AKADEMIYA 2063

CACCI
COMPREHENSIVE ACTION FOR CLIMATE CHANGE INITIATIVE

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CACCI FIELD NOTES

Rwanda Natural Forest Cover Dynamics between 2015 and 2020

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About the CACCI Field Notes

AKADEMIYA2063 CACCI Field Notes are publications by AKADEMIYA2063 scientists and collaborators based on research conducted under the Comprehensive Action for Climate Change Initiative (CACCI) project. CACCI strives to help accelerate the implementation of Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) by meeting the needs for data and analytics and supporting institutional and coordination capacities. In Africa, CACCI works closely with the African Union Commission, AKADEMIYA2063, the African Network of Agricultural Policy Research Institutes (ANAPRI), and climate stakeholders in selected countries to inform climate planning and strengthen capacities for evidence-based policymaking to advance progress toward climate goals.

Published on the AKADEMIYA2063 website (open access), CACCI Field Notes provide broad and timely access to significant insights and evidence from our ongoing research activities in the areas of climate adaptation and mitigation. The data made available through this publication series will provide evidence-based insights to practitioners and policymakers driving climate action in countries where the CACCI project is being implemented.

AKADEMIYA2063's work under the CACCI project contributes to the provision of technical expertise to strengthen national, regional, and continental capacity for the implementation of NDCs and NAPs.

AKADEMIYA2063 is committed to supporting African countries in their efforts against climate change through provision of data and analytics using the latest available technologies. Under CACCI, for which Rwanda is a pilot study country, the team of scientists at AKADEMIYA2063 is examining natural forest cover dynamics, as well as tracking greenhouse gas emissions for all African countries, at the pixel level. These findings will be published in future Field Notes.

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About AKADEMIYA2063

AKADEMIYA2063 is a pan-African non-profit research organization with headquarters in Kigali, Rwanda and a regional office in Dakar, Senegal. Inspired by the ambitions of the African Union's Agenda 2063 and grounded in the recognition of the central importance of strong knowledge and evidence-based systems, the vision of AKADEMIYA2063 is an Africa with the expertise we need for the Africa we want. This expertise must be responsive to the continent's needs for data and analysis to ensure high-quality policy design and execution. Inclusive, evidence-informed policymaking is key to meeting the continent's development aspirations, creating wealth, and improving livelihoods.

AKADEMIYA2063's overall mission is to create, across Africa and led from its headquarters in Rwanda, state-of-the-art technical capacities to support the efforts by the Member States of the African Union to achieve the key goals of Agenda 2063 of transforming national economies to boost economic growth and prosperity.

Following from its vision and mission, the main goal of AKADEMIYA2063 is to help meet Africa's needs at the continental, regional and national levels in terms of data, analytics, and mutual learning for the effective implementation of Agenda 2063 and the realization of its outcomes by a critical mass of countries. AKADEMIYA2063 strives to meet its goals through programs organized under five strategic areas—policy innovation, knowledge systems, capacity creation and deployment, operational support, and data management, digital products, and technology—as well as innovative partnerships and outreach activities. For more information, visit www.akademiya2063.org.

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1. Introduction

Climate change is undoubtedly one of the greatest challenges of this era. It is caused by the accumulation of greenhouse gases, such as carbon dioxide, in the Earth's atmosphere, which trap heat and cause the planet's temperature to rise. This rise in temperature has far-reaching and devastating consequences, including the melting of glaciers, rising sea levels, extreme weather events, and the loss of biodiversity. Climate change is not just an environmental issue, it also presents serious social and economic challenges, as it affects food security, water availability, public health, and, potentially, social and political stability. Collective efforts are needed to address this global challenge, including reducing greenhouse gas emissions, increasing the use of renewable energy, and implementing sustainable land-use practices.

Forests play a vital role in fighting climate change because of their ability to absorb and store carbon dioxide from the atmosphere. Trees absorb carbon dioxide during photosynthesis and store it in their trunks, branches, and leaves. When forests are destroyed, the carbon dioxide they have absorbed is released back into the atmosphere, contributing to greenhouse gas emissions and global warming. Protecting and restoring forests is therefore essential to mitigation measures against climate change. Forests also provide numerous benefits, such as supporting biodiversity, regulating water cycles, and providing livelihoods for local communities. Forest conservation is a critical part of global efforts to combat climate change and ensure a sustainable future for generations to come.

Monitoring forest cover is an essential aspect of measuring their geographical extent, understanding rates of forest loss and degradation, identifying areas of high conservation value, and evaluating the effectiveness of forest conservation and restoration efforts. It also allows us to understand the threats that forests face, driven by various factors and activities such as agriculture, logging, mining, and urbanization. Monitoring enables better management and planning of forest resources.

Remote sensing technologies, such as satellites, drones, and aerial photography, have revolutionized the way we monitor forest cover as they enable scientists to track changes on the earth's surface over time at a global scale. Satellite images provide global coverage and allow researchers to track changes in forest cover over large areas and long periods. Drones offer higher spatial resolution than satellites and can provide detailed information on forest health, such as detecting disease outbreaks or insect infestations. Aerial photography can capture detailed information on forest structure and composition, such as the height and density of tree canopies.

In this Field Note, Rwanda's natural forest cover changes and forest cover losses for the 2015-2019 period are assessed using publicly available satellite remote sensing data. The overarching objective of this study was to perform a stock-taking exercise, assessing the geographical extent and location of natural forest cover changes and natural forest cover losses within the country. By providing a solid foundation of knowledge on natural forest cover change, this exercise sets out to enable evidence-based processes that result in policy and program design for Rwanda's forest cover management.

The document is organized as follows. Section 2 discusses the methodology and datasets that were used in this research. Section 3 focuses on the results, and Section 4 discusses of the overall findings and presents the conclusion.

It is worth noting that a land use and land cover report assessing overall forest dynamics was conducted by the Rwanda Forest Authority in 2019. The report estimated a national forest cover of 30.4 percent. This Field Note, which only focuses on natural forest cover, estimates the size of natural forest to be 21.9 percent nationally. The difference between the two forest cover estimates can largely be accounted for by the exclusion of woody shrublands and forest above wetlands from the study.

2. Datasets and Methodology

2.1. Datasets

The research team used two datasets in this note to study Rwanda's forest cover dynamics over the 2015-2019 period and the year 2020. The datasets were the Proba-V land use and land cover map for 2015, 2016, 2017, 2018, and 2019 (Buchhorn et al., 2020)[1] and the global forest cover loss for 2020 (Methodology paper cf. Hansen et al., 2020 (with updated 2020 data)). Both datasets were produced using a combination of satellite remote sensing data and machine learning techniques to classify pixels based on a specific metric, such as spectral signatures and vegetation indices.

1 Buchhorn, M., et al. 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2019: Globe (Version V3.0.1). https://doi.org/10.5281/zenodo.3939050

For the Proba-V data, spectral signatures were used by the authors to classify forests depending on their spectral footprint and tree structures. Trees are defined as vegetation taller than five meters in height and are expressed as a percentage per output grid cell as '2000 Percent Tree Cover'. 'Forest Cover Loss' is defined as a stand-replacement disturbance or a change from a forest to a non-forest state, during the 2000-2021 period. Table 1 summarizes the datasets used, their sources, and spatial resolution.

Table 1: Dataset description, source, spatial resolution, and year of publication

Dataset description	Source	Spatial resolution	Year(s)
Land use and land cover (LULC) used to extract forest cover for this note.	Land use and land cover of Rwanda in 2019. Data source: M. Buchhorn; B. Smets; L. Bertels ; M. Lesiv; N. E. Tsendbazar; D. Masiliunas; L. Linlin; M. Herold; S. Fritz. 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2019: Globe (Version V3.0.1) 10.5281/zenodo.3939050	Raster file: Grid cell of 100-by-100 meters.	2015, 2016, 2017, 2018, and 2019.
Rwanda forest cover loss events at pixel level.	Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013.	Raster file: Grid cell of 30-by-30 meters.	The methodology was developed in 2013 and the dataset updated for 2020.
Rwanda national borders.	Global administrative areas (boundaries). University of Berkeley, Museum of Vertebrate Zoology and the International Rice Research Institute.	Vector file.	Version 4.1. for the 2018-2022 period.

2.2. The 2019 Rwanda land use, land cover and forest cover maps

Rwanda is a country in Eastern Africa with an area of 26,000 square kilometers. The country shares borders with Uganda, Burundi, Tanzania, and the Democratic Republic of Congo. In 2019, Rwanda's land surface was mainly covered by crops representing 48 percent of the total area, natural forests (21.9 percent) and shrubland (15.6 percent). The rest of the country's land surface is covered by herbaceous vegetation (3.8 percent), herbaceous wetlands (2.6 percent), urban/built-up areas (1.8 percent), and permanent water bodies (5.9 percent).

Table 2: Definition of forest cover categories based on the Product User Manual Land Cover v2.0 from the Copernicus Global Land Operations, issued on 10/11/2019

Forest cover category	Description
Closed forest, deciduous needle leaf	Tree canopy >70 percent, consists of seasonal needle leaf tree communities with an annual cycle of leaf-on and leaf-off periods.
Closed forest, evergreen needle leaf	Tree canopy >70 percent, almost all needle leaf trees remain green all year. Canopy is never without green foliage.
Closed forest, evergreen, broadleaf	Tree canopy >70 percent, almost all broadleaf trees remain green year-round. Canopy is never without green foliage.
Closed forest, deciduous broadleaf	Tree canopy >70 percent, consists of seasonal broadleaf tree communities with an annual cycle of leaf-on and leaf-off periods.
Closed forest, mixed	Closed forest, mix of types
Closed forest, unknown	Closed forest, not matching any of the other definitions
Open forest, evergreen broadleaf	The top layer is 15-70 percent trees, and the second layer is a mix of shrubs and grassland. Almost all broadleaf trees remain green year-round. Canopy is never without green foliage.
Open forest, deciduous broadleaf	The top layer is 15-70 percent trees, and the second layer is a mix of shrubs and grassland. Consists of seasonal broadleaf tree communities with an annual cycle of leaf-on and leaf-off periods.
Open forest, unknown	Open forest, not matching any of the other definitions.

Figure 1: Rwanda land use and land cover, 2019

Data source: *Buchhorn, M., et al. 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2019: Globe (Version V3.0.1) [Data set]. Zenodo. DOI: 10.5281/zenodo.3939050.*

Data processing and mapping: *AKADEMIYA2063.*

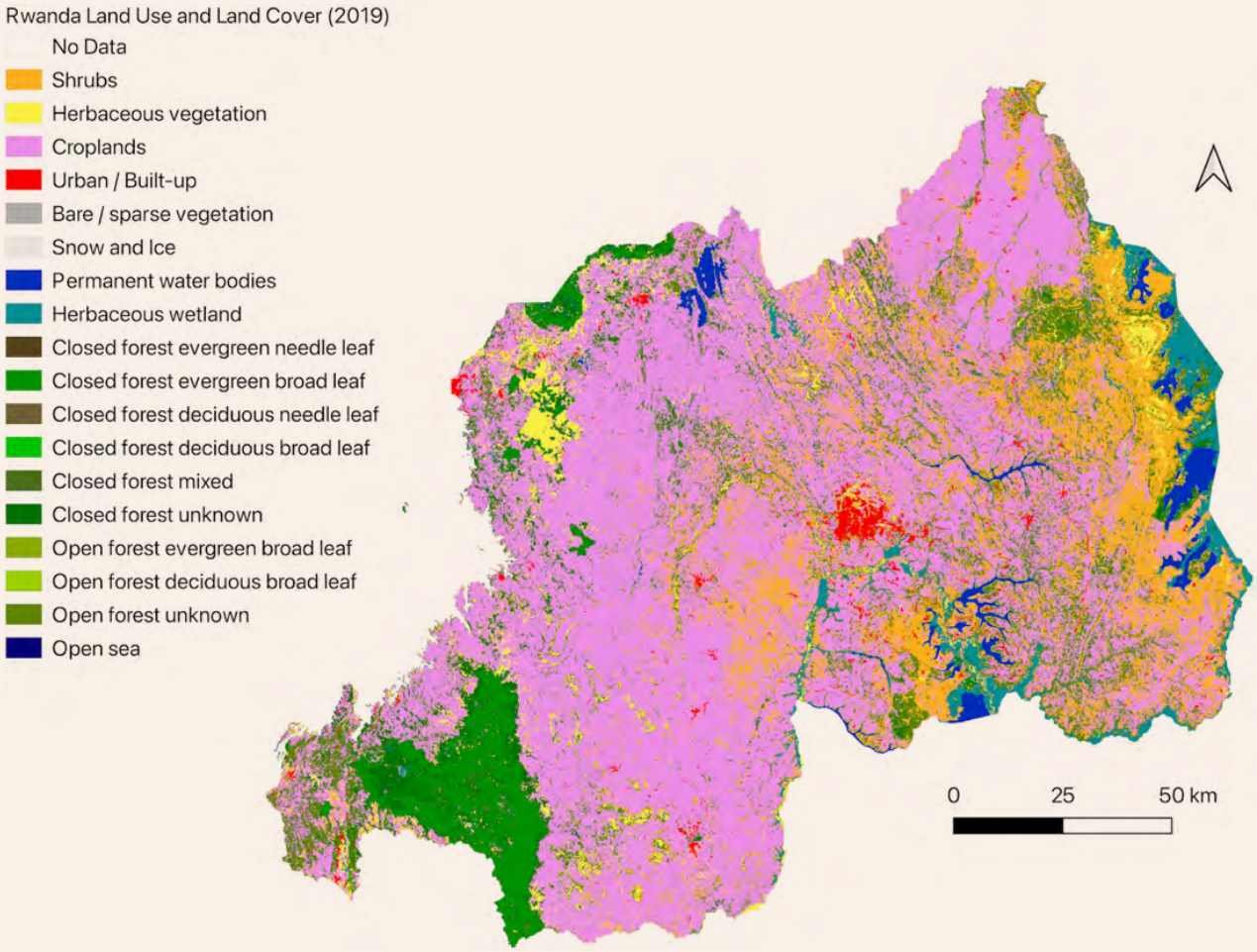
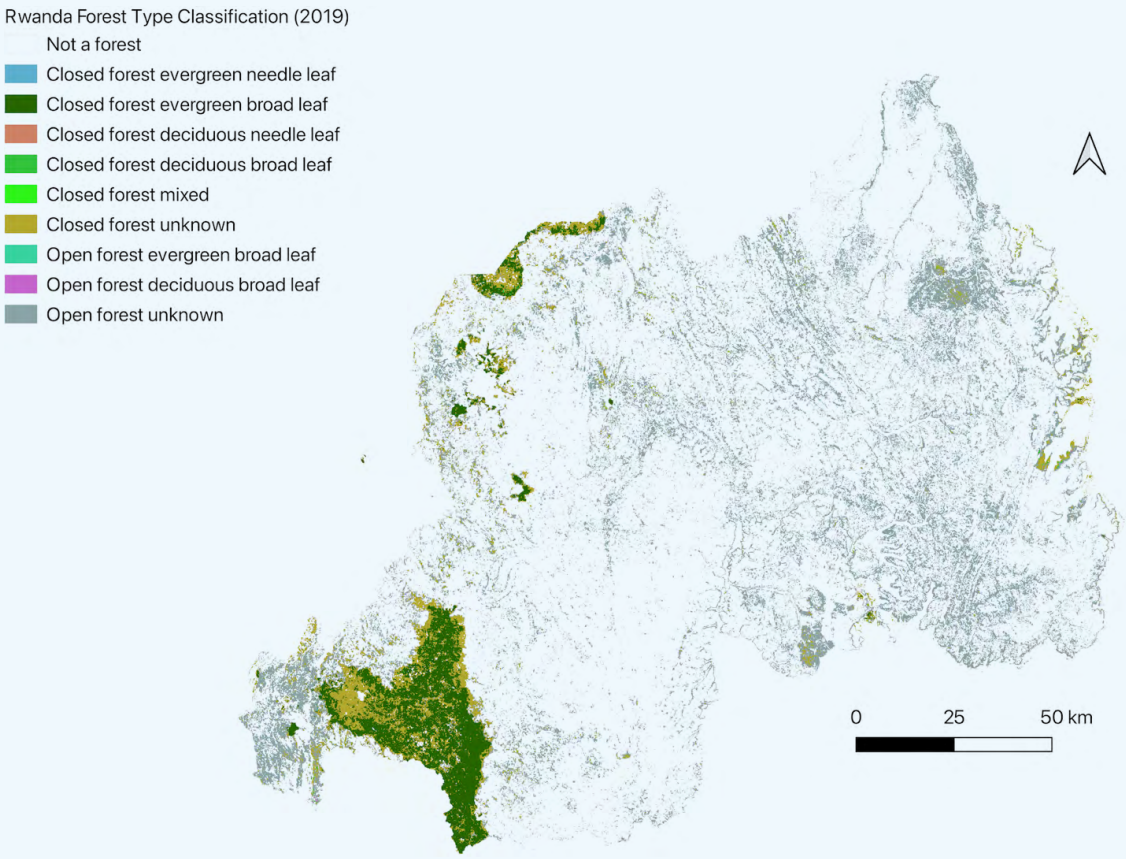


Figure 2: Rwanda natural forest cover map, 2019



Data source: *Buchhorn, M., et al. 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2019: Globe (Version V3.0.1) [Data set]. Zenodo. DOI: 10.5281/zenodo.3939050.*
Data processing and mapping: *AKADEMIYA2063.*

2.3. Methodology

The land use and land cover maps for the year of interest – from the Proba-V data source – were used to extract the natural forest cover pixels. The resulting maps were assembled as a data-cube of five layers, each of them containing only pixels identified as one of the nine forest cover classes (see Table 2) from the dataset. The operation performed above led to a matrix where each pixel had five values for the five years covered by this note. The number of pixels per category was summed and multiplied by the spatial resolution and then divided by the total area of the country to obtain the year-round proportion of coverage for each category of forest. This operation enabled measurement of the dynamics for each forest cover class throughout the period of study. All the computations related to the descriptive statistics were performed using Python 3.16.

For the mapping aspects, we used Quantum-GIS (Q-GIS) version 3.8 Zanzibar, an open-source geographical information systems software with graphical user interface. The Q-GIS zonal statistical functionalities were used for the aggregated map from pixel to sub-national entities, in combination with the shapefile for country national borders.

3. Results

3.1. Rwanda natural forest dynamics (2015-2019)

From the analysis, there has been a reduction of open and closed forests of unknown types over the five years, at an average pace of 0.049 percent point loss per year, equivalent to the loss of 10,015 square kilometers annually (see Table 3 below). The Evergreen broadleaf forest experienced a small decrease of 1 hectare from 2016 to 2017 and from 2017 to 2018, respectively. The Open Forest Deciduous broadleaf lost 7, 20, 27, and 22 hectares from every consecutive year from 2015 to 2019, respectively. However, the Closed Forest Evergreen broadleaf experienced loss of 16, 62, and 42 hectares for every consecutive year for the period 2015-2018 and gained 45 hectares from 2018 to 2019 getting back to the 2017 figures. Finally, the Closed Forest Unknown type experienced loss of 65, 22, 31, and 21 hectares for every consecutive year for the period 2015-2019.

Table 3: Changes in Rwanda's annual natural forest cover by forest type, 2015-2019

		Percentage of coverage by year				
Category	**Sub-category**	**2015**	**2016**	**2017**	**2018**	**2019**
Open forest	Evergreen broadleaved	0.009	0.009	0.009	0.008	0.008
	Deciduous broadleaved	0.030	0.030	0.029	0.028	0.027
	Unknown type, open forest	15.766	15.726	15.675	15.617	15.567
Closed forest	Evergreen broadleaved	3.693	3.692	3.692	3.687	3.689
	Deciduous broadleaved	0.067	0.063	0.063	0.061	0.060
	Unknown type closed forest	3.659	3.572	3.494	3.459	3.451

Data source: *Buchhorn, M., et al. 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2019: Globe (Version V3.0.1) [Data set]. Zenodo. DOI: 10.5281/zenodo.3939050.*

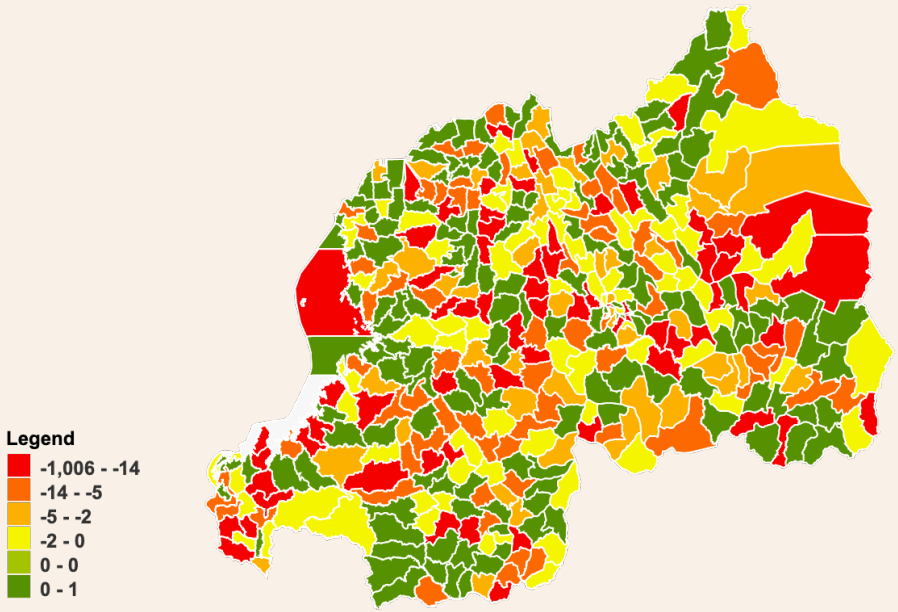
Data processing and analysis: *AKADEMIYA2063.*

We performed additional analysis to compare the change in absolute natural forest cover at the sector level, from 2015 to 2019. For each sector in Rwanda, the total natural forest cover – without categorization by type – and the changes observed were computed. The analysis showed that 14 sectors experienced a natural forest cover loss of over a hundred hectares between 2015 and 2019. These sectors are: Mahama (149 ha), Kigeyo (108 ha), Gashora (389 ha), Ndego (104 ha), Rwimbogo (744 ha), Musaza (143 ha), Kigarama (346 ha), Jarama (942 ha), Mpanga (413 ha), Gahara (120 ha), Rweru (1,006 ha), Karangazi (321 ha), Mwiri (313 ha), and Murundi (371 ha). Only one sector (Katabagemu) experienced a slight increase of one hectare in natural forest cover, while 147 sectors did not experience a perceptible change in forest cover over the same period (cf. Table 4 in the Appendix). Figure 3 shows the absolute change in hectares in natural forest cover at the sector level between 2015 and 2019.

3.2. Rwanda Natural Forest Cover Loss in 2020

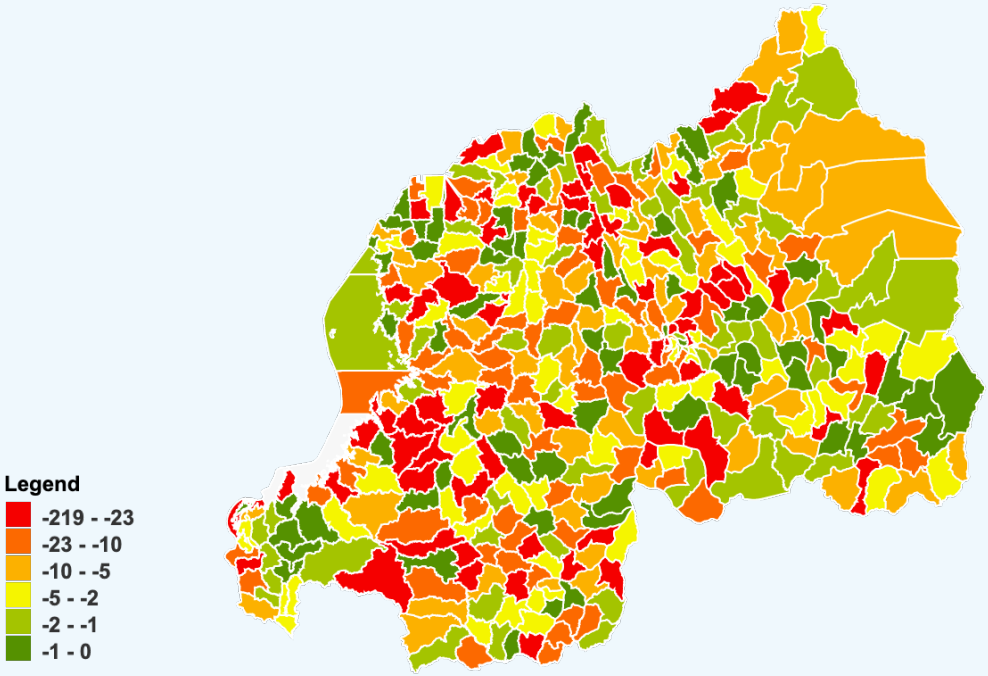
Natural forest cover loss in 2020 is defined as a stand-replacement disturbance or change from a forest to a non-forest state.[2] Figure 6 in the Appendix provides the location of natural forest cover loss observed in 2020 at a pixel size of 30 meters, meaning each cell on the map corresponds to an area of 900 square meters on the ground. Figure 4 below is an aggregated version of Figure 6, with the natural forest cover loss summed up for each sector in the country.

Figure 3: Change in Rwanda's natural forest cover in hectares, 2015-2019 based on the data presented in Table 4 (Absolute difference column) in the Appendix, and with a six-quantile classification.



2 It is worth noting that the Hansen Forest Cover Change defines trees as all vegetation taller than 5m in height.

Figure 4. Rwanda forest cover loss in hectares for each sector, 2020



Data source: *Hansen, M. C.et al. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (November 15th): 850–53.*
Data processing and mapping: *AKADEMIYA2063.*

Three hundred sectors covering most of the country experienced natural forest cover loss between 0 and 14 hectares, followed by 50 sectors that experienced a loss of between 14 and 28 hectares. Twelve sectors experienced the loss of more than 100 hectares in 2020. These are: Buruhukiro (125.91 ha), Bushekeri (133.92 ha), Butare (121.14 ha), Bweyeye (150.75 ha), Cyato (196.02 ha), Muhanda (145.62 ha), Muringa (176.22 ha), Nkungu (101.88 ha), Nyabimata (123.75 ha), Ruharambuga (124.92 ha), Rushaki (218.7 ha), and Twumba (167.67 ha).

4. Conclusion

This Field Note was produced to provide a snapshot of Rwanda's natural forest cover loss for the most recent year that data was available, and to assess forest cover dynamics for the 2015-2020 period. As climate change continues to affect the livelihoods of communities as well as numerous different sectors, the timely availability of assessments like this one can enable decision makers and other stakeholders to measure the impact of interventions, to orient investments, and assess vulnerabilities. The information obtained provides useful input for reporting on the efforts that countries put in place to mitigate climate change as well as contribute to climate change negotiations in international forums and carbon market factsheets.

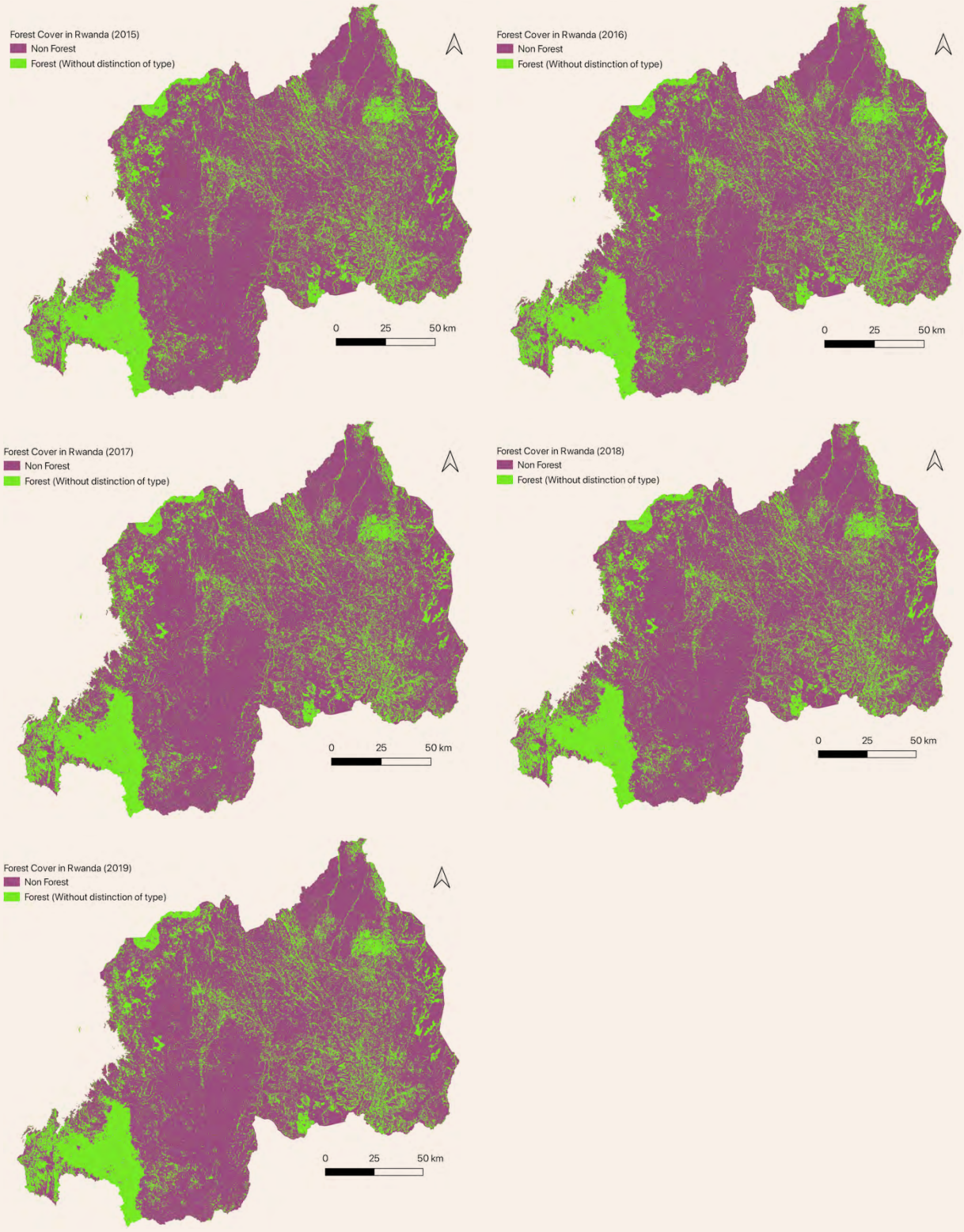
Rwanda experienced - based on the satellite remote sensing data - a decrease in open and closed forest of unknown type over the 2015-2019 period, at an annual rate of 10,015 square kilometers. In 2020, the country lost 6,350.58 hectares of natural forest with a heterogeneous distribution, as shown in Figure 4. A comparison of the 2019 and 2020 forest cover loss data was not possible due to differences in their spatial resolution. However, additional computation and analyses would enable this type of comparison.

It should be noted that the study focuses on natural forest cover loss and does not address forest cover gains from the satellite remote sensing perspective. While natural forest cover loss resulting from disturbances such as fires, farm expansion, or development of built-up areas, is immediately measurable, reforestation takes time before it can be noticed and differentiated from the growth of other vegetation cover on the ground. As such, gains in forest cover cannot be measured as frequently as forest cover losses.

This study did not examine the new land use class for the areas that experienced forest loss, even though the land use and land classification scheme suggest that each pixel should be classified within one of the defined categories. A dynamic analysis of land use and land cover would help assess these changes as each pixel depicting forest cover loss, transitions to another class of land use and land cover.

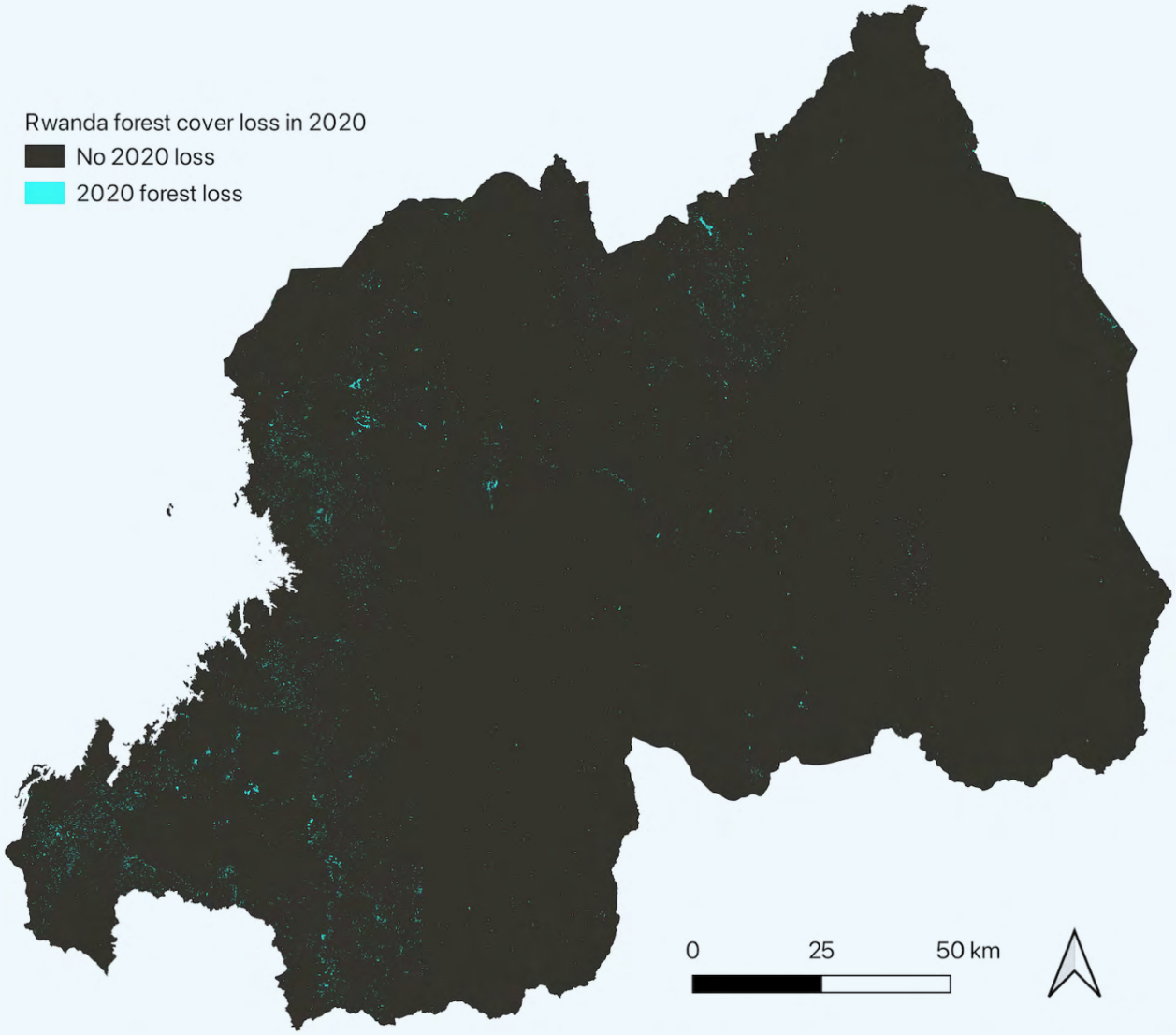
Appendix

Figure 5. Rwanda forest cover maps for 2015, 2016, 2017, 2018, and 2019. Pixel size is 100 meters (1 cell = 1 hectare).



Data source: *Buchhorn, M., et al. 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2015, 2016, 2017, 2018, and 2019: Globe (Version V3.0.1) [Data set]. Zenodo. DOI: 10.5281/zenodo.3939050.*
Data processing and analysis: *AKADEMIYA2063.*

Figure 6. Rwanda forest loss map in 2020.



Data source: *Hansen, M. C.,et al. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (November 15th): 850–53.*
Data processing and mapping: *AKADEMIYA2063.*

Table 4. Rwanda's forest cover change (all types included) between 2015 and 2019.
Data source: *Buchhorn, M., et al. 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2015, 2016, 2017, 2018, and 2019: Globe (Version V3.0.1) [Data set]. Zenodo. DOI: 10.5281/zenodo.3939050. Data processing and analysis: AKADEMIYA2063. FC = Forest Cover; AD = Absolute Difference; RD = Relative Difference.*

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Kigali City	Nyarugenge	Rwezamenyo	0	0	0	-
Kigali City	Nyarugenge	Gitega	0	0	0	-
Kigali City	Nyarugenge	Kimisagara	10	10	0	0
Western	Rutsiro	Mushonyi	1000	972	-28	-2.8806584
Eastern	Gatsibo	Gatsibo	1006	1001	-5	-0.4995005
Kigali City	Kicukiro	Masaka	1007	953	-54	-5.666316894
Eastern	Rwamagana	Kigabiro	1010	1010	0	0
Western	Rubavu	Gisenyi	102	92	-10	-10.86956522
Eastern	Ngoma	Karembo	1025	1019	-6	-0.588812561
Western	Rusizi	Gihundwe	1031	1005	-26	-2.587064677
Eastern	Rwamagana	Nzige	1033	1032	-1	-0.096899225

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Southern	Nyaruguru	Ngoma	104	104	0	0
Eastern	Kirehe	Kigina	1058	1058	0	0
Southern	Muhanga	Kabacuzi	1058	1057	-1	-0.094607379
Kigali City	Nyarugenge	Mageregere	1059	1042	-17	-1.631477927
Eastern	Kirehe	Nasho	1061	1025	-36	-3.512195122
Eastern	Rwamagana	Muhazi	1063	1061	-2	-0.188501414
Eastern	Rwamagana	Muyumbu	1068	1067	-1	-0.093720712
Northern	Rulindo	Buyoga	1070	1070	0	0
Western	Rutsiro	Ruhango	1071	1045	-26	-2.488038278
Eastern	Ngoma	Gashanda	1074	1071	-3	-0.280112045
Western	Karongi	Murambi	109	108	-1	-0.925925926
Northern	Gicumbi	Rubaya	110	110	0	0
Southern	Nyaruguru	Kibeho	1105	1104	-1	-0.09057971
Southern	Muhanga	Muhanga	1112	1112	0	0
Eastern	Rwamagana	Nyakaliro	1115	1070	-45	-4.205607477
Eastern	Ngoma	Kibungo	1116	1116	0	0
Northern	Gakenke	Muhondo	1120	1119	-1	-0.089365505
Eastern	Kayonza	Kabarondo	1132	1125	-7	-0.622222222
Eastern	Rwamagana	Mwulire	1141	1140	-1	-0.087719298
Western	Rubavu	Nyundo	1142	1125	-17	-1.511111111
Northern	Gicumbi	Mutete	1152	1152	0	0
Western	Rusizi	Nyakarenzo	1155	1152	-3	-0.260416667
Eastern	Bugesera	Ngeruka	1171	1166	-5	-0.428816467
Western	Nyamasheke	Nyabitekeri	1173	1141	-32	-2.804557406
Eastern	Kirehe	Mahama	1179	1030	-149	-14.46601942
Eastern	Ngoma	Remera	1180	1177	-3	-0.254885302
Western	Nyamasheke	Kagano	1180	1148	-32	-2.787456446
Eastern	Rwamagana	Karenge	1188	1147	-41	-3.574542284
Kigali City	Kicukiro	Kigarama	119	119	0	0
Western	Nyabihu	Jomba	119	119	0	0
Eastern	Nyagatare	Mukama	1194	1193	-1	-0.083822297
Western	Rusizi	Rwimbogo	1198	1198	0	0
Kigali City	Gasabo	Kacyiru	12	11	-1	-9.090909091
Kigali City	Kicukiro	Gatenga	120	120	0	0
Southern	Nyanza	Kigoma	121	121	0	0
Western	Rusizi	Mururu	1211	1209	-2	-0.165425972
Eastern	Ngoma	Rukira	1212	1212	0	0
Northern	Burera	Cyanika	1219	1219	0	0
Western	Karongi	Rwankuba	1221	1220	-1	-0.081967213
Eastern	Kirehe	Nyamugari	1228	1186	-42	-3.541315346
Eastern	Gatsibo	Ngarama	1239	1227	-12	-0.97799511
Southern	Nyanza	Rwabicuma	124	121	-3	-2.479338843
Southern	Kamonyi	Nyamiyaga	125	125	0	0
Western	Nyabihu	Jenda	1259	1251	-8	-0.639488409
Western	Nyamasheke	Kanjongo	1262	1252	-10	-0.798722045
Northern	Gakenke	Ruli	1269	1262	-7	-0.554675119

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Eastern	Kayonza	Rukara	1277	1274	-3	-0.235478807
Eastern	Gatsibo	Nyagihanga	1284	1280	-4	-0.3125
Western	Rusizi	Nyakabuye	1287	1283	-4	-0.311769291
Western	Rubavu	Kanama	1299	1294	-5	-0.386398764
Kigali City	Kicukiro	Gikondo	13	11	-2	-18.18181818
Eastern	Gatsibo	Rugarama	1306	1305	-1	-0.076628352
Southern	Nyanza	Mukingo	131	130	-1	-0.769230769
Eastern	Rwamagana	Rubona	1310	1301	-9	-0.691775557
Western	Nyabihu	Muringa	1313	1308	-5	-0.382262997
Northern	Gakenke	Busengo	132	132	0	0
Eastern	Bugesera	Mareba	1322	1316	-6	-0.455927052
Southern	Huye	Rusatira	133	133	0	0
Western	Ngororero	Muhororo	133	132	-1	-0.757575758
Northern	Gicumbi	Rukomo	1336	1336	0	0
Southern	Nyaruguru	Nyagisozi	134	134	0	0
Eastern	Bugesera	Musenyi	1340	1277	-63	-4.933437745
Western	Ngororero	Kageyo	135	134	-1	-0.746268657
Eastern	Rwamagana	Munyaga	1365	1353	-12	-0.88691796
Western	Karongi	Gitesi	1375	1375	0	0
Kigali City	Nyarugenge	Muhima	14	14	0	0
Eastern	Ngoma	Sake	1405	1397	-8	-0.572655691
Southern	Kamonyi	Karama	141	141	0	0
Western	Nyabihu	Rambura	1412	1409	-3	-0.212916962
Eastern	Nyagatare	Musheri	1423	1423	0	0
Western	Rutsiro	Musasa	1445	1431	-14	-0.978336827
Western	Rusizi	Butare	14509	14505	-4	-0.027576698
Eastern	Bugesera	Nyamata	1470	1463	-7	-0.4784689
Southern	Nyaruguru	Mata	1478	1478	0	0
Northern	Gicumbi	Bwisige	1486	1486	0	0
Western	Rusizi	Giheke	1489	1479	-10	-0.676132522
Western	Ngororero	Gatumba	149	146	-3	-2.054794521
Eastern	Gatsibo	Gitoki	1495	1493	-2	-0.133958473
Western	Ngororero	Bwira	150	150	0	0
Northern	Gakenke	Coko	1501	1487	-14	-0.941492939
Western	Rusizi	Gitambi	1516	1515	-1	-0.066006601
Eastern	Nyagatare	Karama	152	151	-1	-0.662251656
Southern	Muhanga	Nyabinoni	1534	1507	-27	-1.791639018
Southern	Ruhango	Bweramana	154	154	0	0
Southern	Kamonyi	Nyarubaka	154	154	0	0
Western	Nyamasheke	Mahembe	1552	1548	-4	-0.258397933
Western	Rutsiro	Kigeyo	1554	1446	-108	-7.468879668
Northern	Gakenke	Janja	157	157	0	0
Eastern	Kirehe	Kirehe	1577	1577	0	0
Eastern	Nyagatare	Katabagemu	1586	1587	1	0.063011972
Western	Ngororero	Muhanda	1592	1575	-17	-1.079365079
Northern	Burera	Gahunga	1614	1609	-5	-0.31075202

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Southern	Nyaruguru	Ngera	162	162	0	0
Western	Rusizi	Nkungu	1628	1622	-6	-0.369913687
Southern	Huye	Kigoma	168	168	0	0
Western	Rusizi	Bweyeye	16835	16824	-11	-0.065382786
Northern	Gicumbi	Rushaki	1684	1684	0	0
Northern	Gicumbi	Ruvune	1687	1687	0	0
Southern	Kamonyi	Musambira	169	169	0	0
Eastern	Kayonza	Kabare	1690	1679	-11	-0.655151876
Northern	Gicumbi	Cyumba	170	169	-1	-0.591715976
Southern	Ruhango	Kinihira	170	170	0	0
Eastern	Ngoma	Zaza	1700	1696	-4	-0.235849057
Eastern	Ngoma	Mugesera	1707	1687	-20	-1.185536455
Eastern	Ngoma	Rukumberi	1748	1683	-65	-3.862150921
Western	Nyamasheke	Shangi	1751	1714	-37	-2.158693116
Southern	Muhanga	Rongi	1759	1733	-26	-1.500288517
Eastern	Nyagatare	Gatunda	176	176	0	0
Northern	Musanze	Gataraga	1768	1735	-33	-1.902017291
Southern	Ruhango	Kabagali	177	177	0	0
Western	Nyamasheke	Bushenge	1784	1774	-10	-0.563697858
Eastern	Nyagatare	Matimba	1817	1810	-7	-0.386740331
Northern	Gakenke	Gakenke	182	181	-1	-0.552486188
Eastern	Ngoma	Murama	1823	1817	-6	-0.33021464
Eastern	Bugesera	Gashora	1843	1454	-389	-26.75378267
Eastern	Kayonza	Ndego	1856	1752	-104	-5.936073059
Eastern	Kayonza	Murama	1876	1875	-1	-0.053333333
Southern	Huye	Ruhashya	189	189	0	0
Kigali City	Gasabo	Kimihurura	19	19	0	0
Northern	Musanze	Muhoza	191	181	-10	-5.524861878
Southern	Nyamagabe	Kibirizi	191	188	-3	-1.595744681
Eastern	Gatsibo	Rwimbogo	19176	18432	-744	-4.036458333
Eastern	Kirehe	Mushikiri	1929	1929	0	0
Southern	Gisagara	Kibirizi	193	193	0	0
Eastern	Kirehe	Gatore	1938	1874	-64	-3.415154749
Eastern	Bugesera	Juru	1956	1896	-60	-3.164556962
Southern	Nyamagabe	Gasaka	196	196	0	0
Kigali City	Kicukiro	Kicukiro	2	2	0	0
Northern	Gakenke	Karambo	200	200	0	0
Western	Rutsiro	Nyabirasi	2014	1994	-20	-1.003009027
Western	Ngororero	Ngororero	205	202	-3	-1.485148515
Northern	Gicumbi	Manyagiro	206	206	0	0
Southern	Nyamagabe	Mushubi	206	206	0	0
Eastern	Nyagatare	Kiyombe	2066	2016	-50	-2.48015873
Kigali City	Nyarugenge	Nyakabanda	21	21	0	0
Eastern	Ngoma	Mutenderi	2101	2007	-94	-4.683607374
Southern	Nyaruguru	Cyahinda	213	213	0	0
Southern	Gisagara	Save	214	214	0	0

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Western	Rusizi	Gikundamvura	2144	2141	-3	-0.140121439
Southern	Ruhango	Mwendo	218	218	0	0
Eastern	Ngoma	Rurenge	2189	2180	-9	-0.412844037
Southern	Gisagara	Musha	219	219	0	0
Western	Ngororero	Kavumu	219	219	0	0
Eastern	Ngoma	Kazo	2191	2185	-6	-0.274599542
Western	Ngororero	Matyazo	220	214	-6	-2.803738318
Western	Rutsiro	Mukura	2200	2193	-7	-0.319197446
Eastern	Kirehe	Musaza	2202	2059	-143	-6.94511899
Northern	Musanze	Nyange	2240	2212	-28	-1.265822785
Kigali City	Kicukiro	Nyarugunga	226	220	-6	-2.727272727
Southern	Huye	Gishamvu	226	226	0	0
Western	Rusizi	Nkombo	227	190	-37	-19.47368421
Southern	Nyaruguru	Busanze	229	229	0	0
Southern	Nyanza	Cyabakamyi	229	229	0	0
Northern	Burera	Cyeru	232	221	-11	-4.977375566
Northern	Musanze	Shingiro	2326	2285	-41	-1.794310722
Southern	Ruhango	Mbuye	234	234	0	0
Western	Rusizi	Nzahaha	2344	2341	-3	-0.128150363
Western	Rusizi	Gashonga	2408	2407	-1	-0.041545492
Western	Nyabihu	Kabatwa	2409	2357	-52	-2.206194315
Southern	Nyanza	Muyira	241	241	0	0
Western	Ngororero	Nyange	241	232	-9	-3.879310345
Western	Nyabihu	Rurembo	249	248	-1	-0.403225806
Kigali City	Gasabo	Kimironko	25	25	0	0
Northern	Rulindo	Masoro	250	250	0	0
Northern	Musanze	Rwaza	253	242	-11	-4.545454545
Southern	Nyamagabe	Gatare	2536	2535	-1	-0.039447732
Southern	Nyamagabe	Kibumbwe	254	254	0	0
Northern	Rulindo	Burega	259	258	-1	-0.387596899
Western	Karongi	Twumba	2604	2589	-15	-0.579374276
Northern	Gicumbi	Nyankenke	264	261	-3	-1.149425287
Southern	Muhanga	Shyogwe	265	265	0	0
Eastern	Kirehe	Kigarama	2668	2322	-346	-14.90094746
Southern	Gisagara	Kansi	268	268	0	0
Southern	Gisagara	Mugombwa	270	269	-1	-0.371747212
Southern	Gisagara	Nyanza	274	273	-1	-0.366300366
Southern	Nyamagabe	Musange	282	282	0	0
Northern	Gakenke	Nemba	283	283	0	0
Northern	Gakenke	Rushashi	284	283	-1	-0.35335689
Northern	Musanze	Remera	288	288	0	0
Western	Karongi	Murundi	288	288	0	0
Kigali City	Kicukiro	Niboye	29	29	0	0
Northern	Rulindo	Cyungo	290	290	0	0
Northern	Musanze	Muko	294	292	-2	-0.684931507
Southern	Nyanza	Nyagisozi	294	294	0	0

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Northern	Rulindo	Rukozo	295	295	0	0
Northern	Musanze	Kinigi	2968	2936	-32	-1.089918256
Northern	Rulindo	Murambi	297	297	0	0
Southern	Gisagara	Gikonko	299	298	-1	-0.33557047
Western	Nyabihu	Shyira	299	299	0	0
Southern	Huye	Maraba	301	301	0	0
Southern	Muhanga	Mushishiro	303	303	0	0
Eastern	Ngoma	Jarama	3032	2090	-942	-45.07177033
Northern	Gakenke	Kamubuga	304	303	-1	-0.330033003
Northern	Musanze	Gashaki	305	291	-14	-4.810996564
Eastern	Bugesera	Kamabuye	3062	3062	0	0
Western	Rusizi	Kamembe	308	306	-2	-0.653594771
Kigali City	Gasabo	Bumbogo	318	318	0	0
Southern	Kamonyi	Kayumbu	324	323	-1	-0.309597523
Southern	Huye	Ngoma	325	318	-7	-2.201257862
Eastern	Bugesera	Mayange	3250	3240	-10	-0.308641975
Southern	Huye	Huye	327	327	0	0
Kigali City	Gasabo	Gikomero	329	328	-1	-0.304878049
Eastern	Kirehe	Mpanga	3293	2880	-413	-14.34027778
Southern	Nyamagabe	Nkomane	3294	3294	0	0
Southern	Nyanza	Busasamana	33	28	-5	-17.85714286
Western	Nyabihu	Rugera	330	330	0	0
Southern	Nyaruguru	Rusenge	333	333	0	0
Southern	Nyamagabe	Kamegeri	336	336	0	0
Western	Nyamasheke	Karengera	3374	3371	-3	-0.088994364
Eastern	Rwamagana	Fumbwe	340	340	0	0
Southern	Ruhango	Kinazi	340	312	-28	-8.974358974
Kigali City	Kicukiro	Kanombe	346	330	-16	-4.848484848
Western	Rusizi	Muganza	350	349	-1	-0.286532951
Northern	Burera	Butaro	351	348	-3	-0.862068966
Western	Karongi	Gashari	352	352	0	0
Eastern	Kayonza	Gahini	3533	3532	-1	-0.028312571
Kigali City	Gasabo	Jabana	359	357	-2	-0.56022409
Northern	Musanze	Busogo	367	360	-7	-1.944444444
Eastern	Bugesera	Nyarugenge	370	363	-7	-1.928374656
Southern	Muhanga	Nyamabuye	370	370	0	0
Southern	Nyaruguru	Munini	370	370	0	0
Southern	Muhanga	Cyeza	374	373	-1	-0.268096515
Southern	Nyamagabe	Tare	374	373	-1	-0.268096515
Northern	Burera	Kivuye	375	373	-2	-0.536193029
Northern	Musanze	Nkotsi	376	376	0	0
Eastern	Nyagatare	Rukomo	380	379	-1	-0.263852243
Southern	Ruhango	Byimana	380	380	0	0
Kigali City	Gasabo	Jali	381	381	0	0
Western	Ngororero	Ndaro	381	381	0	0
Western	Nyamasheke	Karambi	3828	3822	-6	-0.156985871

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Southern	Kamonyi	Rugarika	385	383	-2	-0.522193211
Eastern	Kirehe	Gahara	3851	3731	-120	-3.216295899
Western	Nyamasheke	Ruharambuga	3852	3847	-5	-0.129971406
Eastern	Bugesera	Ruhuha	394	393	-1	-0.254452926
Northern	Gakenke	Muyongwe	397	397	0	0
Eastern	Bugesera	Shyara	403	384	-19	-4.947916667
Southern	Nyamagabe	Kitabi	4075	4068	-7	-0.17207473
Northern	Burera	Rusarabuye	410	396	-14	-3.535353535
Northern	Gakenke	Mugunga	411	410	-1	-0.243902439
Western	Rubavu	Mudende	411	407	-4	-0.982800983
Southern	Nyanza	Ntyazo	412	399	-13	-3.258145363
Western	Rubavu	Cyanzarwe	414	404	-10	-2.475247525
Southern	Nyamagabe	Uwinkingi	4180	4173	-7	-0.167745028
Southern	Nyamagabe	Musebeya	420	420	0	0
Southern	Nyaruguru	Ruheru	4224	4216	-8	-0.189753321
Northern	Rulindo	Ntarabana	424	424	0	0
Kigali City	Gasabo	Nduba	427	427	0	0
Southern	Nyaruguru	Muganza	4285	4284	-1	-0.02334267
Northern	Rulindo	Cyinzuzi	429	429	0	0
Eastern	Nyagatare	Rwimiyaga	4339	4321	-18	-0.416570238
Kigali City	Gasabo	Ndera	438	438	0	0
Kigali City	Gasabo	Gisozi	44	43	-1	-2.325581395
Eastern	Nyagatare	Tabagwe	441	433	-8	-1.847575058
Eastern	Gatsibo	Gasange	447	444	-3	-0.675675676
Northern	Gicumbi	Shangasha	448	448	0	0
Northern	Rulindo	Bushoki	450	449	-1	-0.222717149
Northern	Rulindo	Mbogo	452	451	-1	-0.22172949
Northern	Gicumbi	Miyove	454	452	-2	-0.442477876
Western	Rubavu	Bugeshi	456	433	-23	-5.311778291
Southern	Gisagara	Muganza	459	448	-11	-2.455357143
Western	Rutsiro	Manihira	465	463	-2	-0.431965443
Northern	Rulindo	Tumba	471	470	-1	-0.212765957
Southern	Huye	Simbi	48	47	-1	-2.127659574
Southern	Huye	Tumba	48	48	0	0
Southern	Gisagara	Kigembe	480	479	-1	-0.208768267
Northern	Burera	Rwerere	485	472	-13	-2.754237288
Western	Rutsiro	Rusebeya	487	486	-1	-0.205761317
Northern	Rulindo	Rusiga	487	487	0	0
Northern	Gakenke	Mataba	490	485	-5	-1.030927835
Western	Karongi	Mubuga	498	497	-1	-0.201207243
Kigali City	Gasabo	Rutunga	505	504	-1	-0.198412698
Western	Rubavu	Rubavu	505	497	-8	-1.609657948
Kigali City	Nyarugenge	Kanyinya	508	503	-5	-0.994035785
Northern	Gakenke	Kivuruga	509	507	-2	-0.394477318
Kigali City	Gasabo	Kinyinya	51	51	0	0
Northern	Burera	Ruhunde	511	509	-2	-0.392927308

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Southern	Gisagara	Gishubi	513	508	-5	-0.984251969
Eastern	Gatsibo	Remera	517	517	0	0
Northern	Gakenke	Gashenyi	518	518	0	0
Western	Ngororero	Hindiro	52	51	-1	-1.960784314
Eastern	Bugesera	Rweru	5229	4223	-1006	-23.82192754
Kigali City	Kicukiro	Gahanga	524	477	-47	-9.853249476
Northern	Rulindo	Base	525	525	0	0
Northern	Gicumbi	Byumba	527	527	0	0
Western	Rubavu	Nyakiriba	528	521	-7	-1.343570058
Eastern	Gatsibo	Kabarore	5352	5346	-6	-0.112233446
Western	Rutsiro	Murunda	537	534	-3	-0.561797753
Northern	Rulindo	Kinihira	537	537	0	0
Northern	Burera	Gatebe	539	530	-9	-1.698113208
Kigali City	Nyarugenge	Nyamirambo	54	54	0	0
Northern	Gakenke	Cyabingo	54	54	0	0
Northern	Gicumbi	Kageyo	545	545	0	0
Northern	Burera	Gitovu	546	520	-26	-5
Western	Karongi	Ruganda	550	550	0	0
Western	Nyamasheke	Rangiro	5533	5530	-3	-0.054249548
Southern	Muhanga	Nyarusange	554	552	-2	-0.362318841
Western	Rubavu	Rugerero	563	557	-6	-1.077199282
Northern	Gicumbi	Bukure	565	563	-2	-0.355239787
Southern	Huye	Karama	566	566	0	0
Western	Karongi	Gishyita	570	562	-8	-1.423487544
Northern	Burera	Kagogo	574	563	-11	-1.953818828
Western	Ngororero	Sovu	59	59	0	0
Southern	Kamonyi	Rukoma	590	590	0	0
Southern	Nyamagabe	Kaduha	601	601	0	0
Northern	Rulindo	Ngoma	601	601	0	0
Eastern	Gatsibo	Muhura	607	607	0	0
Western	Rusizi	Bugarama	607	607	0	0
Northern	Gakenke	Rusasa	608	606	-2	-0.330033003
Southern	Huye	Rwaniro	61	61	0	0
Kigali City	Nyarugenge	Kigali	610	608	-2	-0.328947368
Northern	Rulindo	Kisaro	610	609	-1	-0.164203612
Southern	Kamonyi	Mugina	612	548	-64	-11.67883212
Southern	Gisagara	Mukindo	619	617	-2	-0.324149109
Northern	Burera	Nemba	623	622	-1	-0.160771704
Northern	Gicumbi	Mukarange	627	627	0	0
Western	Karongi	Rubengera	627	622	-5	-0.803858521
Eastern	Nyagatare	Karangazi	6318	5997	-321	-5.352676338
Northern	Musanze	Gacaca	651	639	-12	-1.877934272
Eastern	Nyagatare	Rwempasha	654	652	-2	-0.306748466
Southern	Nyanza	Busoro	656	565	-91	-16.10619469
Eastern	Rwamagana	Gishali	659	659	0	0
Northern	Gicumbi	Rwamiko	660	660	0	0

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Northern	Musanze	Kimonyi	677	670	-7	-1.044776119
Western	Nyabihu	Kintobo	677	651	-26	-3.993855607
Northern	Musanze	Cyuve	685	669	-16	-2.391629297
Southern	Huye	Mukura	69	69	0	0
Southern	Nyaruguru	Nyabimata	6952	6951	-1	-0.014386419
Western	Nyamasheke	Bushekeri	6955	6903	-52	-0.753295669
Southern	Kamonyi	Ngamba	697	689	-8	-1.161103048
Southern	Nyanza	Kibilizi	698	679	-19	-2.798232695
Southern	Muhanga	Rugendabari	700	698	-2	-0.286532951
Western	Rubavu	Nyamyumba	707	690	-17	-2.463768116
Eastern	Gatsibo	Kageyo	708	706	-2	-0.283286119
Northern	Burera	Kinoni	709	699	-10	-1.430615165
Northern	Gicumbi	Giti	711	711	0	0
Northern	Burera	Rugengabari	716	711	-5	-0.70323488
Kigali City	Gasabo	Gatsata	72	72	0	0
Southern	Huye	Kinazi	72	71	-1	-1.408450704
Eastern	Kayonza	Ruramira	721	721	0	0
Eastern	Gatsibo	Murambi	722	715	-7	-0.979020979
Western	Rutsiro	Boneza	724	703	-21	-2.987197724
Western	Rubavu	Busasamana	726	714	-12	-1.680672269
Eastern	Rwamagana	Munyiginya	729	729	0	0
Western	Rutsiro	Kivumu	731	697	-34	-4.87804878
Western	Karongi	Mutuntu	732	732	0	0
Eastern	Gatsibo	Kiramuruzi	734	728	-6	-0.824175824
Southern	Nyamagabe	Mugano	735	734	-1	-0.136239782
Western	Rubavu	Kanzenze	735	731	-4	-0.547195622
Southern	Nyaruguru	Kivu	7371	7366	-5	-0.067879446
Southern	Gisagara	Ndora	74	74	0	0
Eastern	Gatsibo	Kiziguro	751	747	-4	-0.535475234
Southern	Kamonyi	Runda	752	736	-16	-2.173913043
Northern	Burera	Rugarama	760	757	-3	-0.396301189
Kigali City	Gasabo	Rusororo	760	756	-4	-0.529100529
Western	Nyabihu	Mukamira	761	736	-25	-3.39673913
Eastern	Bugesera	Rilima	764	668	-96	-14.37125749
Southern	Nyamagabe	Mbazi	77	77	0	0
Eastern	Kayonza	Rwinkwavu	771	769	-2	-0.260078023
Northern	Musanze	Musanze	786	774	-12	-1.550387597
Eastern	Bugesera	Mwogo	789	699	-90	-12.87553648
Eastern	Kayonza	Mukarange	790	790	0	0
Eastern	Rwamagana	Musha	794	789	-5	-0.633713561
Northern	Burera	Kinyababa	798	776	-22	-2.835051546
Southern	Ruhango	Ruhango	80	80	0	0
Southern	Nyamagabe	Cyanika	80	80	0	0
Northern	Rulindo	Shyrongi	813	799	-14	-1.752190238
Northern	Gicumbi	Nyamiyaga	818	818	0	0
Southern	Muhanga	Kibangu	822	819	-3	-0.366300366

Provinces	Districts	Sectors	FC 2015 (ha)	FC 2019 (ha)	AD (ha)	RD (%)
Western	Nyamasheke	Gihombo	825	817	-8	-0.979192166
Western	Nyabihu	Karago	828	815	-13	-1.595092025
Western	Ngororero	Kabaya	84	84	0	0
Western	Rutsiro	Mushubati	841	838	-3	-0.357995227
Western	Nyamasheke	Macuba	858	848	-10	-1.179245283
Southern	Nyamagabe	Buruhukiro	8593	8591	-2	-0.023280177
Southern	Huye	Mbazi	86	86	0	0
Northern	Gakenke	Minazi	860	851	-9	-1.057579318
Eastern	Kirehe	Nyarubuye	866	866	0	0
Southern	Gisagara	Mamba	871	806	-65	-8.064516129
Eastern	Nyagatare	Mimuri	885	885	0	0
Western	Karongi	Rugabano	887	880	-7	-0.795454545
Kigali City	Gasabo	Remera	9	9	0	0
Kigali City	Nyarugenge	Nyarugenge	9	9	0	0
Eastern	Kayonza	Nyamirama	901	901	0	0
Western	Nyamasheke	Cyato	9049	9045	-4	-0.044223328
Northern	Gicumbi	Rutare	908	906	-2	-0.220750552
Western	Nyamasheke	Kirimbi	909	901	-8	-0.887902331
Western	Rusizi	Nkanka	910	908	-2	-0.220264317
Eastern	Kayonza	Mwiri	9100	8787	-313	-3.562080346
Kigali City	Kicukiro	Kagarama	92	91	-1	-1.098901099
Western	Nyabihu	Bigogwe	933	929	-4	-0.430570506
Eastern	Kayonza	Murundi	9335	8964	-371	-4.138777332
Southern	Ruhango	Ntongwe	94	94	0	0
Eastern	Rwamagana	Gahengeri	940	939	-1	-0.106496273
Southern	Muhanga	Kiyumba	941	936	-5	-0.534188034
Northern	Gakenke	Muzo	946	942	-4	-0.42462845
Eastern	Bugesera	Ntarama	946	890	-56	-6.292134831
Southern	Kamonyi	Gacurabwenge	95	95	0	0
Northern	Gicumbi	Kaniga	955	954	-1	-0.104821803
Northern	Burera	Bungwe	97	97	0	0
Western	Karongi	Bwishyura	972	968	-4	-0.41322314
Northern	Gicumbi	Muko	979	979	0	0
Western	Rutsiro	Gihango	982	971	-11	-1.132852729
Southern	Kamonyi	Kayenzi	983	975	-8	-0.820512821
Southern	Nyaruguru	Ruramba	988	976	-12	-1.229508197
Eastern	Nyagatare	Nyagatare	997	995	-2	-0.201005025

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