Forest Cover Change Analysis on Thawthi TawOo Indigenous Park

Summary

A case study of forest cover change analysis done in the Thawthi Taw-Oo Indigenous Park (TTIP) was already in Aug 2022. Open-source time series data of tree canopy percent and annual forest loss data during 2000-2021 are used for analysing forest cover in 6 different periods [2000 – 2012, 2005 – 2012, 2010 – 2012, 2012 – 2015, 2012 – 2020, 2012 – 2021]. Besides, a temporal and special change analysis was done based on five regions of interest (Wildlife Sanctuary, Reserve Forest, Community Forest, Kaw & Whole Area of TTIP), with the use of a GIS tool (ArcGIS). In addition, a ground truthing was successfully done with accuracies 0.8 (Forest Loss) and 0.9 (Tree Canopy). As a result of the whole TTIP overview, the highest portion of forest loss is found in the Reserve Forest (RF), probably due to the larger area, among others. It is followed by Kaw, Community Forest (CF), and Wildlife Sanctuary (WF). In contrast, tree canopy classes were leading to closer or denser tree canopy classes for the rest of the existing forest. Forest loss in RF is normally found out,

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possibly due to taungya (shifting cultivation) expansion, forest plantation establishment, actual timber extraction, or others. The Kwai Then RF and the Kayin Chaung RF recorded the largest forest loss among them. During the 2010 & 2012 years, the lowest reduction of tree canopy class within RF was found in both the moderate tree canopy class (40-60%) and the highly closed canopy class (60-80%). Higher forest loss within Kaw has been reported since 2012, and the Yaw Mu Per Kaw has the highest forest loss. Inside Kaw, the highly closed Tree Canopy class (80-99%) is increasing gradually, whereas the closed tree canopy class (60-80%) is decreasing. The CF was expected to be established in 2009, as the forest loss activity started. The highest forest loss activity within the CF occurred at the north-west part of the Mu Sha Lay CF. However, the forest loss and the highly closed canopy class (60-80%) in CF after 2015 were surprisingly decreased. The forest loss within the WF before 2012 was higher than after 2012. The highest forest loss occurred in 2010, and degradation of forest canopy was obviously found .

1. Introduction

The Thawthi Taw-Oo Indigenous Park, sprawling across 5,754 square kilometres, is not just a vast expanse of land but also a vibrant home to over 70,000 individuals, as well as a rich tapestry of flora and fauna. However, this region has been marred by a brutal 74-year-long civil war, leaving a trail of devastation in its wake. This conflict has exacted a heavy toll, resulting in loss of life, the forced displacement of more than 200,000 people, rampant land usurpation, forest degradation, dwindling wildlife populations, and the desecration of cultural sites. Additionally, it has given rise to a surge in illegal extractive activities, such as poaching, wildlife trafficking, and mining.

Over the years, during various periods of rule by the dominant Burman government and even with the existence of the military-drafted 2008 constitution, Indigenous Peoples and ethnic nationalities in Burma have found their rights neither protected nor guaranteed.

Additionally, the centralised land use policies enforced by the Burmese government pose a significant threat to the customary tenure security and practices of Indigenous Peoples concerning their land, forests, and water resources. Consequently, extensive logging activities have stripped away the lush natural landscape of Taw-Oo and eroded the profound connections that local Indigenous Peoples have nurtured with their environment.

In response to these challenges, leaders in the Taw Oo District have taken it upon themselves to initiate forest management initiatives. In 2019, community leaders and members made a collective commitment to establish the Thawthi Taw-Oo Indigenous Park, driven by the overarching goal of safeguarding the rights of Indigenous Peoples and local communities in the years to come. Their vision is clear: to create a community-led conservation and governance project that places the unique cultural heritage and traditions of this diverse group of Indigenous Peoples squarely at its heart.

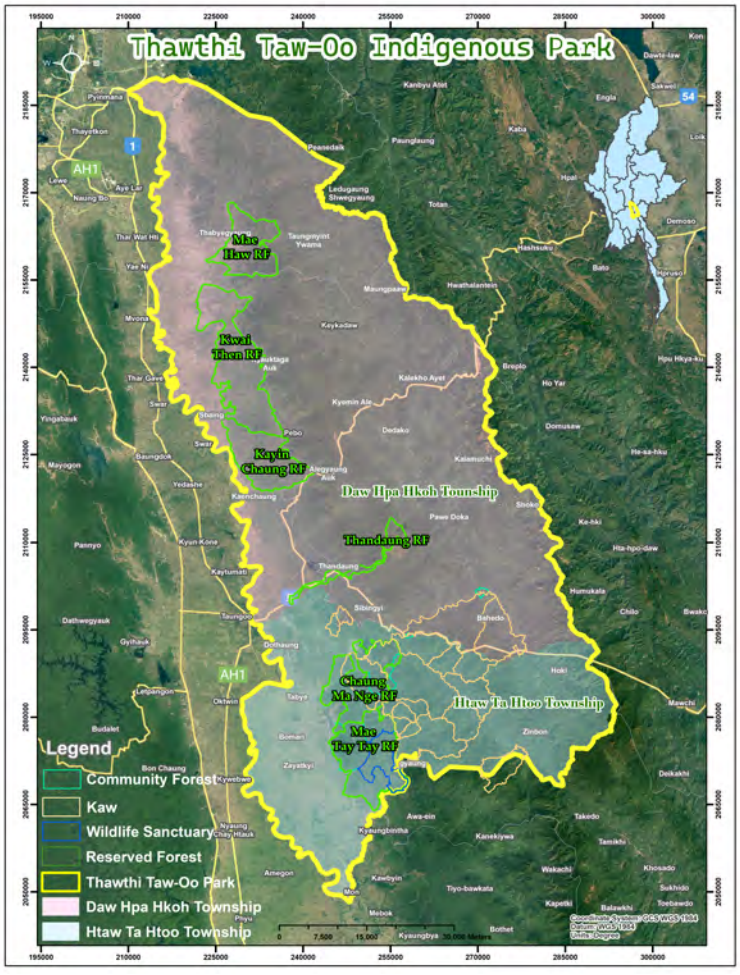
The TTIP serves as a beacon of hope, embodying their collective vision for a conservation approach rooted in community leadership, known as biocultural conservation. This approach places the diverse cultural heritage, knowledge, and traditions of the Karen indigenous people at its core. The TTIP is not merely about protecting the environment; it is about safeguarding a way of life. It seeks to actualize the community's profound understanding of peaceful coexistence, grassroots governance, and democratic federalism. Through this initiative, these resilient communities aspire to forge a brighter future for themselves and the precious natural world they call home.

While the Thawthi Taw-Oo Indigenous Park (TTIP) is still in its early phases of development, the Taw Oo communities have a rich history of engaging in biocultural conservation practices that span generations. Through these practices, they have effectively preserved extensive forest landscapes. Situated within the globally acclaimed Indo-Burma Biodiversity Hotspot, these landscapes serve as crucial carbon sinks, playing a pivotal role in mitigating the impacts of climate change. Moreover, these conservation endeavours have not only bolstered community tenure security but also laid the groundwork for long-term improvements in livelihoods, food security, and poverty reduction.

2. A Case Study

The Karen Environmental and Social Action Network is supporting the improvement of inclusive forest governance in Karen State, focusing on Thawthi Taw Oo Indigenous Park (TTIP), Kare State. Forest Cover Change Analysis was conducted in TTIP with the help of the GIS expert. It is intended to provide capacity building and technical supervision to the partner's GIS team in data works and ground truthing to assess forest cover change TTIP.

- To investigate forest cover change in TTIP.
- To compare forest loss before vs. after 2012.
- To determine the trend of forest canopy density.
- To deliver training for technical transfer.

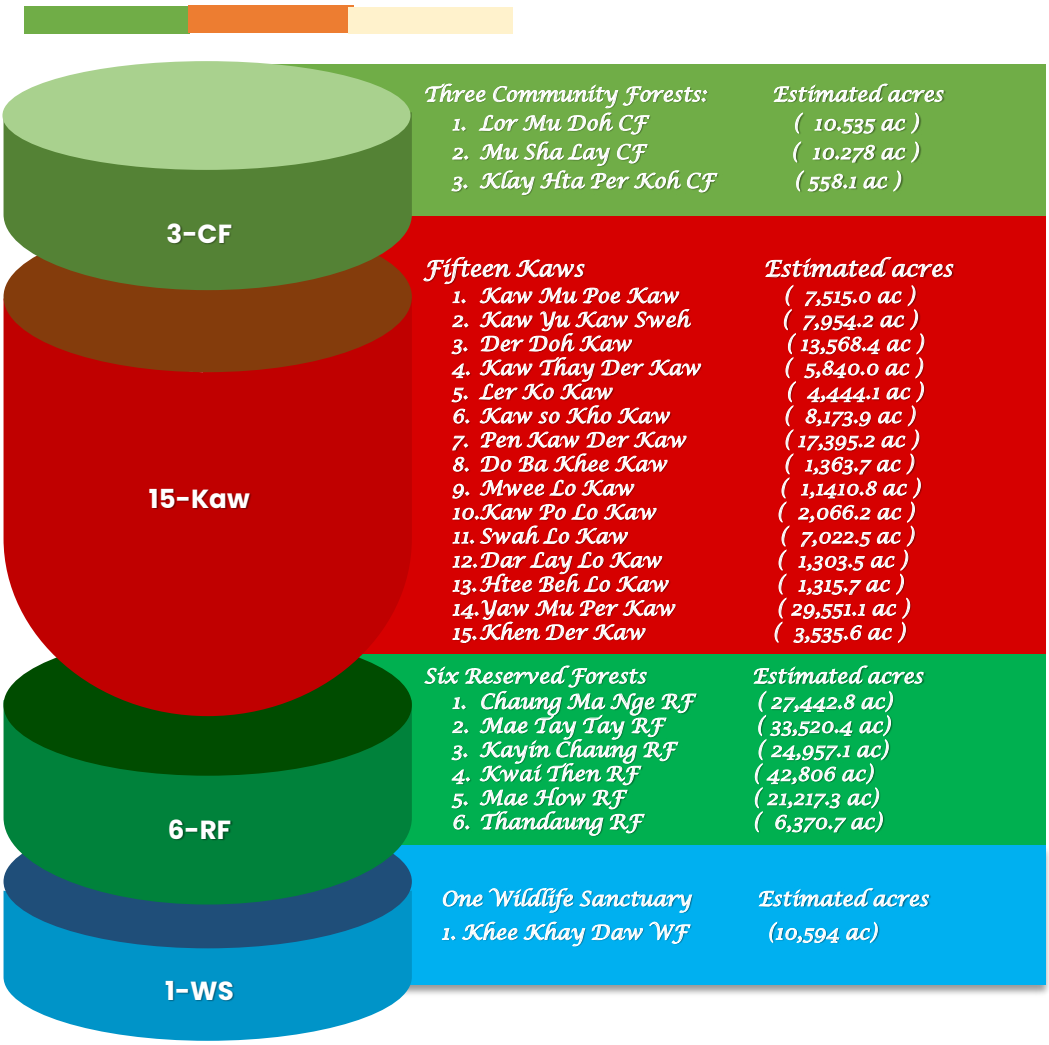


Location of TTIP

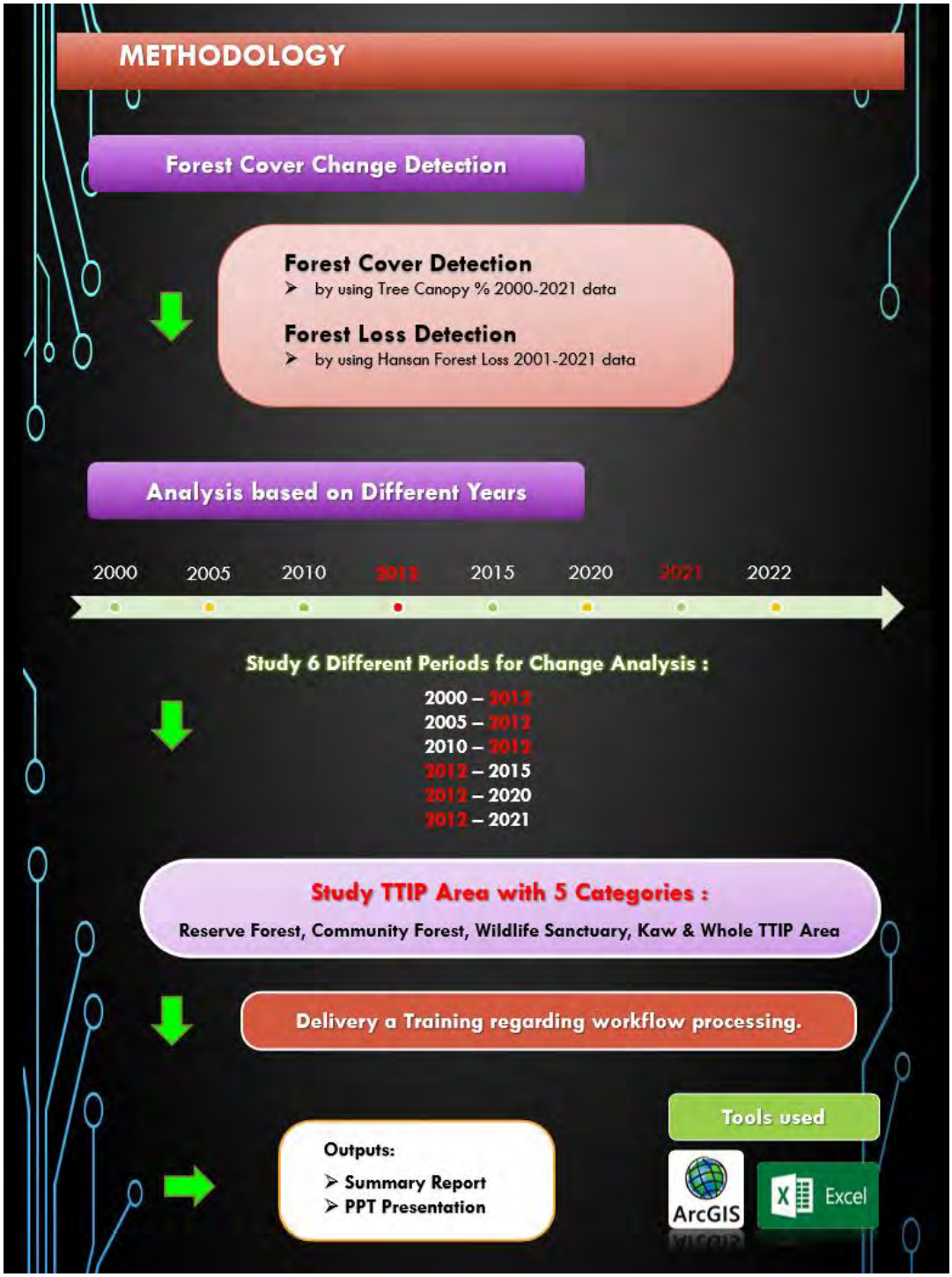
TTIP has an area of 1,425,173 acres, 576,747 ha, 2,227 sqmile, and consists of 8 Townships [Lewe, Pyinmana, Zay Yar Thi Ri, Kyautgyi, Htantapin, Thandaunggyi, Taungngoo, Yedashe], and five State & Regions [Naypyitaw, Shan (South), Kayah, Kayin & Bago (East)]. The location of TTIP is shown in the following figure.

3. Land Use within TTIP

Different Land Use & Management Types within TTIP



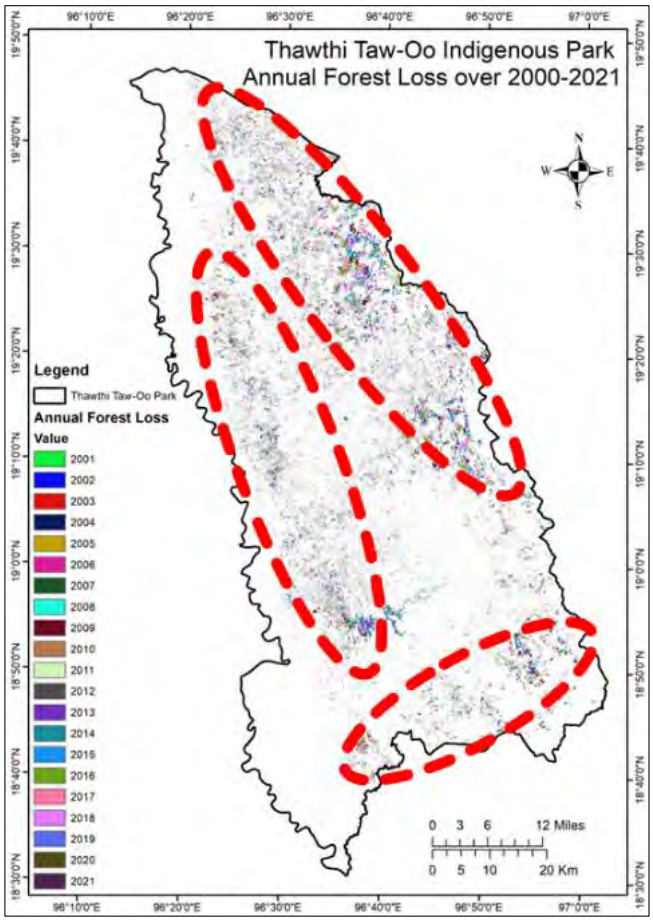
4. Methodology



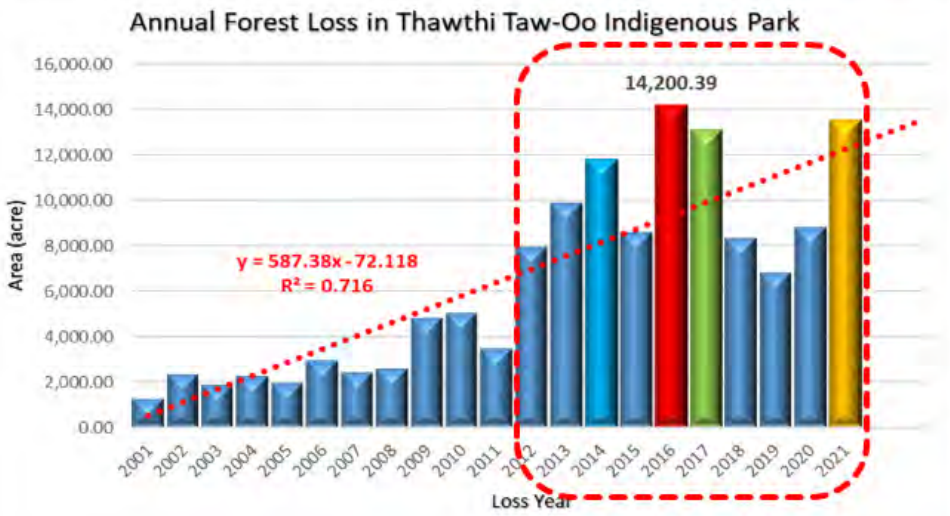
5. Findings Summary

In Reserve Forests, forest loss is a common occurrence, attributed to factors such as shifting cultivation (taungya) expansion, forest plantation establishment, and timber extraction. Kwai Then RF and Kayin Chaung RF experience the largest forest loss, while Thandaung RF has the lowest due to its smaller size. Despite a slowdown after the peak period (2009-2014), forest loss increased again in 2021. In Wildlife Sanctuaries, the western part sees the most annual forest loss, likely due to land encroachment, with higher losses before 2012 and a notable peak in 2010. Community Forests, established in 2009, experience the highest forest loss in the north-west part of Mu Sha Lay CF, with a decrease in loss after 2015. Kaw, the second-highest forest loss area after Reserve Forests, saw its highest loss in Yaw Mu Per Kaw in 2014, increasing post-2012 and then gradually decreasing. In the overall TTIP region, large areas in the western and north-eastern parts experience significant forest loss, slowing down after 2018 but rising again in 2021. This pattern is expected to continue, with Reserve Forests having the highest portion of loss, followed by Kaw, Community Forests, and Wildlife Sanctuaries. Tree canopy classes in TTIP show a trend toward closer or denser canopies, with Annual Forest Loss Trends increasing after 2012, reaching peaks in 2016, 2021, 2017, and 2014.

In the analysis of Reserve Forest trends, there was a higher tree canopy change before 2012 compared to after 2012, particularly notable in Kwai Then RF and Kayin Chaung RF. The years 2010 and 2012 exhibited the least reduction in tree canopy classes, with both moderate (40-60%) and highly closed (60-80%) canopy classes. Although these classes increased continuously after 2012 until 2020, they are expected to rise again in the future, leading to an increase in lower tree canopy classes



Annual Forest Loss in TTIP



Annual Forest Loss Trend in TTIP

(20- 40% & 11-20%). Similarly, in Wildlife Sanctuaries, evident degradation of forest canopy occurred, especially in the western part between 2010 and 2012, resulting in reduced forest area and increased open or sparse forest. Despite continuous increases in canopy classes post-2012 until 2020, future expectations include a decrease, causing a rise in lower tree canopy classes. Community Forests in 2012 saw a significant reduction in highly closed canopy classes (60-80% and 80-99%), which gradually increased after 2015 until 2021, anticipated to decrease again in the future. This reduction led to an increase in lower tree canopy classes, with both moderate (40-60%) and open (20-40%) canopy classes peaking in 2015. The trends in Kaw Forest show a gradual increase in the highly closed tree canopy class (80-99%) and a decrease in the closed canopy class (60-80%). In the TTIP overview, the 80-99 tree canopy % class increased while the 60-80% and 40-60% classes decreased. The year 2020 marked the best in terms of tree canopy %, reflecting a shift toward denser tree canopy classes.