having less than 0.1 ha per capita (FAO 2005). By 2005, deforestation rate was about 13 million hectares per year. This includes 6 million of primary/frontier forests. Frontier forests are defined as “forests where there are no clearly visible indications of human activity and where ecological processes are not significantly disturbed” (UNEP 2007). Primary forests have no sign of past or present human activities and are considered to be the most biologically diverse ecosystems in the world (Butler 2005). Deforestation figures show Nigeria has the worst rate in the world of 55.7%, and Brazil, which is the second largest country with the largest forest area besides the Federation Republic of Russia, losses the largely area annually of approximately 3.6 million hectares of forest (FAO 2005, Rhett 2005). According to FAO Global Forest Resources Assessment (2005) and Millennium assessment (MA) Report (2005), deforestation is a result of the combination and interaction of complex factors acting on a given forest. “The causes of deforestation are very

complex. A competitive global economy drives the need for the money in economically challenged tropical countries” (Urquhart 2007). The three main causes of deforestation in the world (FOA 2005, MA Report 2005) are; 1) Agriculture – conversion of forests into crops and pasture. It was implicated as a factor in the 96% of the forests assessed (Geist and Lambin 2002). Deforestation by poor peasant farmers of most tropical countries is driven by need for the basic human need for food. Most of the farmers in the tropical countries are poor by American standards. In Bolivia, a country holding some of the Amazon forest, the per capita income is \$800. Farmers must raise crops for food and to sell (World Bank 1998). 2) Infrastructural expansion. These include roads development and encroachment of human settlements. It is of particular concern in Latin America countries and urban sprawling in United State and accounted for 72% of the cases studied and, 3) wood extraction which accounted for 67% of the cases studied. Industrial logging is the primary issue in Asian countries while domestic fuelwood gathering is main driver in Africa. Forest fires are often purposeful set by people. On average 104 million hectares of forests were significantly affected each year by forest fire, pests (including insects and diseases) or climatic events such as drought, wind, snow, ice and floods (FAO 2005). However, most of the information from developing countries of forest affected by disturbances is severely underreported, with information missing from many countries, especially for forest fires in Africa (FAO 2005). Governments sell logging concessions so that they service their international debt, for industrial development or for other projects (Urquhart 2007). Other drivers of deforestation are population growth, poverty, landlessness and consumer demand (UNEP 2007, FAO 2005).

Forest planting, landscape restoration and natural expansion has reduced the net loss of forest area, with the changes in the period of 2000-2005 estimated at 7.3 million hectares per

year, down from 8.9 million hectares per year in the period of 1990-200 (FAO 2005, MA Report 2005, and UNEP 2007). Africa and South America have the largest net loss of forests. Oceania and North and South America had a net loss of forest, while Europe continued to expand, but at a slower rate. Asia, which had a net loss in the 1990s, registered a net gain due to large reforestation by China (FAO 2005, MA report 2005). Over the last three decades, almost half of the Earth's original forest cover has been deforested, and only 20% of frontier forests remained by 1997 (Bryant et al. 1997). Deforestation, selective logging and other human interventions accounts for the loss of six million primary forests every year (UNEP 2007).

Forests help maintain conditions that make life possible, from regional hydrological cycles to global climate changes (Bryant et al. 1997). While deforestation, degradation and poor forest management reduce carbon storage in forests, sustainable management, planting, and rehabilitation of forests can increase carbon sequestration. It is estimated that the world's forests store 283 billion tons of carbon in their biomass alone, and that the carbon stored in forest biomass, deadwood, litter and soil together is roughly 50 percent more than the amount of carbon in the atmosphere. Carbon in forest biomass decreased in Africa, Asia and South America in the period 1990-2005, but increased in all other regions. For the world as a whole, during this period, carbon stocks in forest biomass decreased by 1.1 billion tons of carbon annually. This was because of the continued deforestation and forest degradation, which was partly offset by forest expansion (including planting) and an increase in growing stock per hectare in some regions (Bryant et al. 1997, FAO 2005). Without forests, carbon oxidizes to carbon dioxide which is a greenhouse gas in the atmosphere, with a net effect of global warming (Bryant et al. 1997, FAO 2005). Deforestation between 1850 and 1990 released 122 billion metric tons of carbon dioxide into the atmosphere. The current rate of release is approximately 1.6 billion metric tons. Other

sources of fossil fuel release about 6 billion metric tons of carbon dioxide per year (Urquhart et al. 2007, Bryant et al. 1997, FAO 2005, World Bank 1998). Thus, it is evident that the loss of natural forests around the world contributes more to global emissions each year than the transport sector. Curbing deforestation is a highly cost-effective way to reduce emissions. Some of the options to reduce carbon emission include increased energy efficiency, reduced energy demand, better transport and the use of green energy (UNEP 2007, FAO 2005).

Tropical forests are the world's reservoirs of ecosystem and biodiversity hotspots (Roper and Ralph 1999). They occupy approximately 2,000 million hectares and represent resources in the form of economic products and environmental services. By the close of the 20th century, there were approximately 3,500 million hectares of forest land in the world, representing 27% of the land cover. Most of the tropical forests are in the developing countries (Roper and Ralph 1999). Deforestation of tropical forests is more than mere destruction of beautiful areas. With the current rate of deforestation, tropical rain forests will disappear within the next 100 years, with major effects on global climate change and the loss of many plants and animals from the face of the earth (Urquhart et al. 2007).

To avoid the high costs associated with massive forest loss and degradation, we need to preserve and responsibly manage the remaining frontier forests (Bryant et al. 1997, FAO 2005, MA Report 2005). There are a lot of examples of civilization, such as ancient societies in Mesopotamia, the Mediterranean and Central America contributed to deforestation leading to soil erosion, river siltation, wood shortage and other banes of agriculture and industrial productivity. The costs associated with destruction of frontier forests are enormous. They include loss of large forested watersheds, which includes heavier loading. Many countries lose billions of

dollars every year in property damage due to forests destruction. India losses approximately US\$1 billion every year due to flooding (FAO 2005).

Forests are housing to the world's indigenous cultures. Over 50 million indigenous people live in the tropical forests. Amazon forests houses at least 400 indigenous groups, comprising of approximately 1 million people in all (Bryant et al. 1997). Indigenous people have a bank of knowledge and information about the nature. Thus, transforming forests to wipe out indigenous people is a moral crime (Bryant et al. 1997). Primary forests/frontier forests are guardians of biodiversity of plant and animal species, indigenous diverse cultures of people with deep connections to their habitat, and ecological processes. They provide recreational and ecotourism opportunities, spiritual and aesthetics. This is one of the gifts of nature Earth that we can leave for our children (FAO 2005). Only 20% of world forests remain on large intact areas. They include tropical rainforests, mangrove, coastal and swamp forests. Monsoon and deciduous forests thrive in drier and more mountainous regions (FAO 2005).

Total area in original, current and Frontier Forest of the Earth's forests as it appeared 8,000 years ago. Source: Bryant et al. 1997. Last frontier forests: Ecosystems and economies on the edge. World Conservation Monitoring Center)

Region	Original Forest (000Km ²)	Total Remaining Forest (Frontier and non-Frontier Forest) (000 Km ²)	Total Remaining as a % of Original Forest	Total Frontier Forest (000 Km ²)	Frontier Forest as a % of Total Original Forest	Frontier Forest as a % of Total Remaining Forest
Africa	6,799	2,302	34%	527	8%	23%
Asia	15,132	4,275	28%	844	6%	20%
Central America	1,779	970	55%	172	10%	18%
North America	10,877	8,483	78%	3,737	34%	44%
South America	9,736	6,800	70%	4,439	46%	65%
Europe	4,690	1,521	32%	14	0.30%	1%
Russia	11,759	8,083	69%	3,448	29%	43%
Oceania (i)	1,431	929	65%	319	22%	34%
World	62,203	33,363	54%	13,501	22%	40%

Notes: (i) Oceania consists of Papua New Guinea, Australia and New Zealand

The above table compares the world forests 8000 years ago and how they appear now. From the table, nearly half, 46% of the Earth's forests have been converted into other uses over the last 80 centuries. Only 22% of the Earth's original forests remain in large relative ecosystems. Boreal forests form nearly half of the remaining frontier forests. Boreal forests are primarily broad leaf coniferous between arctic tundra to the north, and warmer temperate forests to the south. They are mostly in Alaska, Russia, Canada and Scandinavia. They remain less disturbed because of long winters and poor soils making them difficult to practice farming and because they tend to be slow growing, scrawny and widely dispersed (Bryant et al. 1997). Temperate forests are the most disturbed and fragmented. Bryant et al. (1997) found that 3% of today's frontier forests are temperate, while another 5% having both temperate, and either boreal or tropical frontier forest. Temperate forests were the first to be cleared as a result of good climate and soils (Bryant 1997). Most of China's east forest was converted to farmland by 100 B.C. Greeks and Romans destroyed much of forest of Mediterranean more than 2000 years ago. Europe frontier forests were cleared into cities and towns in the Middle Ages, while frontier forests of the Mediterranean and Middle East are completely cleared (WRI 2007).

World Demand for Wood as Fuel

The major use of forest wood is fuel. This is a pattern which is both ancient and modern, and it is not likely to change in the next several decades (FAO 1999). Wood fuel is the most important non-fossil fuel. A study by FAO (1999), found that almost half of the 4.4 billion cubic meters (m³) of wood harvested in 1996, was burned for cooking, to provide heat, or used to make charcoal for later burning. Most other wood products also end up being burned for fuel. Approximately 63% of all wood harvest is burned as fuel (FAO 1999).

Africa and Asia use 75% of global woodfuels (FAO 1999). Developing countries which have a majority of low income people depend most heavily on wood fuel. Overall, Brazil, China, Indonesia and Nigeria, use about half of the fuel wood and charcoal produced and consumed each year (FAO 1998).

Between 1961 and 1998, woodfuel consumption rose by nearly 80%, closely trailing the world population growth rate of 92% in the same period (FAO 1999). Fuel wood and charcoal demand increases with an increasing population of rural poor. Charcoal consumed in form of banquettes is important fuel among urban poor communities (FAO 1999). The population of poor urban people is expanding. In some Latin America countries, charcoal is a source of fuel for industries. The steel industries of Brazil depend heavily on charcoal. In many developing economies, fossil fuel is added to the energy mix but not substituted for woodfuels (FAO 1999). Economic growth in many developing countries caused an increase in fossil fuel use and a decline in biomass energy fuel use, but the actual quantity of biomass consumed continued to grow (FAO 1999). There are local and regional hardships and shortages of woodfuel in many parts of the Africa, Asia and Latin America. This includes long distances to gather daily wood supplies (FAO 1999). There has been a mistaken assumption that forests are the only sources of firewood (RWEDP 1997a:20). Studies have shown that two thirds of wood fuel comes from non forest sources as woodlots, roadsides verges, backyards, residues from logging, wood industry and tree plantations (RWEDP 1997a: 21). At the global level, wood collection for fuel is not regarded by FAO as an important cause of deforestation. Woodfuel supply can be sustained through well managed government planting programs, community woodlots, and plantations (FAO 1999). In Africa, studies by FAO (1999) show that institutional factors such as lack of property rights or ownership and not scarcity of trees are to blame for wood shortages.

Causes of Deforestation

“It is said that people destroy forests because they are poor, and that deforestation causes poverty—but generalizations are a poor foundation for policy, we find that deforestation is caused by both rich and poor people—and it can either destroy or create assets for poor people”, Kenneth Chomitz, the World Bank group. There are many causes of deforestation. These causes can be grouped into the following categories (Roper and Ralph, 1999).

Predisposing conditions to deforestation

Deforestation results due to an interaction of environmental, social, cultural and political forces in a given region. They differ from region to region (Roper and Ralph, 1999).

Population growth is a major hindrance to attainment of sustainable development. Most of the population growth is occurring in the developing countries. Approximately 75% of world population lives in the developing countries with one billion living in abject poverty, with majority in developing countries where deforestation is an issue. 2.8 billion People live in rural areas depending on agriculture with at least 500 million depending on clearing the forest to plant subsistence crops. Poverty drives most people to deforest for survival and desire to escape the poverty cycle (FAO 1998).

Associated with poverty is the socioeconomic environment limiting economic options, health, rural capital and reduced income opportunities and institutional and infrastructural growth. Studies show that as societies become stable, they develop more environmental concern and greater appreciation of environmental values. Food insecurity and undernourishment drives the poor people to look at forests as short term solution to their problems (Roper and Ralph, 1998).

The struggle for economic and political power by individuals and corporations as they seek profits at expense of human suffering and environmental degradation is a major agent of deforestation (Roper and Roberts, 1998). This is manifested by monopolistic markets, competing land uses, export oriented agricultural crops, and exploitive logging (Roper and Ralph, 1998).

Indirect causes of deforestation

Government policies such as subsidized credit for agricultural and livestock expansion have contributed to deforestation. Others include tax breaks for importation of new equipments that negatively impact forests, reduced rates for income and corporate tax for competing land uses. High taxes on imported petroleum products discourages use of alternate fuel to firewood, while infrastructure and energy development that do not account for the value of forest capital lost and reliance on cash export crops by commercial farmers forces displaced small farmers to cultivate marginal forestland. International policies such as debt repayment, structural adjustments and trade have great impact on forest resources. Structural adjustment programs encourage expansion of foreign exchange earning export crops encourages liquidation of forest capital through logging or clearing for agriculture (Roper and Ralph, 1999).

Government sponsored settlement programs are created to avoid overpopulation at the urban centers and to gain political favor and sovereignty. This has led to deforestation, replacing forests with marginal subsistence farming (Roper and Ralph, 1999).

Implementation of economic structural adjustments and macroeconomic reform programs leave many people unemployed and in absolute poverty. This has motivated people to migrate to the forests to practice slash and burn farming (Roper and Ralph, 1999).

Servicing of external debt has drained many countries of their meager resources. Brazil and Mexico, two of the most deforested countries, have the biggest external debt of all

developing countries (World Bank 1998). The average ‘Top 10’ deforesting countries rose from 26% in 1975 to 60% in 1996 (World Bank 1998). The country resources are directed to services debts and not alleviation of poverty. Forest rich countries are tempted to liquidate their forests to service foreign debt (World Bank 1998).

Government policies and weak institutions within a country can contribute to loss of forests resources (Roper and Ralph, 1998). Some policies are not well thought of, while others are crafted to favor a small group of politically and economically powerful people at the expense of the larger community. Some however are adopted with best intentions and have negative unforeseen impacts (Roper and Ralph, 1999). Rescinding policy can be very difficult. Many countries are now repealing their policies and legislation that contributed to deforestation in the past. Brazil has repealed the subsidy to promote cattle ranching in the Amazon (Roper and Ralph, 1999).

Land access and tenure has an important influence on people’s attitude towards land use. Due to a lack of guarantee that land will remain theirs, farmers have no incentive to invest in making it more productive. Secondly, as land passes from one generation to another, the farm sizes become too small to remain economical. Most of the arable land is held by large corporations and thus not accessible to majority of farming population. Due to the consolidation of land into big farms for mechanization, and the introduction of new technologies, the small farmers have been pushed to forest frontiers (Roper and Ralph 1998).

Market pressure has led to increased demand for forest products and food, hence the increased spread of deforestation. As the population increases, the demand for forest based products and fuelwood increases leading to increased deforestation. In agriculture, the increase in population leads to increased consumption. Countries that have favorable conditions for growing

the crops market them to regions where demand is high. Examples are cattle ranching in Brazil and rice farming in Malaysia which have contributed to deforestation (Roper and Ralph 1998).

Undervaluations of natural forests lead to low understanding of the value of goods and services that are provided by the forests. As a result, forests that are perceived as less valuable are cleared and replaced by more attractive land uses. Some of world's primary forests have been cleared to create room for industries that have detrimental effects on the environment and are a threat to remaining forests (Roper and Ralph 1998).

Social factors such as urban migration, food production, agrarian revolution, national security, unemployment, and other issues, have caused governments to forget about deforestation and let it continue unabated. Common resources such as forests have been perceived as "free" resources for use by everyone and free from government regulation. Thus, rather than being managed for common good, they have been abused and neglected (Roper and Ralph 1998).

The direct causes to deforestation include slash and burn farming, commercial agriculture, cattle ranching, mining, petroleum, and gas exploration and infrastructure development (Roper and Ralph 1998).

Carbon Trading/Avoided Deforestation

Carbon trading is trading of permit to emit carbon and other greenhouse gases as a way of countries to meet their Kyoto protocol obligations of reducing carbon dioxide and mitigation of global warming (World Bank 2005). Countries cap their carbon emission at certain levels and issue permits to industries and firms that grant them right to emit stated amounts of carbon over a period of time. The firms that can reduce their emissions sell to others that are unable to reduce greenhouse gas by giving monetary value for the cost of polluting air (Capoor and Ambrosi

2006). According to François Bourguignon, Chief Economist and Senior Vice President, Development Economics, at the World Bank, “Global carbon finance can be a powerful incentive to stop deforestation, compensation for avoiding deforestation could help developing countries to improve forest governance and boost rural incomes, while helping the world at large to mitigate climate change more vigorously”. Trees are worth more alive, storing carbon, than they would be worth if burned and transformed to unproductive fields. With the carbon trading, it is possible to reduce pressures on tropical forests through a comprehensive framework that integrates sustainable forest management into the global strategy for mitigating climate change and preserving biodiversity (World Bank 2005).

Sustainable Forest Management and Forest Certification

The definition of Sustainable forest Management (SFM), according to FAO, “is the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems”. To achieve SFM, criteria and indicators have been developed with essential elements and conditions by which SFM may be assessed and used for reporting. There are nine international and regional criteria and indicators involving over 150 countries. The three most advanced initiatives are; the Pan-European (Helsinki), Montreal, and International Tropical Timber Organization (ITTO). The other six that are coming up are Tarapoto proposal, African Timber Organization, African Dry-Zone Process, Near East Process, Dry Forest Asia Initiative, and Lepalerique Process (Patosaari 2004).

SFM has a growing international consensus. As a result, seven thematic areas of interest have been developed. They are on; 1) extent of forest resources, 2) biological diversity, 3) forest health and vitality, 4) productive functions and forest resources, 5) protective functions of forest resources, 6) socio-economic functions, and 7) legal, policy and institutional framework. They effectively provide a common, implicit definition of SFM (Patosari 2004).

SFM was recognized by the parties to the Convention on Biological Diversity (CBD) in 2004 to be a concrete means of applying the ecosystem approach. The CBD ecosystem approach is defined as “The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way”. An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompasses the essential structures, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems (FAO 2005).

Forest certification has emerged as a result of growing environmental awareness and consumer demand for more socially responsible business (FAO 2005). It is a critical tool for communicating environmental and social performance of forest operations. Independent organizations develop standards of sustainable forest and independent auditors issue certificates to forest operations that comply with the set standards. Certification of forest products procurement process helps enhance comprehensive wood and paper policies. This includes protection of sensitive forests values, thoughtful material selection and efficient use of products. Though it is a world initiative, to date, most certification operations are in Europe and North America. Developing countries lack capacity to undertake certification audit and maintain operations to certification standards. (FAO 2005).

Brazil Soy Agriculture and Cattle Ranching

Brazil is the world's fifth largest nation by landmass. It also has the highest biological diversity on Earth (LA Times 2005). Brazil's struggle to become an agricultural giant has made it the world's largest exporter of many agricultural goods. However, this has come at a cost; most of the country's ecological areas have been plowed for crops and animals (LA Times 2005).

Brazil now supplies sugar to Nigeria, chicken to Hong Kong, tobacco to Germany and coffee to Japan (Hirsch and Chu 2005).

Growing staples for the world Agricultural products make Brazil a key player worldwide

Brazil percentage share of world agricultural export in 2004

Orange juice	82
Soybeans	38
Soy meal	34
Sugar	29
Chicken	29
Coffee	28
Soybean oil	28
Tobacco	23
Beef	20
Pork	16

Sources: U.S. Department of Agriculture, Food and Agriculture Organization, Institute for International Trade Negotiations

The increasing population in China has fueled much growth in Brazilian agriculture, with more than 60% of China's orange juice now coming from Brazil. They also supply a third of Asian nation's soybean and tobacco purchases (Hirsch and Chu 2005). In 2004, Brazil agricultural export was US\$27.6 billion while imports were US\$3.2 billion, resulting to a net surplus of US\$24.4 billion (Hirsch and Chu 2005). Many smaller farmers are being pushed out of the market by the large farms. This agricultural boom is responsible for most of the deforestation of the Amazon region (Hirsch and Chu 2005).

Brazil produces the second largest amount of beef in the world from United States (FAO 2005). By 2003, Brazil was the third largest exporter of boneless beef and veal in the world, after Australia and USA (FAO 2005b). Projections indicate a steady increase in beef production at a rate of more than 3.2% per year between 2004 and 2011, with a rapid growth from Egypt, Asia and Russia (FAO 2005b). Cattle ranching remain a very important industry and are becoming a more vital part of the Brazilian economy (project Amazonia 2006). The Brazilian commercial cattle herd is the largest in the world with beef and milk being the two top livestock products. The beef export grew to US\$1 billion in 2001 with United States and Europe being the major markets for Brazilian beef and veal (project Amazonia 2006). For every 1/4lb hamburger consumed in US from rainforest beef, about 55 square feet of rainforest was cleared. The United States Department of Agriculture (USDA) has no adequate systems to monitor the source of beef coming from rainforests, which results in this beef passing through US processing plant, and is then labeled as domestic meat (project Amazonia 2006). Approximately 80% of Brazilian cattle production which increased fivefold between 1993 and 2003, is export driven with cattle pasture-hamburger connections [World Rainforest Movement (WRM) Bulletin 2005].

Slash and burning is often employed to clear land for pasture. Land in Brazil is very speculative, with 0.8% of landlords owning 43% while 53% of landowners (mostly small peasants) own 2.7% of the land. Multinationals own 36 million hectares of Brazilian territory (project Amazonia 2006). Most of the land owned by the landlords is unfarmed and is used for speculation of prices. There is a high of crime rate among the peasants from the landlords. The land reforms of 1985 did not achieve much as it settled 18000 of 5million landless families (project Amazonia 2006).

Brazil produces about 6.14 million tons of carcass weight of beef and veal per year, and exports around 7% of the world total beef, with a major motivation being fast food industries in the developed countries (project Amazonia 2006). The occupation of 1970s and 1980s was largely motivated by government subsidies and policies, but the dynamics of recent occupation is more autonomous with significant increase in deforestation in the 1990s despite reduction of subsidies and incentives by the government. The rich landowners and companies have monopolized the ranching industry in Brazil (World Bank Report, project Amazonia 2006). Devaluation of Brazilian currency, expansion of inroads, electricity, slaughter houses, low land prices, and the easy illegal occupation of government land have contributed to expansion of the beef industry (FAO 2005). The current Brazilian law requires that landowners preserve 80% of their land, but this is hard to enforce with around 300 inspectors for 5 million acres of land (project Amazonia 2006). Majority of the cattle ranchers are concentrated in the Amazon states of Mato Grosso, Para and Rondonia, where deforestation is highest (FAO 2005).

The causes of deforestation in Brazil are a combination of economic, social and development factors (Mertens 2003). Road development and other infrastructure stimulate intensification of cattle production particularly close to slaughter house and main roads and extensive production systems through new forest clearings (Mertens 2003). Due to fluctuations in prices and yield of main perennials, more small holders are turning to livestock which provides lower but safer returns. A belief of large landholder's is that clearing forests prevents their land from being invaded by the landless (Mertens 2003). Medium and large-scale cattle ranching are the leading cause of deforestation in Brazil (World Bank Report). This is closely followed by soy cultivation with the two resulting in clearance of over 80 million hectares of land approximately equivalent to 10% of Brazil total land (WRM Bulletin 2005). The expansion

of cattle ranching has driven expansion of soy agriculture to over 21 million hectares over the last 60 years. With the outbreak of foot and mouth disease in 2001, soy became an important ingredient of cattle feed in United States and Europe, opening the market for Brazilian soy export. By 2005, the government estimation of soy production was 63.6 million tons with an increase in area of about 50% in 4 years from 14 million hectares in 1990 to 21 million hectares in 2004 (WRM Bulletin 2005). As Philip Fearnside, co-author of a report in Science (21-May-2004) and a member of Brazil's National Institute for Amazonian Research in Manaus explain;

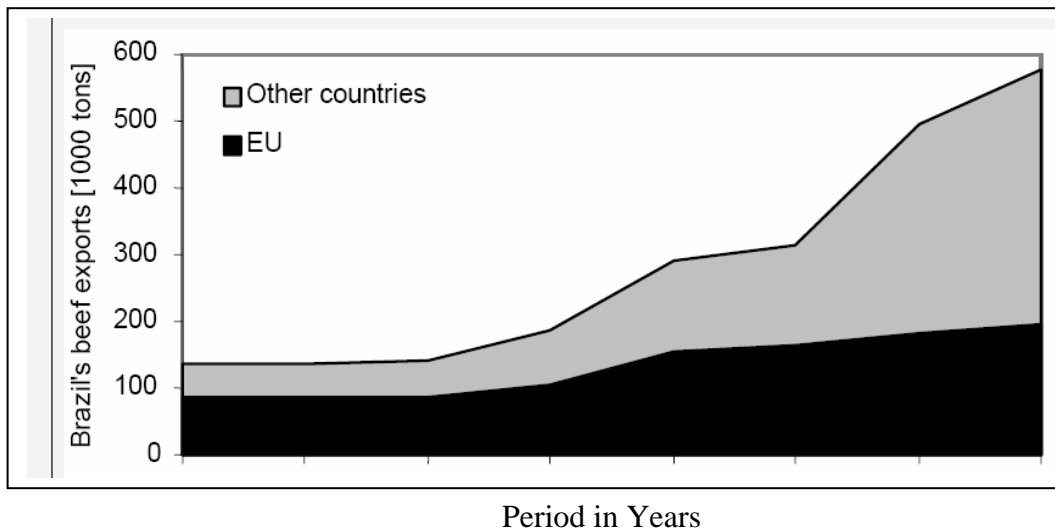
“Soybean farms cause some forest clearing directly. But they have a much greater impact on deforestation by consuming cleared land, savanna, and transitional forests, thereby pushing ranchers and slash-and-burn farmers ever deeper into the forest frontier. Soybean farming also provides a key economic and political impetus for new highways and infrastructure projects, which accelerate deforestation by other actors.”

In Brazil the rate of deforestation is largely driven by commodity prices. Recent development of a new variety of soybean has led to the displacement of beef ranches and farms of other crops, which, in turn, move farther into the forest. Certain areas such as the Atlantic Rainforest have been diminished to less than 10% of their original size, and the Amazon Rainforest is awaiting the same fate with 600 fires burning daily. Although much conservation work has been done, few national parks or reserves are efficiently enforced (WRM 2005).

Soy business expansion is marked by unclear land tenure regimes and corruption. The WWF estimates that by 2020, about 20 million hectares of forest and savanna land in Latin America could be destroyed by soy agriculture (WRM Bulletin 2005). Cattle ranching and soy agriculture have had negative impacts not only in the Amazon forest, but has also bred conflict between the ranchers and the indigenous people which is marked with corruption, political protection and violence. This leads to displacement, violence, murder, loss of livelihoods and suicide (WRM Bulletin 2005). Maggi, a businessman, who owns part of the Brazilian soy

agribusiness, said; “to me, a 40% increase in deforestation doesn’t mean anything at all, and I don’t feel the slightest guilt over what we are doing here. We are talking about an area larger than Europe that has barely been touched, so there is nothing at all to get worried about.” The soy expansion and cattle ranching has proved to increase deforestation and generation of social, economic and cultural problems to indigenous and landless peasants of Brazil. The World Bank however, through the International Financial Corporation (IFC), has continued to fund the expansion of these business ventures (WRM Bulletin 2005).

Brazil Beef export growth trend to Europe and other countries. Source, food and agricultural organization of the United Nations (FAO 2005).



Nigeria Crude oil and Natural gas and their Impacts on Forests

Nigeria is Located in Western Africa, bordering the Gulf of Guinea, between Benin and Cameroon. It is the most populous country in Africa, with 20% of the West Africa people. The country has 250 ethnic groups with rich diversity of culture and different languages. The indigenous groups in Nigeria are the Nok culture who worked in iron and produced sophisticated terra sculptures over 2000 years ago. The Housa kingdom and Borow Empire in the north developed as important terminals of north-south trade between North African Berbers and forest people who exchanged slaves, ivory and cola nuts in barter trade. The Yoruba kingdom founded about 1400 expanded between 17th and 19th century with high level political organization to modern Togo.

Nigeria was colonized by British rule from 1885, which was consolidated in 1914 as a colony and protectorate of Nigeria but remained divided into north and south provinces and Lagos colony. The country was granted independence in October 1960 as a federation of three regions (north, western and eastern). In 1963, they altered their relationship with the United Kingdom and proclaimed themselves as a federal republic and promulgated a new constitution, and established a fourth region of Midwest (CIA 2005).

The different regions were at different development levels, by the time Nigeria gained her independence. These disparities in economic and education developments between the north and south magnified ethnic, regional and religious tensions. On January, 15, 1966, a small group of army officers mostly from southeastern Igbos, overthrow the government, assassinated the federal prime minister, and prime Ministers of northern and western regions. This led to high ethnic tensions as military government could not consolidate power.

As a result of this instability, Nigeria has experienced six military coupes, two of which were abortive. This threw the country into turmoil and leading to thousands of deaths and assassinations. As the respective military governments focused on consolidating power within the States, more attention was on crude oil and natural gas as the immediate source of economic empowerment. Foreign companies took advantage of this government instability and influence policy formulation. Other government ministries were also neglected and suffered economic mismanagement and lack of clear guideline. This made Nigeria, which was food sufficient, a net importer of food. The country's forest, where most of the oil fields and natural gas are found, saw a period of destruction by the oil and gas companies.

On the February, 27th 1999, former military head of state Olusegun Obasanjo who had been freed from prison by former military leader, won country elections. His government has faced communal violence that has claimed a lot of lives. Nigeria reelected Obasanjo as president in 2003 national elections.

Nigeria has a population of 135 Million. It has an area of 357000 sq. miles. The country's GDP growth rate is 5.3%, and has an average life expectancy of 47 years. Nigeria has a literature rate of 68%, and inflation rate of 10.5%. The country's unemployment rate stands at 5.8%, with 60% of the people living below the poverty line (CIA 2007). Nigeria has a varied climate of equatorial in south, tropical in center and arid in north. Nigeria has high agricultural potential, (hence the 'green' in the flag), and 33% of the land is arable. Most parts of the country experience rich soil, and good rainfall. About 80% of the land is cultivable, and about 13 percent of the land is forested, and livestock are also maintained by farmers (CIA 2007).

The U.S is the largest consumer of Nigeria's crude oil accounting 40% for Nigeria crude oil export. Agriculture has suffered from year of mismanagement and poorly conceived

government policies coupled with poor infrastructure. Agriculture accounts for 41% of GDP and 2/3 of employment. In October 2005, the International Monetary Fund (IMF) approved the first ever support instrument for Nigeria (WRM 2007).

According to the FAO (2005) Nigeria has the world's highest deforestation rate of primary forests. It has lost more than half of its primary forest in the last five years. Nigeria's original natural forest cover used to be 600,000 sq. km at the beginning of the 20th century. Deforestation mostly for fuelwood and wood for export has within a century reduced the forest cover to less than 38,000 sq. km, which is less than 5% of its original forest (Raufu 2003). The World Bank estimates that Nigeria loss over US\$750M annually as a result of deforestation, more than 484 plant species have become threatened with extinction, and deforestation has decimated several country's species of wildlife (Raufu 2003). "Nigeria's wildlife is rapidly declining due to habitat loss and increased pressure from hunters, poachers and bush burning; animals that have disappeared from Nigeria include the cheetah, the pygmy hippopotamus, the giraffe, the black rhinoceros and the giant eland. About 10 to 12 species of primates including the white-throated guenon species of primates and sclater's guenon are under threat due to habitat loss and deforestation," says the Vision 2010 report.

The fuel prices have a very high impact on deforestation. Majority of Nigerians rely on kerosene stoves for cooking fuel and only a few can afford gas and electricity. In the 1980s, successful governments embarked on fuel price hikes. This has led to urban poor and rural dwellers to revert back to fuelwood with rampant tree felling and a thriving fuelwood business (Raufu 2003). The other causes of deforestation are logging, subsistence agriculture, and clearing for the oil drilling and death as a result of oil spilling (FAO 2005).

Nigeria has four vegetation zones, the coastal mangrove swamps, the rain forest, the woodland savanna and the northern savannas. Before Independence in 1960, Nigeria was self-sufficient in terms of food. Due to political instability, and the decline in agricultural focus with the discovery of oil and industry, coupled with population growth, Nigeria's food source eventually became insecure, and started importing a lot of food (WRM 2007).

Nigeria forests lie into two broad categories; 1) woodlands and forests of the savanna regions (four-fifths of the country's forest area which are sources of fuel and poles), and 2) rainforests of the southern humid zone that supply almost all domestic timber and lumber, with fuelwood as a byproduct (WRM 2007). Nigeria's forests have gradually shrunk over the centuries, especially in the north, where uncontrolled commercial exploitation of privately owned forests began in the late nineteenth century. Toward the end of the 1800s, the colonial government began establishing forest reserves. By 1900 more than 970 square kilometers had been set aside. By 1930 this reserve had grown to almost 30,000 square kilometers, and by 1970 had grown to 93,420 square kilometers, mostly in the savanna regions (WRM 2007). In the 1950s, forest regeneration was mostly by natural reseedling. This changed in the 1960s when the government established plantations of fast growing exotic species of teak and gmelina, an Australian hardwood (WRM 2007). These state plantations later became important sources for timber for pulp, poles and fuelwood. The rising Nigerian population increased demand of timber especially in the construction industry. This resulted in a decline of the export from forest earning. The oil boom of the 1970s slowed exports further, as more and more wood was diverted to the domestic construction industry (WRM 2007).

In the 1980s, Nigeria's demand for commercial wood products (excluding paper pulp and paper) threatened to exhaust reserves before the year 2000. To reverse this process, especially in

the northern savanna, the government needed to double the rate of annual plantings it set in the 1980s. In June 1989, the government announced receipt of a World Bank loan for afforestation to stabilize wood product output and forest reserves (WRM 2007). About 80 percent of Nigeria's land is suitable for farming and grazing, while roughly 13 percent is forested and provides *mahogany, iroko, ebony*, and other woods. There are several plywood factories and sawmills (WRM 2007).

Oil in Nigeria is found in small fragmented pockets along the Niger Delta. Wells from several fields are channeled to flow to a single station through a network of pipelines (WRM 2007). Major pipelines transport oil to refineries and shipping terminals and are complemented by tank farms and pumping stations. Oil spills are very numerous. The leaks permeate the coast waters and streams causing adverse damage and death to mangrove forests (WRM 2007). As Alfredo Quarto wrote,

“The Niger Delta contains the third largest contiguous mangrove forest in the world. Once rich in biodiversity and teeming with marine life, the area is now being rapidly degraded by petroleum production. The entire region is engulfed in what might be called a Petroleum War --a war fueled by the uncontrolled avarice of the multinational oil conglomerates too long wed to their ubiquitous cronies and mafia-style henchmen in government. During my second week in Nigeria, I was struck down by malaria -- wounded in battle, you might say-- another victim in this unholy war against the planet. But the roads to oil riches in Nigeria are lined with countless other victims and environmental refugees, whose very source of life and sustenance is left in abject ruin. Yet, this is a war in which there can be no victors --only victims-- for in the end everyone who is native to this planet stands to lose. Those hundred and more uncontrolled gas flares burning continuously for decades are adding to global warming, eerily lighting the way towards imminent natural disaster, while those multifarious oil spills and pipeline leaks are saturating the land and water ways, until, as one local resident put it, "There are no fish near shore now, the mangroves are dying, our food crops will not grow, our well waters are contaminated, and even our rainwater is no longer safe to drink!"

In another case, Bony Island, which is situated at the southern edge of Rivers State in the Niger Delta has suffered since the early 1990s, when the federal government of Nigeria in collaboration with its international partners started the multi-billion dollar project known as

Nigeria liquefied natural gas limited (NLNG). These major oil companies include Shells, Agip, Chevron, Mobil, and Elf among others that are famous worldwide for the social and economic destruction (WRM 2007). Though the locals have protested against the destruction of their mangrove forests, the clearing is carried out under the watchful eyes of heavily armed security. Oil discoveries in Nigeria have caused destruction of the mangrove, local community displacements and suffering and environmental degradation of water sources and soils, resulting to deaths, murder, and violence in Nigeria (WRM 2007). The oil companies have produced crude oil and gas for many decades many the local communities remain poor and their environment destroyed. As Dickson wrote,

“When the soldiers arrived at the community yesterday with their gunboats, our people thought they came for peace, and so no one raised any dust. Our chiefs gathered immediately at the palace of the Amanyanabo to await the soldiers to explain their mission, but the next thing that happened was shooting, shooting, shooting.... firing and firing. The soldiers were shooting at everyone, and started burning houses at the waterside”. A famous Nigerian poet, Nnimmo Bassey strong poem says: “Dried tear bags/ polluted streams/ things are real/ when found in dreams/ we see their Shells/ behind military shields/ evil, horrible, gallows called oilrigs/ drilling our souls. / we thought it was oil/ but it was blood.”

Japan Deforestation, Reforestation and Its Impact on Tropical Forestry

Japan is an island chain between the Northern Pacific Ocean and the Sea of Japan. It lies in the eastern Asia, east of the Korean Peninsula. Japan got its independence in 660 B. C. with the traditional founding by Emperor Jimmu. It has a history of stability and strong culture (CIA 2007). In 1854, Japan signed the Karagawa treaty with U.S. which opened its ports and began modernization and industrialization become a regional power over China and Russia and occupied Korea, Taiwan and later China (CIA 2007). Japan attacked American forces in 1941, triggering their entry into world war two (WWII). After the defeat, they recovered quickly and become powerful nation as well as a strong ally to the U.S. (CIA 2007).

Japan's climate varies from tropics in the south to cool temperate in the north. They have a tiny agricultural sector that is highly subsidized and protected, being self sufficient in rice, and importing 60% of their food on caloric basis (CIA 2007). Japan is the second most technologically powerful economy after the U. S. and third largest economy after U.S. and China (CIA 2007).

Japan's population is 127 million people. The age structure comprises of 0-14 years 14.2%, 15- 64years 65.7% and over 65 years 20%. The literatures levels are 99% and a fertility rate of 1.4childrenborn per woman. The two major long term challenges are aging population and external debts of US\$1.547 trillion which is 176% of GDP (CIA 2007).

Japan has an area of 93 million acres and has more than 6,800 islands. Japan land cover is 70% hills and mountains. The forests cover 62million acres, which is 67%, with 33 million acres being natural forests, which forms 53% of natural forests (CIA 2007). Japan has 47 prefectures as administrative areas (Save the world 2007).

Japan Forestry

Traditionally, people have preserved the forests for protection from landslides, river silting and floods (Knight 1997, CIA 2007). Japan is one of the largest world importers of timber as foreign timber is cheaper than domestic grown timber. This has contributed to tropical and boreal deforestation especially in China and South America (Knight 1997, CIA 2007).

During the WW II, the military build up of homes that were destroyed led to increased demand in wood with result of massive felling of trees. This continued after the war to feed the house construction boom. In a bid to replace the forests the government embarked on a campaign under the slogan 'making the mountains green' with special tree planting days and weeks and a

tree planting fund. They have tree planting annual festival (shokujasai) rotational within the 47 prefectures, which the Emperor and Empress attend, listen to a 'pledge' (chikai) made by a young man and a woman who act as 'representative of forestry successors' (ringyo kokeisha daihyo), and plants tree saplings. This has created sacred forests noted in connection with the Emperor throughout the country (Knight 1997, Nakashima 2002). Forest successor's pledge;

“to build a beautiful land, rich with greenery and wonderful nature, raised by all our hands together--it is our responsibility to fulfill this shared desire of the Japanese people. Here, on this day, according to the theme of 'let us all together raise our green homeland "(midori no kyodo)"--- we as the forest successor, aware of the extremely great undertaking that is our mission to fulfill, pledge all our efforts to achieve the unlimited development of the national forestry and a national homeland rich in greenery” (Wakayama-ken 1977: 59).

The landowners planted almost exclusive fast growing cedar as close as possible resulting to over 40% of forests consisting of cedar and cypresses of around 1950s. “Post war projects restored forests ---and the economic advantages of importing timber have given the new stands time to grow. Today the mountain woodlands are again among the jewels of Japan” (Totman 1985: 3). Japan reforestation is connected to both cultural and natural restoration (Knight 1997). Before the forests could mature, construction industry with government support started importing timber from U.S and Canada. The small landowners left the forests alone as they could not compete with the big firms (CIA 2007, Takayama 2007). Now the government is on a mission to promote the use of local timber especially in school (Takayama 2007). "Our mountains are rotting," says the land-use expert and member of Japan's Upper house. The forests are neglected for decades and they have reverted to their natural state causing a disaster. They have suffered undercutting and over-forestation (Knight 1997, Takayama 2007).

The history of afforestation, flood control and forest conservation is regarded as the country's conservation policy. Increased forest resource production means the creation of

affluent country, and nature conservation is equated to protection for the country. “Love for the forest” has been considered “love the country” and planting trees has meant to “build the country”. Nature and country are represented in association with each other (Nakashima 2002). The history of “producing nature” in Japan is the process of involvement and marginalization of “other nature” within the region (Nakashima 2002). When Japan occupied Korea and Taiwan, they regarded them as new countries and introduced the Japanese forest policy (Nakashima 2002). But they regarded their forest as “wasted forest land” which was attributed to lack of “love for the forest” and used them as “steppingstones to the tropical forestry” (Kanihira 1930). Korea and Taiwan have adopted the same rhetoric that forests have been wasted because of over-cutting and violent utilization of forest which they attribute to traditional shifting cultivation (slash-and-burn farming) in Korea and Taiwan. Demolishing this wrong conventional notion that burning forests doesn’t matter is vital to conservation of forests in this island. Afforestation campaigns are important in demolishing, savagery and creating a civilization, which is a distinct function of colonialism (Nakashima 2002).

Japan being a major importer of tropical wood has been criticized as a major contributor to tropical deforestation and as been labeled as ‘ecooutlaw’ and an ‘environmental predator’ hence charged with ‘crimes against Earth’ (Knight 1997). Japan is also charged with practicing ‘a selfish nationalistic forest conservation policy’ (Knight 1997). The pre-war reforestation is one of Japan’s achievements which restored the country as a ‘green archipelago’ (midori no retto) (Knight 1997). To counter the criticism of deforestation in other less powerful countries, Japan has developed a tropical reforestation program through its environmental aid program. This has allowed Japan to serve as a role model for reforestation (Knight 1997, Eccleston 1996).

Due to the aspect of globalization, forests have been rhetorically deployed by government to justify environmental conditions in their country. Malaysia has tried to justify its forest loss by pointing to apparent forest restoration elsewhere as Japan justifies reforestation by part at deforestation outside (Knight 1997). Dauvergne (1997) termed the resource management and environmental impact of the Japanese as “shadow ecology”. This ecological impact is invisible due to complex combination of various factors such as government practice in overseas development assistant (ODA), corporate conduct, investment and technological transfer and trade. (Nakashima 2002). Though Japans afforestation and forest conservation are connected to the deforestation of the southern Asia and Pacific, Japanese people cannot see because of their national environmental consciousness and the “shadow ecology” (Nakashima 2002).

International timber trade in Japan is threefold. It preserves Japanese forest standing timber due to low competition with cheap timber. It also contributes to forest loss in Asia, allows Japans to pride of national environmental achievements and claim international importance. Thirdly timber-trade in Southeast Asia contributes to global warming. As a result of conservation and protection, Japanese forests have acquired the status regional site for carbon sequestration (OECD 1994).

Critique of the Case Studies

Nigeria and Brazil are coming up as strong world economies and they have the potential with enormous resources and strong labor force. But the country's resources, instead of boosting the economy, have been mismanaged through bad governance, lack of political will, and misrule that have led to formulation of weak policies that favors the few politically correct at the expense of the vast majority of citizens. As a result, Nigeria has the highest deforestation rate in the world followed by Brazil. Extensive research in the world have proved that the economic value of preserved forest and its potential for biodiversity conservation and ecological services is usually twenty times higher than the value of chopped wood. The major cause of deforestation in these two countries is inappropriate and conflicting policies relating to forest management. Promotion of large scale development and infrastructural projects such as roads, open the forested areas and attracts settlement and other industrial construction. This has caused a lot of forest loss and fragmentation.

Japan, Nigeria and Brazil have similar government structures of national government and regional governments at the state (prefecture) level. But unlike Japan where the rule of law has prevailed, the leadership of Nigeria and Brazil has seen many problems and civil strife due to bad governance and foreign influence by capitalistic investment companies, making them the most corrupt countries with human abuse records. The country policies are more market driven, as they are suppliers of raw materials.

Nigeria and Brazil have both tried to attract foreign investors through economic incentives and government subsidies to large scale farmers and companies. The impacts by the investors on the country's environment are more profound because of inadequate management, weak enforcement of the existing laws by the respective governments, and weak institutions with

poor regulatory control mechanisms. This has led to increased corruption and manipulation with widespread impacts on corruption. Industrial interests have also dominated the policies and decision making.

Nigeria is the second largest sub-Saharan economy and fastest growing source of high quality crude oil and natural gas (Ploch 2007). While the country's crude oil and natural gas estimates are over US\$ 40 billion per year, the country human development index is amongst the lowest in the world with majority of its citizens under extreme poverty. According to US aid, over 70% of the country's population lives below a dollar a day (Ploch 2007). The country's economy depends on crude oil and natural gas that accounts for over 85% of GDP. As a result, the country has been rocked by misrule through the power of the bullet in the struggle to control the vast oil and gas resources. It also led to all other sectors and industries being neglected and is on the decline. Though over 70% of the county can form good crop land, Nigeria is a net importer of refined oil and food crops.

Nigeria has made several attempts to put programs in place that would ensure efficient management of forest resources. However, the successful governments have shown little will to fully support and implement these programs. The current political stability as witnessed in the successful hand-over of the first civilian-to-civilian government should be nurtured to promote good and friendly environmental and forest preservation policies and promotion of agriculture.

The social benefits from ranching have contributed little to the alleviation of social and economic inequalities in Brazil (Knudsen et al. 2005). However, it is worthy noting that sustainable cattle's grazing is not linked to environmental losses. Sustainable livestock grazing can enhance plant species richness and diversity of grasslands and is widely used as a

management tool in conservation programs of natural grasslands, as restoration of grassland reversing decline in northern Europe floristic diversity (Knudsen et al. 2005).

Some of the recommendations that can be implemented in Brazil include 1) Prevention of land grabbing. Though the Government's Action Plan in addressing land tenure is appropriate, it will require substantial political will, funding, and proper mechanisms to stop ranchers illegally occupying government lands, 2) restrict road projects outside already developed regions. There is a link between roads and deforestation and it is difficult to control land speculation and deforestation close to roads, 3) proper laws specifying the government forests to avoid incursions by ranchers and other farmers, 4) provide economic incentives to maintain land as forest. Brazil is already planning a compensation program to promote more eco-friendly agriculture. It should also consider direct payments for forest conservation, and 5) devote more funds on environment protection and reforestation efforts by the government.

Brazilian companies have taken the lead in making ethanol and flex fuels. These are viable renewable economic alternatives that require a lot of support. However, a lot of resources are required for research and government support on this area.

Japan currently ranks as one of the most industrialized countries in the world. Japan, being a major importer of both exhaustible and renewable natural resources and the second largest consumer of fossil fuels in the world after U. S.- has a major international responsibility to conserve and protect the environment through the ODA program. Through these government programs, Japan has become a key player in overseas “reforestation” schemes. Most of these projects however have had limited success due to lack of experts with reasonable community participation approach, insufficient field staff and relative independence from government bureaucracy (Kuroda 2000).

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