

Annex 5. Assessment of leakage from ERP areas towards surrounding buffer areas.

Methodology for tracking potential leakage outside the ERP Program (10 km buffer)

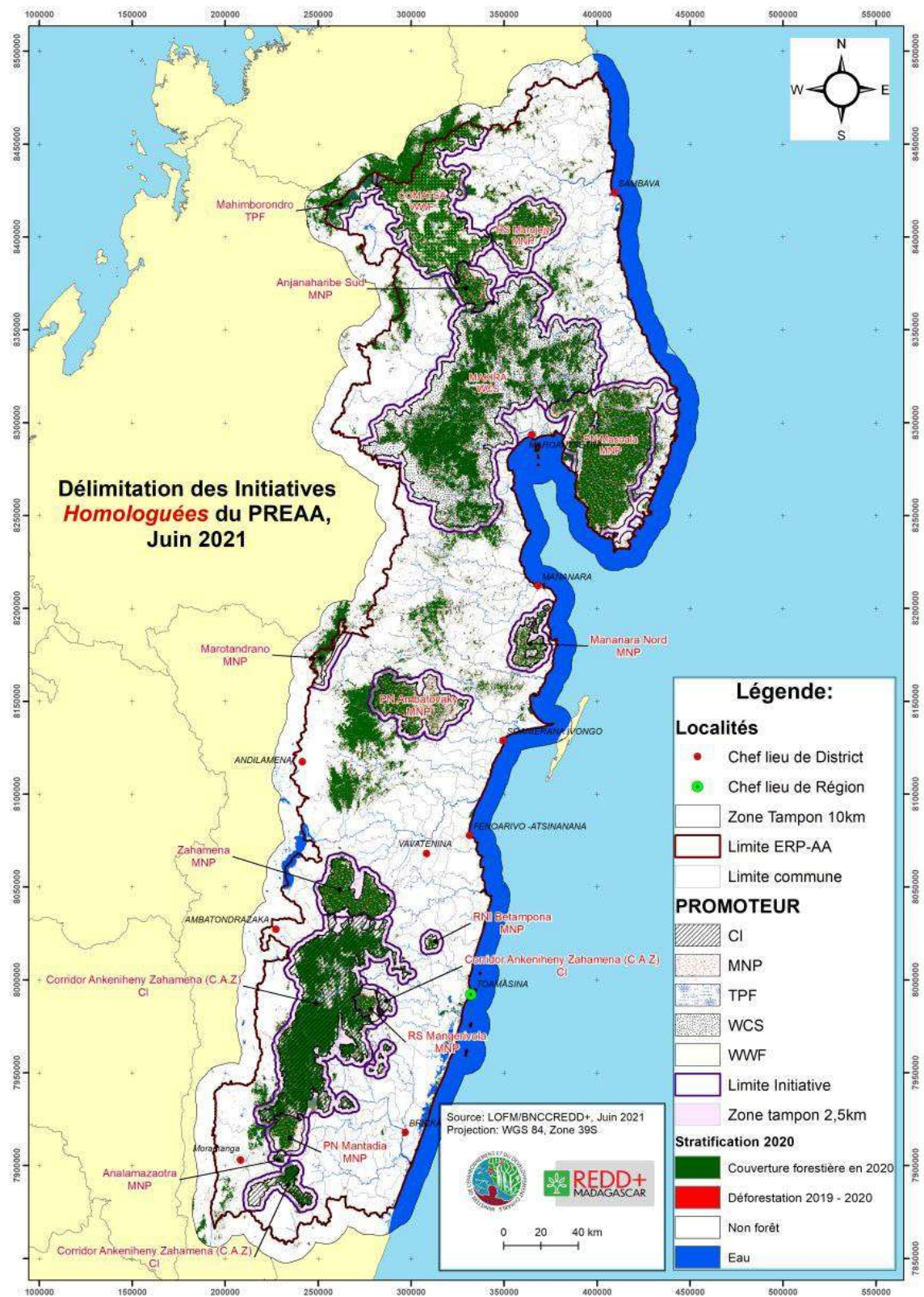
Reducing Emissions from Deforestation and forest Degradation (REDD+) is a program initiated to reduce carbon emissions by preventing deforestation and degradation of forests. One of the biggest challenges of REDD+ projects is the risk of leakage, which refers to the displacement of deforestation or degradation activities from the project area to non-project areas. Leakage can lead to an increase in emissions from non-project areas, thereby nullifying the benefits of the REDD+ project. Monitoring leakage is therefore a critical part of any REDD+ project.

For the ERPAA program, the leakage is evaluated by comparing the change in deforestation inside the program with a 10 km buffer outside the program.

The configuration of the ERP AA is designed based on how the project is implemented, there are three distinct zone in the project area:

- Areas managed by initiatives, called “initiatives”: Forest area under the control of one of the vetted initiatives. Those areas are mostly protected areas with their buffer zones. There are 14 areas managed by five (05) initiatives in the ERPAA (figure 1)
- Forest area outside the initiatives, are areas that has no promoter or vetted initiative that work on them. This area will likely have higher deforestation rates if compared to the areas inside the initiatives, but forest loss will be controlled by the intervention of the REDD+ institution with the local government (communes, districts)
- Non forest area inside the ERPAA, around the villages: In those villages, implementation activities are carried out (no population are living inside the forest). These include leakage prevention.

Activity displacement should then be measured in the forest area outside the ERPAA limit. Since the Madagascar National Parks (MNP, the responsible and manager of protected areas in Madagascar) usually have a 2,5km buffer around each National Parks and Protected areas for monitoring, we assume 10km buffer around the project area would be large enough to monitor leakages.



Potential leakage caused by the PRE was assessed over a 10-kilometre buffer zone outside the ERP Area. Annual deforestation rates (FAO 1995¹) were estimated both in the program area and the

¹ FAO, 1995. Forest resources assessment 1990. Global Synthesis. FAO, Rome

buffer zone, based on the same mapping studies used for the reference level and the monitoring report. The data used for this comparison was the historical data from the mapping study of national deforestation from 2000 to 2019 for the classes: Stable Forest, forest loss, forest gain, Stable non-forest, and water (<https://drive.google.com/file/d/1wCXR8SmaxP-3JCYsepNjlrnerjdUO8tq/view>)

The methodologies used for mapping are described in the following linked documents:

1. <https://www.environnement.mg/?wpmpro=rapport-final-sur-lanalyse-de-la-deforestation-nationale> (Historical data from the mapping study of national deforestation from 2000 to 2019) which describes the methodological steps of map production in the framework of the SSTS ;
2. <https://www.environnement.mg/?wpmpro=standard-doperation-pour-la-stratification> (Annual Monitoring Period Stratification Maps) where the procedures for creating a land use and cover map and these changes to prepare stratified random probability sampling are detailed.

Based on the data, annual deforestation rates (following the FAO formula) were estimates for the entire program area (PA), the implementation areas (IA) inside the program area, non-implementation areas inside the program area (nIA), and the 10 km buffer zone (BUF).

This monitoring of probable leakage outside the PA is carried out annually. Table 1 presents the results:

Table 1. Deforestation rates observed in the ERP Area and its leakage buffer during the historic and reporting periods

Reference period	Deforestation rates in % (FAO 1995)			
	Implementation area (IA) inside PA	Non-IA inside PA (nIA)	Program Area (PA)	BUF 10km
2006	0,65	2,74	1,26	1,34
2007	0,65	2,74	1,26	1,34
2008	0,65	2,74	1,26	1,34
2009	0,65	2,74	1,26	1,34
2010	0,65	2,74	1,26	1,34
2011	0,83	3,36	1,51	1,25
2012	0,83	3,36	1,51	1,25
2013	0,83	3,36	1,51	1,25
2014	0,83	3,36	1,51	1,25
2015	0,83	3,36	1,51	1,25
FREL Mean (2006-2015)	0,74	3,05	1,385	1,295
2019	0,95	3,12	1,48	1,06
2020	0,69	2,9	1,21	0,96

The results show during the reference period, the buffer zone showed a deforestation rate 7% lower than the one observed in the PA and how, during the reporting period, this difference increased substantially 40% lower in 2019 and 26% lower in 2020 contrary to what leakage from the PA would have entailed. Based on this, we consider the ERP is not generating leakage from the PA towards the buffer zone.