

DRAFT



LAND COVER ATLAS OF

# FOUTA DJALLON

HIGHLANDS

& its Physical Extension  
to the Coast





**LAND COVER ATLAS OF**

---

**FOUTA  
DJALLON**

---

**HIGHLANDS**

**& its Physical Extension  
to the Coast**

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned. The views expressed in this information product are those of the author(s) and do not necessarily reflect the views of FAO.

The designations employed and the presentation of material in the map(s) do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

The word “countries” appearing in the text refers to countries, territories and areas without distinction.

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged.

Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders.

Applications for such permission should be addressed to:

John S. Latham  
Senior Land and Water Officer (Geospatial)  
NRL - UN/FAO

FAO  
Viale delle Terme di Caracalla, 00153 Rome, Italy  
or by e-mail to:  
copyright@fao.org  
© FAO December 2012



## LAND COVER MAPPING

The Fouta Djallon Highlands (FDH) have a rich natural environment and important ecosystems. Over the last decades, a number of growing threats have been contributing to the decline of its natural values. Land cover assessment and monitoring of its dynamics are essential requirements for the sustainable management of natural resources and for environmental protection. Land cover is the easiest detectable indicator that changes rapidly over time and can be used to monitor the human interventions on the land.

The FAO, Land and Water Division has applied FAO methodologies and FAO/ISO standards to produce a harmonised land cover database of the FDH area for 2010. Following are the essential characteristics of this product:

1. Mapped about 400,000 km<sup>2</sup> covering 5 countries: Guinea, Guinea-Bissau, Mali, Senegal and Sierra Leone;
2. Satellite images (mostly 2007-2010 ASTER, Landsat where gaps detected) were used as primary source data, generating a dataset at 1:100,000 scale;
3. Legend with 47 land cover classes based on the FAO's Land Cover Classification System;
4. The database shows that almost 85% of the area is covered by natural vegetation: 58% trees (NVT), 18% herbaceous (NVH) and 8% shrubs (NVS); agriculture (AG) is represented with 14%, while bare soil (BS), urban areas (URB) and water bodies (WAT) cover the remaining area.

## LAND COVER CHANGE

Detection of hot spots of rapidly changing land cover is an effective input for national reporting and planning remedial measures.

With FAO's standard methodologies and tools and the global availability of free Landsat imagery since 1970, the land cover change detection has become more accurate and cost effective.

For the FDH area, a land cover change detection has been performed for the last 20 years. Following are the essential characteristics of this product:

1. 1990 and 2008 Landsat images were compared to detect changes of land covers;
2. Major classes of land cover for which changes are evaluated are: closed forest, urban and agricultural areas;
3. Most land cover changes occur from natural vegetation (NV, -84%) to agriculture (AG, +82%). The changes are quite distributed in the whole area, but hot spots of concentrated changes are identified in Guinea-Bissau, Sierra Leone and Mali;
4. Cloud cover, as well as different seasonality, might have interfered in the change detection for certain areas.

## CARTOGRAPHIE DU COUVERT VÉGÉTAL

*Le massif du Fouta Djallon (MFD) possède un environnement naturel riche et des écosystèmes importants. Au cours des décennies écoulées, un nombre croissant de menaces a contribué au déclin de ses valeurs naturelles. L'évaluation du couvert végétal et le suivi de sa dynamique sont essentiels à la gestion durable des ressources naturelles et à la protection de l'environnement. Le couvert végétal est l'indicateur le plus facilement détectable; il évolue rapidement au fil du temps et peut servir à surveiller les interventions humaines sur les terres.*

*La Division des terres et des eaux de la FAO a appliqué les méthodologies de l'Organisation et les normes FAO/ISO pour produire une base de données harmonisée sur le couvert végétal de la zone du MFD relative à 2010. Ci-dessous figurent les caractéristiques essentielles de ce produit:*

1. Cartographie de 400 000 km<sup>2</sup> environ couvrant cinq pays: Guinée, Guinée-Bissau, Mali, Sénégal et Sierra Leone;
2. Des images satellitaires (2007-2010 ASTER principalement, Landsat en cas de lacunes) ont été utilisées comme source primaire de données créant un ensemble de données à l'échelle 1:100 000;
3. Légende comprenant 47 classes de couvert végétal basées sur le système de classification du couvert végétal de la FAO;
4. La base de données montre que près de 85 % de la zone sont recouverts par la végétation naturelle: 58% d'arbres (NVT), 18% d'herbages (NVH) et 8% de broussailles (NVS); l'agriculture (AG) représente 14 % alors que les sols nus (BS), les zones urbaines (URB) et les masses d'eau (WAT) occupent la zone restante.

## CHANGEMENT DU COUVERT VÉGÉTAL

*La détection des points chauds du couvert végétal en évolution rapide est une contribution efficace à la préparation des rapports nationaux et à la planification des mesures correctives.*

*Grâce aux méthodologies et outils normalisés de la FAO et à la disponibilité mondiale gratuite de l'imagerie satellitaire Landsat prise depuis 1970, la détection du changement du couvert végétal s'est faite plus exacte et rentable.*

*Pour la zone du MFD, une détection du changement du couvert végétal a été conduite pendant les 20 dernières années. Ci-dessous figurent les caractéristiques essentielles de ce produit:*

1. Les images Landsat pour 1990 et 2008 ont été comparées pour détecter des changements des couverts végétaux;
2. Les grandes classes de couvert végétal pour lesquelles les changements sont évalués sont: la forêt dense, et les zones urbaines et agricoles;
3. La plupart des changements du couvert végétal sont dus au passage de la végétation naturelle (NV, -84%) à l'agriculture (AG, + 82%). Les changements sont largement répartis dans toute la zone mais des points chauds de changements concentrés sont identifiés en Guinée-Bissau, au Sierra Leone et au Mali.
4. La couverture nuageuse, ainsi que la saisonnalité différente, pourrait avoir entravé la détection du changement dans certaines zones.

# LAND COVER CLASSES

AGG <sup>1</sup>	LCCS LABEL
AG	Large to Medium (→2 ha) Tree crops - Crop Cover: Orchrd(s)
AG	Small (←2 ha) Tree crops - Orchard(s)
AG	Rainfed Broadleaved Evergreen Tree Crop(s). Dominant Crop: Coconut Palm (Cocos nucifera L.)
AG	Rainfed Tree Plantation(s)
AG	Large to Medium size (→2ha) field(s) of Rainfed Shrub Crop(s)
AG	Small Sized Field(s) (←2ha) Of Rainfed Shrub Crop(s)
AG	Scattered Isolated Small Sized Field(s) Of Rainfed Shrub Crop(s)
AG	Large to Medium (→2 ha) Irrigated Herbaceous crops
AG	Small (←2 ha) Irrigated Herbaceous crops
AG	Large to Medium (→2 ha) Rainfed Herbaceous crops
AG	Small (←2 ha) Rainfed Herbaceous crops
AG	Small (←2 ha) Rainfed Herbaceous crops - Isolated (10-20%)
AG	Shifting Cultivation Of Herbaceous Crops
AG	Small (←2 ha) Post Flooding Herbaceous crops.
AG	Post Flooding Cultivation OF Scattered Isolated Small Sized Field(s) Of Herbaceous Crop(s)
AG	Small sized herbaceous rainfed fields, often limited by woody hedgerow, with scattered rural houses forming a village
AG	Large to Medium (→2 ha) Rice crops, in rotation with mais and other herbaceous crops.
AG	Small (←2 ha) Rice crops .
NVT	Closed (→65%) Broadleaved DeciduousTrees
NVT	Open Trees (Woodland)


AGG <sup>1</sup>	LCCS LABEL
NVT	Closed to Open (100-40)% Broadleaved Evergreen Trees. Floristic Aspect: Palm Trees (Generical)
NVT	Very Open (40-15%) Broadleaved Evergreen Trees. Floristic Aspect: Palm Trees (Generical)
NVT	Closed to open trees - Gallery forest
NVT	Close to Open (100-40%)Trees On Permanently Flooded Land
NVT	Closed to Open (100-40)% Trees On Temporarily Flooded Land.
NVT	Closed to Open (40-100%) Mangrove Shrubs in Brackish Water.
NVS	Closed (→65%) Broadleaved Deciduous Thicket with Sparse (←15%) Emergents
NVS	Open Medium To High Shrubs (Shrubland)
NVS	Closed to Open (100-15%) Shrubs On Permanently (→4 months) Flooded Land
NVS	Closed to Open (15-100%) Shrubs temporarily (2-4 months) flooded.
NVH	Closed to Open (40-100%) Herbaceous vegetation with Sparse (4-15%) Trees and Shrubs.
NVH	Sparse (←15%) Herbaceous Vegetation
NVH	Closed to Open (40-100%) Herbaceous vegetation permanently (→ 4 months) flooded with brackish water.
NVH	Closed (65-100%) Herbaceous vegetation permanently (→ 4 months) flooded.
NVH	Closed to Open (40-100%) Herbaceous vegetation temporarily (2-4 months) flooded.
URB	Airport
URB	Mines and Quarries
URB	Port
URB	Urban Area(s)
URB	Rural Settlement
BS	Bare Soil


AGG <sup>1</sup>	LCCS LABEL
BS	Ironpan/Laterite Crust(s) - Bowal
BS	Gravels, Stones And/Or Boulders - River bank and Rock Debris
BS	Bare Rock And/Or Coarse Fragments
WAT	Artificial Lake
WAT	Flowing Fresh water perrennial (→ 4 months) - River
WAT	Standing Fresh water perennial (→ 4 months). Lake
WAT	Tidal Area


<sup>1</sup> AGG: aggregated class


# LEGEND


## Administrative Boundaries & Roads

- 

Populated places
- 

International boundary
- 

Pilot sites
- 

River/water stream
- 

Hydrological basins and/or sub-basins

## Land Cover

	AG	AGRICULTURE
	BS	BARE SOILS
	NVH	NATURAL VEGETATION HERBACEOUS CLOSED TO OPEN
	NVS	NATURAL VEGETATION SHRUBS CLOSED TO OPEN
	NVT	NATURAL VEGETATION TREES CLOSED TO OPEN
	URB	URBAN AREAS
	WAT	WATERBODIES

# LAND COVER DISTRUBUTION

## BY COUNTRY

### FOUTA DJALLON HIGHLANDS

Class		GUINEA (km²)	GUINEA-BISSAU (km²)	MALI (km²)	SENEGAL (km²)	SIERRA LEONE (km²)	TOTAL (km²)	%
	Agriculture	32,078.16	1,879.64	13,245.00	2,132.56	5,292.45	54,627.82	14.06
	Bare soils	1,812.37	13.79	1,031.13	156.97	333.27	3,347.54	0.86
	Herbaceous	45,387.58	1,454.59	15,491.56	2,453.17	4,886.92	69,673.82	17.94
	Shrubs	14,588.86	422.75	7,404.77	7,267.77	1,048.05	30,732.20	7.91
	Trees	129,687.30	9,371.65	48,826.03	14,676.67	23,199.15	225,760.81	58.12
	Urban areas	880.88	63.29	459.68	38.07	117.22	1,559.13	0.40
	Waterbodies	1,188.31	101.01	1,186.52	94.39	188.40	2,758.64	0.71
Total area		225,623.46	13,306.73	87,644.70	26,819.60	35,065.47	388,459.96	100

## BY LOCAL ADMINISTRATIVE UNIT

### GUINEA

Admin 1 <sup>st</sup> level	Admin 2 <sup>nd</sup> level	AGRICULTURE (km²)	BARE SOILS (km²)	HERBACEOUS (km²)	SHRUBS (km²)	TREES (km²)	URBAN AREAS (km²)	WATERBODIES (km²)	TOTAL LAND (km²)
N'Zerekore	Beyla	1,677.12	0.00	2,106.78	9.15	6,427.67	18.09	7.96	10,246.77
Boke	Boffa	922.99	22.84	409.47	1,242.22	2,493.30	9.85	148.30	5,248.96
Boke	Boke	1,667.21	35.93	1,926.67	711.14	6,073.86	69.58	194.14	10,678.53
Kindia	Coyah	253.37	99.87	68.04	259.52	415.41	36.37	13.78	1,146.37
Faranah	Dabola	1,412.44	20.37	546.25	96.84	3,091.07	12.68	1.46	5,181.11
Mamou	Dalaba	823.31	0.46	744.64	197.40	1,296.16	7.16	33.67	3,102.80
Faranah	Dinguiraye	891.40	11.15	3,258.55	74.09	7,173.61	5.00	42.18	11,456.00
Conakry	Dixinn	1.74	0.00	0.00	0.00	0.34	26.73	0.00	28.81
Kindia	Dubreka	499.67	298.88	235.71	1,299.73	1,557.47	37.77	59.48	3,988.71

## GUINEA

Admin 1 <sup>st</sup> level	Admin 2 <sup>nd</sup> level	AGRICULTURE (km²)	BARE SOILS (km²)	HERBACEOUS (km²)	SHRUBS (km²)	TREES (km²)	URBAN AREAS (km²)	WATERBODIES (km²)	TOTAL LAND (km²)
Faranah	Faranah	1,954.88	24.49	1,376.54	304.07	9,150.94	35.86	28.30	12,875.08
Kindia	Forecariah	1,168.95	51.52	326.09	637.42	1,869.20	15.19	131.29	4,199.65
Kindia	Fria	182.43	0.00	401.74	396.88	583.36	13.77	9.10	1,587.28
Boke	Gaoual	914.21	238.06	2,268.80	1,340.65	6,437.90	4.40	35.33	11,239.34
N'Zerekore	Gueckedou	361.06	1.80	1,093.90	0.00	2,026.59	16.42	14.00	3,513.78
Conakry	Kaloum	0.38	0.30	0.13	0.00	9.33	26.29	0.34	36.78
Kankan	Kankan	1,620.92	3.59	4,766.78	114.31	10,703.38	46.08	43.05	17,298.11
Kankan	Kerouane	778.89	9.47	2,559.14	122.89	5,839.89	40.48	14.03	9,364.81
Kindia	Kindia	1,695.02	348.62	1,166.48	1,016.61	4,447.09	54.37	81.72	8,809.92
Faranah	Kissidougou	652.10	0.00	1,441.17	0.00	4,059.23	25.82	6.42	6,184.75
Labe	Koubia	589.47	15.89	844.90	274.61	1,817.75	1.77	3.32	3,547.71
Boke	Koundara	897.09	123.04	855.20	572.98	2,815.47	10.91	13.44	5,288.14
Kankan	Kouroussa	1,582.78	132.19	3,333.48	101.33	10,519.77	30.34	62.88	15,762.77
Labe	Labe	539.14	0.00	331.75	261.81	933.54	45.56	0.42	2,112.22
Labe	Lelouma	525.47	26.02	360.17	477.89	1,321.14	11.07	4.72	2,726.48
N'Zerekore	Lola	2.49	0.00	57.03	0.00	229.41	0.22	0.00	289.16
N'Zerekore	Macenta	78.08	30.56	761.45	2.35	2,818.41	5.56	1.79	3,698.20
Labe	Mali	910.43	23.07	1,338.34	2,122.99	3,955.55	7.46	11.83	8,369.66
Mamou	Mamou	2,333.73	48.63	1,376.73	271.82	6,115.01	35.71	21.85	10,203.48
Kankan	Mandiana	1,890.50	18.32	3,504.11	27.79	5,870.21	18.61	54.78	11,384.34
Conakry	Matam	0.00	0.00	0.00	0.00	2.94	13.15	1.41	17.50
Conakry	Matoto	20.56	0.00	0.00	0.18	124.62	16.41	23.21	184.97
Mamou	Pita	919.38	116.28	601.12	1,020.64	1,799.37	26.46	27.12	4,510.37
Conakry	Ratoma	48.57	0.00	0.00	0.00	26.90	63.91	3.48	142.86
Kankan	Siguir	2,636.80	55.31	3,686.26	476.33	10,653.89	70.85	57.61	17,637.04
Kindia	Telemele	1,014.73	53.03	1,422.63	1,018.86	4,011.51	20.61	23.33	7,564.70
Labe	Tougue	610.86	2.70	2,217.50	136.35	3,016.00	0.34	12.55	5,996.30
<b>TOTAL</b>		<b>32,078.16</b>	<b>1,812.37</b>	<b>45,387.58</b>	<b>14,588.86</b>	<b>129,687.30</b>	<b>880.88</b>	<b>1,188.31</b>	<b>225,623.46</b>

GUINEA-BISSAU

Admin 1 <sup>st</sup> level	Admin 2 <sup>nd</sup> level	AGRICULTURE (km²)	BARE SOILS (km²)	HERBACEOUS (km²)	SHRUBS (km²)	TREES (km²)	URBAN AREAS (km²)	WATERBODIES (km²)	TOTAL LAND (km²)
Bafata	Bafata	269.75	0.00	30.09	22.04	318.78	12.01	7.04	659.71
Tombali	Bedanda	8.27	0.00	0.00	0.82	15.07	0.00	0.00	24.16
Gabu	Boe	37.16	1.99	966.73	110.98	1,973.49	0.07	32.00	3,122.41
Quinara	Buba	35.61	0.00	12.33	1.03	249.45	0.22	15.01	313.65
Tombali	Cacine	31.28	0.00	0.16	2.36	85.86	0.00	7.21	126.87
Bafata	Contuboel	131.82	0.00	1.47	25.34	623.48	7.12	2.58	791.81
Quinara	Fulacunda	0.04	0.00	0.00	0.00	0.04	0.00	0.24	0.32
Gabu	Gabu	321.05	9.31	150.24	75.86	1,652.18	12.16	5.44	2,226.24
Bafata	Galomaro/cosse	52.66	0.00	4.85	0.00	307.64	4.89	0.00	370.05
Bafata	Gamamudo/ga-nadu	60.76	0.00	1.00	15.23	167.91	3.67	0.82	249.40
Gabu	Pirada	220.75	0.00	15.03	1.70	754.66	3.30	0.81	996.26
Gabu	Pitche	308.12	2.50	72.68	124.91	1,444.67	1.79	4.70	1,959.38
Tombali	Quebo	55.33	0.00	43.78	0.00	471.26	1.09	5.78	577.24
Gabu	Sonaco	231.78	0.00	11.21	17.12	525.44	13.11	2.91	801.57
Bafata	Xitole	115.25	0.00	145.02	25.37	781.73	3.85	16.46	1,087.68
TOTAL		1,879.64	13.79	1,454.59	422.75	9,371.65	63.29	101.01	13,306.73

MALI

Admin 1 <sup>st</sup> level	Admin 2 <sup>nd</sup> level	AGRICULTURE (km²)	BARE SOILS (km²)	HERBACEOUS (km²)	SHRUBS (km²)	TREES (km²)	URBAN AREAS (km²)	WATERBODIES (km²)	TOTAL LAND (km²)
Kayes	Bafoulabe	706.65	312.62	514.87	333.46	5,497.22	12.90	465.52	7,843.24
Sikasso	Bougouni	187.43	0.00	175.06	2.65	446.37	1.91	24.80	838.23
Bamako	Commune 1	5.49	0.94	1.05	1.35	0.15	22.53	3.30	34.81
Bamako	Commune 2	0.89	0.11	0.69	0.39	0.12	12.87	3.39	18.47
Bamako	Commune 3	0.21	0.00	0.77	0.00	4.41	13.44	0.90	19.73
Bamako	Commune 4	4.30	0.00	1.51	0.06	4.33	23.53	4.98	38.70
Bamako	Commune 5	4.58	0.04	0.36	0.42	0.35	32.50	3.07	41.32
Bamako	Commune 6	30.28	1.69	4.72	3.87	0.00	51.08	0.53	92.16
Koulikoro	Kangaba	942.80	25.15	902.78	715.79	2,239.35	8.57	24.03	4,858.46
Koulikoro	Kati	3,056.54	47.12	2,363.05	951.17	6,144.70	121.54	95.65	12,779.77
Kayes	Kayes	1,029.34	399.36	1,907.73	2,820.20	5,279.71	53.95	75.37	11,565.68
Kayes	Kenieba	1,117.91	160.48	3,033.13	1,187.18	9,595.87	28.17	41.95	15,164.69
Kayes	Kita	2,995.95	67.35	4,303.11	448.61	14,551.84	53.63	56.98	22,477.46
Koulikoro	Kolokani	1,135.26	4.43	381.16	502.35	982.66	1.00	14.39	3,021.25
Koulikoro	Koulikoro	747.82	10.00	194.60	432.11	1,053.04	3.71	18.11	2,459.39
Sikasso	Yanfolila	1,279.53	1.84	1,706.96	5.18	3,025.91	18.36	353.55	6,391.33
TOTAL		13,245.00	1,031.13	15,491.56	7,404.77	48,826.03	459.68	1,186.52	87,644.70



## SENEGAL

Admin 1 <sup>st</sup> level	Admin 2 <sup>nd</sup> level	AGRICULTURE (km²)	BARE SOILS (km²)	HERBACEOUS (km²)	SHRUBS (km²)	TREES (km²)	URBAN AREAS (km²)	WATERBODIES (km²)	TOTAL LAND (km²)
Tambacounda	Bakel	34.53	20.69	53.24	409.84	726.91	0.23	1.76	1,247.21
Tambacounda	Kedougou	911.47	132.03	1,943.79	4,776.58	8,828.14	12.79	33.32	16,638.12
Kolda	Kolda	250.67	0.00	12.71	95.74	474.77	2.53	3.49	839.90
Tambacounda	Tambacounda	51.62	3.68	339.85	1,229.67	2,314.32	0.00	11.96	3,951.11
Kolda	Velingara	884.27	0.57	103.59	755.93	2,332.53	22.52	43.85	4,143.26
TOTAL		2,132.56	156.97	2,453.17	7,267.77	14,676.67	38.07	94.39	26,819.60

## SIERRA LEONE

Admin 1 <sup>st</sup> level	Admin 2 <sup>nd</sup> level	AGRICULTURE (km²)	BARE SOILS (km²)	HERBACEOUS (km²)	SHRUBS (km²)	TREES (km²)	URBAN AREAS (km²)	WATERBODIES (km²)	TOTAL LAND (km²)
Southern	Bo	42.80	0.00	0.00	0.00	102.55	0.20	0.74	146.29
Northern	Bombali	1,352.71	42.37	971.67	254.94	5,346.21	20.98	40.16	8,029.03
Eastern	Kailahun	0.52	0.00	0.31	0.00	8.45	0.00	0.00	9.28
Northern	Kambia	809.27	0.00	76.66	440.35	1,112.19	5.76	37.69	2,481.92
Eastern	Kenema	42.04	0.00	1.60	0.00	177.72	0.57	3.04	224.97
Northern	Koinadugu	928.48	168.66	1,727.06	89.53	9,635.38	11.97	26.33	12,587.42
Eastern	Kono	517.07	28.12	988.19	15.58	3,039.13	48.50	13.78	4,650.36
Southern	Moyamba	3.79	0.00	4.58	0.00	12.73	0.00	0.42	21.53
Northern	Port Loko	472.59	0.00	150.42	110.76	1,126.19	1.73	34.00	1,895.70
Northern	Tonkolili	1,123.18	94.13	966.42	136.89	2,638.61	27.53	32.23	5,018.98
TOTAL		5,292.45	333.27	4,886.92	1,048.05	23,199.15	117.22	188.40	35,065.47

## BY BASIN

### GAMBIA SUB-BASIN

Class	km²	%
Agriculture	2,483.6	8.9
Bare soils	203.9	0.7
Herbaceous	3,673.7	13.1
Shrubs	7,203.9	25.7
Trees	14,385.4	51.3
Urban areas	21.8	0.1
Waterbodies	57.8	0.2
Total area	28,030.0	100

### NIGER

Class	km²	%
Agriculture	18,000.8	15.3
Bare soils	331.5	0.3
Herbaceous	25,855.1	21.9
Shrubs	2,870.1	2.4
Trees	69,473.9	58.9
Urban areas	582.0	0.5
Waterbodies	815.2	0.7
Total area	117,928.5	100

### SENEGAL

Class	km²	%
Agriculture	12,252.7	11.8
Bare soils	1,057.7	1.0
Herbaceous	19,861.9	19.1
Shrubs	8,427.2	8.1
Trees	61,230.7	59.0
Urban areas	207.6	0.2
Waterbodies	727.0	0.7
Total area	103,764.8	100

### AFRICA WEST COAST

Class	km²	%
Agriculture	22,043.4	15.6
Bare soils	1,754.2	1.2
Herbaceous	20,723.7	14.7
Shrubs	12,235.9	8.7
Trees	82,472.5	58.4
Urban areas	749.3	0.5
Waterbodies	1,275.3	0.9
Total area	141,254.3	100

# LAND COVER FOUTA DJALLON HIGHLANDS

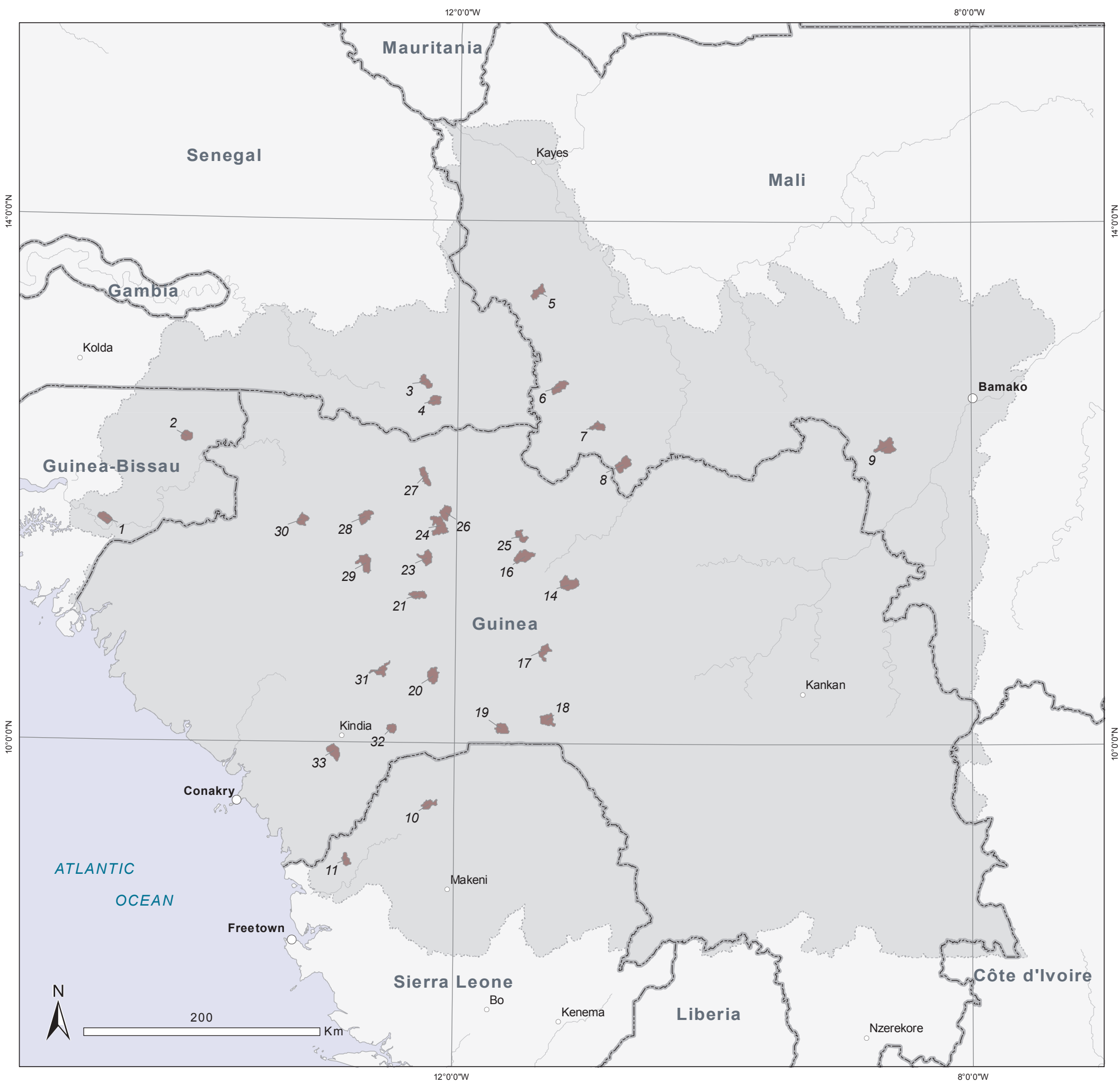
---

Land cover maps and statistics are compiled for the whole Fouta Djallon Highlands boundary and for the extent of each country included into the area. The land cover distribution is reported in the tables as disaggregated at the second administrative level.



# PILOT SITES

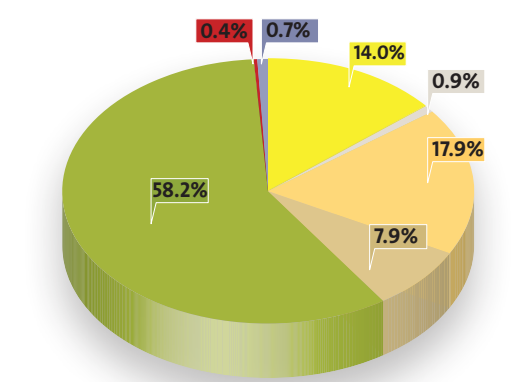
ID	SITE NAME	Km <sup>2</sup>
GUINEA BISSAU		
1	Rio Nhadjaba (Rio Pulom, Corubal), Gam Bessé, Chitoli	77
2	Rio Mada (Rio Geba), Jaima, Gabu	68
SENEGAL		
3	Batakokouta (Gambie)	69
4	Tenkoto (Gambie), Kedougou	67
MALI		
5	Bali-Bali (Falémé Senegal) Diafara	77
6	Bilali-Ko (Falémé Senegal), Linguekoto	91
7	Faranda (Falémé Senegal), Faraba	66
8	Fari (Falémé Senegal), Sagalo	113
9	Koba (Niger), Naréna	145
SIERRA LEONE		
10	Makoboya (Little Scarcies-Kaba), Kamakwie	65
11	Kabamon (Great Scarcies-Kolenté), Kawula, Kambia	51
GUINEA		
14	Mini (Tinkisso-Niger), Kalinko	133
16	Fangan (Bafing, Senegal), Kenieoula, Tougué	123
17	Nyalen (Tinkisso-Niger), Watala, Dabola	79
18	Soloya (Mongo-Kaba), Marella	93
19	Baleng (Kaba), Oure-Kaba	79
20	Spring of Bafing (Senegal river) near Tolo, Mamou	62
21	Guetoya (Konkouré), Pita	74
23	Dima (Gambie), Tountouroun, Labé	89
24	Silamé (Gambie), Doubel, Pilimini	151
25	Spring of Diafore, near Kouratongo	80
26	Songhe-Donde (Silamé-Gambie), Daraméré, Téliré	84
27	Spring of Soulounde, just SE of Mali town	97
28	Koundou (Koliba), Linsan-Saran	93
29	Banga (Konkouré), Lelouma	120
30	Koliba, Gaoua	67
31	Garafiri dam/lake on the Konkoure	75
32	Dissa (Kolenté), Sougueta	49
33	Kimbissi (Samou), Friguiagbé, Kindia	97





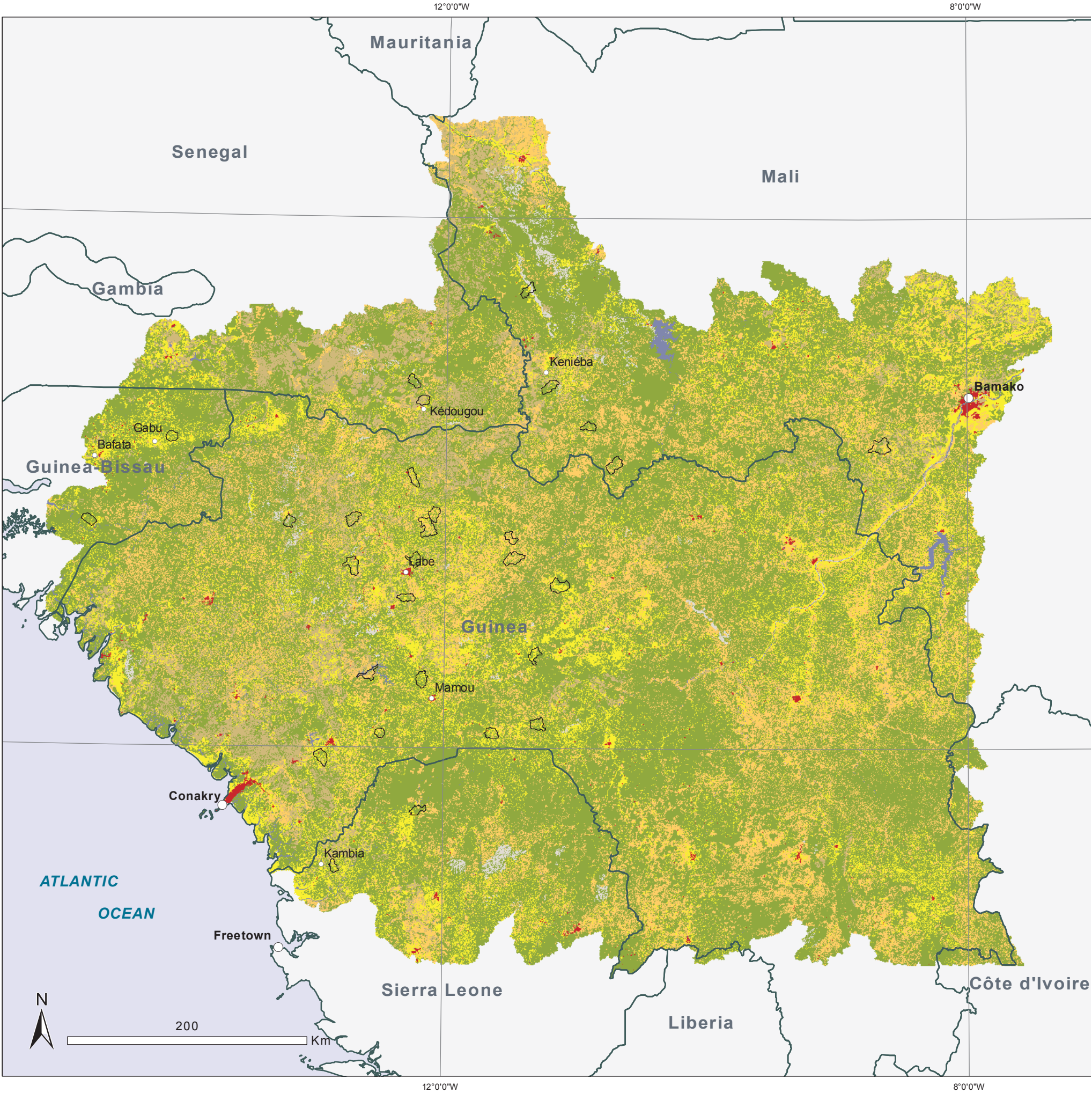
# FOUTA DJALLON HIGHLANDS

## LAND COVER



Class		Km²	%
<div></div>	Agriculture	54,785	14.0
<div></div>	Bare soils	3,348	0.9
<div></div>	Herbaceous	70,115	17.9
<div></div>	Shrubs	30,739	7.9
<div></div>	Trees	227,590	58.2
<div></div>	Urban areas	1,562	0.4
<div></div>	Waterbodies	2,876	0.7
	<b>Total area</b>	<b>391,015</b>	<b>100</b>

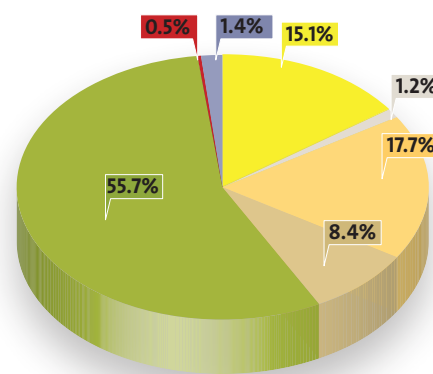
## INDEX MAP





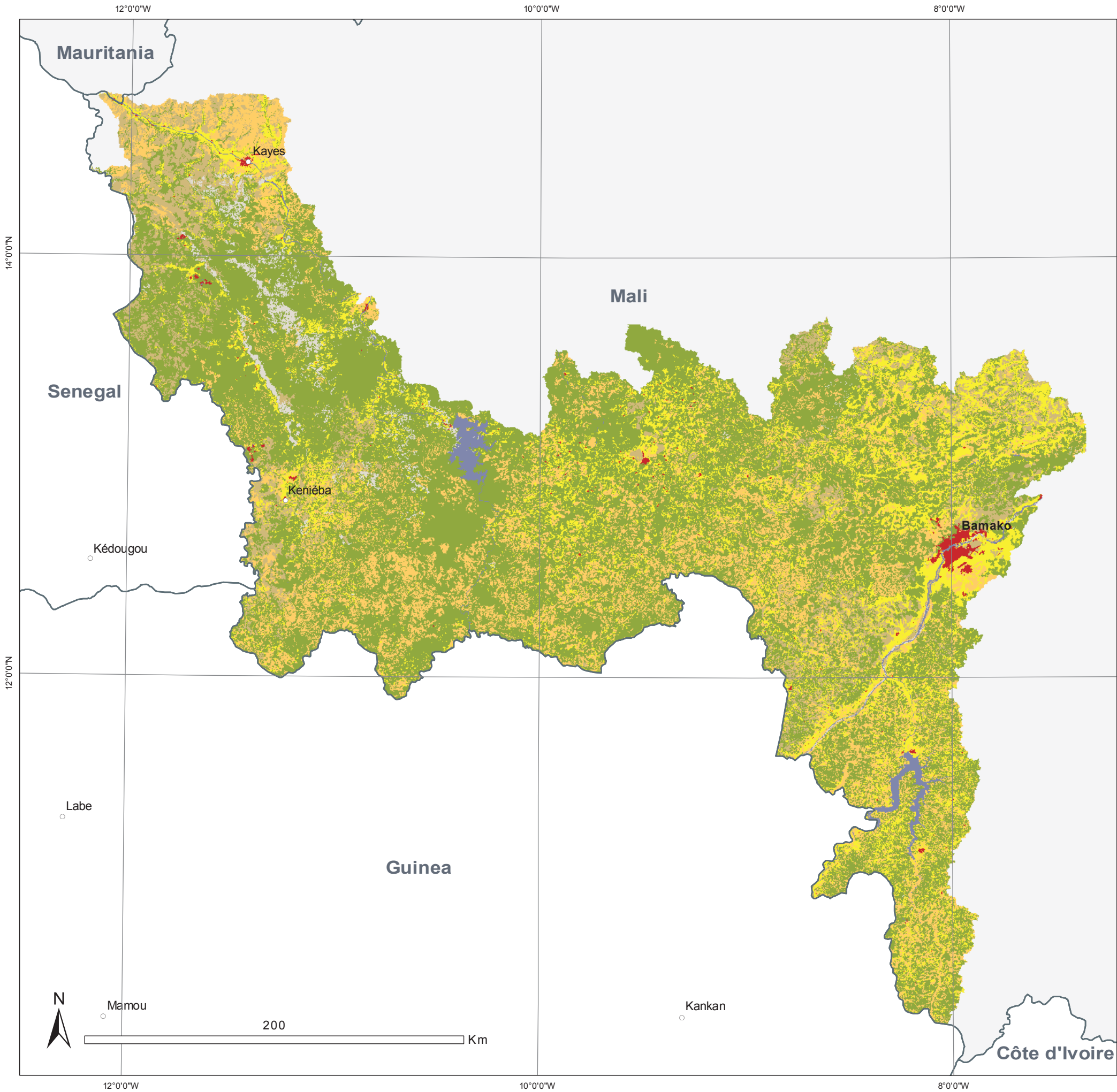
MALI

LAND COVER



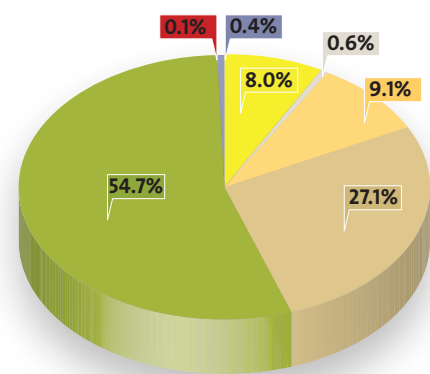
Class	Km²	%
Agriculture	13,245	15.1
Bare soils	1,031	1.2
Herbaceous	15,492	17.7
Shrubs	7,405	8.4
Trees	48,826	55.7
Urban areas	460	0.5
Waterbodies	1,187	1.4
Total area	87,645	100

INDEX MAP



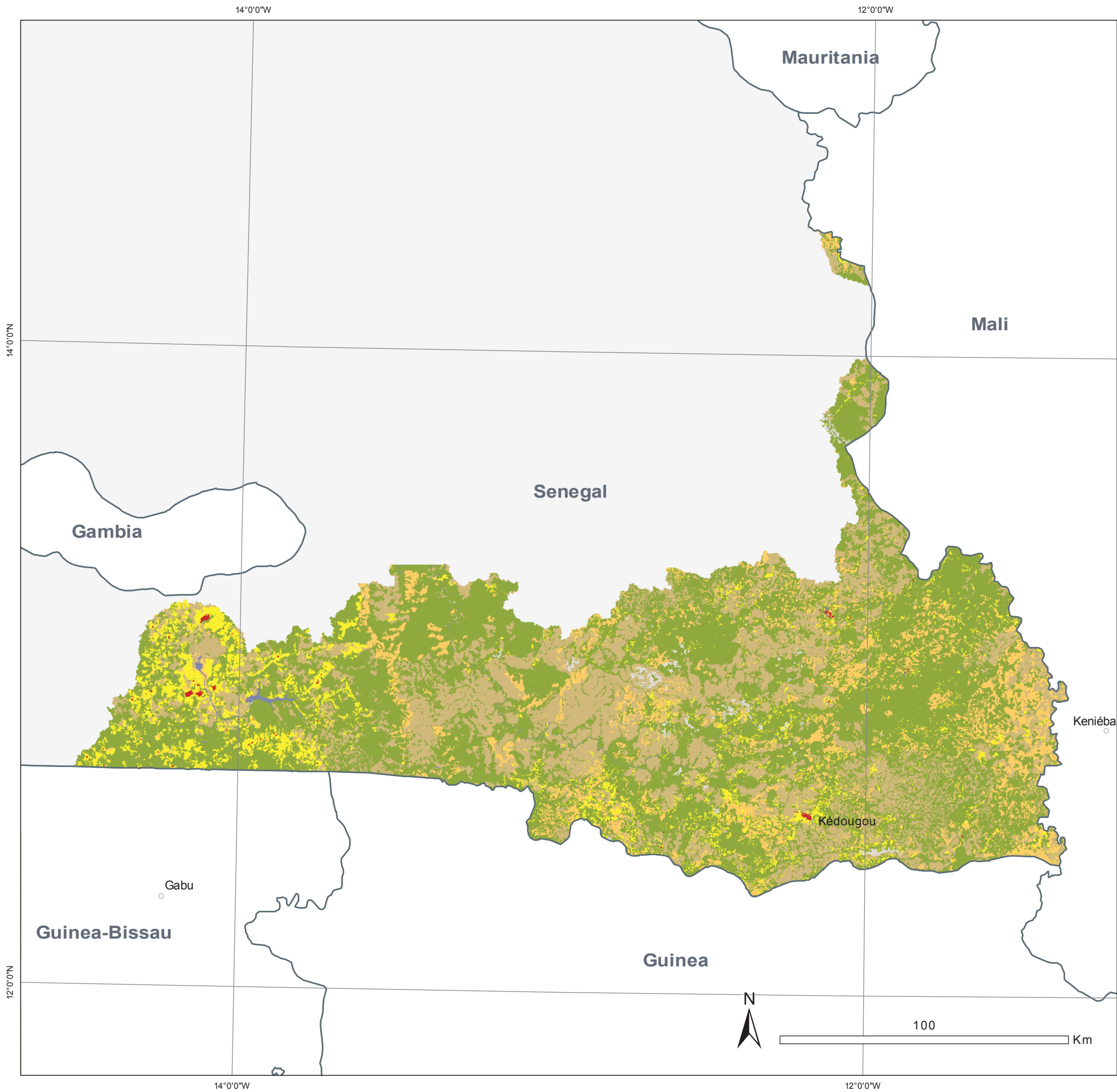
# SENEGAL

## LAND COVER



Class	Km²	%
Agriculture	2,133	8.0
Bare soils	157	0.6
Herbaceous	2,453	9.1
Shrubs	7,268	27.1
Trees	14,677	54.7
Urban areas	38	0.1
Waterbodies	94	0.4
Total area	26,820	100

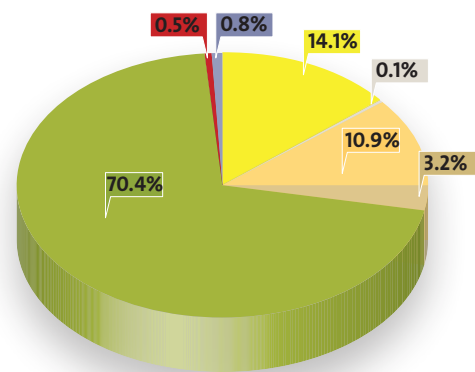
## INDEX MAP





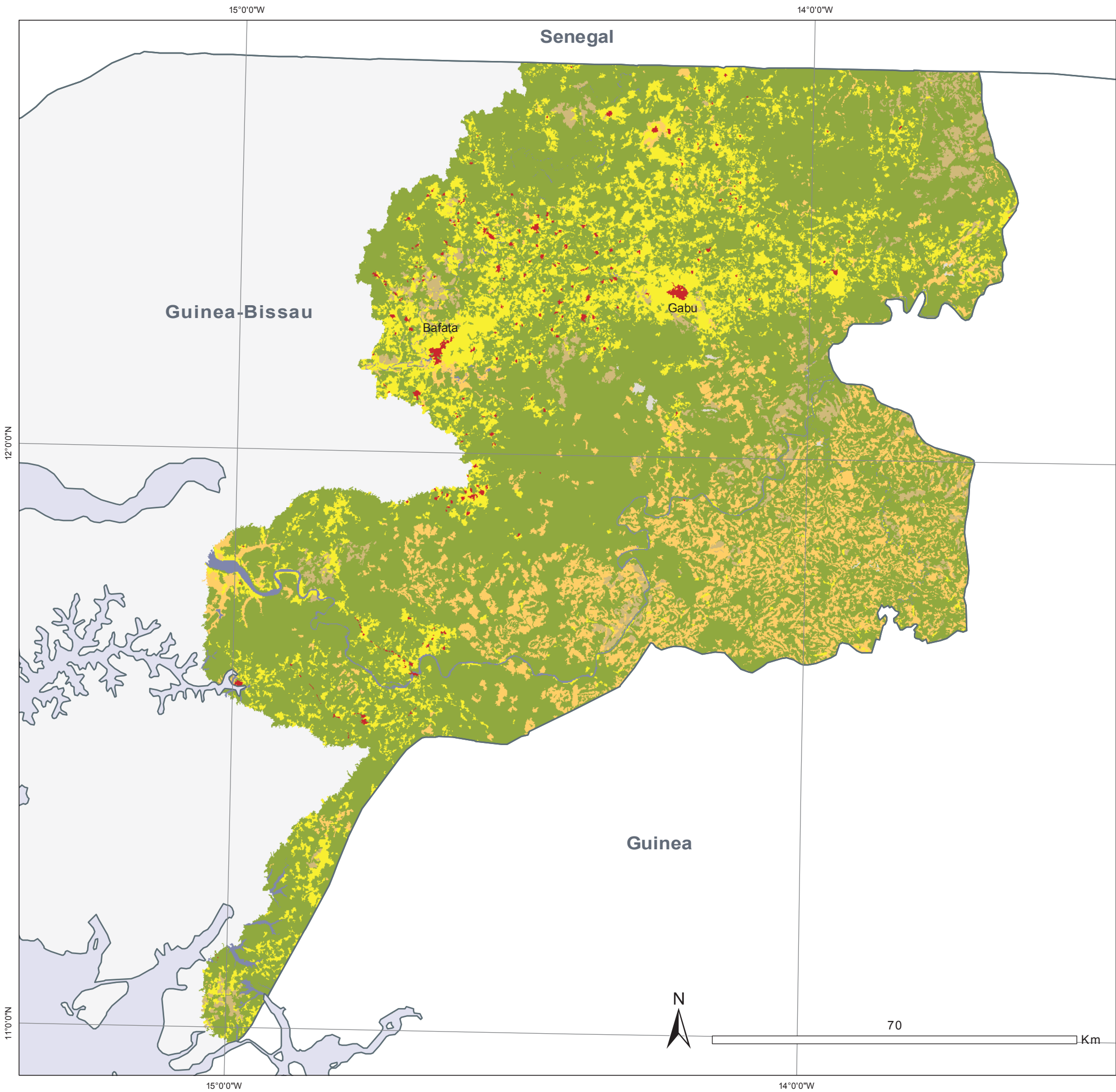
# GUINEA BISSAU

## LAND COVER



Class	Km²	%
Agriculture	1,880	14.1
Bare soils	14	0.1
Herbaceous	1,455	10.9
Shrubs	423	3.2
Trees	9,372	70.4
Urban areas	63	0.5
Waterbodies	101	0.8
Total area	13,307	100

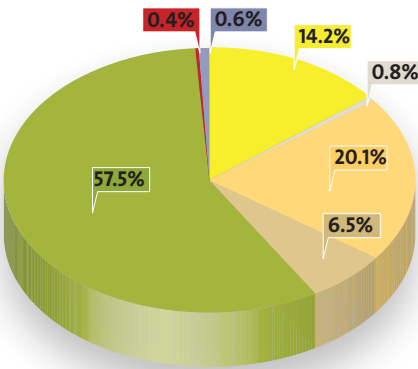
## INDEX MAP





# GUINEA

## LAND COVER



Class	Km²	%
Agriculture	32,097	14.2
Bare soils	1,812	0.8
Herbaceous	45,398	20.1
Shrubs	14,591	6.5
Trees	129,763	57.5
Urban areas	882	0.4
Waterbodies	1,296	0.6
Total area	225,841	100

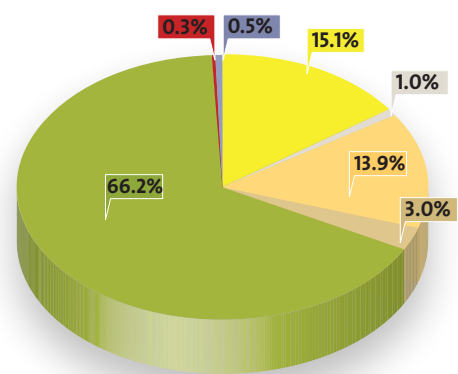
## INDEX MAP





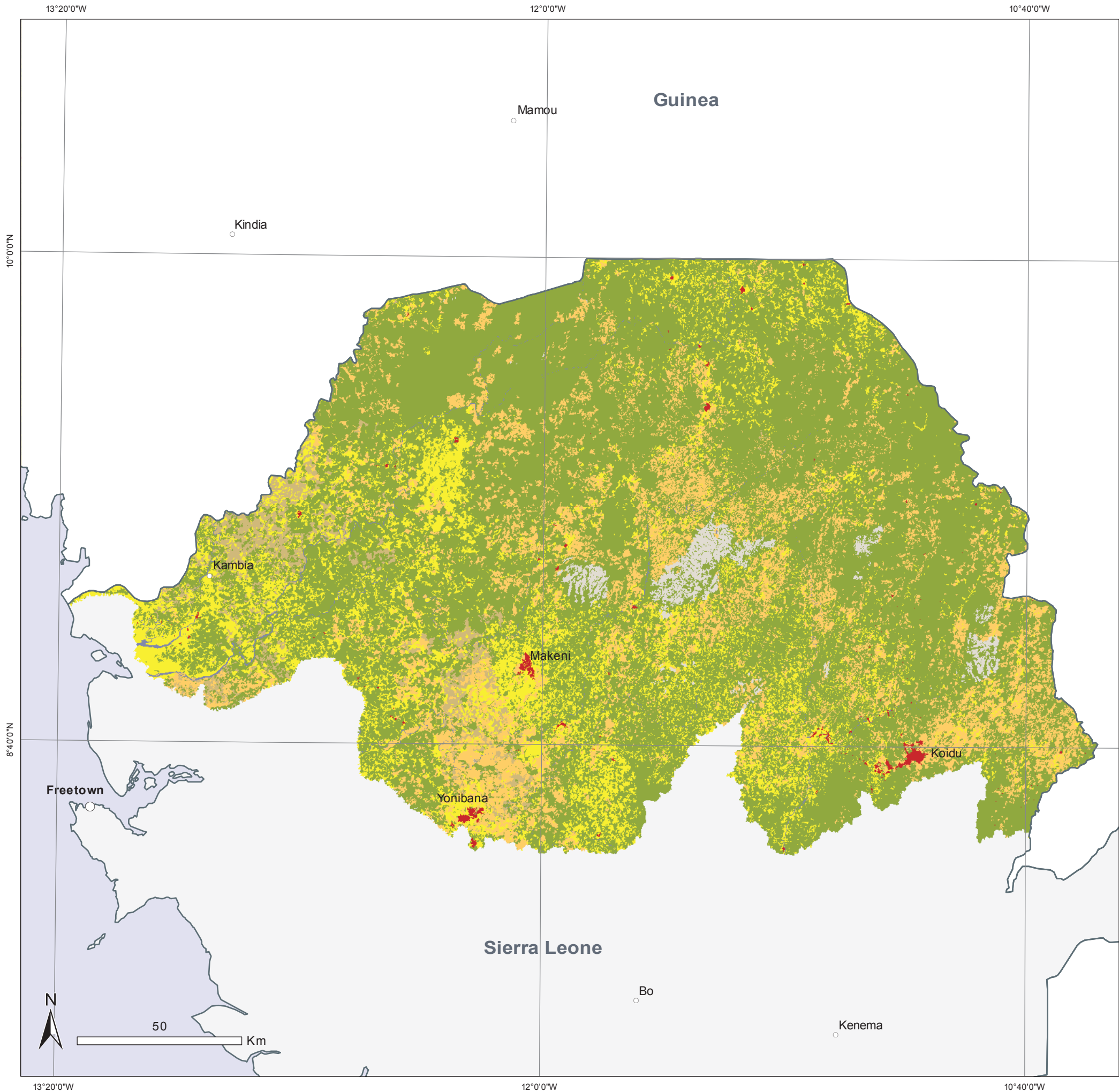
# SIERRA LEONE

## LAND COVER



Class	Km²	%
Agriculture	5,292	15.1
Bare soils	333	1.0
Herbaceous	4,887	13.9
Shrubs	1,048	3.0
Trees	23,199	66.2
Urban areas	117	0.3
Waterbodies	188	0.5
Total area	35,065	100

## INDEX MAP



An abstract graphic featuring a dark teal background. In the bottom left corner, there is a stylized mountain range. The mountains are represented by overlapping geometric shapes in shades of light blue and lime green. To the right of the mountains, there are three horizontal, wavy lines in shades of light blue and teal, suggesting water or waves. The overall design is clean and modern.

## LAND COVER BY BASIN

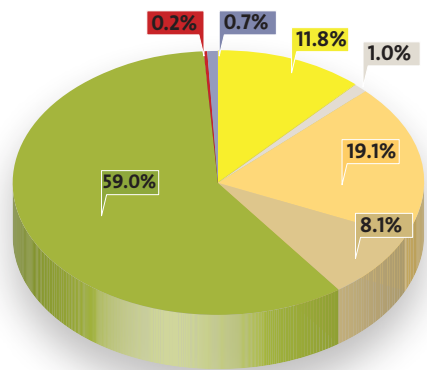
---

A hydrological basin can be defined as the extent of land from which surface water originating from precipitation, channelled in rivers and streams, drains down stream in a single point towards another waterbody such as river, lake, sea or ocean or wetland. A closed hydrological basin may drain also into a sink like a salt pan or a point where the surface water is lost underground. The hydrological basin includes also the streams and the rivers that convey the water as well as the land surfaces from which water drains into those channels and it is separated from adjacent basins by a “drainage divide” or “watershed”. Hydrological basins drain into other hydrological basins and many small hydrological sub-basins form together larger river basins. Hydrological basins are the reference unit to study surface water movements within the hydrological cycle.



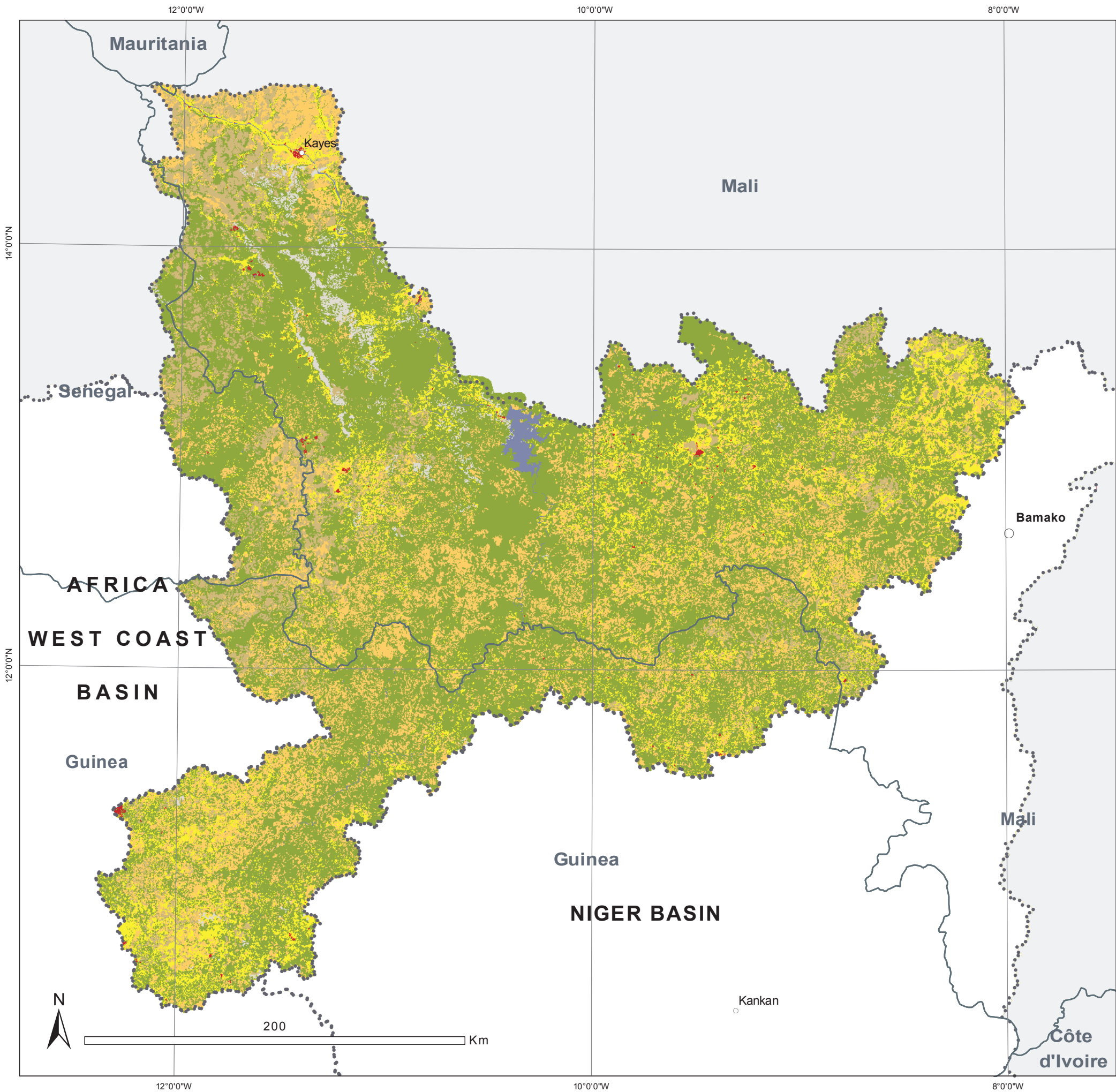
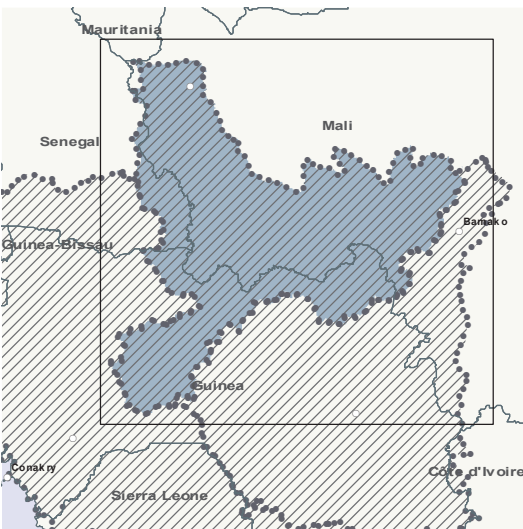
# SENEGAL BASIN

## LAND COVER



Class	Km²	%
<div></div> Agriculture	12,253	11.8
<div></div> Bare soils	1,058	1.0
<div></div> Herbaceous	19,862	19.1
<div></div> Shrubs	8,427	8.1
<div></div> Trees	61,231	59.0
<div></div> Urban areas	208	0.2
<div></div> Waterbodies	727	0.7
<b>Total area</b>	<b>103,765</b>	<b>100</b>

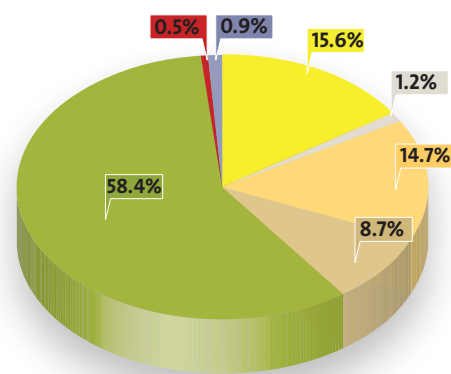
## INDEX MAP





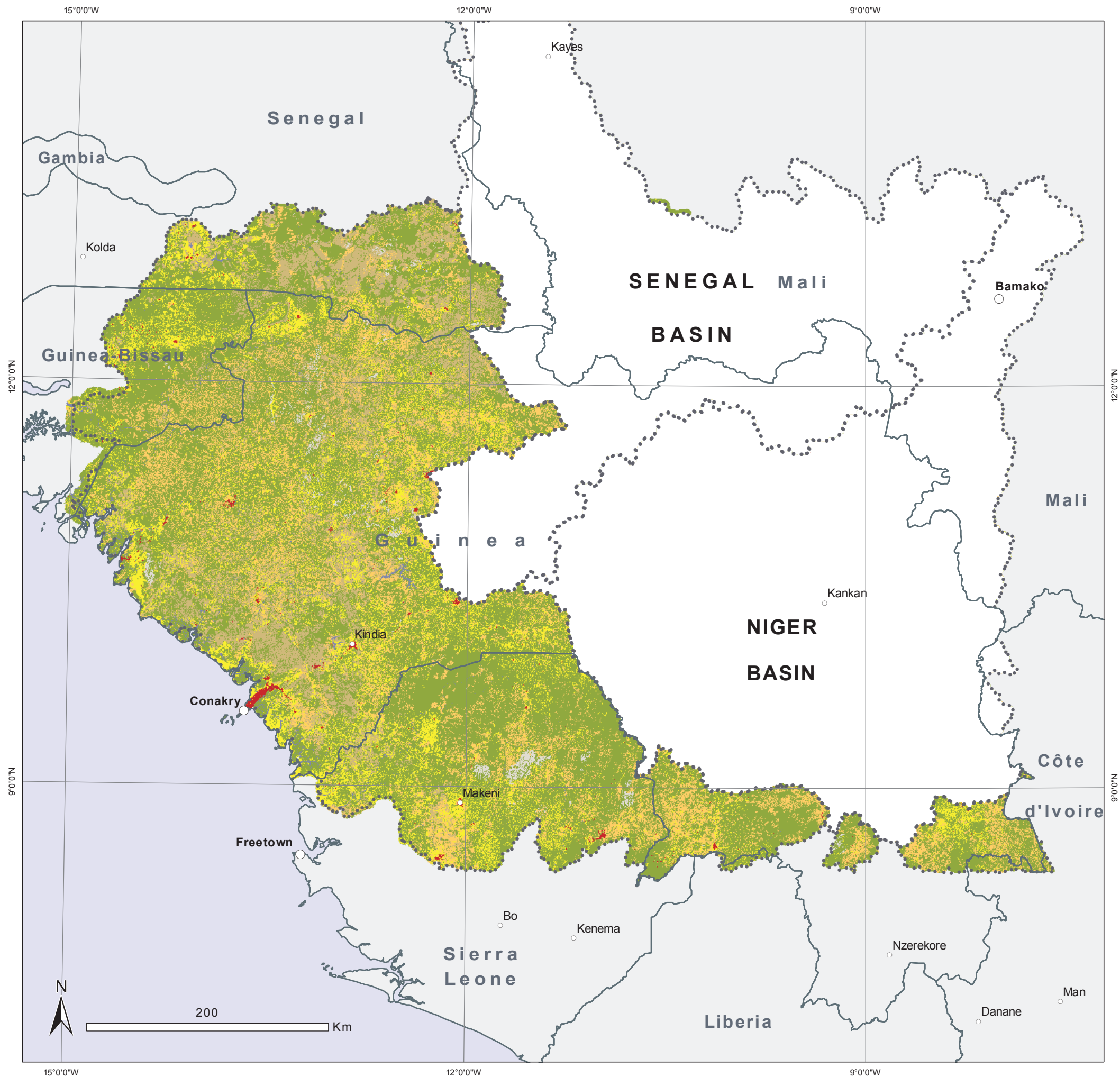
# AFRICA WEST COAST BASIN

## LAND COVER



Class	Km²	%
Agriculture	22,043	15.6
Bare soils	1,754	1.2
Herbaceous	20,724	14.7
Shrubs	12,236	8.7
Trees	82,473	58.4
Urban areas	749	0.5
Waterbodies	1,275	0.9
Total area	141,254	100

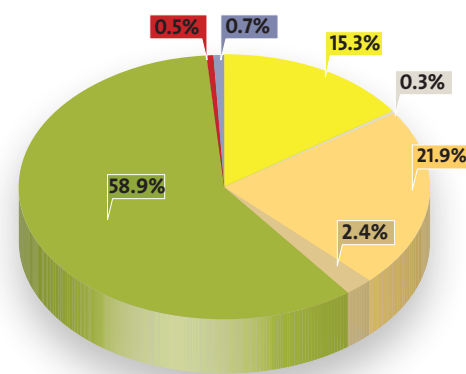
## INDEX MAP





# NIGER BASIN

LAND COVER



Class	Km²	%
<div></div> Agriculture	18,001	15.3
<div></div> Bare soils	331	0.3
<div></div> Herbaceous	25,855	21.9
<div></div> Shrubs	2,870	2.4
<div></div> Trees	69,474	58.9
<div></div> Urban areas	582	0.5
<div></div> Waterbodies	815	0.7
<b>Total area</b>	<b>117,928</b>	<b>100</b>

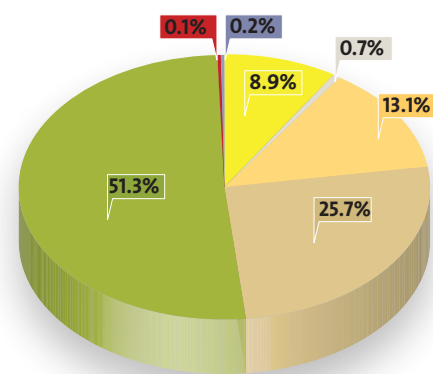
INDEX MAP





# GAMBIA SUB-BASIN

## LAND COVER



Class	Km²	%
Agriculture	2,484	8.9
Bare soils	204	0.7
Herbaceous	3,674	13.1
Shrubs	7,204	25.7
Trees	14,385	51.3
Urban areas	22	0.1
Waterbodies	58	0.2
Total area	28,030	100

## INDEX MAP





## LAND COVER CHANGE

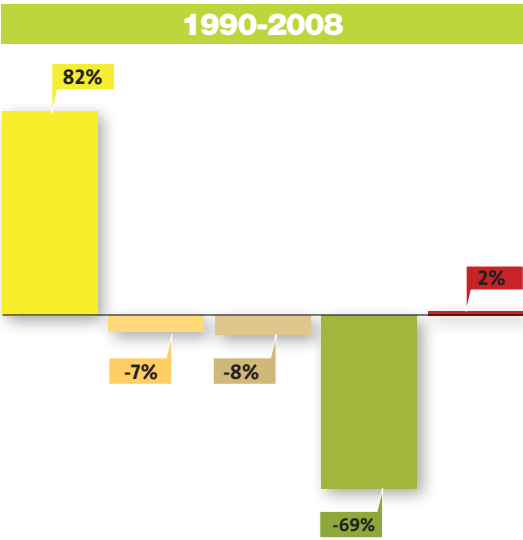
---

Detection of hot spots of rapidly changing land cover is an effective input for national reporting and planning remedial measures.

With FAO's standard methodologies and tools and the global availability of free Landsat imagery since 1970, the land cover change detection has become more accurate and cost effective.

For the FDH area, a land cover change detection has been performed for the last 20 years

# LAND COVER CHANGE



Class	1990 Km²	2008 Km²	CHANGE Km²	%
Agriculture	1,000	13,151	12,151	82
Herbaceous	1,441	463	-979	-7
Shrubs	1,221	63	-1,158	-8
Trees	11,117	836	-10,281	-69
Urban areas	24	287	263	2

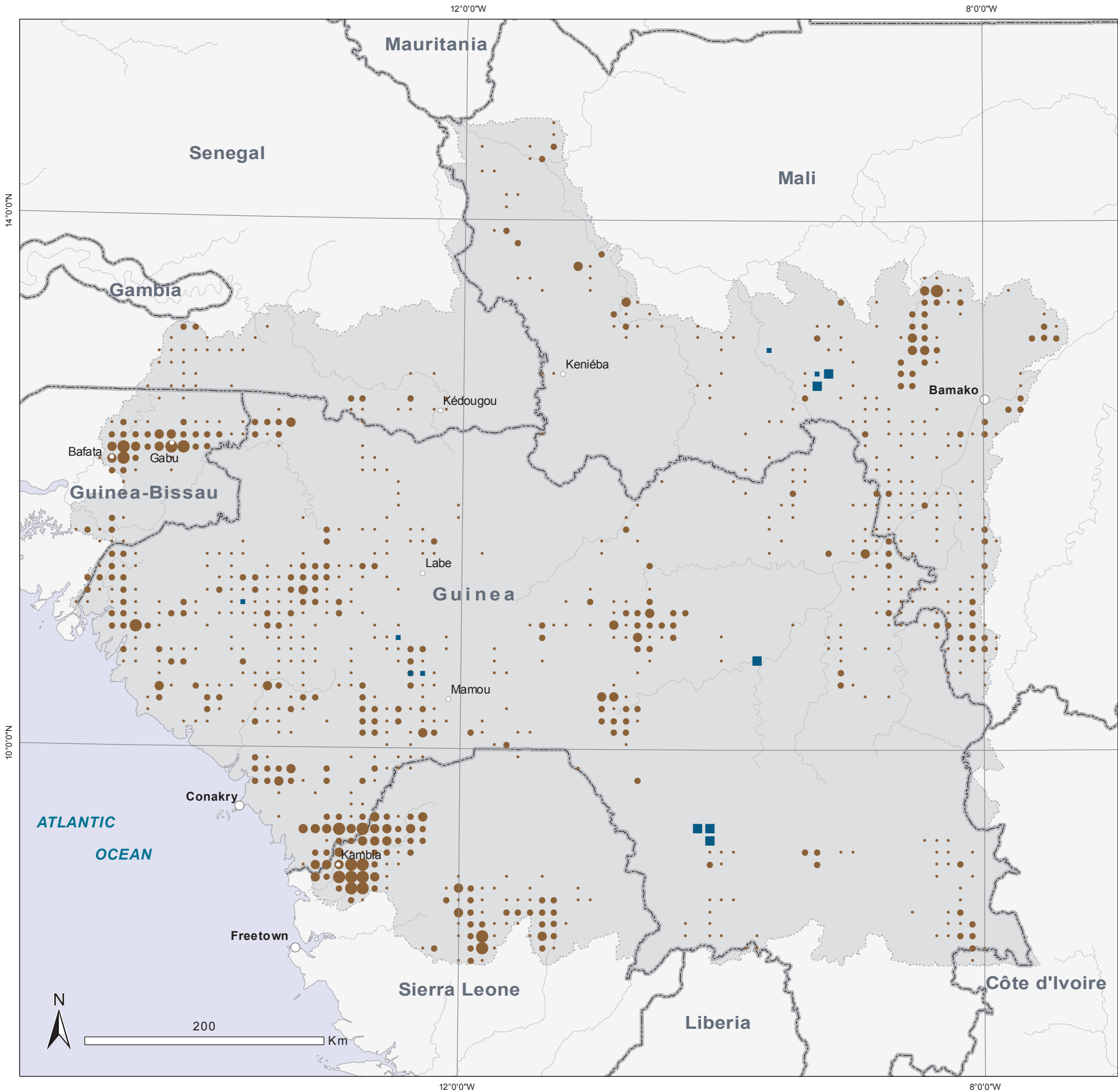
CHANGE 1990-2008

- From “others”(\*) vs agriculture within an area of 100 km²(\*\*)

  - 5 - 10 %
  - 10 - 20 %
  - 20 - 30 %
  - > 30 %
- From agriculture vs “others”(\*) within an area of 100 km²(\*\*)

  - 5 - 10 %
  - > 10 %

(\*) “Others” includes trees, shrubs, herbaceous and urban areas.  
(\*\*) Values of less than 5% are not shown in this map





LAND COVER ATLAS OF  
**FOUTA  
DJALLON**  
**HIGHLANDS**  
& its Physical Extension  
to the Coast

