
**ASSESSMENT OF DEFORESTATION: THE EMPIRICAL STUDY OF THE ENVIRONMENTAL
IMPLICATION AND CONTROL STRATEGIES**

TPL Micah ELEBE
Department of Urban and Regional Planning,
Akwa Ibom State Polytechnic, Ikot Osurua

AND

Iniobong Ita ETUK
Science Technology Department
Akwa Ibom State Polytechnic, Ikot Osurua

ABSTRACT

The study empirically assessed the environmental implication and control strategies of deforestation. Expost-Facto survey design was adopted for the study. The study was conducted in Nigeria. The population of the study consisted of the climate scientist and environmental scientist in Nigeria. Stratified sampling technique was used in selecting 6 climate scientist and 39 environmental scientists which was drawn from each of the geographical zone in Nigeria. This gave a total of 270 sample size used for the study. The instrument used in this study for data collection was a questionnaire titled " Assessment of Deforestation Questionnaire (ADQ)". Face and content validation of the instrument was carried out by an expert in testing, measurement, and evaluation to ensure that the instrument has the accuracy, appropriateness, and completeness for the study under consideration. The reliability coefficient obtained was 0.80, and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical techniques such as percentage analysis. The test for significance was done at 0.05 alpha levels. It was Concluded that the underlying causes of deforestation need the attention of government authority to resolve these causes, implementing strong rules regulations in order to mitigate the adverse impacts of deforestation and save the ecosystem. The underlying causes of deforestation are said to be the following: expansion of farming land, logging and fuel wood, overgrazing, fires, and Mining. Also, all strategies to mitigating deforestation require cooperation and goodwill. The strategies must be such that on one hand they should recognize the critical roles of national, state and municipal governments and on other hand empower the civil society and the private sector to take a pro-active role in reducing deforestation, often working in conjunction with government. One of the recommendations made was that the forested areas should be protected by creating laws and policies that ensure forests are kept protected and restored, and betting on land practices such as wildfire corridors.

KEYWORDS: Deforestation, Environmental Implication and Control Strategies

Introduction

Deforestation has been attributed to various damaging impacts, resulting in increasing global costs. At a micro level, deforestation is associated with fires, soil erosion, watershed deterioration, and microclimate change. According to FAO (2010), current annual global forest loss is approximately 13 million hectares, accounting for approximately 17 percent of total annual greenhouse gas emissions (IPCC, 2007). Deforestation is not just an environmental concern but also a socio-economic-demographic one. Even now, it has been put on the global political agenda. In academic fields, deforestation initiates ever-growing multidisciplinary research and studies, either at the global, regional, national, sub-national, or site level (Damette & Delacote, 2012). Deforestation is no longer a forest sector per se but a multi-sectoral problem. Deforestation involves various factors covering not only environmental aspects but also socio-economic, demographic, and political aspects. However, the development of agricultural technology may also provide a strong incentive for farmers to expand their agricultural land into forest areas. Infrastructure can be the proximate and/or underlying factor. The direct effect is through the process of forest conversion for the land itself and the construction process, while its indirect cause is better accessibility, leading to non-forest land uses, transportation cost reduction, and land prices.

Statement of Problem

Deforestation is a real problem in the world today. Deforestation is threatening tropical forests and their capacity to provide economic and ecological services not only for sustainable local livelihoods but also for ecosystems and climate equilibrium on the Earth. Apart from damaging the environment, deforestation also causes social problems. The planet's ecosystems, biodiversity, and soils are being damaged. And people's livelihoods are often at stake too. Global society has experienced the damaging impacts of forest cover loss for a long time. Currently, global forest cover continues to decline. As worried citizens, many people wonder what they can do to stop deforestation. In the same manner, this paper will provide control strategies for deforestation.

Objective of the Study

1. To assess the extent of deforestation in Nigeria
2. To find out the causes of deforestation in Nigeria
3. To examine the environmental implication of deforestation in Nigeria
4. To assess the control strategies of deforestation in Nigeria

Research Question

1. What is the extent of deforestation in Nigeria?
2. What are the causes of deforestation in Nigeria?
3. What is the environmental implication of deforestation in Nigeria?
4. What are the control strategies of deforestation in Nigeria?

Conceptual Review

Concept of Deforestation

Deforestation is the clearing, destroying, or otherwise removing of trees through deliberate, natural, or accidental means. It can occur in any area densely populated by trees and other plant life. Deforestation is basically the loss of forest. Deforestation is defined by FAO (2010) as the long-term reduction of tree canopy cover below the minimum 10% threshold. As noted above, land-use changing from forest to non-forest uses is counted as deforestation. However, temporary tree cutting where the forest is expected to regenerate is not considered deforestation. According to the United Nations Framework Convention on Climate Change (2006), deforestation is defined as a measurable, sustained decrease in crown cover from greater than 10% to less than 10%.

Deforestation is the removal of the existing natural vegetation cover, especially where the native cover is largely forest (Mawalagedara and Oglesby, 2012). Deforestation is the clearing away of forests by a process in which an area loses its existing natural forest vegetation and resources. The conversion of forest to an alternative permanent non-forested land use such as agriculture, grazing, or urban development is called deforestation (Chakravarty, Ghosh, Suresh, Dey, & Shukla, 2012). According to different studies and surveys, it is stated that forests are spread over less than 4.6 million hectares of total area. These forests undergo rapid degradation, especially in the mountain areas, and the deforestation rate is nearly 1.5%, which is very high and alarming and threatens the ecosystem.

Causes of Deforestation

Multiple factors, either of human or natural origin, cause deforestation. Natural factors include natural forest fires or parasite-caused diseases that can result in deforestation. Nevertheless, human activities are among the main causes of global deforestation. Distinguishing between the agents of deforestation and its causes is very important in order to understand the major determinants of deforestation (Chakravarty, Ghosh, Suresh, Dey, & Shukla, 2012). The agents of deforestation are those who slash and burn farmers, commercial farmers, ranchers, loggers, firewood collectors, infra-structure developers, and others who are cutting down the forests. The causes of deforestation are the forces that motivate the agents to clear the forests. Below are the causes of deforestation:

Expansion of farming land: Deforestation is proxied by the expansion of agricultural land. This is because agricultural land expansion is generally viewed as the main source of deforestation, contributing around 60 per cent of total tropical deforestation. However, as the land degrades, people are forced to migrate, exploring new forest frontiers and increasing deforestation (Amor and Pfaff, 2008).

Logging and fuel wood: Logging does not necessarily cause deforestation. However, logging can seriously degrade forests. Logging in Southeast Asia is more intensive and can be quite destructive (Putz, Blate, Redford, Fimbel, & Robinson, 2001). However, logging provides access roads for follow-on settlers, and log scales can help finance the cost of clearing remaining trees and preparing land for planting crops or pasture. Logging thus catalyzes deforestation.

Overgrazing: Overgrazing is more common in drier areas of the tropics, where pastures degraded by overgrazing are subject to soil erosion. Stripping trees to provide fodder for grazing animals can also be a problem in some dry areas of the tropics, though it is probably not a major cause of deforestation. Overgrazing is causing large areas of grassland to turn into deserts. Overgrazing is exacerbated by a sociological phenomenon called "the tragedy of the common." People share land but raise animals for themselves and try to enrich them by raising as many as they can. This leads to more animals than the land can support. Animals remove the vegetation and winds finish the job by blowing away the top soil, transforming grasslands into deserts. When a herder was asked why he was grazing goats next to a sign that said "Protect vegetation, no grazing," he said, "The lands are too infertile to grow crops—herding is the only way for us to survive" (Hays, 2008).

Fires: Fires are a major tool used in clearing the forest for shifting and permanent agriculture and for developing pastures. Fire is a good servant but has a poor master. Fire, used responsibly, can be a valuable tool in agricultural and forest management, but if abused, it can be a significant cause of deforestation. Anonymous (2010) noted that based on the data available from 118 countries representing 65 percent of the global forest area, an average of 19.8 million hectares, or one percent of all forests, were reported to be significantly affected each year by forest fires. Deforestation due to road pavements in Brazil has also led to higher incidences of forest fires.

Mining: Mining is very intensive and very destructive. Sands (2005) notes that the area of land involved is quite small and it is not seen as a major cause of primary deforestation. Mining is a lucrative activity, promoting development booms that may attract population growth with consequent deforestation.

Environmental Implications of Deforestation

Deforestation may cause negative global consequences for timber supply, hydrologic unbalance, biodiversity, global cycles of substantial elements, and massive carbon emissions (Uusivuori, Lehto, & Palo, 2002).

Loss of Habitat: One of the most dangerous and unsettling effects of deforestation is the loss of animal and plant species due to their loss of habitat. 70% of land animals and plant species live in forests. Not only does deforestation threaten species known to us, but also those unknown. One of the most dangerous and unsettling effects of deforestation is the loss of animal and plant species due to their loss of habitat. 70% of land animals and plant species live in forests. Not only does deforestation threaten species known to us, but also those unknown.

Increased Greenhouse Gases: In addition to the loss of habitat, the lack of trees also allows a greater amount of greenhouse gases to be released into the atmosphere. Healthy forests absorb carbon dioxide from the atmosphere, acting as valuable carbon sinks. Deforested areas lose that ability and release more carbon.

Other Effects of Deforestation

Climate Change: It is essential to distinguish between microclimates, regional climates, and global climate while assessing the effects of forest on climate, especially the effect of tropical deforestation on climate (Gupta, Thapliyal, Pal, & Joshi, 2005). Deforestation can change the global change of energy not only through micrometeorological processes but also by increasing the concentration of carbon dioxide in the atmosphere because carbon dioxide absorbs thermal infrared radiation in the atmosphere. Moreover, deforestation can lead to an increase in the albedo of the land surface, which affects the radiation budget of the region. Deforestation affects wind flows, water vapour flows, and solar energy absorption, thus clearly influencing local and global climate. Deforestation on lowland plains moves cloud formation and rainfall to higher elevations (Lawton, Nair, Pielke & Welch, 2001). Deforestation disrupts normal weather patterns, creating hotter and drier weather, thus increasing drought and desertification, crop failures, melting of the polar ice caps, coastal flooding, and displacement of major vegetation regimes. In the dry forest zones, land degradation has become an increasingly serious problem, resulting in extreme cases of desertification. Desertification is the consequence of extremes in climatic variation and unsustainable land use practices, including overcutting of forest cover.

Global warming or global change includes anthropogenically produced climatic and ecological problems such as recent apparent climatic temperature shifts and precipitation regimes in some areas, sea level rise, stratospheric ozone depletion, atmospheric pollution, and forest decline. As forests are logged and cleared to supply local, regional, national, and global markets for wood products, cattle, agricultural produce, and biofuels, tropical forests are shrinking at a rate of about 5% per decade (Anonymous, 2007). One of the most important ramifications of deforestation is its effect on the global atmosphere. Deforestation contributes to global warming, which occurs from increased atmospheric concentrations of greenhouse gases (GHG), leading to a net increase in the global mean temperature as the forests are the primary terrestrial sink of atmospheric carbon dioxide. Houghton (2005) noted that tropical deforestation is responsible for the emission of roughly two billion tons of carbon (as CO₂) into the atmosphere per year. Carbon dioxide emissions from global deforestation are estimated to be equal to 25% of emissions from fossil fuel combustion.

Water and soil resources loss and flooding: Deforestation also disrupts the global water cycle. With the removal of part of the forest, the area cannot hold as much water, creating a drier climate. Water resources affected by deforestation include drinking water, fisheries and aquatic habitats, flood and drought control, waterways and dams affected by siltation, less appealing water-related recreation, and damage to crops and irrigation systems from erosion and turbidity (Bruijnzeel, Bonell, Ilmour, & Lamb, 2005). Urban water protection is potentially one of the most important services that the forest provides. Filtering and treating water are expensive. Forests can reduce the cost of doing so either actively by filtering runoff or passively by substituting for housing or farms that generate runoff (Dudley and Stolton, 2003).

Deforestation can also result in watersheds that are no longer able to sustain and regulate water flows from rivers and streams. Once they are gone, too much water can result in downstream flooding, many of which have caused disasters in many parts of the world. This downstream flow causes soil erosion, thus also silting of water courses, lakes, and dams. Deforestation increases flooding for two main reasons. First, with a smaller "tree fountain"

effect, soils are more likely to be fully saturated with water. The "sponge" fills up earlier in the wet season, causing additional precipitation to run off and increasing flood risk. Second, deforestation often results in soil compaction, making it unable to absorb rain (Chomitz, Buys, Luca, Thomas, & Wertz-Kanounnikoff, 2007). Locally, this causes a faster response of stream flows to rainfall and thus potential flash flooding. Moreover, deforestation also decreases dry season flows.

The long-term effect of deforestation on soil resources can be severe. Clearing the vegetative cover for slash and burn farming exposes the soil to the intensity of the tropical sun and torrential rains. Forest floors, with their leaf litter and porous soils, easily accommodate intense rainfall. The effects of deforestation on water availability, flash floods, and dry season flows depend on what happens to these countervailing influences of infiltration and evapotranspiration-the sponge versus the fountain (Bruijnzeel, 2004). Deforestation and other land use changes have increased the proportion of the basin subject to erosion and, so, over the long run, have contributed to siltation. Heavy siltation has raised the river bed, increasing the risk of flooding, especially in the Yangtze river basin in China, the major river basins of the humid tropics in East Asia, and the Amazonian basin (Van Noordwijk, Agus, Verbist, Hairiah, & Tomich, 2006).

Decreased biodiversity, habitat loss and conflicts. Deforestation, especially those in the tropics, serves as a storehouse of biodiversity, and consequently, deforestation, fragmentation, and degradation destroy biodiversity as a whole and habitat for migratory species, including endangered ones, some of which have yet to be catalogued. Tropical forests support about two thirds of all known species and contain 65 percent of the world's 10, 000 endangered species (Myers and Mittermeier, 2000). Retaining the biodiversity of the forested areas is like retaining a form of capital, until more research can establish the relative importance of various plants and animal species. According to the World Health Organization, approximately 80% of the world's population relies on traditional medicine for primary health care, at least in part. loss and associated large changes in forest cover could trigger abrupt, irreversible, and harmful changes. Regional climate change, including feedback effects that could theoretically shift rainforests to savannas, and the emergence of new pathogens as the growing trade in bush meat increases contact between humans and animals (Anonymous, 2005).

Another negative effect of deforestation is the increase in incidents of human-animal conflicts, hitting hard the success of conservation in a way that alienates the people's participation in conservation. The Elephant habitat, located in northern West Bengal, India, is part of the Eastern Himalaya Biodiversity Hotspot, which is characterized by a high degree of fragmentation. The heavy fragmentation of this habitat has resulted in an intense human-elephant conflict, causing not only the loss of agricultural crops but also human and elephant lives. Mangabe (2004) reported the mortality of about 50 people and 20 elephants due to these severe human-elephant conflicts each year in this hotspot area.

Economic losses. The tropical forests destroyed each year amount to a loss in forest capital valued at US \$45 billion. By destroying the forests, all potential future revenues and future employment that could be derived from their sustainable management for timber and non-timber products disappear.

Control Strategies of Deforestation

Ways to reduce deforestation must go hand in hand with improving the welfare of cultivators on the forest frontier. Any policy that does one without the other is unacceptable. Since there are no general solutions and strategies since these will vary with region and will change over time, all strategies require cooperation and goodwill (Rashid, 2020). Effective implementation is essential, including stakeholder participation, development of management plans, monitoring and enforcement. The strategies should be such that, on one hand, they should recognize the critical roles of national, state, and municipal governments and, on the other hand, empower civil society and the private sector to take a pro-active role in reducing deforestation, often working in conjunction with the government.

Reduce population growth and increase per capita incomes: Reduction of population growth is pivotal in reducing deforestation in developing countries. Consequent to a reduced population, an increase in per capita income will occur as a consequence of increased incomes and literacy rates, which will reduce pressure on the remaining forests for new human settlement and land use change.

Reducing emissions from deforestation and forest degradation: Many international organizations, including the United Nations and the World Bank, have begun to develop programs to curb deforestation mainly through REDD, which uses direct monetary or other incentives to encourage developing countries to limit and/or roll back deforestation. Significant work is underway on tools for use in monitoring developing countries' adherence to their agreed REDDS targets (Chomitz et al., 2007).

Increase the area and standard of management of protected areas: The provision of protected areas is fundamental in any attempt to conserve biodiversity. Protected areas alone, however, are not sufficient to conserve biodiversity (Nepstad, Schwartzmann, Bamberger, Santilli, Ray, Schlesinger, Lefebvre, Alencar, Prinz, Fiske, & Rolla, 2006). They should be considered alongside, and as part of, a wider strategy to conserve biodiversity. The minimum amount of forest to be protected is generally thought to be 10% of the total forest area. It is reported that 12.4 percent of the world's forests are located within protected areas. Tropical and temperate forests have the highest proportions of their forests in protected areas, while boreal forests have the least. The Americas have the greatest proportion, while Europe has the least proportion of protected areas.

Increase the area of forest permanently reserved for timber production: The most serious impediment to sustainable forest management is the lack of dedicated forests specifically set aside for timber production. If the forest does not have a dedicated long-term tenure for timber production, then there is no incentive to care for the long-term interests of the forest. FAO (2010) found that 89 per cent of forests in industrialized countries were under some form of management, but only about six per cent were in developing countries. If 20 per cent could be set aside, not only could timber demand be sustainably met, but buffer zones could be established to consolidate the protected areas. This would form a conservation estate that would be one of the largest and most important in the world.

Increase the perceived and actual value of forests: There are several ways of increasing the perceived and actual value of forests. Governments can impose realistic prices on stumpage and forest rent and can invest in improving the sustainable productivity of the forest. National and international beneficiaries of the environmental services provided by forests have to pay for such services (Chomitz et al., 2007). There has been some success in devising schemes to collect payments for environmental services like carbon sequestration, biodiversity conservation, catchment protection, and ecotourism. This success can further be realized by integrating a participatory mode of management with these collection schemes to ensure rights and tenure with equity in resource and benefit sharing for improving the livelihoods of the rural poor, who are actually the primary stakeholders in conservation and management.

Promote sustainable management: In order to promote sustainable forest management, it must be sustainable ecologically, economically, and socially. Achieving ecological sustainability means that the ecological values of the forest must not be degraded, and if possible, they should be improved. This means that silviculture and management should not reduce biodiversity; soil erosion should be controlled; soil fertility should not be lost; water quality on and off site should be maintained; and forest health and vitality should be safeguarded. However, management of environmental services alone is not economically and socially sustainable. It will not happen until or unless the developing nations have reached a stage of development and affluence where they can accommodate the costs of doing so. Alternatively, the developed world must be prepared to meet all the costs (Anonymous, 2011). As discussed earlier, there are vast areas of unused land, some of which is degraded and of low fertility. Technological advances are being made to bring this land back into production. This should be a major priority since a significant proportion of cleared tropical forest will eventually end up as degraded land of low fertility.

Strengthen government and non-government institutions and policies: A strong and stable government is essential to slowing down the rate of deforestation. FAO (2010) considered that half of the current tropical deforestation could be stopped if the governments of deforesting countries were determined to do so. Environmental NGO's' contribution towards conservation management has been enormous. They have an advantage over government organizations and large international organizations because they are not constrained by government bureaucracy and inertia. They are better equipped to bypass corruption, and they are very effective at getting to the people on the frontier who are in most need.

Methodology

Expost-Facto survey design was adopted for the study. The study was conducted in Nigeria. The population of the study consisted of the climate scientist and environmental scientist in Nigeria. Stratified sampling technique was used in selecting 6 climate scientist and 39 environmental scientists which was drawn from each of the geographical zone in Nigeria. This gave a total of 270 sample size used for the study. The instrument used in this study for data collection was a questionnaire titled "Assessment of Deforestation Questionnaire (ADQ)". Face and content validation of the instrument was carried out by an expert in testing, measurement, and evaluation to ensure that the instrument has the accuracy, appropriateness, and completeness for the study under consideration. The reliability coefficient obtained was 0.80, and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical techniques such as percentage analysis. The test for significance was done at 0.05 alpha levels.

Result and Discussion

Research Questions 1: The research question sought to find out the extent of deforestation in Nigeria. To answer the research question percentage analysis was performed on the data, (see table 1).

Table 1: Percentage analysis of the extent of deforestation in Nigeria

EXTENTS	FREQUENCY	PERCENTAGE
VERY HIGH EXTENT	110	40.74**
HIGH EXTENT	79	29.26
LOW EXTENT	54	20
VERY LOW EXTENT	27	10*
TOTAL	270	100%

**** The highest percentage frequency**

*** The least percentage frequency**

SOURCE: Field survey

From the result of the data analysis, it was observed that the highest percentage (40.74%) of the respondents affirmed that the extent of deforestation in Nigeria is of very high extent, while the least percentage (10%) of the respondents stated that the extent of deforestation in Nigeria is of very low. The result therefore means that deforestation in Nigeria is of very high extent.

Research Questions 2: The research question sought to find out the causes of deforestation in Nigeria. To answer the research percentage analysis was performed on the data, (see table 2).

Table 2: Percentage analysis of the causes of deforestation in Nigeria

CAUSES	FREQUENCY	PERCENTAGE
Expansion of farming land	101	37.41
Logging and fuel wood	16	5.93
Overgrazing	19	7.04
Fires	126	46.67**
Mining	8	2.96*
TOTAL	270	100%

**** The highest percentage frequency**

*** The least percentage frequency**

SOURCE: Field survey

From the result of the data analysis, it was observed that “Fires” 126(46.67%) was rated the highest cause of deforestation in Nigeria, while “Mining” 8(2.96%) was rated the least cause of deforestation in Nigeria. This means that fire, as one of the human errors, seem to be the most prominent cause of deforestation in Nigeria. The result therefore is in agreement with Chakravarty, Ghosh, Suresh, Dey, & Shukla (2012), who opined that multiple factors, either of human or natural origin, cause deforestation. Natural factors include natural forest fires or parasite-caused diseases that can result in deforestation. Nevertheless, human activities are

among the main causes of global deforestation. Distinguishing between the agents of deforestation and its causes is very important in order to understand the major determinants of deforestation.

Research Questions 3: The research question sought to find out the environmental implication of deforestation in Nigeria. To answer the research percentage analysis was performed on the data, (see table 3).

Table 3: Percentage analysis of the environmental implication of deforestation in Nigeria

IMPLICATION	FREQUENCY	PERCENTAGE
Loss of Habitat	205	75.93**
Increased Greenhouse Gases	65	24.07*
TOTAL	270	100%

** The highest percentage frequency

* The least percentage frequency

SOURCE: Field survey

From the result of the data analysis, it was observed that “Loss of Habitat” 205(75.93%) was rated the highest environmental implication of deforestation in Nigeria, while “Increased Greenhouse Gases” 65(24.07%) was rated the least environmental implication of deforestation in Nigeria. The result therefore is in agreement with Uusivuori, Lehto, & Palo (2002), who noted that deforestation may cause negative global consequences in the following areas: timber supply, hydrologic unbalance, biodiversity, global cycles of substantial elements, and massive carbon emissions.

Research Questions 4: The research question sought to find out the control strategies of deforestation in Nigeria. To answer the research percentage analysis was performed on the data, (see table 4).

Table 4: Percentage analysis of the control strategies of deforestation in Nigeria

CONTROL STRATEGIES	FREQUENCY	PERCENTAGE
Reduce population growth and increase per capita incomes	98	36.30**
Reducing emissions from deforestation and forest degradation	75	27.78
Increase the area and standard of management of protected areas	24	8.89
Increase the area of forest permanently reserved for timber production	22	8.15*
Increase the perceived and actual value of forests	25	9.26
Promote sustainable management	26	9.63
TOTAL	270	100%

** The highest percentage frequency

* The least percentage frequency

SOURCE: Field survey

The above table 4 presents the percentage analysis of the control strategies of deforestation in Nigeria. From the result of the data analysis, it was observed that “Reduce population growth and increase per capita incomes” 98(36.30%) was rated the most prominent control strategy of deforestation in Nigeria, while “Increase the area of forest permanently reserved for timber production” 22(8.15%) was rated the least. The result, therefore, is in agreement with the research findings of Rashid (2020), who opined that ways to reduce deforestation must go hand in hand with improving the welfare of cultivators at the forest frontier. Any policy that does one without the other is unacceptable. Since there are no general solutions and strategies since these will vary with region and will change over time, all strategies require cooperation and goodwill.

Conclusion

The underlying causes of deforestation need the attention of government authority to resolve these causes, implementing strong rules regulations in order to mitigate the adverse impacts of deforestation and save the ecosystem. The underlying causes of deforestation are said to be the following: expansion of farming land, logging and fuel wood, overgrazing, fires, and Mining. Also, all strategies, with “reduction of population growth and increase per capita incomes” as the most prominent strategy that help in mitigating deforestation, require cooperation and goodwill. The strategies must be such that on one hand they should recognize the critical roles of national, state and municipal governments and on other hand empower the civil society and the private sector to take a pro-active role in reducing deforestation, often working in conjunction with government.

Recommendations

1. Forested areas should be protected by creating laws and policies that ensure forests are kept protected and restored, and betting on land practices such as wildfire corridors.
2. Local communities and tourists should be educated about the need to protect forests and develop and enroll in ecotourism activities.

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