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UNCONTROLLED TIMBER TRADE: A MAJOR CAUSE OF DEFORESTATION IN OSUN STATE, NIGERIA

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ABSTRACT

This paper investigates the unrestrained timber trade, a key driver of deforestation in Osun State, Nigeria. It demonstrates how excessive demand for timber for construction and commercial use, combined with poor law enforcement, has promoted illegal logging. Evidence shows criminality in the timber industry, including the physical abuse of forest guards, and how the Timber Contractors' Association supports its members in undertaking illegal activities. The study assesses the effects of deforestation, particularly the serious impacts of climate change from the release of stored carbon, which contribute to global warming and disrupt the ecosystems, as well as the socio-economic effects, such as soil erosion and biodiversity loss. Findings illustrate that the illicit timber trade is fuelled by poor implementation of forestry laws, a lack of public awareness, and illegal economic gains that compromise environmental sustainability. The paper recommends interventions such as public sensitisation, stakeholder involvement, and sustainable environmental practices. Addressing the problems requires cogent policies and government intervention to curb deforestation, mitigate climate change, and promote environmental sustainability in Osun State.

Keywords: Deforestation, Ecosystem, Loggers, Osun State, Socio-economic and Timber.

1 INTRODUCTION

The unrestrained timber trade is a key cause of deforestation in Osun State, Nigeria, contributing to serious socio-economic and environmental issues. The forests within the Osun area play significant roles in climate regulation and biodiversity conservation (Ejirihugha, Ozo, and Egele, 2022). However, depletion rates have increased sharply due to illegal and excessive logging. Corruption and weak enforcement of forestry laws worsen the issue, promoting the excessive exploitation of forests by illegal loggers with little penalties (Adeyemi and Ayinde, 2022). As explained by Kolade et al. (2020), illegal timber trade leads to ecological imbalance and soil erosion, and threatens the survival of local communities who rely on local farming for their income

Deforestation accelerates climate change by intensifying carbon emissions, as Kareem et al. (2017) assert. As noted by Agbelade (2023), protecting forests is vital to maintaining ecological balance and supporting local communities'

livelihoods. Forests act as carbon sinks, absorbing carbon dioxide and helping reduce global warming and climate change. The forests protect biodiversity by providing habitats for various animal and plant species, controlling soil erosion, regulating water cycles, improving air quality, and supporting livelihoods (Adi, 2023). Moreover, forests protect the ozone layer by reducing emissions of various gases that could negatively affect atmospheric composition (Agbelade, 2023). This blocks dangerous ultraviolet radiation, decreases the risk of health conditions such as cataracts and skin cancer, and promotes overall environmental sustainability.

2 OSUN STATE: TOPOGRAPHY AND HISTORY

Osun State is a state in southwestern Nigeria. Topographically, it features undulating terrain with isolated inselbergs, rolling hills, and lowlands. The state has prominent rivers, such as the Osun River. The state lies in the tropical rainforest, with most of the original forest cover having been disturbed by human activities, the major contributor being illegal timber logging (Fasona, Adedoyin, and Sobanke, 2020). The climate in Osun State is tropical, with well-defined dry and wet seasons, which support diverse vegetation, making the area suitable for forestry and agriculture.

Historically, Osun State was extricated from Oyo State on the 27th of August 1991. The Yoruba people primarily inhabit Osun State and have a cultural heritage deeply rooted in traditional art, religion, and governance. According to Jida (2022), Osun State is renowned for the Osun-Osogbo Festival, a cultural event that marks the spiritual significance of the Osun River. Figure 1 below illustrates the study map area.

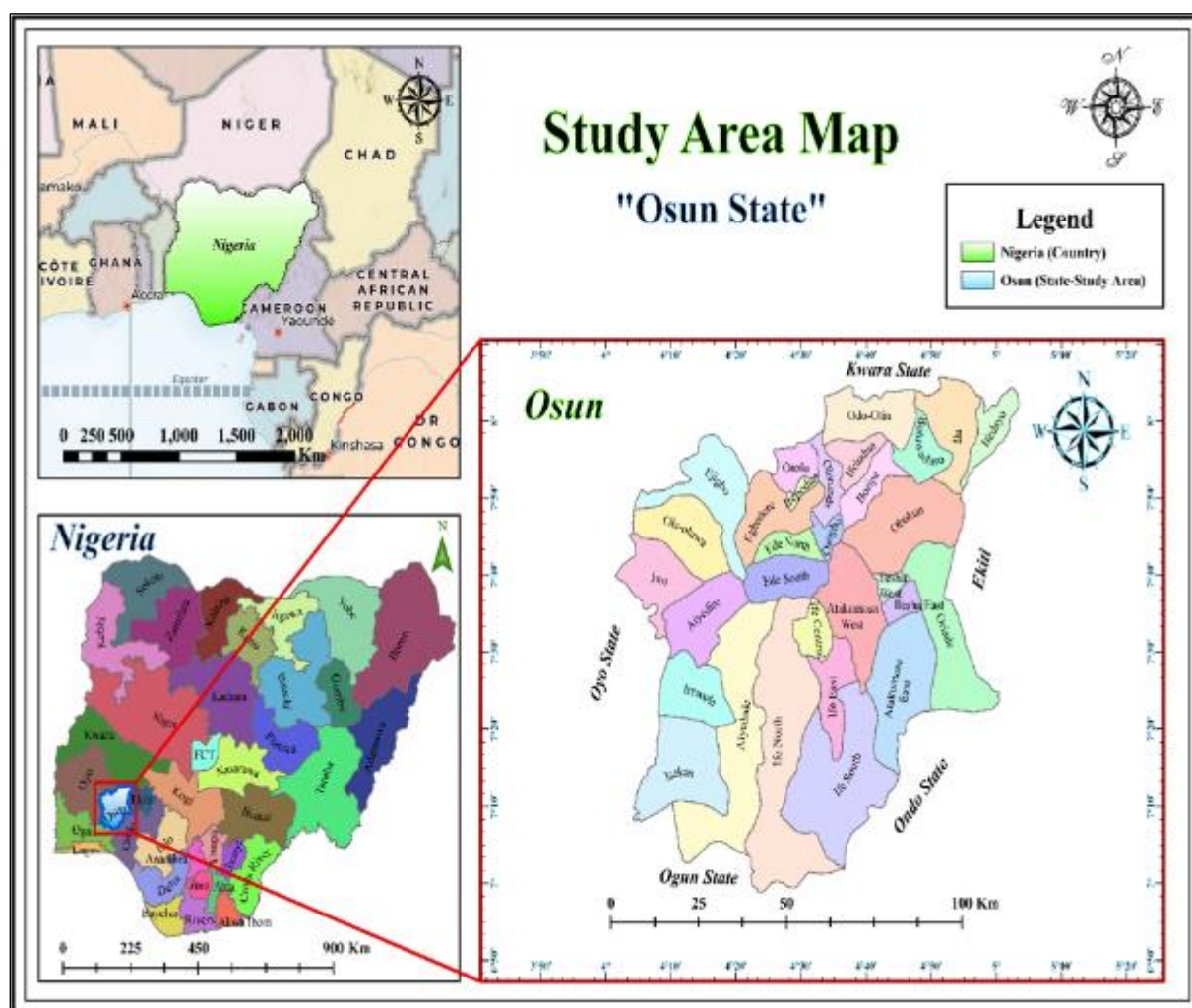


Figure 1: Osun State Area Map. (Source: Author).

2.1 Uncontrolled Timber Trade in Osun State: The Criminality

According to Odeyale et al. (2025), the Shasha Forest Reserve in Osun State experiences high deforestation rates due to illegal logging. The unlawful timber trade is a key driver of deforestation in Osun State, driven mainly by high demand for timber products and weak enforcement of forestry laws (Olawuyi, 2019; Adejumo et al., 2024). The criminality of illegal logging is pronounced, with loggers utilising forged permits to gain access to protected forests in collusion with

corrupt officials, thereby increasing deforestation rates (Ikuomola et al., 2016). Figure 2 below shows that between 2002 and 2025, Osun State lost approximately 7.1 kha of primary forests, accounting for about 10% of the total forest cover. If this is allowed to continue, it portends danger to the health of the surrounding communities, the state, and Nigeria.

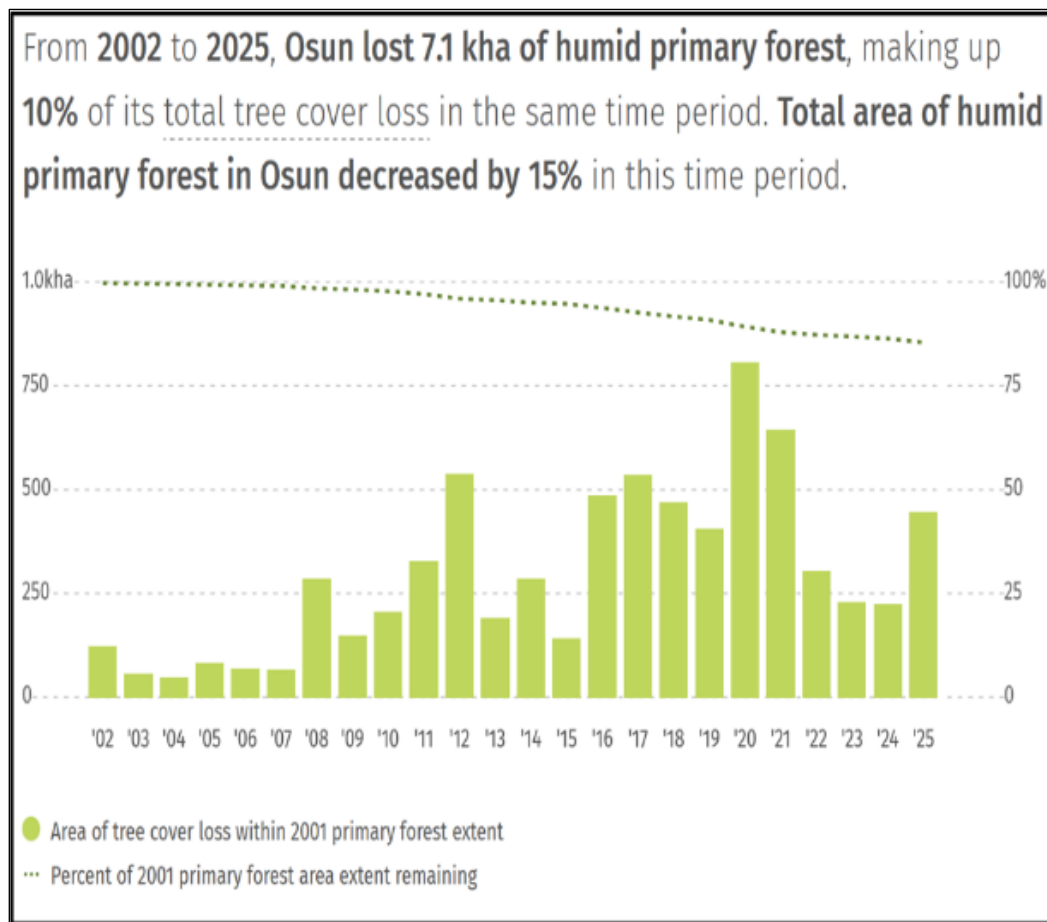


Figure 2: Tree loss between 2002 and 2025 in Osun State (Source: Globalforestwatch, 2026).

As Olaniyan (2018) notes, illegal loggers evade arrest with the assistance of unscrupulous security operatives tasked with patrolling the forest. In some cases, illegal loggers engage in deadly battles with security guards when they attempt to arrest them. The poor monitoring system and low prosecution of illegal loggers further intensify the timber trade. This illegal act accelerates forest loss, threatens biodiversity, and strengthens the cycle of environmental degradation in Osun.

2.2 Forest Guards' near-death and violent experience with illegal loggers

According to Adeyemi and Oyinloye (2020), forest guards play a significant role in safeguarding forest reserves; however, they face life-threatening situations when confronting illicit loggers. The forest guards usually report intimidation and physical abuse during patrols, especially when they interfere with illicit logging activities. For instance, there was a reported incident of a forest guard in the Ikire area of Osun state whose hands were nearly chopped off when he and colleagues encountered illegal loggers using chainsaws in April 2019. He sustained severe injuries while trying to block a chainsaw blade with his hand during an attack where loggers threatened them with death. Also, there was a reported fierce exchange of gunfire when a team from the Department of Forestry, Ministry of Environment, Osun State, supported by men of the Agro Ranger unit of the Nigeria Security and Civil Defence Corps, Osun Command, engaged illegal loggers and poachers in a gun duel in Shasha Forest, Ile-Ife (Punch, 2020). Figure 3 below demonstrates the loss of tree cover due to deforestation.

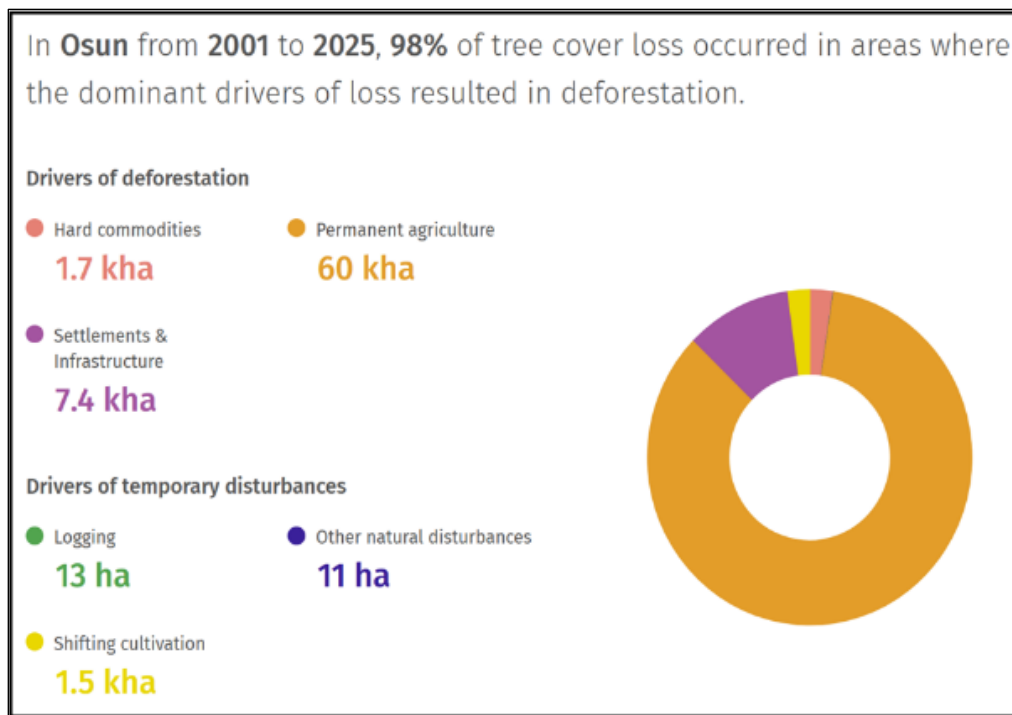


Figure 3: The key drivers of deforestation (Source: Globalforestwatch, 2026).

Understandably, Figure 3 shows that agriculture accounts for the highest percentage of tree cover loss in Osun State, Nigeria, due to population growth, a trend that warrants urgent attention. Still, when it is attributed to illegal logging which is next to agriculture in terms of percentage, there is a particularly devastating effect on biodiversity because perpetrators often deliberately target remaining high conservation value forests—forests with outstanding biological, ecological, social, or cultural values—including protected areas, affecting indigenous peoples and local communities through the loss of natural forest resources and sometimes through intimidation and violence. The illegal loggers intimidate the forest guards, sometimes mercilessly maltreated, leaving them with several injuries. This demonstrates how violent armed loggers frequently overpower enforcement officials. In some cases, the violence leaves forest guards hospitalised. These experiences illustrate the psychological and physical risks linked with protecting forests. In addition to the direct physical violence, the forest guards encounter other threats, such as the illicit loggers attacking them with bees, which highlights the mixed intimidation strategies. Despite near-death experiences, most forest guards diligently carry out their duties to protect forest ecosystems; however, the failure of effective law enforcement measures and the lack of government support persistently endanger the lives of the forest rangers tasked with protecting forests in Osun state.

2.3 The Timber Contractors' Association's contribution to Illegal Timber logging

The Timber Contractors' Association in Osun State defends its members who face accusations of involvement in illegal timber activities (Ikuomola, 2020; Areo et al., 2024). The Association's leaders support its members, claiming they are lawful stakeholders in the forestry sector. According to Mike et al., (2025), the leader claims that the timber contractors have the government's approval because they usually pay the government; this demonstrates how they encourage these illicit activities. The Association attempts to legalise illegal logging by suggesting that its members engage in reforestation, frequently planting trees to replace those cut during their logging operations (Daramola et al., 2020; Babatunde and Babatunde, 2020). Although the Timber Contractors' Association claims its members engage in environmental sustainability, this conflicts with broader evidence of poor law enforcement in the forest sector and the high levels of deforestation and depletion in Osun State, Nigeria. As Ikuomola (2019) claims, the leaders emphasise that logging practices make a significant economic contribution, with about 300 vehicles transporting timber out of the forest weekly, indicating the financial significance of logging practices, while paying no heed to the implementation of strict forest regulations that guard against illegal logging. Also, the association rejects accusations that its members engage in near-death experiences with the forest guards, despite numerous cases showing otherwise. In this regard, the Timber Contractors' Association's defensive perspective and legitimisation of illegal logging could intensify deforestation and its negative impacts in Osun State, Nigeria.

2.4 Impact of Unlawful Timber Trade on Deforestation in Osun State

The unlawful timber trade is a key cause of deforestation in Osun State, Nigeria, altering the area's ecosystems and biodiversity (Adeyemi and Ayinde, 2022; Kareem et al., 2017). Deforestation in Osun state disrupts the ecological

balance, affecting water cycles, soil fertility, and climate regulation (Saka-rasaq, 2019; Iwuchukwu et al., 2023). Figure 4 below shows tree cover loss between 2000 and 2020 in Osun State, with a net change of -3.0% (-21kha) in forest cover.

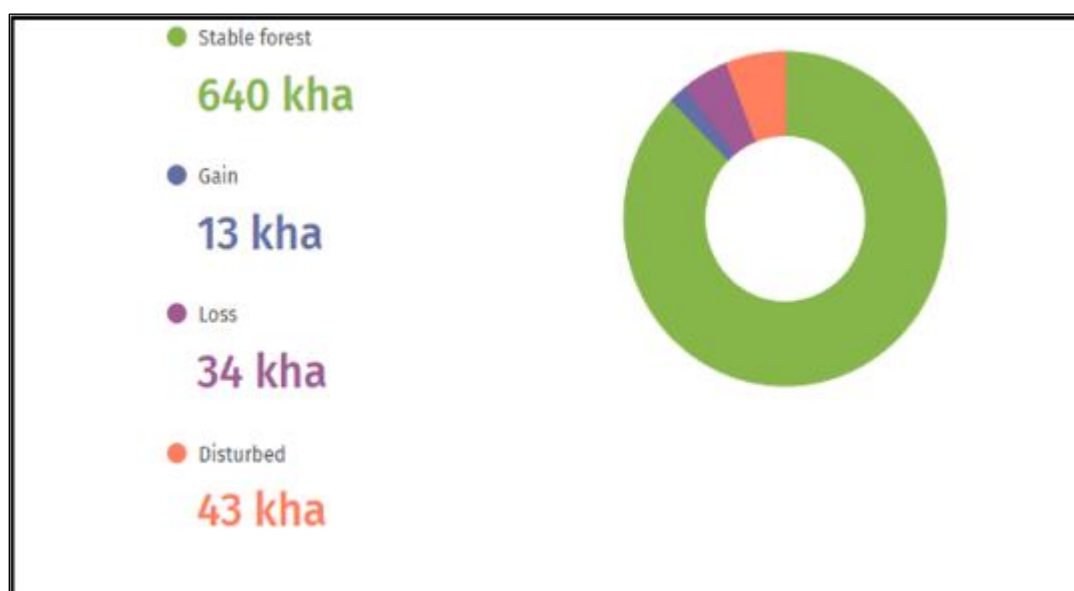


Figure 4: Figure illustrating the stable forest, gain, loss, and disturbed forest (Source: Globalforestwatch, 2026).

The excessive demand for timber for commercial purposes, cooking and construction has promoted illegal and excessive logging, contributing to the depletion of forests in Nigeria (Nwokeoma et al., 2024). Most illegal loggers harvest timber without adhering to sustainable practices, such as reforestation, thereby contributing to the loss of endangered tree species. This dastardly act of forest exploitation leads to biodiversity loss, as deforestation destroys habitats for many animal and plant species (Ogundele et al, 2016; Enuoh and Ogogo, 2018; Gasu, Gasu, and Ntemuse, 2021).

Similarly, illegal tree logging contributes to soil erosion and increases the risk of flooding, especially during heavy rains (Ojo et al., 2024; Adeyemi and Oyeleye, 2021). The illegal timber trade weakens the environmental conservation regulations and also undermines the authority of regulatory agencies (Ndubuisi, 2025). The economic benefits of timber harvesting are short-lived; failing to control it causes irreversible environmental impacts (Adeniyi, 2016). Deforestation in Osun State negatively affects local communities who rely on forest resources for their survival (Orowale et al., 2022). Accordingly, the illegal timber trade is a serious environmental issue that necessitates urgent action to promote environmental sustainability.

2.5 Policies and Government Efforts to Curb the Illegal Timber Trade in Osun State

2.5.1 The illegal entry and deforestation of the forest

Illegal entry into forest reserves is a key driver of the illicit timber trade. Despite current laws, such as Section 20 of the 1999 Constitution of the Federal Republic of Nigeria, which plays a significant role in protecting forests to enhance environmental sustainability and safeguard wildlife, forests, land, air, and water (Ogunkan, 2022; Adebayo, 2020). As noted by Akinloye (2024), unauthorised individuals persistently enter the forests without permits, engage in illegal logging, and contribute to deforestation. Even though the Nigerian government enacted laws mandating that forest rangers allow only licensed individuals to log identified trees, illegal loggers defy these laws and continue their illegal activities. Deforestation continuously threatens biodiversity and contributes to environmental degradation. Effective deforestation solutions include protecting Indigenous land rights, enforcing sustainable agricultural practices, implementing strong legal protections against illegal logging, and restoring degraded forests. It is significant to improve inter-agency collaboration, strengthen monitoring systems, and enforce strict penalties to tackle illegal entry and safeguard forests in Osun State.

2.5.2 Government ultimatum to encroachers to curb illegal logging

The Osun State government has issued an ultimatum to encroachers to curb increasing environmental degradation. Also, an ultimatum was issued to encroachers to vacate protected areas, as their nefarious activities are adversely affecting local communities in Osun State. In addition, the government imposed penalties concerning illegal activities such as logging and forest clearing (Kolade et al., 2020). This directive demonstrates a strong political commitment to

implementing the existing conservation laws to stop illicit timber operations (Oso and Babalola, 2018). The government's vital response is long overdue and, if enforced, will promote environmental sustainability. These measures align with broader conservation efforts, including tree-planting initiatives aimed at restoring degraded lands and fostering environmental sustainability. By combining enforcement of environmental conservation laws with reforestation measures, the government will promote environmental sustainability. Nonetheless, the success of the government ultimatum relies greatly on community involvement, consistent enforcement, and continuous monitoring to prevent illegal timber activities.

2.6 The Role of Deforestation on Climate Change

Deforestation has significant effects on climate change in Osun State, primarily due to the loss of tree cover, which acts as a carbon sink and helps regulate environmental systems. The trees take in carbon dioxide, a key greenhouse gas, thereby reducing global warming (Olorunnisola, 2023).). Figure 5 below shows that between 2001 and 2025, Osun State lost approximately 71 km² of tree cover and emitted 45 Mt of CO₂, underscoring the urgency of addressing deforestation.

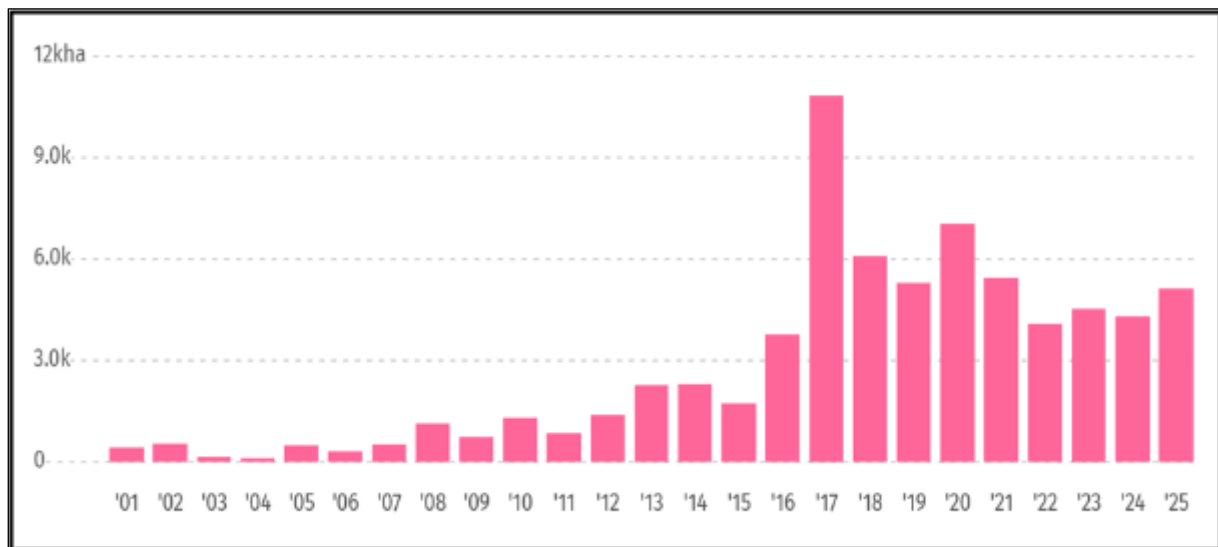


Figure 5: Loss in tree cover in Osun State, Nigeria (Source: Globalforestwatch,2026).

Ahmed and Aliyu (2019) explained that illicit tree felling releases stored carbon, contributing to climate change. According to Fasona et al., (2022), reduced tree cover reduces atmospheric moisture, contributing to drier soils and lower agricultural productivity. The persistent deforestation diminishes the environment's capacity to control climate change, making Osun state more susceptible to extreme weather and long-term environmental damage.

2.7 Possible Remedies to the Unlawful Timber Trade in Osun State, Nigeria

The effective tackling of the illegal timber trade in Osun State requires collaboration among local communities, stakeholders, and the government. One remedy is the continued public sensitisation on environmental conservation. It is essential to create awareness about the climate and environmental risks associated with illegal logging. As advised by Folorunso and Folorunso (2022), creating awareness of environmental conservation inspires sustainable practices that reduce forest exploitation. Furthermore, the government should enforce strict forestry laws to identify and arrest illegal timber contractors, thereby fostering environmental sustainability.

3 CONCLUSION

In conclusion, the unlawful timber trade in Osun State is a serious problem that leads to deforestation and its negative effects, such as climate change. Illegal logging and poor implementation of forestry regulations have contributed to environmental degradation. The consequences of the unchecked timber trade include decreased agricultural productivity, soil erosion, biodiversity loss, and climate change. The near-death experiences of the forest guards and the timber contractor's Association, which supports its members, illustrate the challenges of mitigating the illegal timber trade. Without effective and urgent interventions, deforestation could lead to irreversible impacts. Remedies to address these adverse consequences include public sensitisation, strict government implementation of forestry regulations, and collaboration with stakeholders to foster sustainable environmental practices. Therefore, tackling the illicit timber trade is essential for environmental sustainability in Osun State.

Recommendation

To successfully tackle the illegal timber trade in Osun State, Nigeria, the government should enforce rigorous, fit-for-purpose forestry laws and impose harsher penalties on illicit loggers to deter further violations. Additionally, Osun State should strengthen agencies, including the Osun State Forestry Department, by providing better training, financing, and modern surveillance tools for forest guards to promote environmental sustainability. Furthermore, public awareness should be increased to educate local communities and timber contractors about the negative effects of deforestation. The government requires collaboration with stakeholders to detect illegal loggers and take appropriate action. Encouraging reforestation practices is vital for replacing harvested trees and promoting environmental sustainability.

REFERENCES

- [1] Adebayo, W., A. (2020). Environmental law and the reality of the conservation and management of forests in Nigeria: *JL Pol'y and Globalisation*, 96, p.1.
- [2] Adejumo, A., Thompson, C., and Basnet, S. (2024). The Challenges Finnish Timber Firms Might Encounter when Entering the Nigerian Market.
- [3] Adeyemi, A., A., and Ayinde, M. O. (2022). Evaluation of Land-Use and Land-Cover Changes in Oba Hills Forest Reserve, Osun State, Nigeria. *Forestist*, 72(2).
- [4] Adeyemi, A., A., and Oyinloye, T., H. (2020). Effectiveness of Alternative Conservation Means in Protecting the Osun-Osogbo Sacred Grove in South-West, Nigeria. *Plant*, 8(1), pp.1-9.
- [5] Adeyemi, A., A., and Oyeleye, H. A. (2021). Evaluation of land-use and land-cover changes cum forest degradation in Shasha Forest Reserve, Osun State, Nigeria using remote sensing. *Tanzania Journal of Forestry and Nature Conservation*, 90(2), pp.27-40.
- [6] Adi, O., S. (2023). Framework for environmental protection in Nigeria. *International Journal of Law and Society (IJLS)*, 2(2), pp.77-98.
- [7] Agbelade, A., D. (2023). Conservation Dynamics of Three Protected Forests in the Tropical Rainforest Ecosystem of Nigeria. *Vegetation Dynamics, Changing Ecosystems and Human Responsibility*, p.31.
- [8] Ahmed, Y., A., and Aliyu, I. (2019). Climate Change-Induced challenges to deforestation: the need to increase mitigation measures in Nigeria. *Analele Universității din Oradea, Seria Geografie*, 29(2), pp.64-76.
- [9] Akinloye, F., Y. (2024). Pattern of Environmental Degradation and Associated Health Implications in Osun State, Nigeria. *Nigerian Journal of Environment and Health*, 4, pp.78-85.
- [10] Areo, O., S., Omole, A., O., Amoo-Onidundun, O., N., and Adejoba, A., L. (2024). Impact of illegal logging operation on Nigerian economy: A concise review. *Agriculture, Food, and Natural Resources Journal*, 3(2), pp.349-357.
- [11] Babatunde, T., O., and Babatunde, O. O. (2020). Structure, conduct and performance of the timber market in Ife East Local Government of Osun State, Nigeria. *Journal of Applied Sciences and Environmental Management*, 24(6), pp.1093-1098.
- [12] Daramola, J., O., Adesuyi, F. E., Olugbadieye, O. G., Akinbowale, A. S., and Adekunle, V. A. J. (2020). Rate of timber harvest and the effects of illegal activities on forest conservation in Southwestern Nigeria. *Asian J For*, 5(1), pp.8-16.
- [13] Ejirihugha, V., I., Ozo, J., U., and Egele, A., E. (2022). Timber Marketing and Economic Development in Ebonyi State, Nigeria. *International Academic Journal of Management and Marketing Annals*.
- [14] Enuoh, O., O., and Ogogo, A. U. (2018). Assessing tropical deforestation and biodiversity loss in the Cross River Rainforest of Nigeria. *Open Journal of Forestry*, 8(3), pp.393-408.
- [15] Fasona, M., Adedoyin, B., and Sobanke, I. (2020). Status and drivers of spatial change of forest reserves and protected areas in selected states of Southwest Nigeria: A case study of Ogun, Osun, and Oyo states, Nigeria. *Osun Geographical Review*, 3(1).
- [16] Fasona, M., J., Akintuyi, A., O., Adeonipekun, P., A., Akoso, T., M., Udofia, S., K., Agboola, O., O., and Ogundipe, O., T. (2022). Recent trends in land-use and cover change and deforestation in south-west Nigeria. *GeoJournal*, 87(3), pp.1411-1437.
- [17] Folorunso, M., A., and Folorunso, S., A. (2022). Environmental degradation in Nigeria: the challenges of peaceful co-existence. In *Peace Studies for Sustainable Development in Africa: Conflicts and Peace-Oriented Conflict Resolution*. Cham: Springer International Publishing, pp. 207-218.

- [18] Gasu, M., B., Gasu, G., N., and Ntemuse, U., E. (2021). A review of biodiversity loss and climate change: Policy measures and adaptation strategies in Nigeria. *Malaysian Journal of Tropical Geography (MJTG)*, 47(1 and 2), pp.100-122.
- [19] Globalforestwatch (2026). Primary Forest Loss in Osun, Nigeria. [online] Osun, Nigeria Deforestation rates. [online]. Available at: <https://shorturl.at/ZoygB> [Accessed 30th of April 2026].
- [20] Kareem, W., B., Okwori, R., O., Hassan, A., M., Mohammed, B., M., and Agboola, J., O. (2017). Appraisal of Causes, Consequences and Remedies of Human-Induced Deforestation in Osun State, Nigeria. *Proceedings of the 2nd International Engineering Conference, Federal University of Technology, Minna, Nigeria*.
- [21] Kolade, R., I., Olawuyi, E., B., Adejumo, A., A., and Akanni, O., F. (2020). Socio-economic impacts of timber harvesting in Ago'Owu forest reserve and its environs in the local government area of Osun State, Nigeria. *Journal of Research in Forestry, Wildlife and Environment*, 12(1), pp.100-110.
- [22] Ikuomola, A., D., Okunola, R., A., and Akindutire, A., F. (2016). Criminality: Illegal logging of woods in Nigeria's south-west forest belt. *African Journal of Criminology and Justice Studies*, 9(1), p.10.
- [23] Ikuomola, A., D. (2020). Foreign cartels and local accomplices: Socio-economic realities of criminality and deforestation in Nigeria's forest belts. *Journal of Comparative Research in Anthropology and Sociology*, 11(01), pp.17-33.
- [24] Ikuomola, A., D. (2019). Foreign cartels and local accomplices: Criminality and deforestation in the Nigerian forest belts.
- [25] Iwuchukwu, F., U., Ewuzie, U., Ajala, O., J., Ojukwu, V., E., Nnorom, I., C., Egbueri, J., C., and Ighalo, J., O. (2023). A consideration of the climatic drivers, focal points and challenges of soil erosion, land degradation, landslides and landscapes in Nigeria. *Climate Change Impacts on Nigeria: Environment and Sustainable Development*, pp.449-477.
- [26] Jida, N. (2022). Investigating the brand image of Nigeria and its implications for marketing this country as a tourism destination: UK perspective. *University of Salford (United Kingdom)*.
- [27] Kareem, W., B., Okwori, R., O., Hassan, A., M., Mohammed, B., M., and Agboola, J., O. (2017). Appraisal of Causes, Consequences and Remedies of Human Induced Deforestation in Osun State, Nigeria. *Proceedings of the 2nd International Engineering Conference, Federal University of Technology, Minna, Nigeria*.
- [28] Kolade, R., I., Olawuyi, E., B., Adejumo, A., A., and Akanni, O., F. (2020). Socio-economic impacts of timber harvesting in Ago'Owu forest reserve and its environs in the local government area of Osun State, Nigeria. *Journal of Research in Forestry, Wildlife and Environment*, 12(1), pp.100-110.
- [29] Mike, J., H., and Sunday Bontur, L. (2025). Fading Forests, Encroaching Sands: A Critique of Nigeria's Environmental Laws on Deforestation. *AUN Journal of Law*, 1(1).
- [30] Ndubuisi, O., G. (2025). The Role of Law in Environmental Conservation: Regulation, Enforcement and Compliance.
- [31] Nwokeoma, B., Okafor, S., Onah, S., Nwokeoma, S., and Amadi, G. (2024). Illegal Logging in Rural Southeast Nigeria: Implications for Environmental Crime and Ecological Sustainability. *Forestist*, 74(1).
- [32] Odeyale, O., C., Olawuyi, E., B., and Adenuga, D., A. (2025). Socio-Economic Impact of Illegal Activities in Shasha Forest Reserve on the Inhabitants of Ifedayo Local Government Area, Osun State, Nigeria.
- [33] Ogundele, A., T., Oladipo, M., O., and Adebisi, O., M. (2016). Deforestation in Nigeria: The need for urgent mitigating measures. *International Journal of Geography and Environmental Management*, 2(1), pp.15-26.
- [34] Ojo, A., G., Balogun, B., Aluko, O., and Alage, L. (2024). Assessment of Mining-Induced Land Degradation in Ile-Ife, Osun State, Nigeria.
- [35] Olaniyan, A. (2018). Foliage and violence: Interrogating forests as a security threat in Nigeria. *African Security Review*, 27(1), pp.88-107.
- [36] Olawuyi, E., B. (2019). Illegal activities in Ago-Owu Forest Reserve in Osun State and their implications on sustainable forest management. *Journal of Research in Forestry, Wildlife and Environment*, 11(3), pp.296-305.
- [37] Nigeria. In *Wood Industry: Past, Present and Future Outlook*. IntechOpen.
- [38] Ogunkan, D., V. (2022). Achieving sustainable environmental governance in Nigeria: A review for policy consideration. *Urban Governance*, 2(1), pp.212-220.
- [39] Orowale, O., O., Oyerinde, O., V., and Olusola, J., A. (2022). Payment for forest ecosystem services through willingness to pay in Oba Hill Forest Reserve, Osun State, Nigeria.

- [40] Oso, A., O., and Babalola, F., D. (2018). Evaluation of illegal forest activities in the South-West of Nigeria. *Journal of Multidisciplinary Studies*, 7(1), pp.40-54.
- [41] Oso, A., O., Agbeja, B., O., and Faleyimu, O., I. (2017). Perceived forest offences among stakeholders and their impact on sustainable forest reserve management in Southwestern Nigeria.
- [42] (Punch, 2020). Illegal Loggers Attack Us with Chainsaws, Guns While Protecting Govt Reserves –Forest Guards [online]. Available at: <https://punchng.com/illegal-loggers-attack-us-with-chainsaws-guns-while-protecting-govt-reserves-forest-guards/> [Accessed 5th of May 2026].
- [43] Saka-rasaq, O. (2019). Forest Loss in Nigeria, the Impact on Climate and People from the perspectives of illegal Forest activities and Government Negligence.