

## Project Update: March 2020

Linked to the project funded by Rufford Foundation (37590-1), the analysis of forest degradation in the Masako Forest Reserve was planned to measure deforestation rates and to predict sustainable ecological solutions. We present in this short report the spatial analyses of the evolution of forest degradation over three decades in the Masako Forest Reserve. These analyses were made possible by the time series of Landsat 3,4,5,6,7 and 8 images. Data processing was carried out through the compilation of ENVI 3.4 images. However, the layout was done by ArcMap software.

### Evolution of vegetation formation in the Masako Reserve from 1984 to 2018

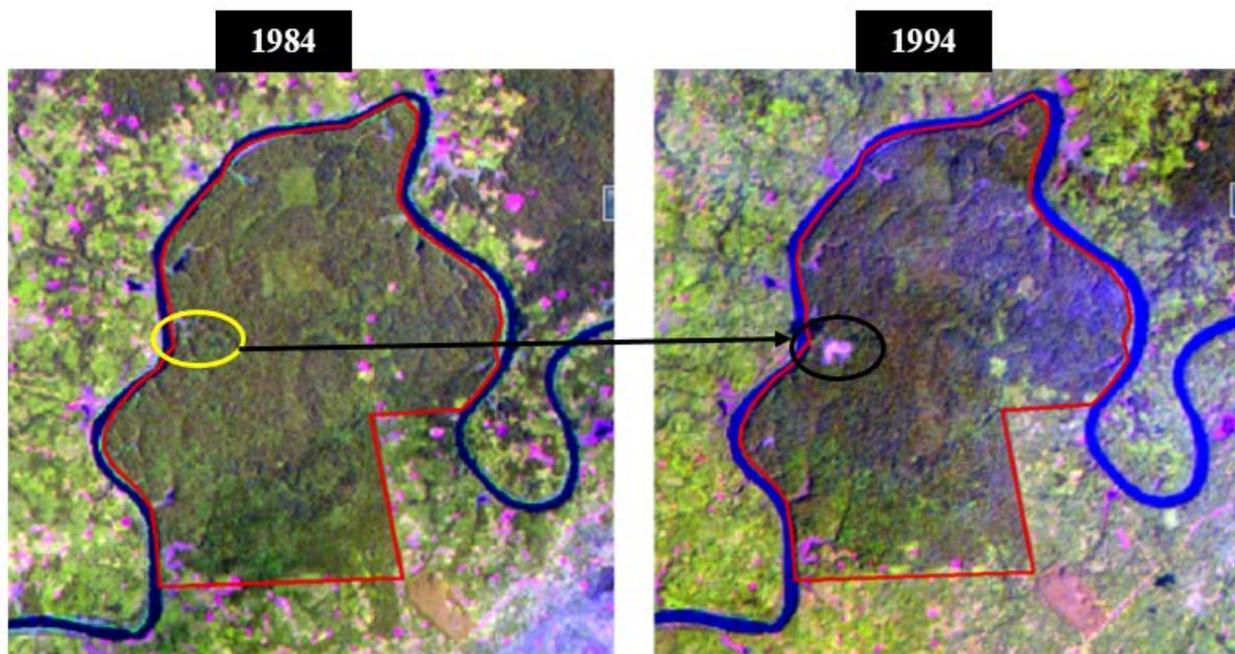


Figure (1). Land use map 1984 and 1994

Across the two dates of analysis of the above image, we observed the less significant changes and also we see that on the 1984 map, the matrix is constituted by the primary forest class as the dominant class, whereas in 1994, this class decreased its extent and increased the number of its patches while keeping the apparent architecture of the 1984 image.

According to figure (2), the class whose surface remains the most stable over time, apart from the water class, is the secondary forest class, besides being the most extensive class on both dates. On the other hand, it is the fallow and field classes that fluctuate the most. Another class that appears is the "habitation" class, which is concentrated mainly in the south of the reserve. We note that the primary forest has decreased significantly.

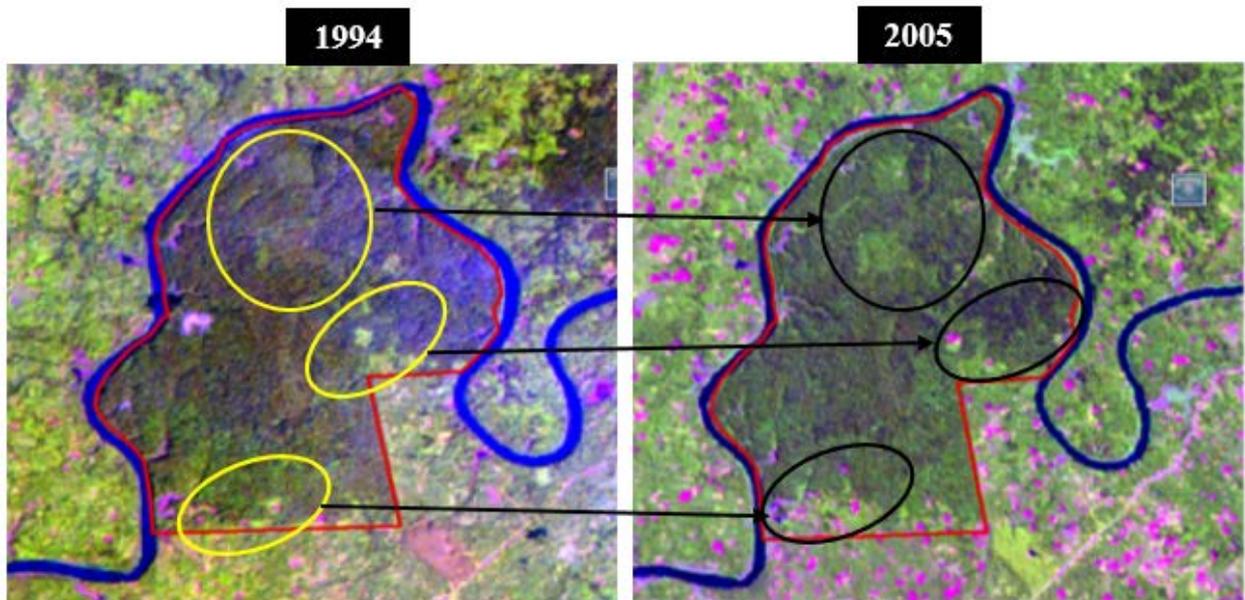


Figure (2). Land use map 1994 and 2005

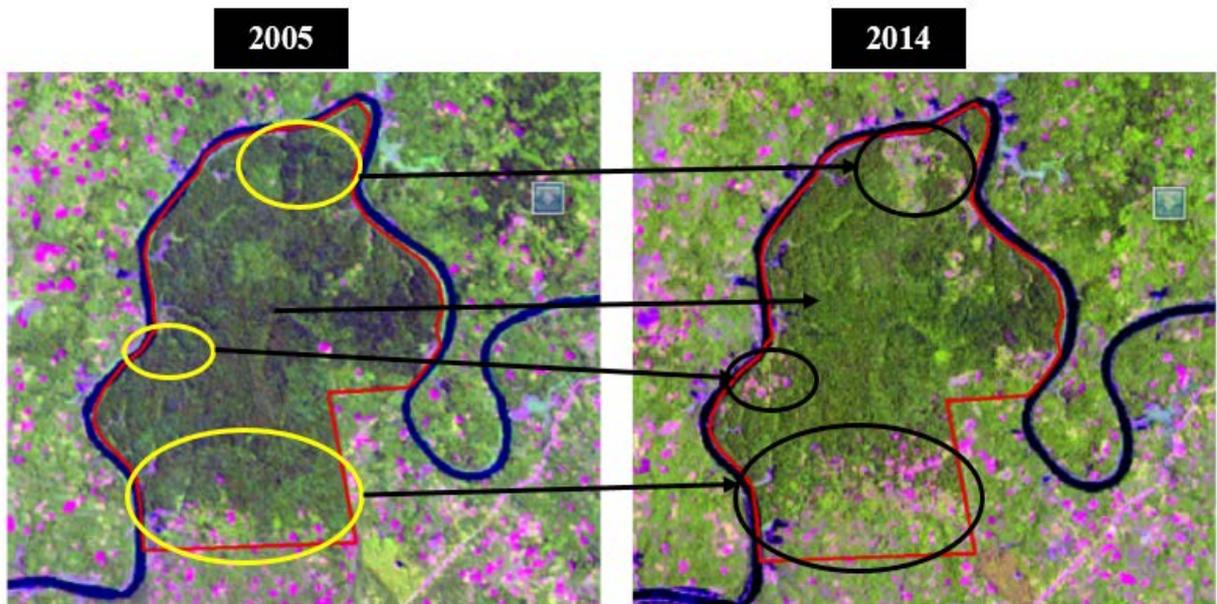


Figure (3). Land Use Map 2005 and 2014

While the 2014 image above remains a striking evidence of the massive destruction of ecosystem quality and quantity, when looking at these two maps figure (3), overall we realise that between 2005 and 2014, the overall structure of the study area has changed; the matrices as well as the distribution of class spots have also changed. Large patch of primary forest are being degraded and converted, giving way to smaller patches (fallow and field, dwelling and trail).

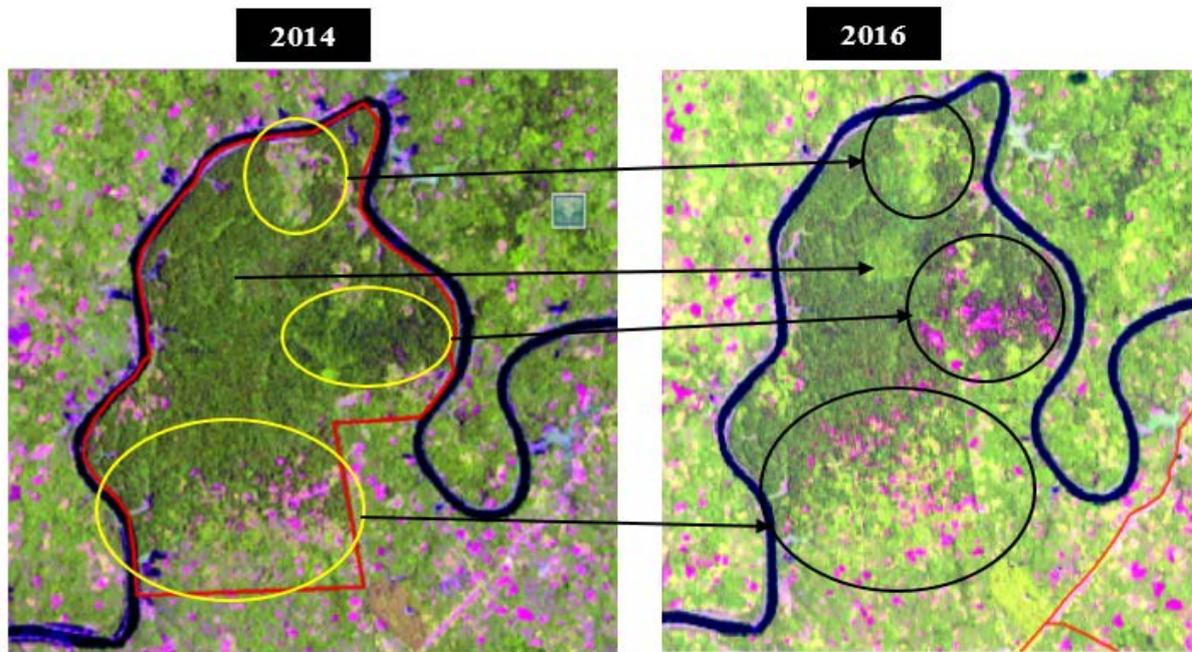


Figure (4). Land Use Map 2014 and 2016

Thus, by analysing Figure (4), we can establish that the land use during the period between 2014 and 2016 shows total instability, particularly of secondary forest. A large proportion of the secondary forest in 2014 was converted to fallow and bare soil in 2016, a small proportion of the primary forest in 2014 was fragmented into bare soil and field in 2016, but also bare soil was converted to fallow. There is a large change in the reserve between the two dates, for the primary forest it is clear that it has lost a considerable proportion of its area to fallow and field.

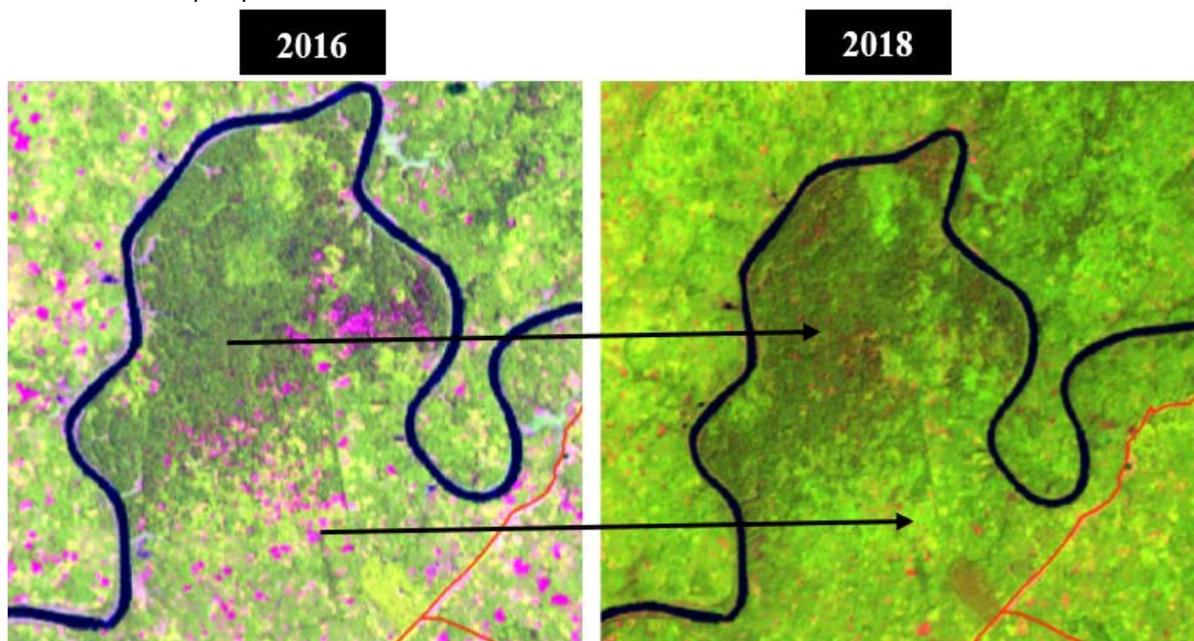


Figure (5). Land Use Map 2016 and 2018

Figure (5) shows that the deforestation of the reserve between 2016 and 2018 is very significant. The year 2016 shows some portions of the primary and secondary forests in the reserve. However, we see a strong transformation of a large area of primary and secondary forest to fallow and field, bare soil and fallow.

Based on these different analyses, it has been noted that with this progressive regression of the area of the Masako Forest Reserve, we may witness the almost total disappearance of the reserve's forest cover. The future changes to be observed in the reserve will be catastrophic if the right decisions are not taken now.