

Regional Territorial Planning and Sustainable Development Plan

LOT 5: North-West Region

DIAGNOSTIC STUDY OF THE TERRITORY

Volume III: Cartographic Atlas



For The Ministry of Economy, Planning and Regional
Development, Yaounde (MINEPAT)

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Regional Territorial Planning and Sustainable Development Plan

Diagnostic study of the territory Cartographic atlas

The diagnostic report consists of three parts:

- Volume I: the evaluation of the situation and the SWOT analysis
- Volume II: annexes with additional data, figures and tables, and the results of the stakeholder field survey on regional planning sectors
- Volume III the cartographic atlas.

In the present volume, the maps elaborated for the diagnostic report are presented. They are structured thematically, relating to the sectors of analysis of the first volume and were used to create geographic figures.

Their design and content were elaborated based on inputs by the experts and are meant to support their analysis by providing geospatial information about the facts described in the first volume.

Authors: IU / CPAC

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Foreword / data sources

This document is the Cartographic Atlas of the Diagnostic Study, prepared for the Regional Territorial Planning and Sustainable Development Plan of the Territory of the North-West Region of Cameroon.

The following cartographic work is based on vector layers that have been received or elaborated from information by the following institutions:

- The Ministry of Economy, Planning and Regional Development (MINEPAT): the data of the National Territorial Planning and Sustainable Development Plan, 2015, for the layers of the administrative boundaries, the administrative headquarters, and the layers of the protected areas, forests, plantations and mining permits. The information contained in the “Rapport de Développement Economique” for the locations of reported flood events.
- The National Institute of Cartography (NIC): the layer on surface water bodies.
- The Institute for Geological and Mining Research (IRGM) and the Ministry of Mines, Industry and Technological Development (MINMIDT): the layers on mining potentials, quarries, and natural risk zones in the North-West Region.
- The National Community Driven Development Program (PNDP): the consolidated data of the Communal Development Plans for the layers on villages and their related information, on the chiefdoms’ palaces as well as the layer on the economic infrastructures (marketplaces).
- The National Institute of Statistics (NIS): the information on population by subdivision, on electrification in the divisions, on hotel beds in the divisions.
- The Ministry of Water and Energy (MINEE): the information on rural electrification
- OpenStreetMap (OSM): the road layers

The raster data were collected from the following institutions:

- The United States Geological Survey (USGS): the images of the *Landsat 5*, *Landsat 7*, and *Landsat 8* satellites as well as the *1 Arc-Second Global Elevation Data* of the Shuttle Radar Topography Mission (SRTM)
- The Global Land Cover Facility (GLCF) of the University of Maryland: the layers of *Tree Cover* for the years 2000, 2005, 2010, 2015.

The Landsat images were downloaded as surface reflectance and processed in QGIS and *LeoWorks* to calculate the land cover classifications of 1987 (Landsat 5), 2003 (Landsat 7 SLC-On), and 2018 (Landsat 8). The SRTM elevation data were used to calculate the relief layer of the background as well as the watershed.

Complementary fieldwork allowed the creation of the following layers:

- The production areas (maps 3.1-a to 3.3) have been digitalised by a field expert from the University of Bamenda.
- The areas of land use and boundary conflicts (maps 7- a to g) have been digitalised based on the information collected from PNDP officers in the municipal councils in April to May 2018.

All further thematic sources of data and information used to design and produce the maps are listed in detail at the begin of each thematic map-section.

Notice:

The authors must warn about discrepancies between the official boundaries of the subdivision as contained in the data of MINEPAT and the location of some villages according to the coordinates of the PNDP database. Some villages may appear outside their respective (sub)division. From comparison with secondary sources and local knowledge, it seems that the delineation of the boundary may be erroneous for some subdivisions (notably Bafut and Njinikom). The authors recommend the MINEPAT to verify the accuracy of its border coordinates.

1 Administrative structure (see report chapter 3)

1.1. Administrative units – Divisions of the North-West Region

Map 1.1-a: Administrative units – Boyo Division.....	6
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The maps 1.1-a to -g show the administrative units in the North-West Region. The Region is sub-divided into Divisions (departments). These are headed by Divisional officers appointed by the President. The Divisions are again Sub-Divided into Sub-Divisions (arrondissements) headed by Assistant Divisional Officers (Sous Prefets). See Decree n° 2008/376 of 12th November 2008 on the administrative organisation of the Republic of Cameroon. The chiefs/Fons who are traditional rulers are described as auxiliaries to administration (See law n° 77/245 of 1977 relating to the organisation of traditional chieftaincies as amended by Decree n° 2013/332 of 13th September 2013).

There is a total of seven Divisions in the North-West Region and a total of 34 Sub Division. The basic unit of local government is the council and there are 34 councils in the Region. In the North-West Region there is one special urban community: the Bamenda City Council headed by a Government Delegate appointed by presidential decree.

Used sources/data for the content of the maps:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from

geofabrik.de, *osm_road_free_1.shp*

Notice:

discrepancies may appear between the official boundaries of the subdivision as contained in the data of MINEPAT and the location of some villages according to the coordinates of the PNDP database. Some villages may appear outside their respective (sub)division. From comparison with secondary sources and local knowledge, it seems that the delineation of the boundary may be erroneous for some subdivisions (notably Bafut and Njinikom). The authors recommend the MINEPAT to verify the accuracy of its border coordinates.

1.2. Traditional kingdoms of the North-West Region

The map 1.2 shows the first and second class Kingdoms of the North-West Region. Beside the formal administrative structure, the North-West Region has its traditional authorities and traditional rulers. Most of the Fons cooperate closely with the senior divisional officers, representing the present Cameroonian presidency, in actually addressing the needs of the population. The Cameroon Chieftaincy Law contained in decree No 77/245 of July 15, 1977 organizes traditional communities into villages or chiefdoms. And according to the decree, traditional chiefdoms are organized on a territorial basis and they comprise First class chiefdom, Second class chiefdom and Third class chiefdom. There are 121 chiefdoms distributed in the North-West Region. The first class chiefdoms are Bafut, Bali Nyongha, Kom, Mankon and Nso and they cover large territories which encompass several second and third class chiefdoms. The lower chiefdoms cover villages or quarters.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Palaces: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP) as well as local experts' knowledge for the first class palaces
- First class kingdoms: layer digitalised by local experts based on the information gathered during the NW field survey of 2018 commissioned by IU/CPAC

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Map 1.1: Administrative units - Divisions of the North-West Region

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

✕✕ International

Regional

Divisional

Subdivisional

Territory of the Region

Stream / river

Lake

Headquarters¹

Regional

Divisional

Subdivisional

Road network⁷

National road

Regional road

Hydrographic network²

Stream / river

Lake

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

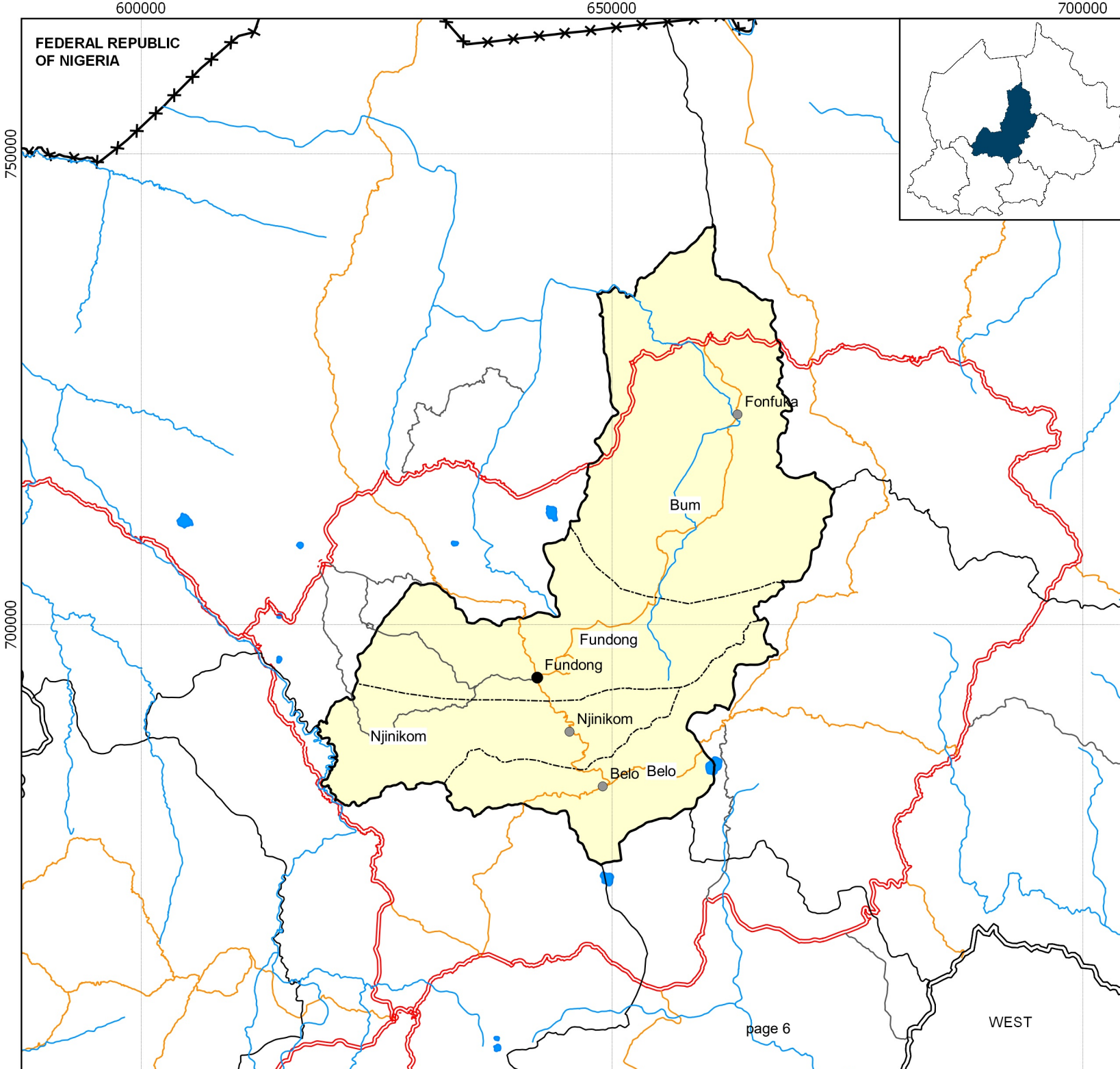
[1] MINEPAT, 2015, National Territorial Planning and Sustainable
Development Plan, *donnee_decembre2015.gdb*[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*[4] PNDP, 2016, *Communal Development Plans, Consolidated Data*[5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and
Landsat 8 images*[6] GLCF, *Tree Cover*[7] OpenStreetMap, *osm_roads_free_1.shp*

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Lake Bamendjin

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Ministry of Economy, Planning and Regional Development

Map 1.1-a: Administrative units - Boyo Division

Regional Territorial Planning and Sustainable Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

✕✕ International

Regional

Divisional

Subdivisional

Territory of the Division

Headquarters¹

● Divisional

● Subdivisional

Road network⁷

National road

Regional road

Secondary road

Hydrographic network²

Stream / river

Lake

0 5 10 km

N

December 2018

Spatial reference: UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*

[2] NIC, *hydro_lineaire.shp*, *hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*

[5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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geomer

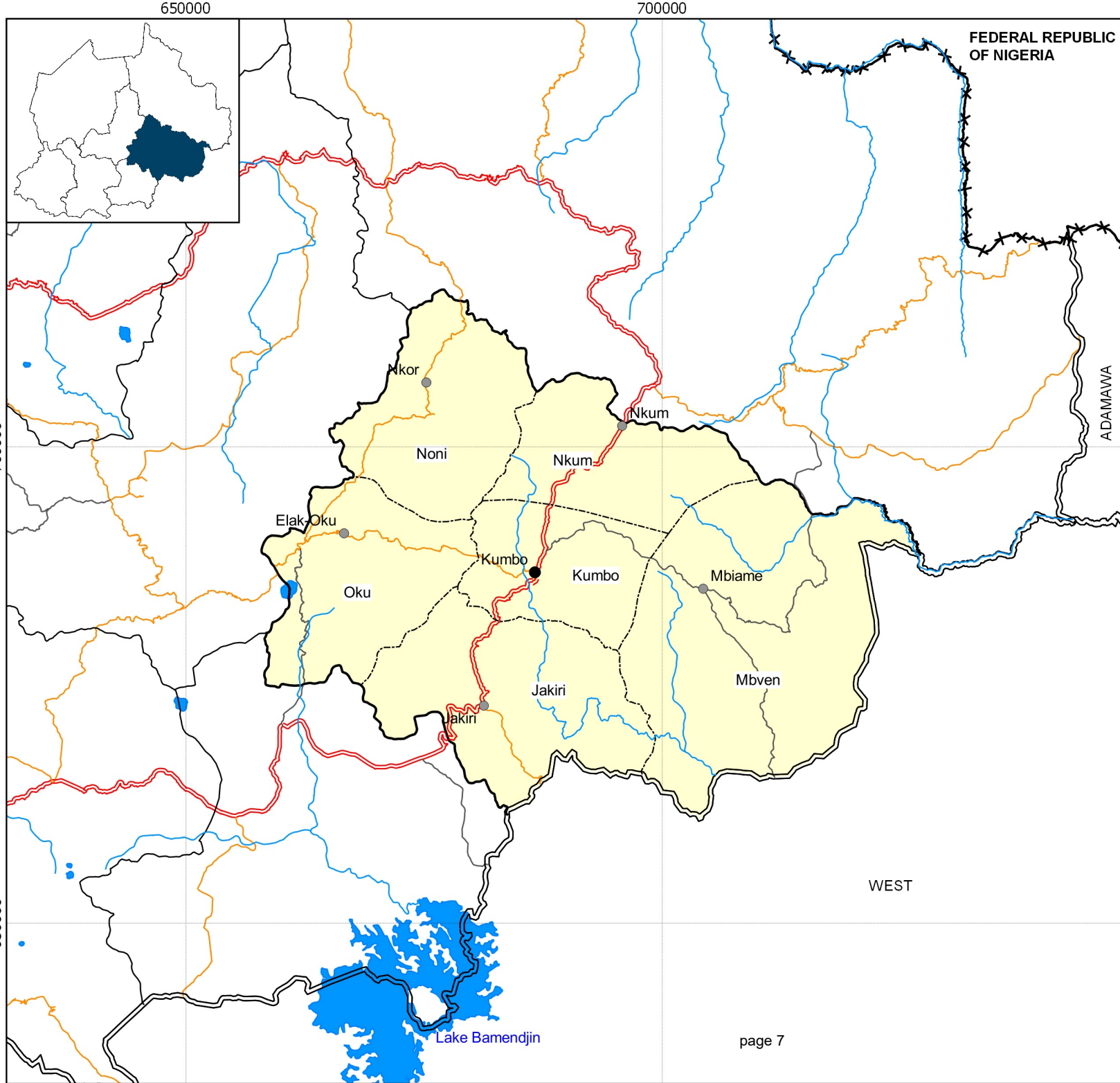
geomatics engineering

CPAC

Cameroon Planning and Development Centre

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WEST



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Map 1.1-b: Administrative units - Bui Division

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- Regional
- Divisional
- - - Subdivisional
- Territory of the Division

Headquarters¹

- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary road

Hydrographic network²

- Stream / river
- Lake

0 5 10 km



December 2018

Spatial reference:
UTM Zone 32N

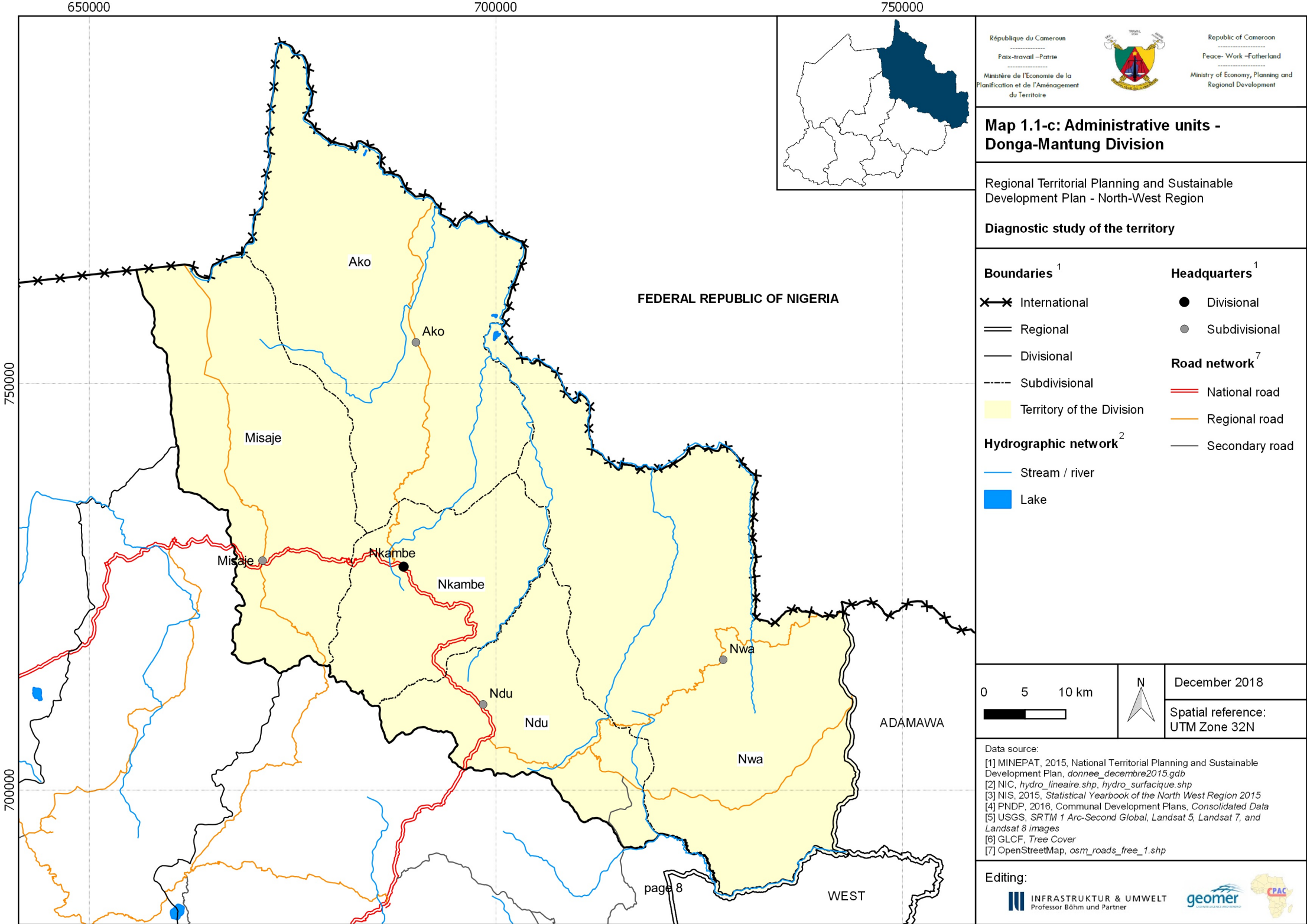
Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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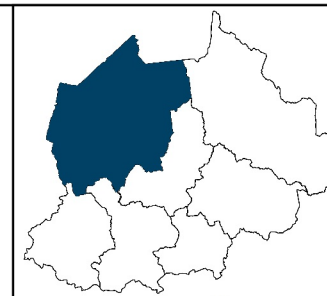


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SOUTH-WEST



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Map 1.1-d: Administrative units - Menchum Division

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

✕✕ International

— Regional

— Divisional

- - - Subdivisional

Territory of the Division

Hydrographic network²

— Stream / river

Lake

Headquarters¹

● Divisional

● Subdivisional

Road network⁷

National road

Regional road

Secondary road

0 5 10 km



December 2018

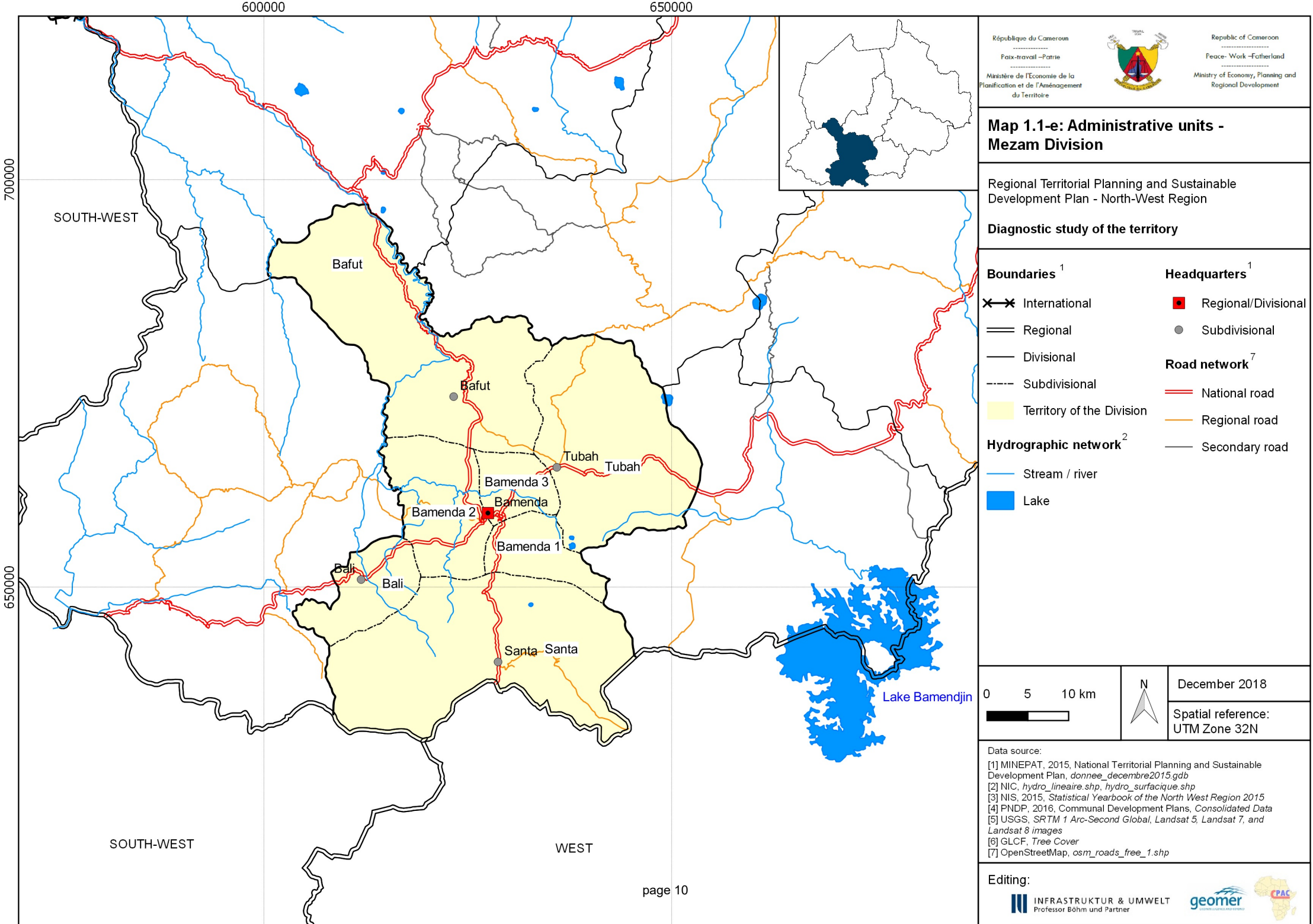
Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
 [2] NIC, *hydro_lineaire.shp*, *hydro_surfacique.shp*
 [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
 [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
 [5] USGS, *SRTM 1 Arc-Second Global*, *Landsat 5*, *Landsat 7*, and *Landsat 8 images*
 [6] GLCF, *Tree Cover*
 [7] OpenStreetMap, *osm_roads_free_1.shp*

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550000

600000

650000

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OF NIGERIA

700000

650000

SOUTH-WEST

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**Map 1.1-f: Administrative units -
Momo Division**

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

✕✕ International

== Regional

— Divisional

- - - Subdivisional

Yellow box Territory of the Division

Headquarters¹

● Divisional

● Subdivisional

Road network⁷

Red line National road

Orange line Regional road


Grey line Secondary road

Hydrographic network²


Blue line Stream / river

Blue box Lake

0 5 10 km



N



December 2018

Spatial reference:
UTM Zone 32N

Data source:
[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
[5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
[6] GLCF, *Tree Cover*
[7] OpenStreetMap, *osm_roads_free_1.shp*

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geomer



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FEDERAL REPUBLIC OF NIGERIA

750000

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SOUTH-WEST

650000

WEST

Lake Bamendjin

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Map 1.2: Traditional kingdoms of the North-West Region

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Headquarters¹

- Regional
- Divisional
- Subdivisional

Hydrographic network²

- Stream / river
- Lake

Road network⁷

- National road
- Regional road

Palaces

- ★ First class
- ◆ Second class⁴
(approx.)

First class kingdoms⁶

- Bafut
- Bali Nyongha
- Kom
- Mankon
- Nso

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] NW Field Survey 2018
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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2 Environment and natural resources

(see report chapter 4)

2.1. Relief map

Map 2.1-a: Relief map of Boyo Division.....	19
Map 2.1-b: Relief map of Bui Division.....	20
Map 2.1-c: Relief map of Donga-Mantung Division.....	21
Map 2.1-d: Relief map of Menchum Division.....	22
Map 2.1-e: Relief map of Mezam Division.....	23
Map 2.1-f: Relief map of Momo Division.....	24
Map 2.1-g: Relief map of Ngo-Ketunjia Division.....	25

The maps 2.1-a to -g show the relief map of the Divisions. The relief with mountain ranges (highest locations, mountain tops), lowland (plains, lowest locations) and the elevation/contour lines are basic information for all land use developments and environmental settings. The North-West Region of Cameroon is known as the Western Highlands. Situated at an average altitude of 1,550 m (NIS, 2017, Statistical Yearbook 2015), it is dominated by a range of mountains, with the highest peak at Mt Oku (3,008 m). The relief, covered with grassy vegetation and some forest, offers a captivating view characterized by panoramic contrasts with plains surrounded by mountains with solid masses, deep valleys with streams, rivers, waterfalls and numerous crater lakes.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Contour lines created with the *1 Arc-Second Global Elevation Data* of the Shuttle Radar Topography Mission, United States Geological Survey
- Relief features and names provided by the local experts

2.2. Geological formations..... 26

The map 2.2 shows the geological formations. The underlying bedrocks in the North-West Region are mostly granite rocks from the Pre-Cambrium, dating back from more than 500 million of years. The bed rocks are covered by either sedimentary materials from the Cretaceous and Tertiary eras or by volcanic soils, thrown out in ancient eruptions. Later in the Quaternary era in some areas new sediments were deposited on older layers, like in the Mamfe depression (partly in the North-West - and in the South-West Region).

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Geologic units: drawn from maps by the Institute for Geological and Mining Research, *Formations et Géologie Structurale*

2.3. Pedology..... 27

The map 2.3 shows the soil types in the North-West Region, reflecting the geological origin and relief (Basalt). The kind of parent rock, climate, the topography and the occurrence of plants and animals together determine the type of soil. The relatively warm and humid climate in the North-West Region favours weathering, organic deposition and leaching. Steep slopes hamper soil formation, but vegetation and especially time (millions of years) managed to create abundant new soil. Looking at the different soils in the region you find a mosaic of different types depending on the type of bedrock and past volcanic and fluvial activities.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>• Soil characteristics: data of the National Institute of Cartography, <i>Pedologie.shp</i>

2.4. Land cover classification

Map 2.4-a: Land cover classification – 2018.....	28
Map 2.4-b: Land cover classification – 2003.....	29
Map 2.4-c: Land cover classification – 1987.....	30

The maps 2.4 show the land cover classification in 2018, 2003 and 1987. One can see that nowadays a mosaic of either shrubby grassland with cropping or in the dryer areas a mosaic of Sahelian grassland with cropping, are the prevailing landuse categories, while bigger remaining patches of forests are limited to the Northern-, the Central- and the South-West Divisions of the region. Deforestation, increasing agriculture (cropping and livestock) and urbanisation have changed the land cover tremendously over a relatively short period of time in just a few decades. This is an ongoing trend. It is

intensified by the growing demands of food, housing, and natural resources (like wood and water) of the growing population in the North-West Region.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>• Land cover: classified from <i>Landsat 5</i>, <i>Landsat 7</i>, and <i>Landsat 8</i> satellite imagery, United States Geological Survey
<p><u>Notice:</u></p> <p>The land cover class “built surfaces” may seem absent from the map but it is actually represented. Because of its nature, this land cover class is extremely scarce on the classified image. Built surfaces correspond to areas with an almost pure mineral reflectance (metallic rooftops, bare soil, naked rocks) and no biomass reflectance. At the resolution of a Landsat sensor (30m*30m) most pixels are a composite of the main reflectances (green biomass, water, minerals), especially in the NW region where constructions are rather small, distant from one another and where vegetation is abundant everywhere. The class “built surfaces” can therefore only be found in the most densely built-up and largest artificially sealed-off surfaces, which appear on the map as very small red clusters (area of Bamenda, Kumbo and Ndop). These clusters are sometimes overlapped by the symbol of the headquarters and the national road.</p>

2.5. Land cover dynamics and changes

Map 2.5-a: Land cover dynamics over the period 2015 – 2000..... 31

Map 2.5-b: Land cover changes between 1987 and 2003..... 32

Map 2.5-c: Land cover changes between 2003 and 2018..... 33

Map 2.5-d: Evolution of forest cover since 1987..... 34

The maps 2.5 show the dynamics and changes of the land cover. For land cover/ land use in the North-West Region it is evident that during the past decades there has been a serious degradation of land, due to a combination of population growth, building of houses and infrastructure, climate change and overexploitation of naturalness. Deforestation, intensifying agriculture on sometimes very steep slopes as well as overgrazing have depleted the soil, especially in the more densely populated divisions of Mezam, Ngo-Ketunjia (destruction of wetlands and swamps for rice production) and Bui Division.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Evolution of forest in % of tree cover: calculated from *Tree Cover* raster data by the Global Land Cover Facility of the University of Maryland
- Boundaries of protected areas: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Land cover changes: calculated by computing the differences between land cover classes obtained from *Landsat 5*, *Landsat 7*, and *Landsat 8* imagery
- Changes of forest cover: calculated by computing the differences between land cover classes obtained from *Landsat 5*, *Landsat 7*, and *Landsat 8* imagery, only for the forest class

Notice:

Like in the previous maps, some classes in the evolution of forest cover (the 10%-20% classes) appear to be absent but are only very scarce. Due to the 30m resolution of the dataset, individual pixels are not distinguishable at the scale of the map unless they build up to larger clusters, which is rarely the case for these classes. The “severe loss” and “medium gain” classes are transition classes between the statistically more-occurring extreme classes and can be found mostly as a very thin one or two pixel wide interface between them.

2.6. Hydrographic network and elevation..... 35

The map 2.6 shows the hydrographic network and elevation. The high amount of precipitation, the geomorphology and the soil structure cause a dense network of rivers all over Cameroon. Most of the rivers in the Western Highlands have rapids and falls. Only parts of the Katsina-Ala river in Menchum Division towards Nigeria are navigable. The rivers do supply a lot of fish in towns like Babessi (Ngo-Ketunjia Division) and Mbo-Nso (Mbven Sub Division in Bui Division).

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Elevation above sea level created with the *1 Arc-Second Global Elevation Data* of the Shuttle Radar Topography Mission, United States Geological Survey
- Relief features and names provided by the local experts

2.7. Hydrography..... 36

The map 2.7 shows the hydrographic basins of the North-West Region. An important watershed between the Benoue and Sanaga drainage basins is on the southern side of the Adamawa Plateau northeast of the North-West Region. There are smaller but important other watersheds in the Manenguba Mountains in the south of the North-West Region as well as in the Bambutus- and the Bamenda highlands. The rivers flowing in the southwest direction in the North-West Region, mostly originate from the Adamawa Plateau and belong to the Atlantic (Mungo and Sanaga Hydrographic) Basin, flowing towards the Noun, Sanaga and the Wouri river, but some of the rivers like the Katsina-ala in Menchum are an effluent of the Niger and belong to the Niger Hydrographic basin.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>• Drainage basins and watershed computed from the <i>1 Arc-Second Global Elevation Data</i> of the Shuttle Radar Topography Mission, United States Geological Survey

2.8. Nature protection

Map 2.8-a: Nature protection and wildlife.....	37
Map 2.8-b: Nature protection and reserves.....	38

The maps 2.8 show the protected areas in the North-West Region. Nature is relatively scarce in the North-West region. From an ecological standpoint, the region is among the poorest in the country. Only Adamawa and the West Region have less surface of protected areas for wildlife. Deforestation is immense and ever more increasing with

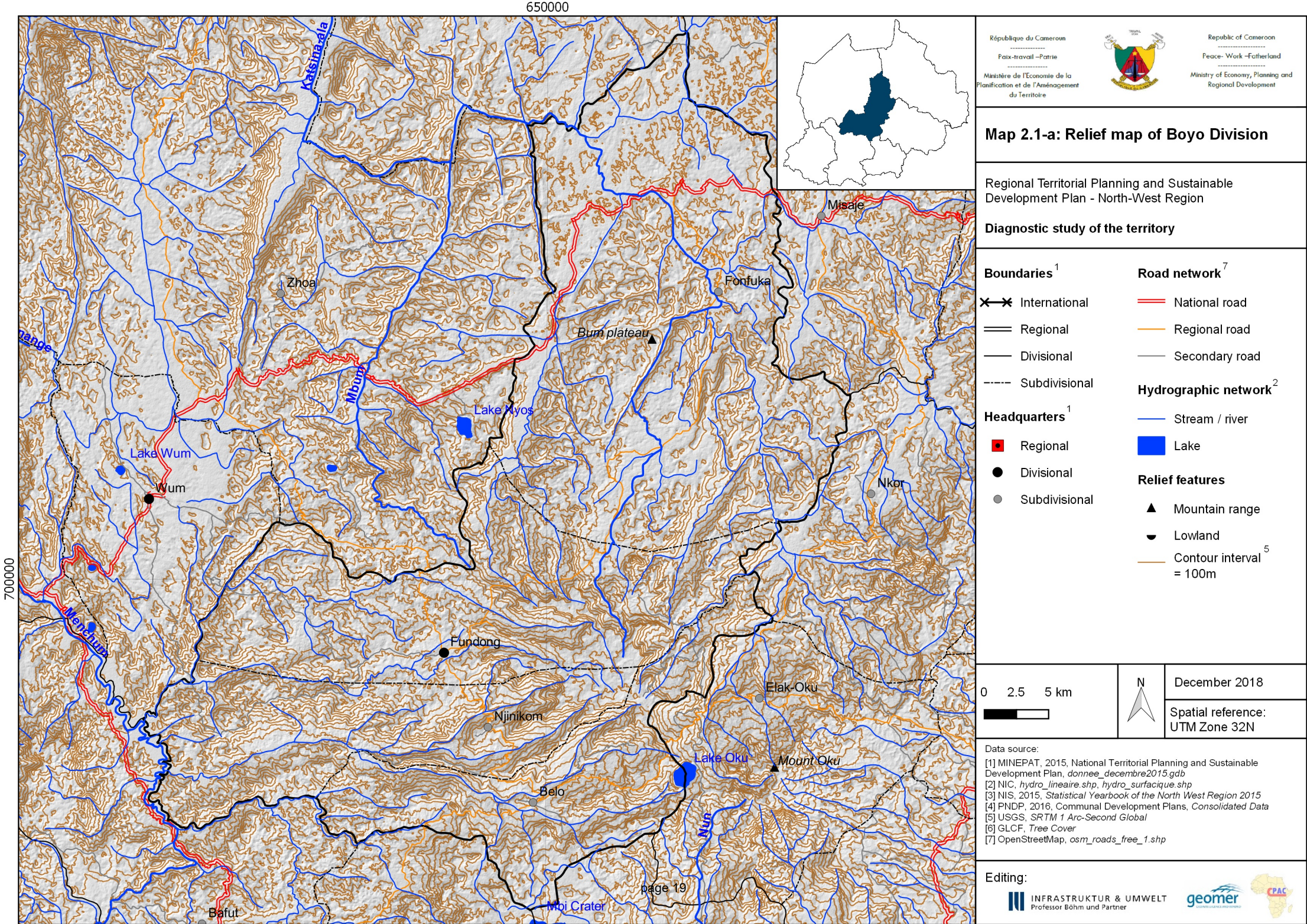
the growing demands of a growing population. Deforestation takes place outside as well as inside (because of a lack of enforcement of regulations) protected reserves. Fragile habitats and threatened species are getting more rare at an alarming speed. Looking at the different divisions, there are big differences in the percentage of coverage by natural forest. Menchum Division is the top area for naturalness in the North-West Region, with Donga- Mantung as the second Division, rich in biodiversity. Together these divisions host more than 90% of the protected areas of the whole North-West Region and host a lot of rare endemic species of fauna and flora in its habitats. Menchum is also the division with the only National Park in the North-West Region (Kimbi Fungom). Part of that park, as well as Mbembe Ako Forest in Donga- Mantung were designated more than 80 years ago and have since been legally protected and managed as natural areas. Other divisions and especially Momo and Bui divisions (both only 1 protected area, respectively Kagwene Gorilla Sanctuary in Njikwa and Kilum-Ijim Mountain Forest & Plant life Sanctuary in Oku) have only a few strongholds left, while in Ngoketunjia there is not even a single protected forest or wildlife reserve. Boyo and Mezam are both intermediate and have 3 or 4 different (parts) of protected areas, that together comprise 1,000-s of hectares.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>• Protected areas: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Non-protected valuable areas: layer digitalised by local experts based on the information gathered during the NW field survey of 2018 commissioned by IU/CPAC• Vegetation cover: classified from <i>Tree Cover</i> raster data by the Global Land Cover Facility of the University of Maryland

2.9. Natural hazards and risk areas..... 39

The map 2.9 shows the natural risk and hazard areas of the North-West Region. Naturally induced hazards in the North-West Region are relatively rare and are mostly confined to landslides on steep slopes and occasionally flooding along rivers and streams. At present in Cameroon only Mount Cameroon in the South-West Region is still recently and regularly volcanically active. In the North-West Region no volcanic activity or accompanying earthquakes have been observed since many centuries. Natural hazards have always occurred. Some of these hazards are induced or aggravated by certain kinds of land use, such as agriculture or unregulated urbanization which if they take place on steep slopes, expose the population to landslides. Others like volcanic or gas eruptions from lakes are independent of land use but result from a conjunction of physical factors and weather conditions as it was the case with the Lake Nyos gas eruption in 1986.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>• Natural risk areas: the flood events were located on the map according to the information contained in the “Rapport de Développement Economique” by the MINEPAT. The other risk areas were located using the information of the IRGM report “Situation of natural risk zones in the NW region”.• Landslide risk areas: are the result of the overlap of <i>1 Arc-Second Global Elevation Data</i> by the USGS with the <i>Tree Cover</i> raster data by the GLCF of the University of Maryland



Map 2.1-a: Relief map of Boyo Division

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Diagnostic study of the territory

- Boundaries**¹

 - International
 - Regional
 - Divisional
 - Subdivisinal

Headquarters¹

 - Regional
 - Divisional
 - Subdivisinal
- Road network**⁷

 - National road
 - Regional road
 - Secondary road


Hydrographic network²

 - Stream / river
 - Lake

Relief features

 - Mountain range
 - Lowland
 - Contour interval⁵
= 100m

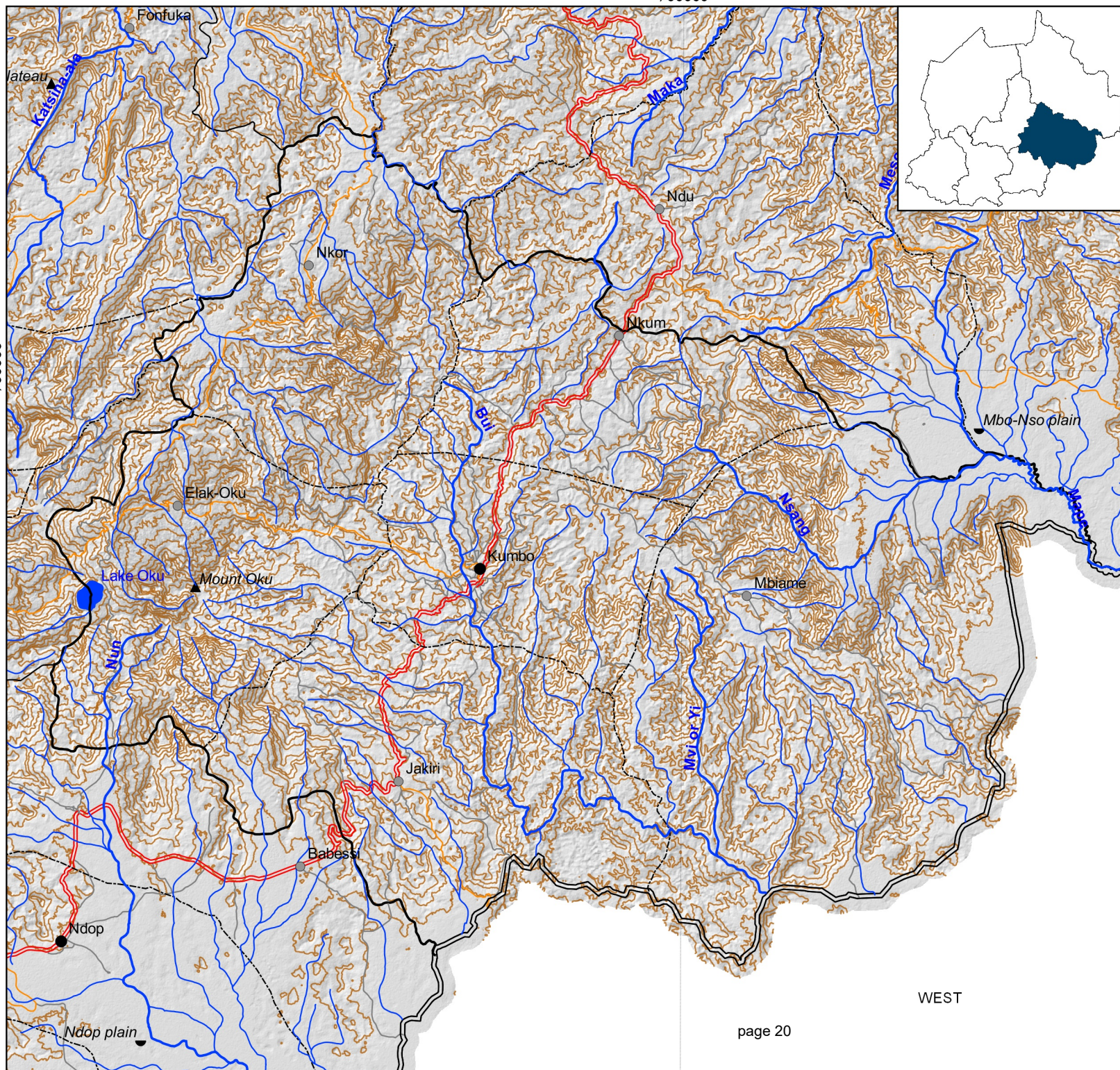
0 2.5 5 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:
[1] MINEPAT, 2015, National Territorial Planning and Sustainable
Development Plan, *donnee_decembre2015.gdb*
[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
[5] USGS, *SRTM 1 Arc-Second Global*
[6] GLCF, *Tree Cover*
[7] OpenStreetMap, *osm_roads_free_1.shp*



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Map 2.1-b: Relief map of Bui Division

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 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary road

Hydrographic network²

- Stream / river
- Lake

Relief features

- ▲ Mountain range
- ▼ Lowland
- Contour interval⁵
= 100m

0 2.5 5 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

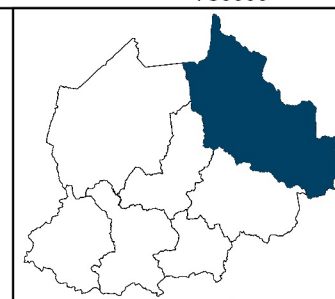
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Map 2.1-c: Relief map of Donga-Mantung Division

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Diagnostic study of the territory

Boundaries¹

-  International
 Regional
 Divisional
 Subdivisional

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

-  National road
 Regional road
 Secondary road

Hydrographic network²

- Stream / river
■ Lake

Relief features

- ▲ Mountain range
 ◐ Lowland
 — Contour interval⁵
 = 100m

0 2.5 5 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*

[2] NIC, *hydro_lineaire.shp, hydro_surfaceique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

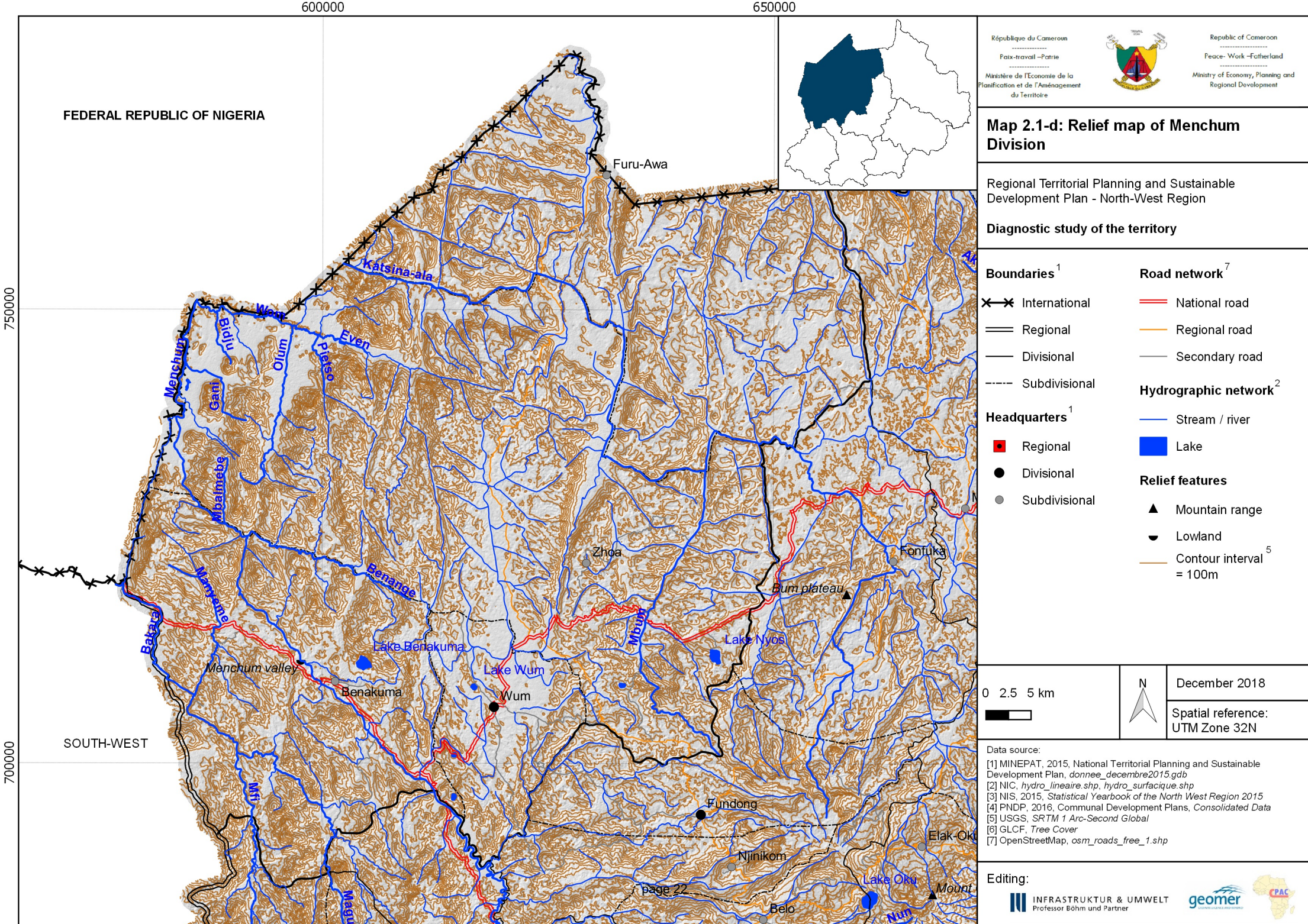
[4] PNPD, 2016, *Municipal Development Plans, Consolidated Data*

[5] USGS, *SRTM 1 Arc-Second Global*

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm roads free 1.shp*

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Map 2.1-e: Relief map of Mezam Division

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Diagnostic study of the territory

Boundaries¹

- ✕—✕ International
- == Regional
- Divisional
- - - Subdivisional

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary road

Hydrographic network²

- Stream / river
- Lake

Relief features

- ▲ Mountain range
- ▼ Lowland
- Contour interval⁵
= 100m

0 2.5 5 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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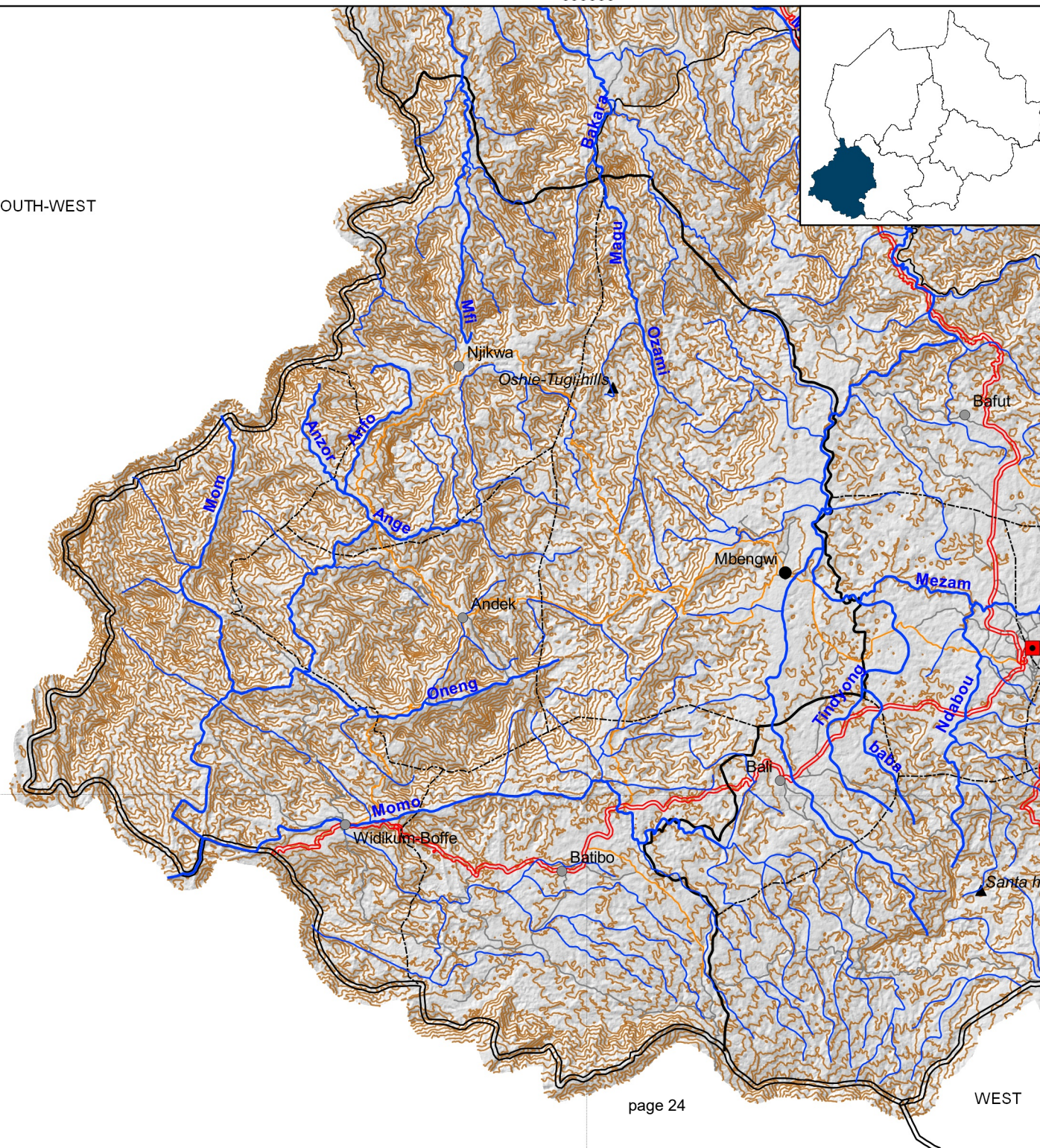


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Map 2.1-f: Relief map of Momo Division

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Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary road

Hydrographic network²

- Stream / river
- Lake

Relief features

- ▲ Mountain range
- ▼ Lowland
- Contour interval⁵
= 100m

0 2.5 5 km



December 2018

Spatial reference:
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Data source:

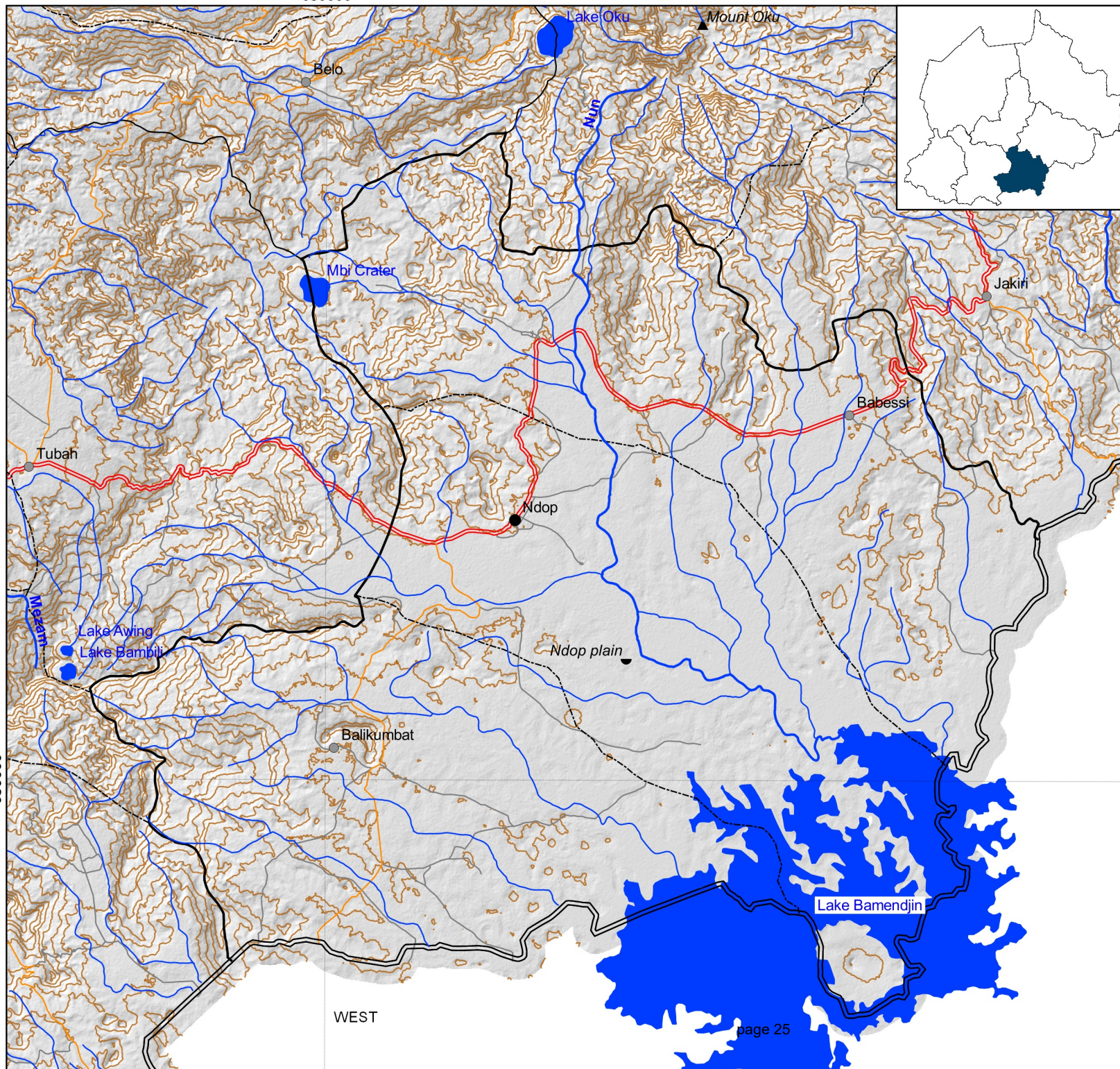
- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.1-g: Relief map of Ngo-Ketunjia Division

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Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary road

Hydrographic network²

- Stream / river
- Lake

Relief features

- ▲ Mountain range
- ▼ Lowland
- Contour interval⁵
= 100m

0 2.5 5 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.2: Geological formations

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- ══ Regional
- Divisional

Headquarters ¹

- Regional
- Divisional

Road network ⁷

- ══ National road
- Regional road

Hydrographic network ²

- Stream / river
- Lake

Geologic units ⁶

- Pre-Quaternary plutonic volcanic ash
- Sedimentary conglomerates, shists, quartzites, and sedimentary volcanic material
- Late tectonic granites
- Syntectonic granites
- Biotite and amphibole gneisses

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] IRGM, *Formations et Géologie Structurale*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.3: Pedology

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional

Road network ⁷

- National road
- Regional road

Soil characteristics ²

- Skeletal soils on
- Volcanic ash
- Fluvial alluvium
- Weathered soils on
- Volcanic basic rocks
- Sesquioxide soils on
- Non differentiated rocks
- Red acid rocks
- Basic rocks
- Yellow acid rocks
- Basalts
- Hydromorphic soils on
- Non differentiated parent material
- Superimposed on
- Undifferentiated rocks/
yellow acid rocks

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp, Pedologie.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.4-a: Land cover classification - 2018

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- ══ Regional
- Divisional

Headquarters¹

- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Road network⁷

- National road
- Regional road

Land cover (as of January 2018)⁵

- Built surfaces
- Mosaic sahelian savanna / cropland
- Mosaic cropland / shrubby grassland
- Forest

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.4-b: Land cover classification - 2003

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional

Headquarters¹

- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Road network⁷

- National road
- Regional road

Land cover (as of January 2003)⁵

- Built surfaces
- Mosaic sahelian savanna / cropland
- Mosaic cropland / arbustive grassland
- Forest

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.4-c: Land cover classification - 1987

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- ══ Regional
- Divisional

Headquarters¹

- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Road network⁷

- National road
- Regional road

Land cover (as of January 1987)⁵

- Built surfaces
- Mosaic sahelian savanna / cropland
- Mosaic cropland / shrubby grassland
- Forest

0 10 20 km



December 2018

Spatial reference:

UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.5-a: land cover dynamics over the period 2015 - 2000

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- ══ Regional
- Divisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional

Road network ⁷

- ══ National road
- Regional road

Evolution of forest in % of tree cover ⁶

- Extreme loss:
> 20%
- Severe loss:
10% - 20%
- Loss of forest:
< 10%
- Gain of forest:
< 10%
- Medium gain:
10% - 20%
- Important gain:
> 20%
- Boundaries of ¹ protected areas

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.5-b: land cover changes between 1987 and 2003

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

✕✕ International

== Regional

— Divisional

Hydrographic network ²

— Stream / river

■ Lake

Headquarters ¹

■ Regional

● Divisional

Road network ⁷

— National road

— Regional road

Land cover changes ⁵

■ Loss of forest to grassland

■ Loss of grassland to sahelian savanna

■ Forest gained over grassland

■ Forest gained over sahelian savanna

■ Gain of grassland over sahelian savanna

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable
Development Plan, *donnee_decembre2015.gdb*

[2] NIC, *hydro_lineaire.shp*, *hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*

[5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and
Landsat 8 images

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.5-c: land cover changes between 2003 and 2018

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

✕✕ International

== Regional

— Divisional

Headquarters¹

■ Regional

● Divisional

Road network⁷

== National road

— Regional road

Hydrographic network²

— Stream / river

■ Lake

Land cover changes⁵

■ Loss of forest to grassland

■ Loss of grassland to sahelian savanna

■ Forest gained over grassland

■ Gain of grassland over sahelian savanna

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable
Development Plan, *donnee_decembre2015.gdb*

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*

[5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and
Landsat 8 images*

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.5-d: Evolution of forest cover since 1987

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 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- ══ Regional
- Divisional

Headquarters¹

- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Road network⁷

- National road
- Regional road

Changes of forest cover⁵

- Loss of forest since 2003
- Net loss of forest since 1987
- Gain of forest since 2003

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.6: Hydrographic network and elevation

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Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional

Road network⁷

- National road
- Regional road

Elevation above sea level (in m)⁵

- ≤ 500
- 500 - 1000
- 1000 - 1500
- 1500 - 2000
- 2000 - 2500
- > 2500

Relief features

- ▲ Mountain range
- Lowland

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.7: Hydrography

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional

Headquarters ¹

- Regional
- Divisional

Road network ⁷

- National road
- Regional road

Hydrographic network ²

- Stream / river
- Major draining river
- Lake

Drainage basins ^{2, 5}

- Benoue basin
- Sanaga basin
- Western rivers basin
- Watershed delineation

0 10 20 km



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Spatial reference:

UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp, Bassin_versant.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, *Communal Development Plans, Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.8-a: Nature protection and wildlife

Regional Territorial Planning and Sustainable
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Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional

Road network ⁷

- National road
- Regional road

Protected areas ¹

- Forest reserves
- ▨ Protected forest
- Plantlife sanctuary
- Wildlife reserves
- ▨ National park
- Wildlife sanctuary

Non-protected valuable areas ⁵

- ▨ Forest
- ▨ Wetland

Vegetation cover ⁶

- Grassland
- Shrubland
- Dense forest

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] NWV Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 2.8-b: Nature protection and reserves

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional

Road network ⁷

- National road
- Regional road

Protected areas ¹

- Forest reserve
- Wildlife reserve
- Not protected but valuable ⁵

Vegetation cover ⁶

- Grassland
- Shrubland
- Dense forest

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, *Communal Development Plans, Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Menchum floods
(07.2017)

SOUTH-WEST

Flood in Widikum
(08.1997)

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Map 2.9: Natural hazards and risk areas

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Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Road network⁷

- National road
- Regional road

Natural risk areas^{1, 3}

- ▨ Flood risk area
- ▨ Occured flood
- ▨ Gas eruption

Headquarters¹

- Regional
- Divisional

Landslide risk areas^{5, 6}

- Steep slopes ($\geq 30\%$)
- Steep slopes ($\geq 30\%$) and weak tree cover ($< 20\%$)
- Steep slopes and weak tree cover combined with friable sesquioxide soils on basalts

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb, RADEC*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] IRGM, *Situation of natural risk zones in the region*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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3 Economy (see report chapter 5)

3.1. Production and consumption

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Map 3.1-k: Production and consumption areas – Momo Division.....	53
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The maps 3.1 show the areas of production and consumption. The most important food crops for agricultural production in the North-West Region are Maize, Cocoyam, Beans, Casava and Plantain Banana, followed by Yam, Palm Oil, Banana, Irish Potatoes and Tomato. Despite some few changes over the years, the observation is that the first two food crops for each division remain dominant across the years. For the Boyo Division we have plantains and banana/maize as the dominant food crops over the years, for Bui we have maize and beans, for Donga-Mantung we have cocoyam/achut and maize, for Menchum we have maize and cocoyam/achut, for Mezam we have Cassava and Cocoyam/Achuh, for Momo we have cocoyam and yam, and for Ngoketunjia we have bean and maize with rice being the least. Six out of the

seven divisions of the North-West Region, except Menchum, are involved in the production of Arabica coffee. Robusta coffee does well in Menchum, Mezam, Momo, Ngoketunjia and cocoa farming is practiced mostly in Donga-Mantung, Menchum, Mezam, and Momo. Cocoa is still practiced at a very small scale, small farms, in the North-West Region compared to other regions like the Southwest, where we have plantations. Plantation-driven types of projects are not very common in the North-West Region until today as they are in the Southwest region from old tradition.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Main exchange corridors: typology and location were determined with the information of the MINEPAT report “Monographic report on frontier markets in the North-West Region” and complemented by local expert knowledge
- Production areas: layer digitalised by local experts based on the information gathered during the NW field survey of 2018 commissioned by IU/CPAC
- Trade structures: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP)
- Cross-border trade: MINEPAT report “Monographic report on frontier markets in the North-West Region” and complemented by local expert knowledge

3.2. Potential surfaces for cash crops: arabica and rice..... 55

The map 3.2 shows the potential surfaces for the cash crops arabica and rice.

The exportation of cash crops is an advantageous mean of generating income while requiring few other input assets than those already in place for subsistence farming. Due to its topography, the North-West Region offers potential for rice farming in the Mbo-Nso plain and in the Ndop plain, and for arabica coffe all across the mountain

range. Arabica is already farmed largely in the Mezam, Bui, Boyo and Donga-Mantung Divisions whereas rice is known to be extensively cultivated in Ngo-Ketunjia.

Used sources/data for the content of the map:
<ul style="list-style-type: none">Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPATHeadquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPATHydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>Main exchange corridors: typology and location were determined with the information of the MINEPAT report “Monographic report on frontier markets in the North-West Region” and complemented by local expert knowledgeProduction and potential areas: layer digitalised by local experts based on the information gathered during the NW field survey of 2018 commissioned by IU/CPAC

3.3. Forestry..... 56

The map 3.3 shows the activities related to forestry. Around the more populated urban areas of Bamenda, Kumbo, Nkambé and Fundong, eucalyptus trees are a common sight as they are a prime construction material. In the center of the mountain range, between the Oku area and the Fundong area, community forests provide very important services to the population as reservoirs of biodiversity and medicinal plants.

Used sources/data for the content of the map:
<ul style="list-style-type: none">Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPATHeadquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPATHydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>

<ul style="list-style-type: none">Main exchange corridors: typology and location were determined with the information of the MINEPAT report “Monographic report on frontier markets in the North-West Region” and complemented by local expert knowledgeEucalyptus tree: layer digitalised by local experts based on the information gathered during the NW field survey of 2018 commissioned by IU/CPACForest activity: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP) as well as <i>donnees_decembre2015.gdb</i> of the SNADDT by the MINEPATVegetation cover: classified from <i>Tree Cover</i> raster data by the Global Land Cover Facility of the University of Maryland
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3.4. Mining activities and potentials..... 57

The map 3.4 shows the mining activities and potentials in the North-West Region. The mining industry in the North-West is still in its infancy stage, with activity being predominantly artisan in nature. However, the Region has significant potential, and large proportions of its landmass are yet to be explored. As the state of infrastructure improves, it can be expected that mining in this fast emerging region to prosper. The region has considerable potential for mining with its prospects of bauxite, iron ore, sapphire, ruby, diamond, tin, gold, titanium, rutile, kyanite, basalt, sand, pyroclastic materials and others. Of the region’s 17,300 km2 surface area, less than 25% has been explored for mineral by five different exploration projects. In 2017, a total of 67,936 m2 of land was occupied by industrial quarry activities. A vast geography endowed with diverse topography has made the North-West Region the repository of abundant resources which provides a base for investment. The region is quite rich in natural resources. The region has considerable potential for Gold in Misaje, Lum Ndu, Mbengwi, Diamond in Misaje, Donga Mantung, Iron in Mayor-Binka, Coal in Tabeken, Sapphire in Mayo-Kilah, Mbiame, Donga-Mantung, Zircon in Fonfuka and Coal, Kaolin in Mbengwi. pyroclastic materials in Befang, clay on the lower slopes of the Sabga hill and the upper limits of the Ndop plain and Bamessing. Though there are no industrial mining activities going on, small scale mineral mining activities, industrial quarrying, semi-industrial and artisanal activities dominate the mining industry in the region. It is sometimes difficult to differentiate between non-industrial commercial and non-industrial domestic activities from some artisanal activities, considering that many of them are seasonal.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Location of quarries: data of the Ministry of Mines, Industry and Technological Development, complemented by local expert knowledge
- Mineral potentials: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Exploration permits: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT

3.5. Touristic potential..... 58

The map 3.5 shows the touristic potential.

Most of the touristic potential of the North West region corresponds to the area of the traditional kingdoms. The Fons' palaces belong to the traditional heritage of the North West Region and are often accompanied by museums that expose the artifacts of the kingdom. The center of the region between Bamenda and Kumbo is also its touristic heart as it comprises beside the Fon's palaces, ecotourism sites, mountains as well as the protected areas of Mount Oku forest and Mbi Crater. The good road quality between Kumbo and Bamenda makes the travel to all these points of interest quite convenient whereas the National Park in the Menchum Division is currently much more difficult to access. The most populated Divisions of Mezam, Bui, and Ngo-Ketunjia offer the largest hotel beds capacity.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Touristic sites: knowledge provided by local experts as well as information gathered during the NW field survey of 2018
- Protected areas: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Total bed capacity in the Divisions: information contained in the *Statistical Yearbook of the North West Region 2015* by the National Institute of Statistics

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SOUTH-WEST

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Map 3.1-a: Production and consumption areas - Rice, potatoe, beans, and yam

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional

Road network⁷

- National road
- Regional road

Main exchange corridors

- ↔ National
- ↔ International, with¹ customs office
- ↔ International, pre-dominantly informal
- Main regional consumption area

Production areas⁵

- Rice
- ▨ Potatoe
- ▨ Potatoe, intensive production
- Beans
- ▨ Yam

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.1-b: Production and consumption areas - Maize and cocoyam

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional

Road network ⁷

- National road
- Regional road

Main exchange corridors

- ↔ National
- ↔ International, with customs office ¹
- ↔ International, pre-dominantly informal
- Main regional consumption area

Production areas ⁵

- Maize
- Cocoyam

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

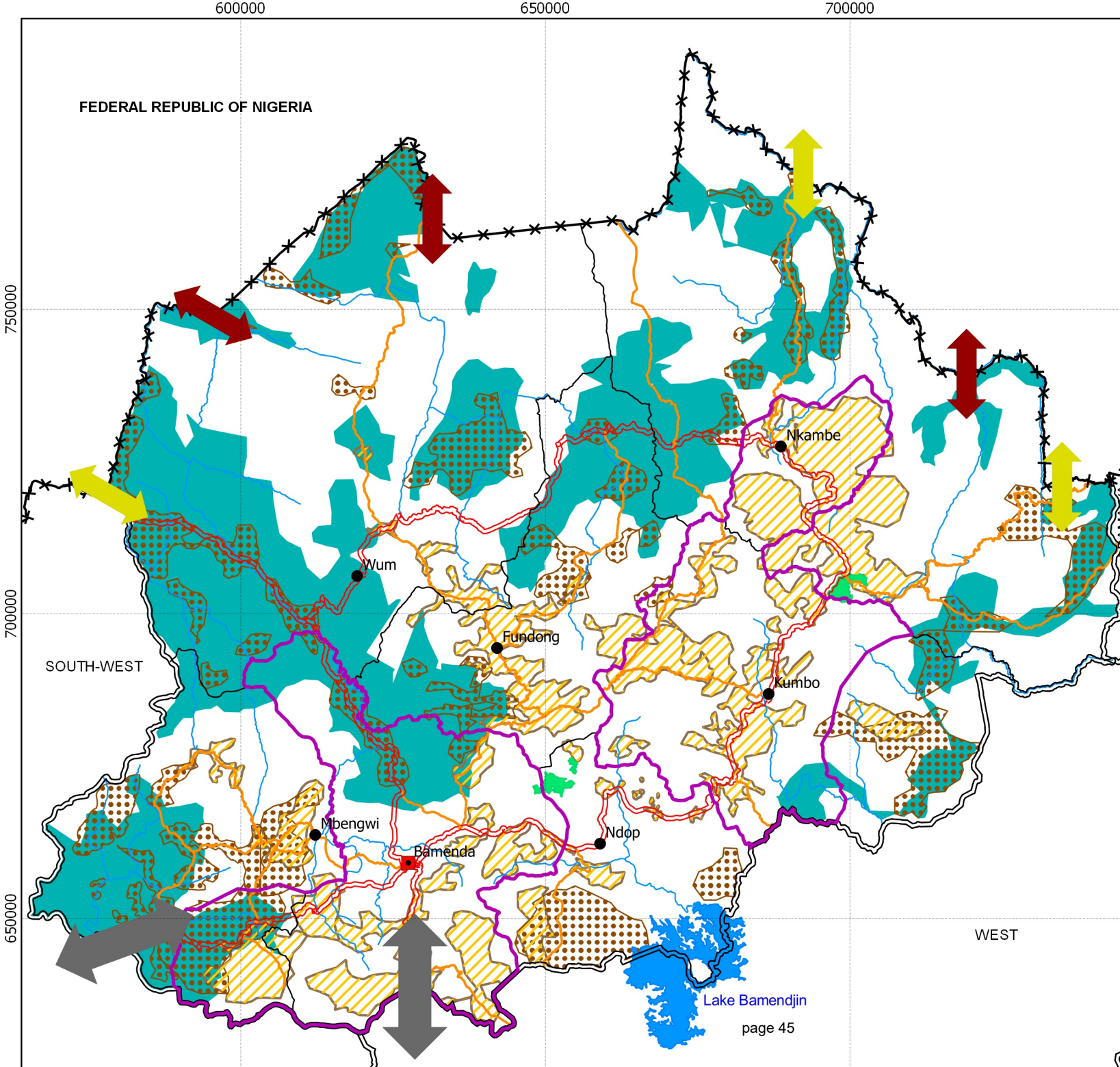
- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.1-c: Production and consumption areas - Coffee, Cocoa, and Tea

Regional Territorial Planning and Sustainable Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

International

Regional

Divisional

Hydrographic network²

Stream / river

Lake

Headquarters¹

Regional

Divisional

Road network⁷

National road

Regional road

Main exchange corridors

National

International, with¹ customs office

International, pre-dominantly informal

Main regional consumption area

Production areas⁵

Arabica

Robusta

Cocoa

Tea plantation

0 10 20 km

N

December 2018

Spatial reference: UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*

[5] NW Field Survey 2018

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.1-d: Production and consumption areas - Palm tree, groundnuts, and honey

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional

Road network⁷

- National road
- Regional road

Main exchange corridors

- ↔ National
- ↔ International, with¹ customs office
- ↔ International, pre-dominantly informal
- Main regional consumption area

Production areas⁵

- ▨ Palm tree
- ▨ Honey
- Groundnuts

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

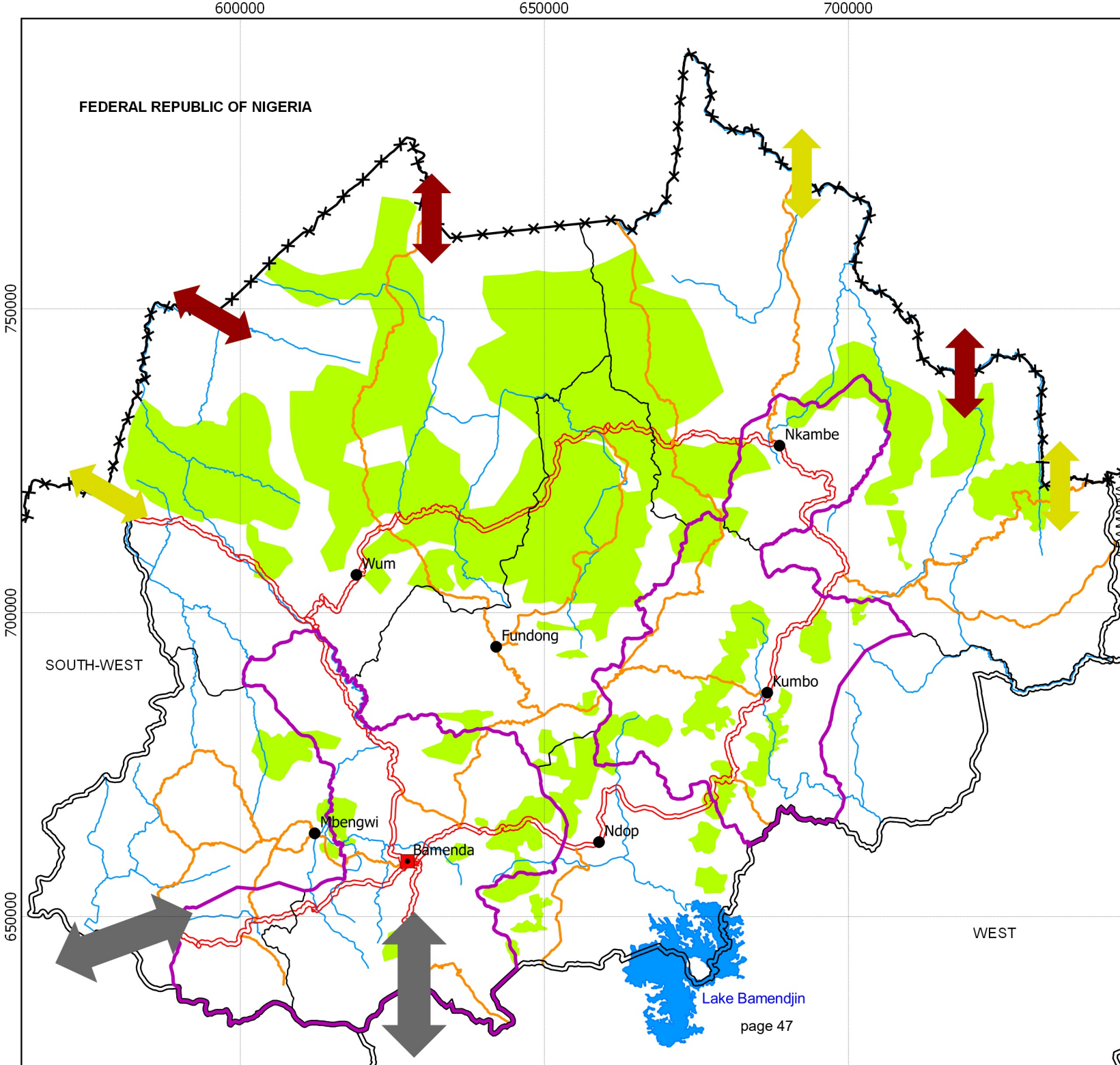
- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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**Map 3.1-e: Production and consumption
areas - Grazing**

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹
××× International
— Regional
— Divisional

Hydrographic network²
— Stream / river
— Lake

Headquarters¹
■ Regional
● Divisional

Road network⁷
— National road
— Regional road

**Main exchange
corridors**
↔ National
↔ International, with
customs office¹
↔ International, pre-
dominantly informal
□ Main regional
consumption area

Production areas⁵
■ Cattle rearing /
pasture

0 10 20 km

N

December 2018

Spatial reference:
UTM Zone 32N

Data source:
[1] MINEPAT, 2015, National Territorial Planning and Sustainable
Development Plan, *donnee_decembre2015.gdb*; Monographic report
on frontier markets in the north west region
[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
[5] NW Field Survey 2018
[6] GLCF, *Tree Cover*
[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.1-f: Production and consumption areas - Boyo Division

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Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Trade structures⁴

- Periodic market
- Permanent market
- Unknown periodicity
- ▲ Cattle market

Hydrographic network²

- Stream / river
- Lake

Production areas⁵

- Maize
- Yam
- Cocoyam
- Beans
- Rice
- Palm tree
- Cattle rearing

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary axis

0 2.5 5 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

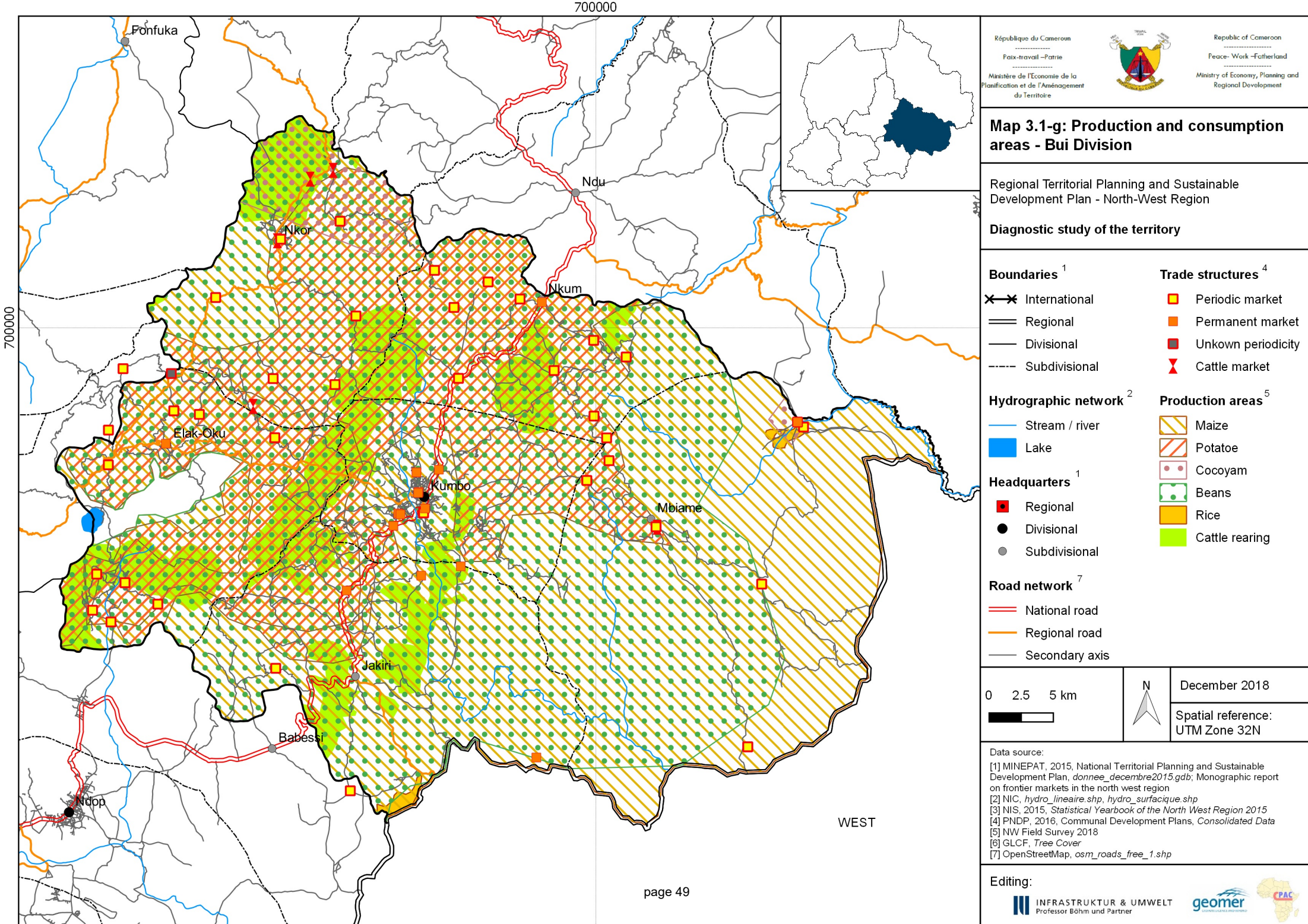
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*

[5] NW Field Survey 2018

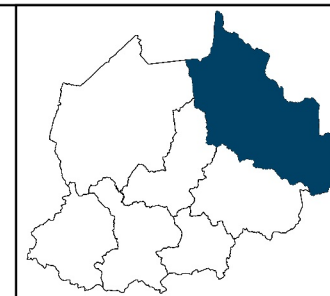
[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.1-h: Production and consumption areas - Donga-Mantung Division

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Trade structures ⁴

- Periodic market
- Permanent market
- Unknown periodicity
- ▲ Cattle market

Hydrographic network ²

- Stream / river
- Lake

Cross-border trade ¹

- ◆ Village with custom office
- ◆ Village without custom office

Headquarters ¹

- Regional
- Divisional
- Subdivisional

Production areas ⁵

- Maize
- Cocoyam
- Beans
- Palm tree
- Rice
- Cattle rearing

Road network ⁷

- National road
- Regional road
- Secondary axis

0 5 10 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

[4] PNDR, 2016, Communal Development Plans, *Consolidated Data*

[5] NW Field Survey 2018

[6] GLCF, *Tree Cover*

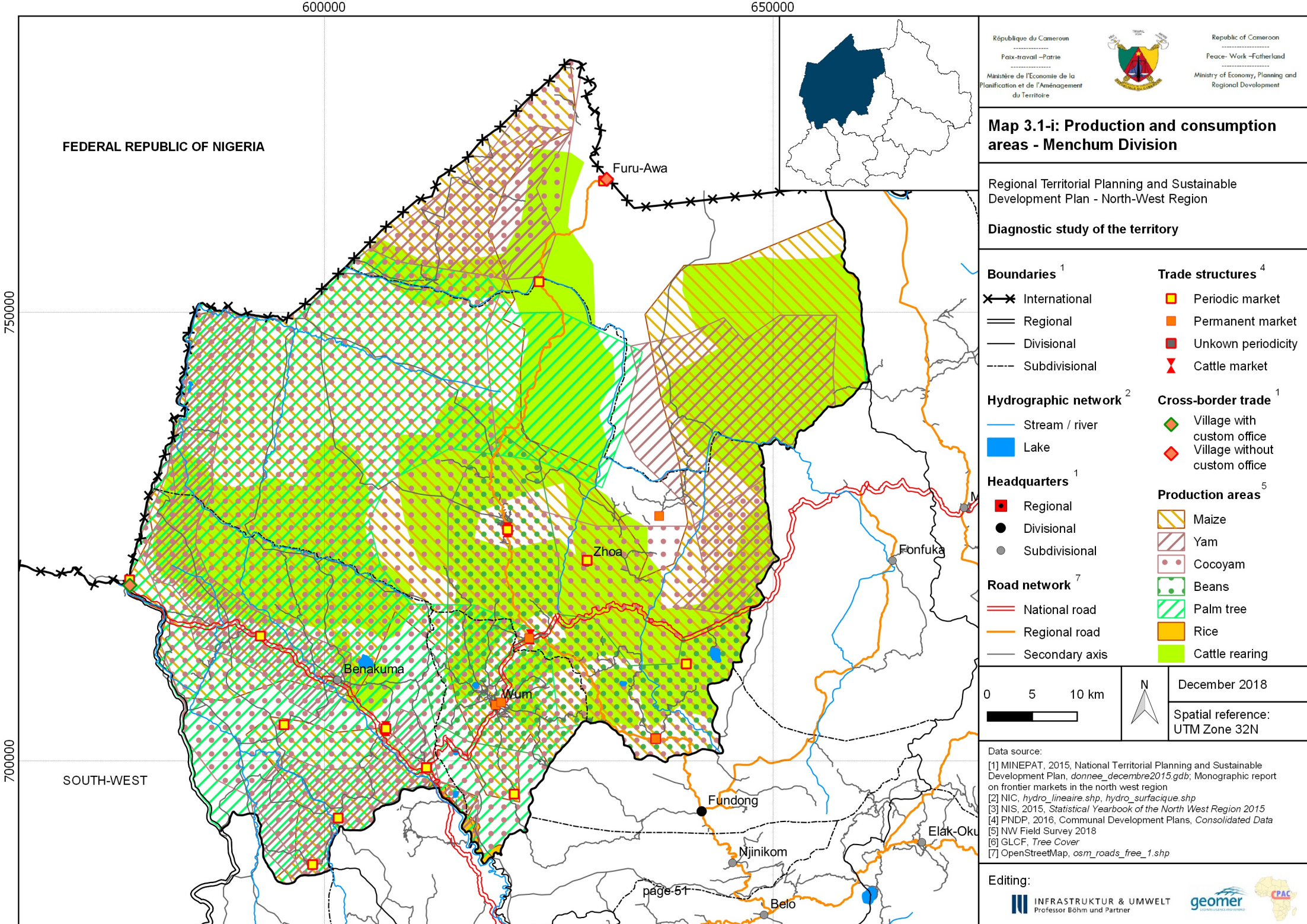
[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.1-j: Production and consumption areas - Mezam Division

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary axis

Trade structures⁴

- Periodic market
- Permanent market
- Unknown periodicity
- ▲ Cattle market

Production areas⁵

- Maize
- Yam
- Cocoyam
- Beans
- Palm tree
- Rice
- Cattle rearing

0 2.5 5 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

[4] PNDRP, 2016, Communal Development Plans, *Consolidated Data*

[5] NW Field Survey 2018

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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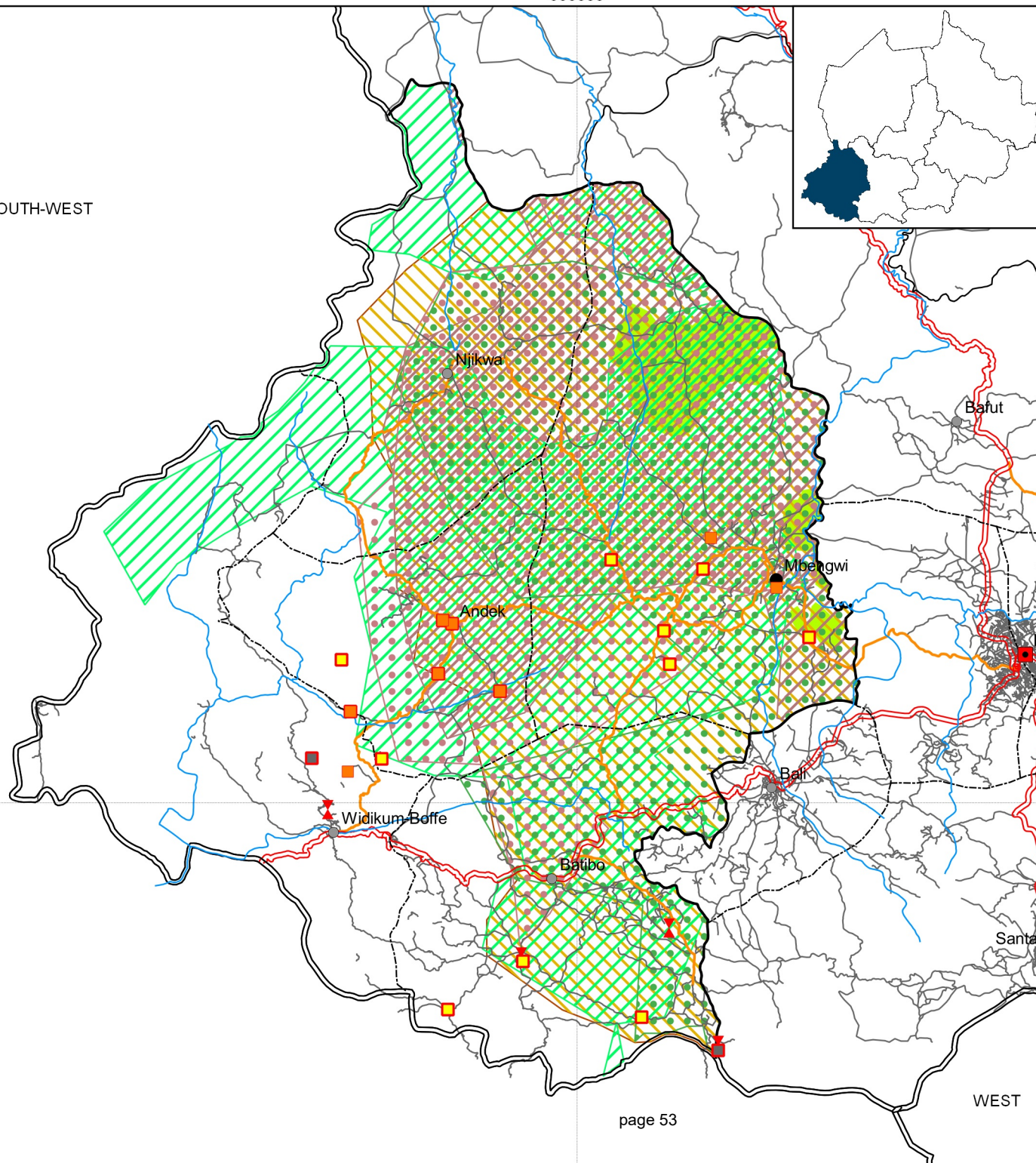
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SOUTH-WEST

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Map 3.1-k: Production and consumption areas - Momo Division

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

- Boundaries**¹
- International
 - Regional
 - Divisional
 - Subdivisional
- Hydrographic network**²
- Stream / river
 - Lake
- Headquarters**¹
- Regional
 - Divisional
 - Subdivisional
- Road network**⁷
- National road
 - Regional road
 - Secondary axis
- Trade structures**⁴
- Periodic market
 - Permanent market
 - Unknown periodicity
 - Cattle market
- Production areas**⁵
- Maize
 - Yam
 - Cocoyam
 - Beans
 - Palm tree
 - Cattle rearing

0 2.5 5 km

N

December 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

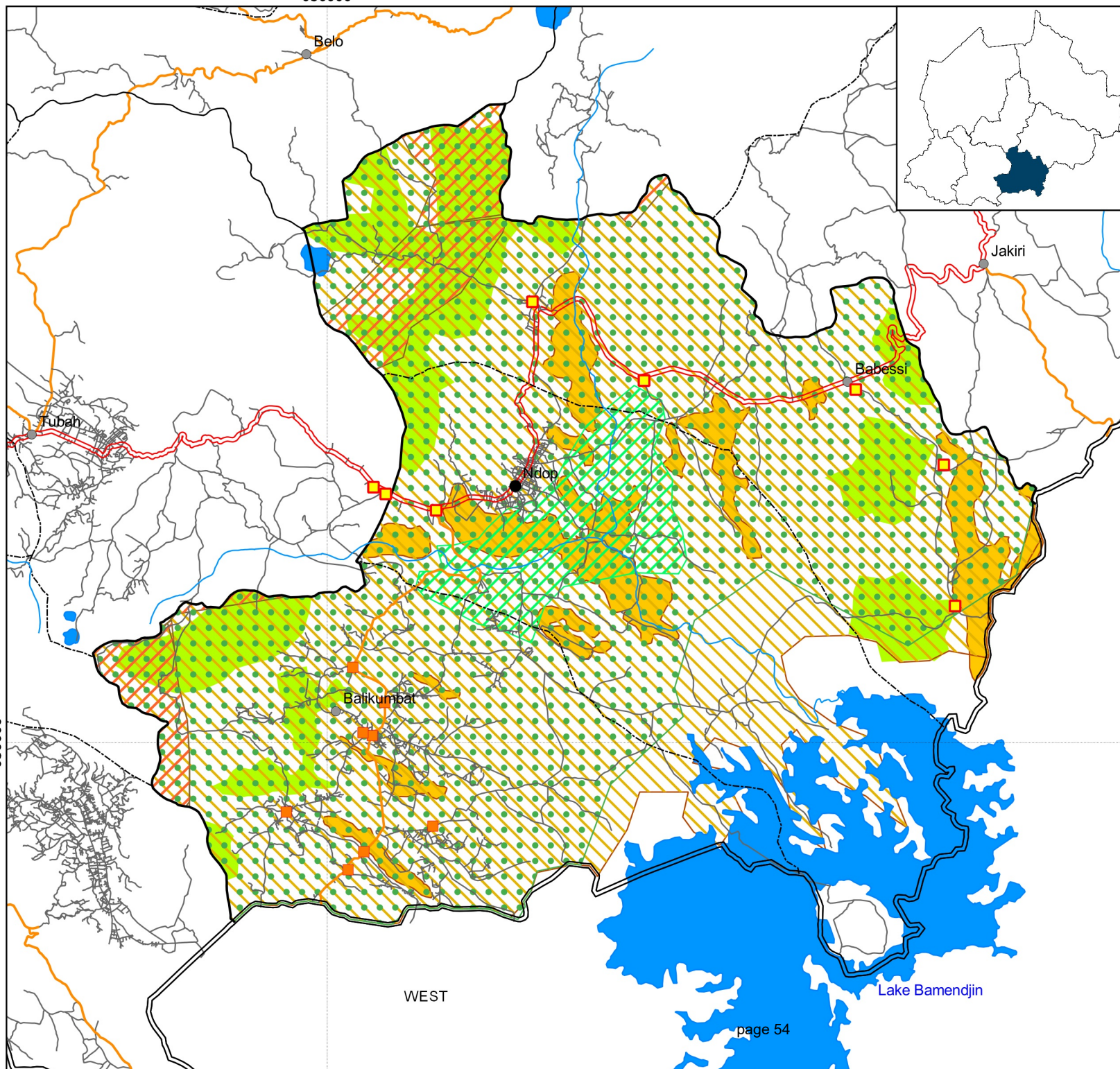
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*

[5] NW Field Survey 2018

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

WEST



Map 3.1-I: Production and consumption areas - Ngo-Ketunjia Division

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Trade structures⁴

- Periodic market
- Permanent market
- Unknown periodicity
- ✕ Cattle market

Hydrographic network²

- Stream / river
- Lake

Production areas⁵

- Maize
- Potatoes
- Beans
- Palm tree
- Rice
- Cattle rearing

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary axis

0 2.5 5 km



Decembre 2018

Spatial reference:
UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

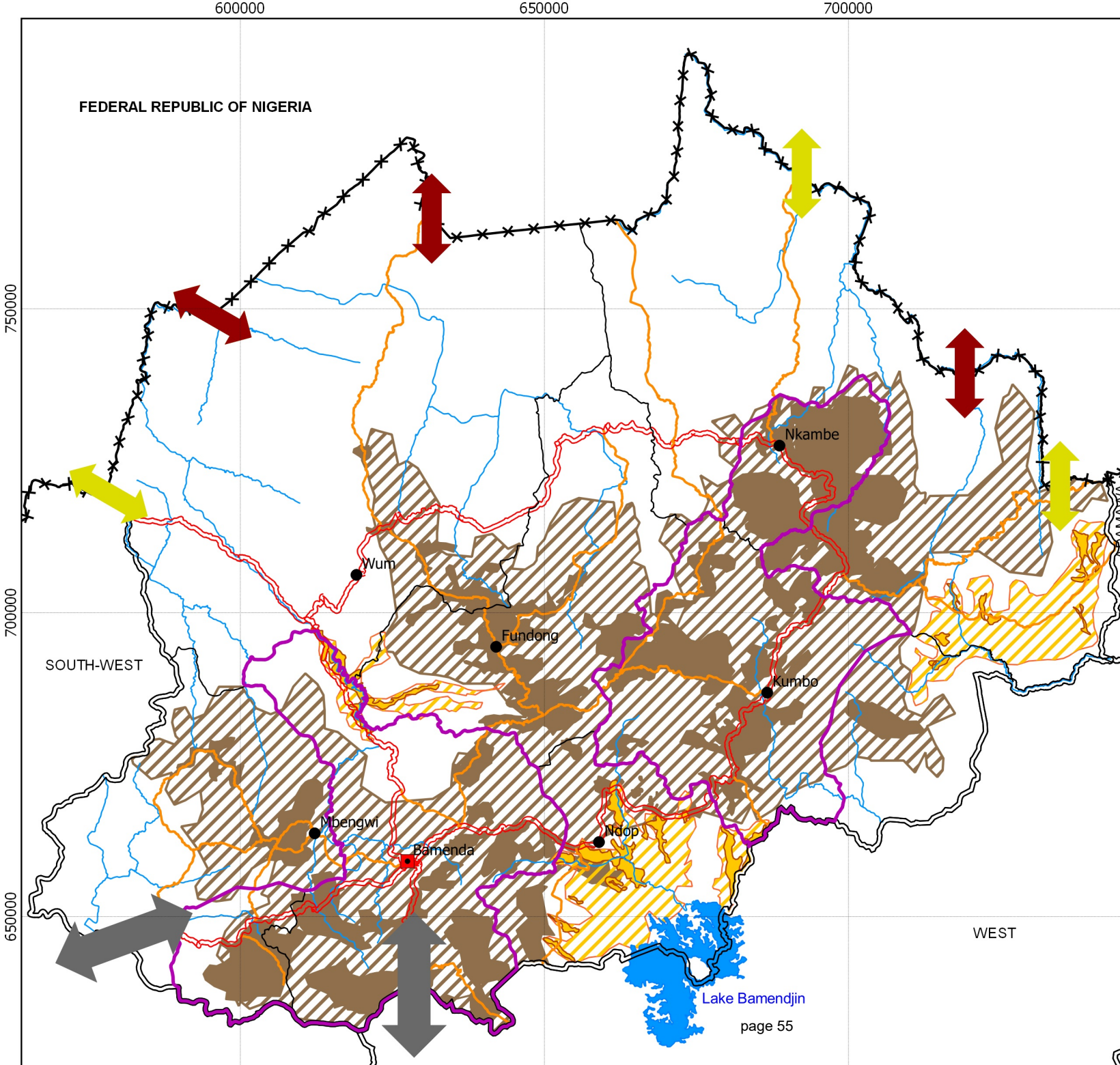
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*

[5] NW Field Survey 2018

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.2: Potential surfaces for cash crops Arabica and rice

Regional Territorial Planning and Sustainable Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- International
- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional

Road network⁷

- National road
- Regional road

Main exchange corridors

- National
- International, with¹ customs office
- International, pre-dominantly informal
- Main regional consumption area

Production areas⁵

- Rice
- Arabica

Potential areas⁵

- Suitable areas for rice
- Suitable areas for arabica

0 10 20 km

N

December 2018

Spatial reference: UTM Zone 32N

Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region

[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*

[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*

[4] PNDR, 2016, Communal Development Plans, *Consolidated Data*

[5] NW Field Survey 2018

[6] GLCF, *Tree Cover*

[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 3.3: Forestry

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional

- ↔ International, with
customs office
- ↕ International, pre-
dominantly informal
- Main regional
consumption area

Hydrographic network²

- Stream / river
- Lake

Eucalyptus tree⁵

- ▨ Area of prevalence
- ▨ Potential area /
area of occurrence

Headquarters¹

- Regional
- Divisional

Forest activity

- Major community¹
forest
- Village with⁴
tree nurseries

Road network⁷

- National road
- Regional road

Vegetation cover⁶

- Grassland
- Shrubland
- Dense forest

Main exchange¹ corridors

- ↔ National

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*; Monographic report on frontier markets in the north west region
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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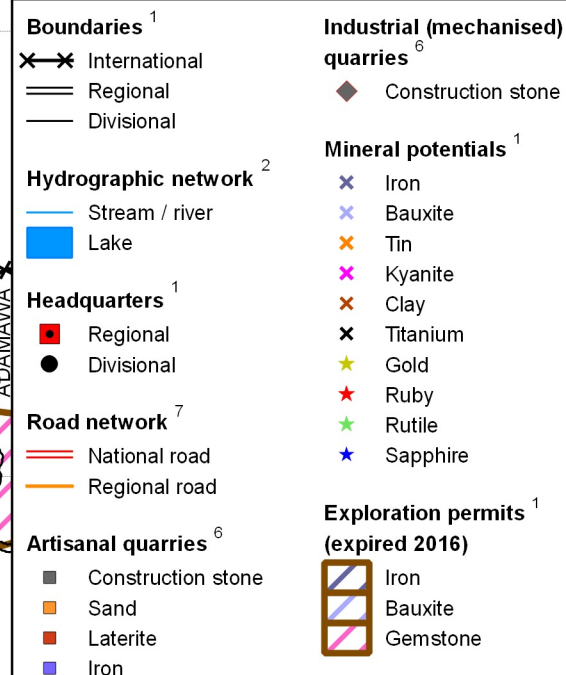


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Map 3.4: Mining activities and potentials

Regional Territorial Planning and Sustainable
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Diagnostic study of the territory



0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
 [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
 [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
 [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
 [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
 [6] IRGM / MINMIDT
 [7] OpenStreetMap, *osm_roads_free_1.shp*

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Ministry of Economy, Planning and
Regional Development

Map 3.5: Touristic potential

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional

Headquarters¹

- Regional
- Divisional

Hydrographic network²

- Stream / river
- Lake

Road network⁷

- == National road
- Regional road
- ✈ Bamenda Airport

Touristic sites⁵

- Cultural heritage
- Ecotourism
- Waterfall
- ▲ Mountain

Protected areas¹

- National park
- Plantlife sanctuary
- Wildlife sanctuary

Total bed capacity³ in the Division

- 0 - 100
- > 100 - 200
- > 200 - 300
- > 300

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, *Communal Development Plans, Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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4 Urbanisation (see report chapter 6)

4.1. Total population of Division and Subdivisional population density in 2015..... 60

The map 4.1 shows the total population of Division and Subdivisional population density in 2015 where we can see the emergence of the Kumbo urban area as the secondary population center of the Region.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>• Population size: information contained in the <i>Statistical Yearbook of the North West Region 2015</i> by the National Institute of Statistics• Population density: information contained in the <i>Statistical Yearbook of the North West Region 2015</i> by the National Institute of Statistics

4.2. Densely populated / urbanised divisions of the North-West Region..... 61

The map 4.2 shows the urban area of the North-West Region. The general trend is the movement from the rural to the urban centres. Putting this side by side with the increase in the birth rate, healthy conditions of living consequent upon a reduction in the death rate, it is anticipated that by the year 2050, most of our present urban centres like Bamenda, Kumbo, Wum, Nkambe and Mbengwi shall increase their present population by about 50%, while towns like Ndop, Bali, Batibo, Fundong, Jakiri will become heavily populated urban centres.

Today, the Bamenda-Ndop-Kumbo axis already concentrates more than half of the population of the North-West region. It is a heavily urbanized and cultivated area where we can find most of the economic facilities and public services in the region. The villages are well connected to one another thanks to a road network that is in a significantly better condition than elsewhere in the North-West.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road condition: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>, complemented by local expert knowledge• Economic facilities: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP)• Production areas: layer digitalised by local experts based on the information gathered during the NW field survey of 2018 commissioned by IU/CPAC

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Map 4.1: Total population of Division and Subdivisional population density in 2015

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- Regional
- Divisional
- - - Subdivisional

Hydrographic network ²

- Stream / river
- Lake

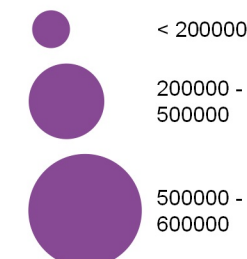
Headquarters ¹

- Regional
- Divisional

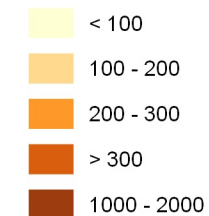
Road network ⁷

- National road
- Regional road

Population size in the Division in 2015 ³



Population density in inhabitants / km² ³



0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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5 Technical infrastructures (see report chapter 7)

5.1. Transport infrastructures

Map 5.1-a: Transport infrastructures.....	64
Map 5.1-b: Transport infrastructures – State of the road network.....	65

The maps 5.1 show the transport infrastructures and the state of the main road network. The road network remains the most used for the transport of people and goods in the Region. Until April 2017, there were four categories of roads: national roads, provincial roads, departmental roads and rural roads. In July 2017, the Region had in total: 357.2 km of paved roads, 2,008 km of unpaved roads, 8,258 km of other tracks/paths/trails, totalling 10,910.9 km.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road nomenclature and coating: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*, complemented by field expert knowledge
- Transport facilities: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP) complemented by information gathered during the NW field survey of 2018

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Map 5.2-f: Road practicability/accessibility – Momo Division	72
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Map 5.2-g: Road practicability/accessibility – Ngo-Ketunjia Division	73
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The maps 5.2 show the road practicability and village accessibility. The national road N6 reaching south Bamenda passes through Santa from Mbouda, a city of the West Region. It continues to Enugu in Nigeria via Batibo, Mamfe and Ekok. The Bamenda-Enugu Corridor is part of the Trans-African Highway; it is very important for trade between Nigeria and the North-West Region, and also with Cameroon. This N6 national road also connects the North-West to the South-West. It should be noted that the going south Babadjou-Santa-Bamenda section is in a bad state. Its rehabilitation is ongoing and is financed by the World Bank. Some roads within the city will benefit from this rehabilitation project. The Ring-Road was identified as a priority development project in 1983. Its route connects five departments out of seven in the Region: Mezam, NgoKetunjia, Bui, Donga-Mantung, Menchum, making a loop of divisional capitals (Bamenda – Wum – Nkambé – Kumbo – Ndop - Bamenda). Because of budgetary constraints, only 30% of the 358 km are tarred roads and in good state. Once this project is completed, this road network will promote tourism, facilitate the development of the Region by significantly promoting trade with Nigeria, the opening up of production basins, in short agricultural development and especially also the transport of food to other parts of the Region and South-West, Littoral and West Regions.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road practicability by car: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*, complemented by field expert knowledge
- Village accessibility: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP)

5.3. Travel time from Bamenda to the Subdivisions' Headquarter..... 74

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The maps 5.3 show the travel time from Bamenda to the Subdivisions Headquarter.

These maps show the portions of road that can be travelled per interval of one hour. The urban areas and villages around Bamenda, Kumbo, and Ndop can be reached quickly with the 1-hour radius extending to approximately 25km. In the more rural Divisions, the 1-hour radius extends to approximately 15 km (Wum, Fundong). The travel time depends primarily on the state of the road and the sections in poor conditions (northern ring road) can radically increase it.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Travel time by car: information provided by the field experts

5.4. State of electrification (as of December 2017)..... 81

The map 5.4 shows the state of electrification in December 2017. the Cameroonian electricity network is an interconnected network and the North-West Cameroon depends in particular on the large electricity production of the South grid. To compensate for the recurrent energy deficits observed in the Region, the government has built a 25.4 MW light fuel thermal power station in the city of Bamenda which it finally transferred to AES-SONEL in 2013 to bring a definitive solution to the management of this infrastructure, which was at the centre of a discord between the Ministry of Energy and Water, AES-SONEL and Electricity Development Corporation (EDC) in January 2013. According to information gathered from MINEE and field experts, 280 out of the 776 villages in the Region have access to electricity.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Power production and information on electrification: information from the report on rural electrification by the Ministry of Water and Energy.
- Connection of villages to the power grid and their percentage per Division: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP)

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Map 5.1-a: Transport infrastructures

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional
- Subdivisional

Transport facilities ^{4, 5}

- ✈ Airport
- ▲ Airstrip
- Motor park
- ⛽ Petrol station
- ◆ Villages with border crossing

Road nomenclature ⁷

- National road
- Regional road
- Other important road

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, *Communal Development Plans, Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 5.1-b: Transport infrastructures - State of the road network

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional
- Subdivisional

Transport facilities ^{4, 5}

- ✈ Airport
- ▲ Airstrip
- Motor park
- ⛽ Petrol station
- ◆ Villages with border crossing

Road coating ⁷

- Asphalt
- Bare soil

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, *Communal Development Plans, Consolidated Data*
- [5] NW Field Survey 2018
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 5.2: Road practicability

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- ══ Regional
- Divisional
- - - Subdivisional

Headquarters ¹

- Regional
- Divisional
- Subdivisional

Hydrographic network ²

- Stream / river
- Lake

Road practicability ⁷ by car

- Good
- Medium
- Bad
- +++ In rainy season only
crossable by bike
- +++ Only crossable by
bike

0 10 20 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

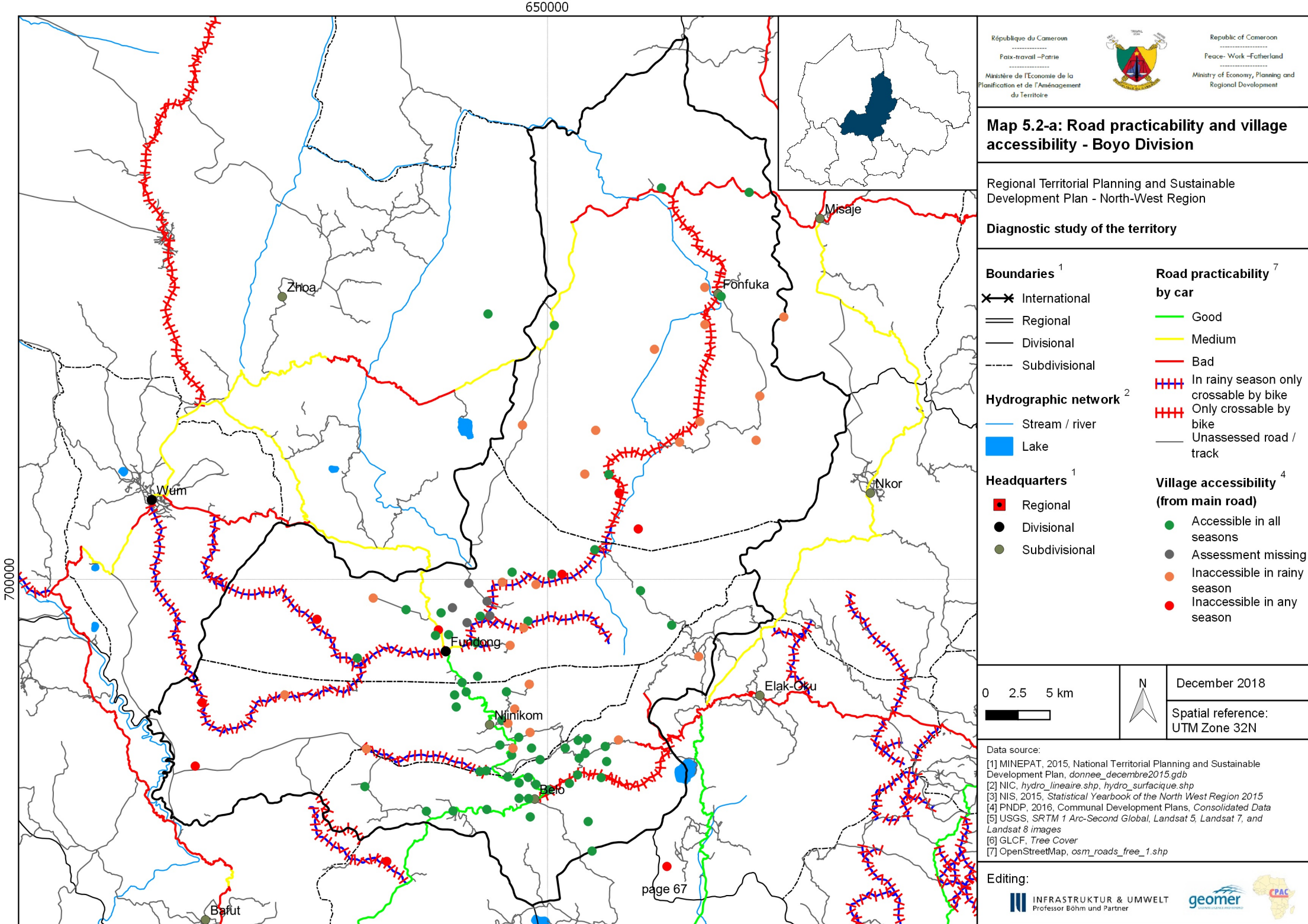
- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, *Communal Development Plans, Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

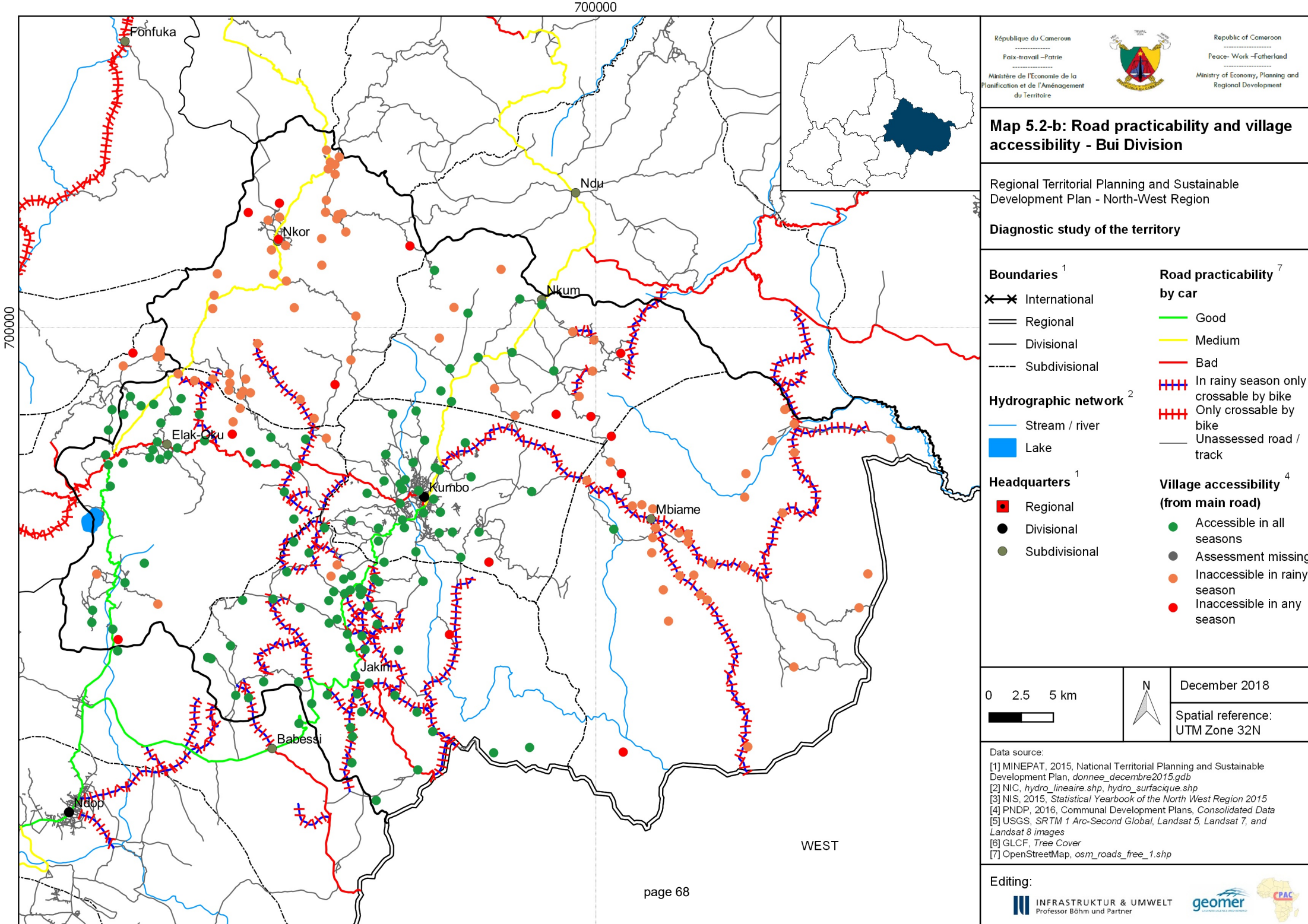
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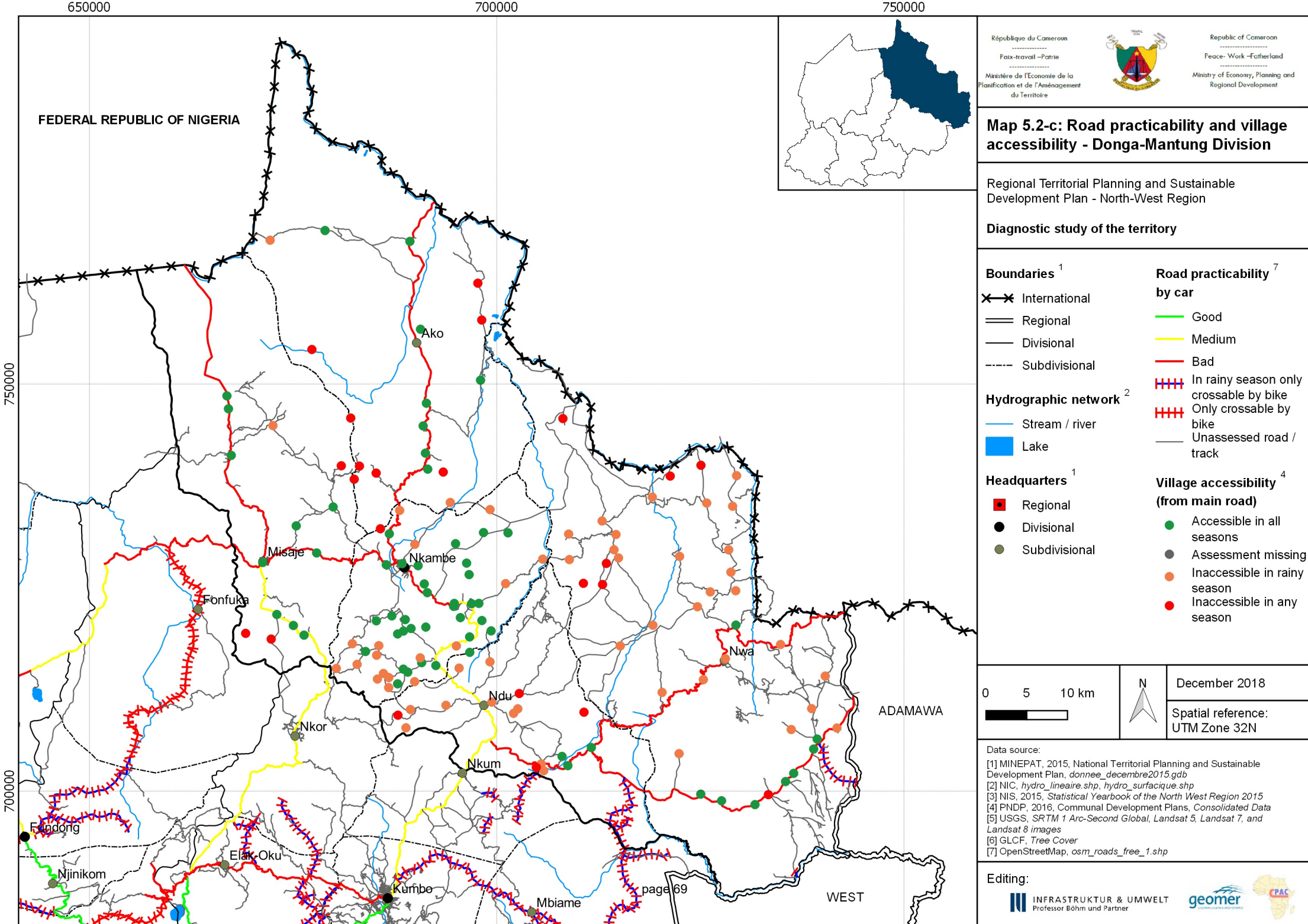
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Map 5.2-d: Road practicability and village accessibility - Menchum Division

Regional Territorial Planning and Sustainable
Development Plan - North-West Region

Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional
- Subdivisional

Road practicability ⁷ by car

- Good
- Medium
- Bad
- +++ In rainy season only
crossable by bike
- +++ Only crossable by
bike
- Unassessed road /
track

Village accessibility ⁴ (from main road)

- Accessible in all
seasons
- Assessment missing
- Inaccessible in rainy
season
- Inaccessible in any
season

0 5 10 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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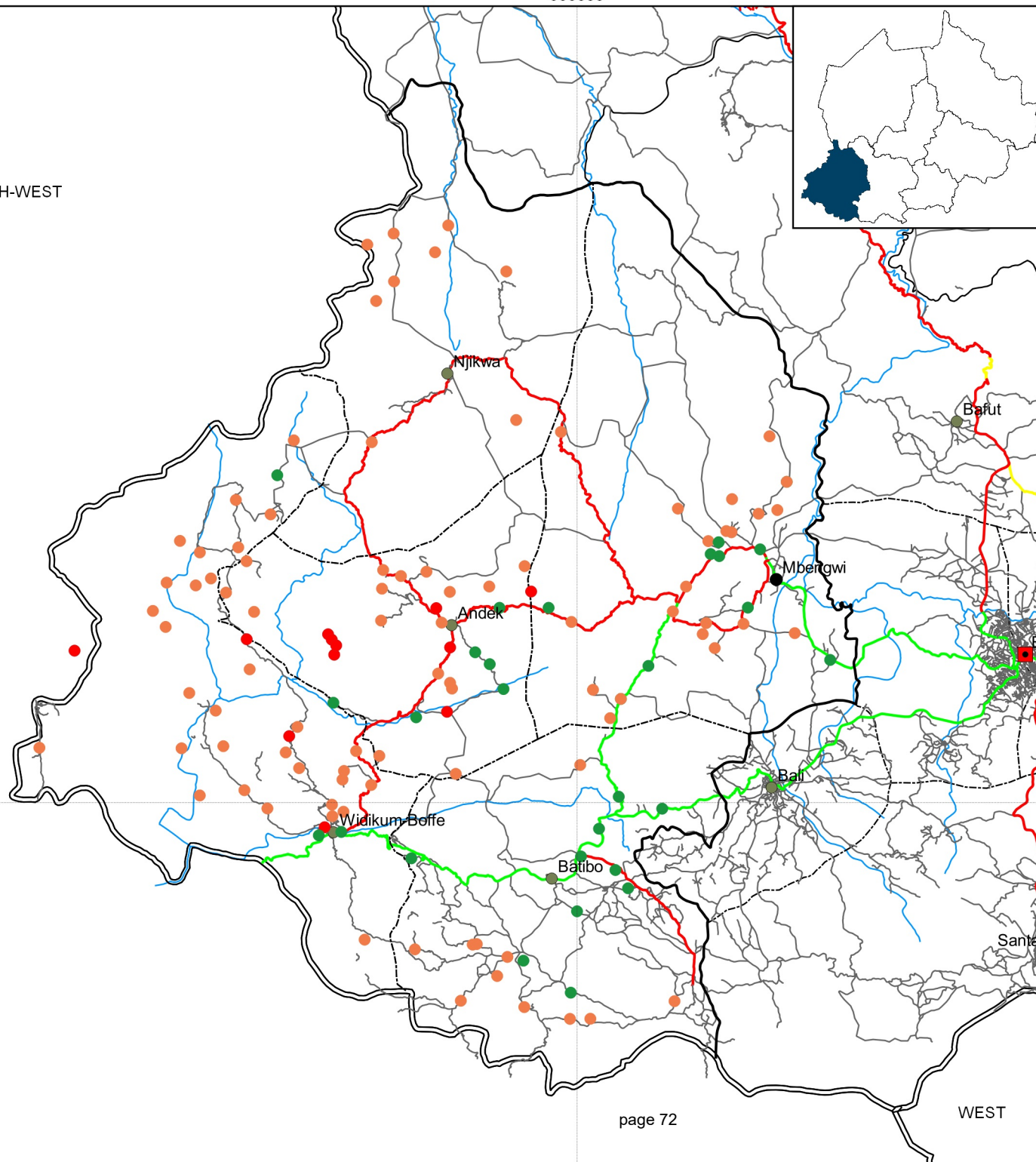
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Map 5.2-f: Road practicability and village accessibility - Momo Division

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road practicability⁷ by car

- Good
- Medium
- Bad
- In rainy season only crossable by bike
- Only crossable by bike
- Unassessed road / track

Village accessibility⁴ (from main road)

- Accessible in all seasons
- Assessment missing
- Inaccessible in rainy season
- Inaccessible in any season

0 2.5 5 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

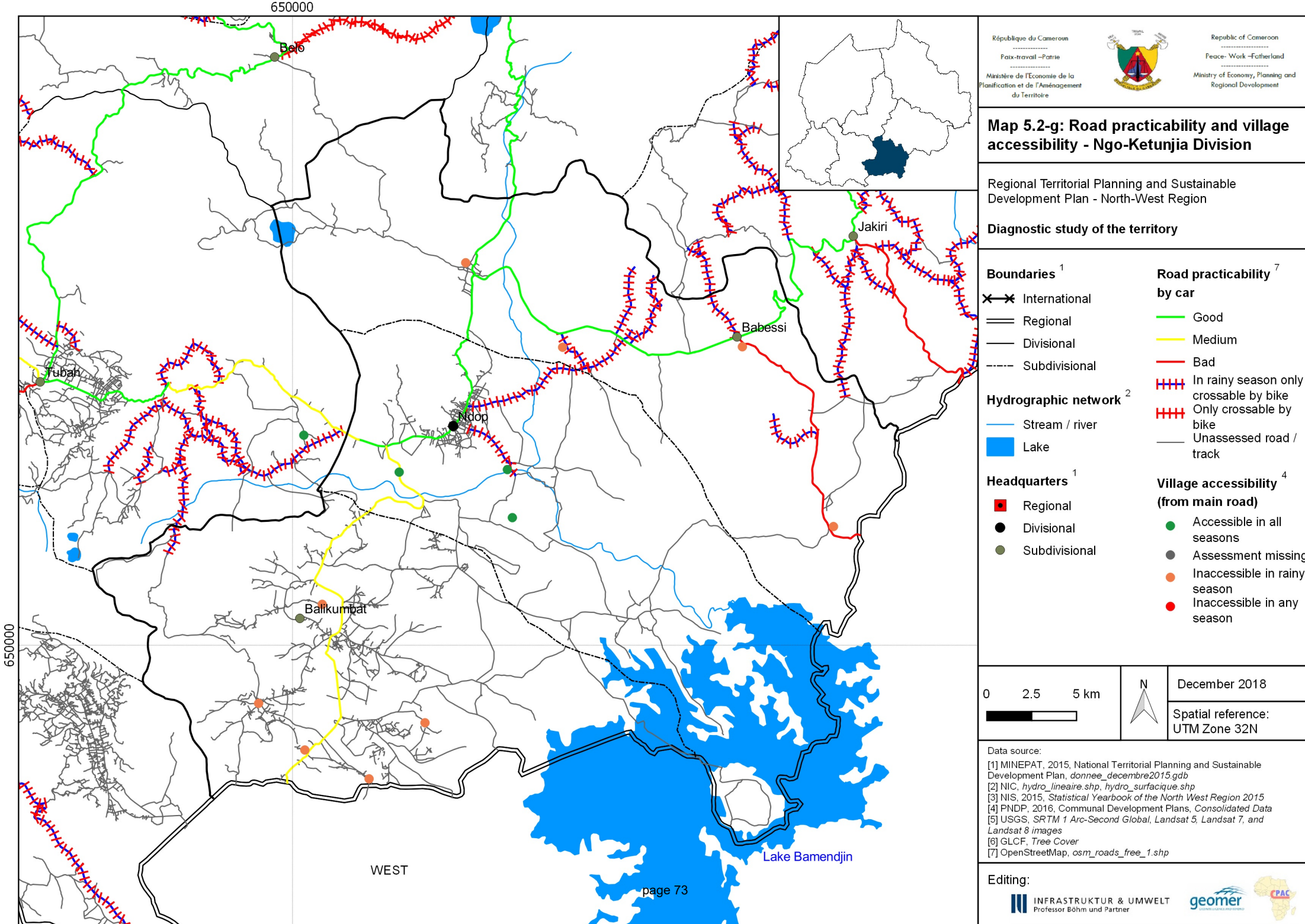
- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 5.3: Travel time from Bamenda to the Subdivisions' Headquarters

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- - - Subdivisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary axis

Travel time by car^{*}

- Within 1 h
- Within 2 h
- Within 3 h
- Within 4 h
- Above 4 h

* The travel time is represented as an area that can be reached on tracks or residential roads connected to the main road network

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

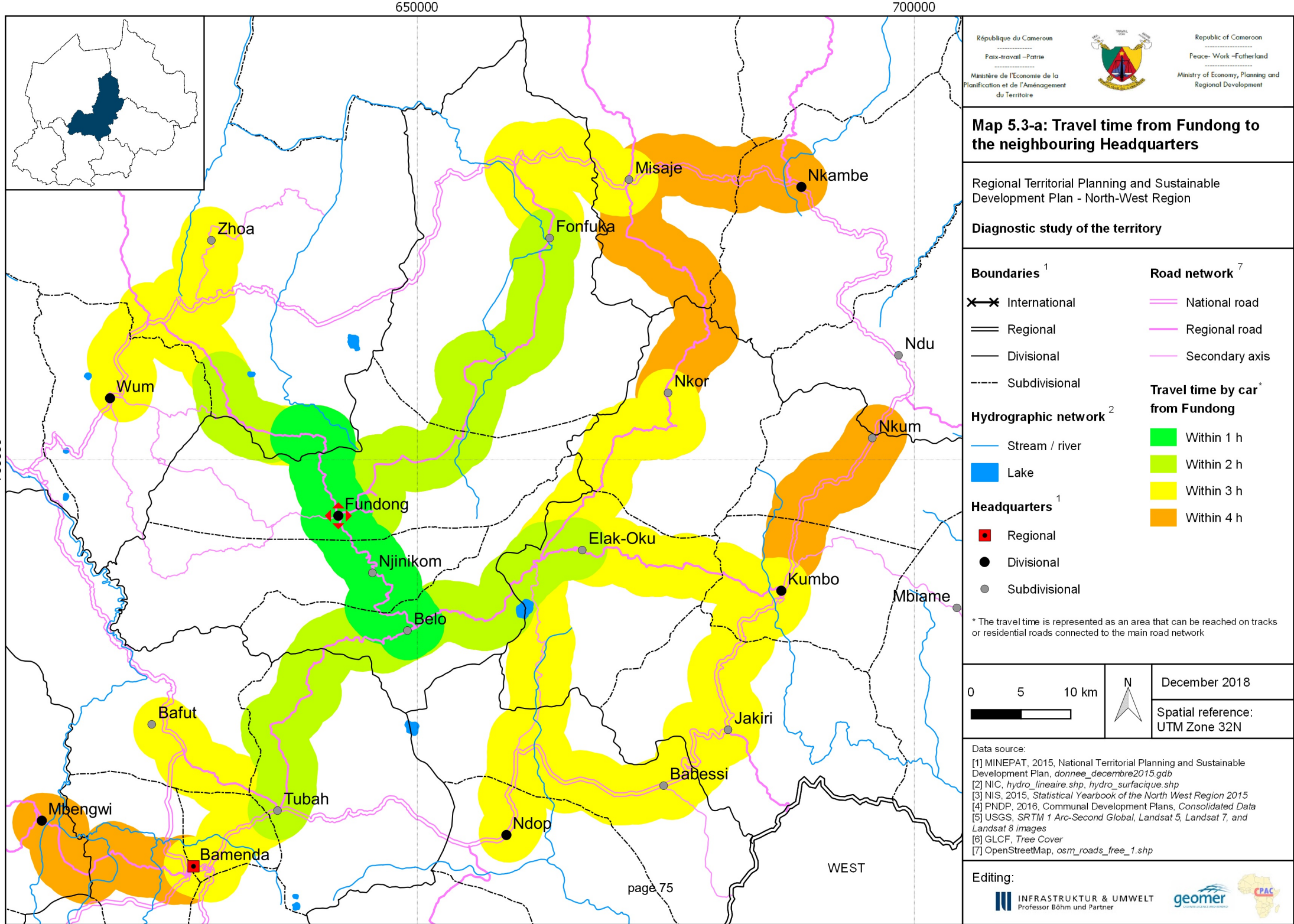
- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

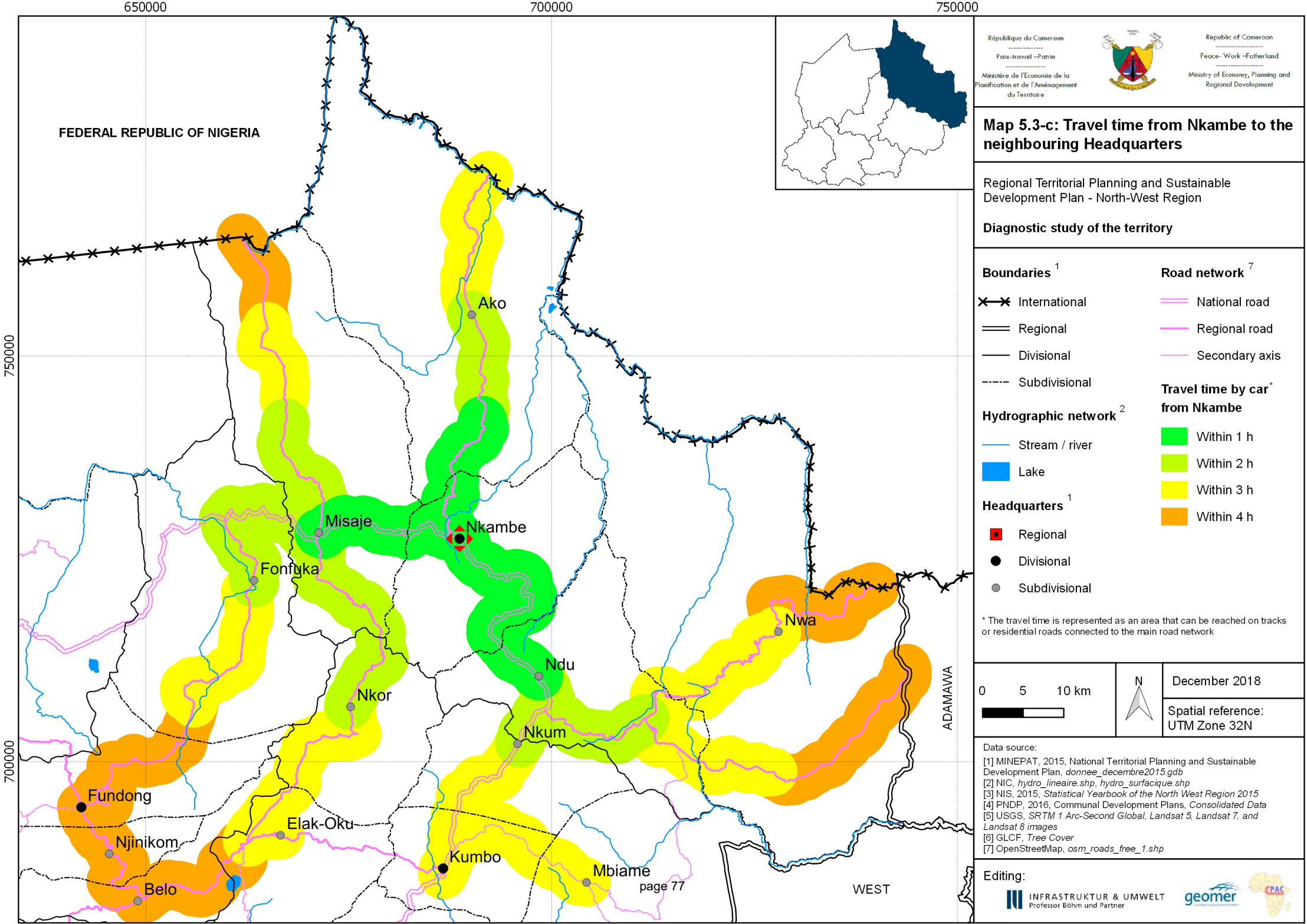
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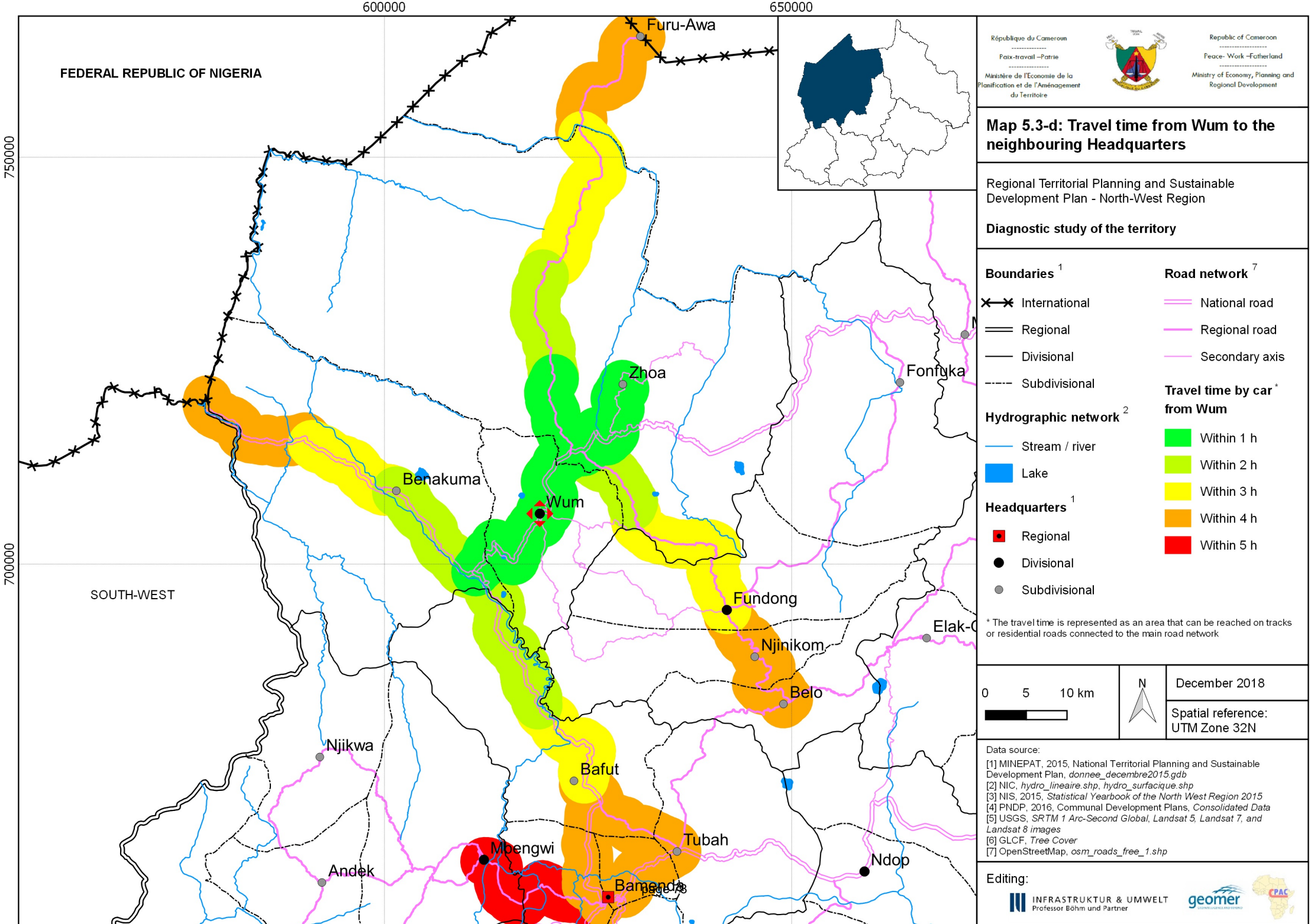


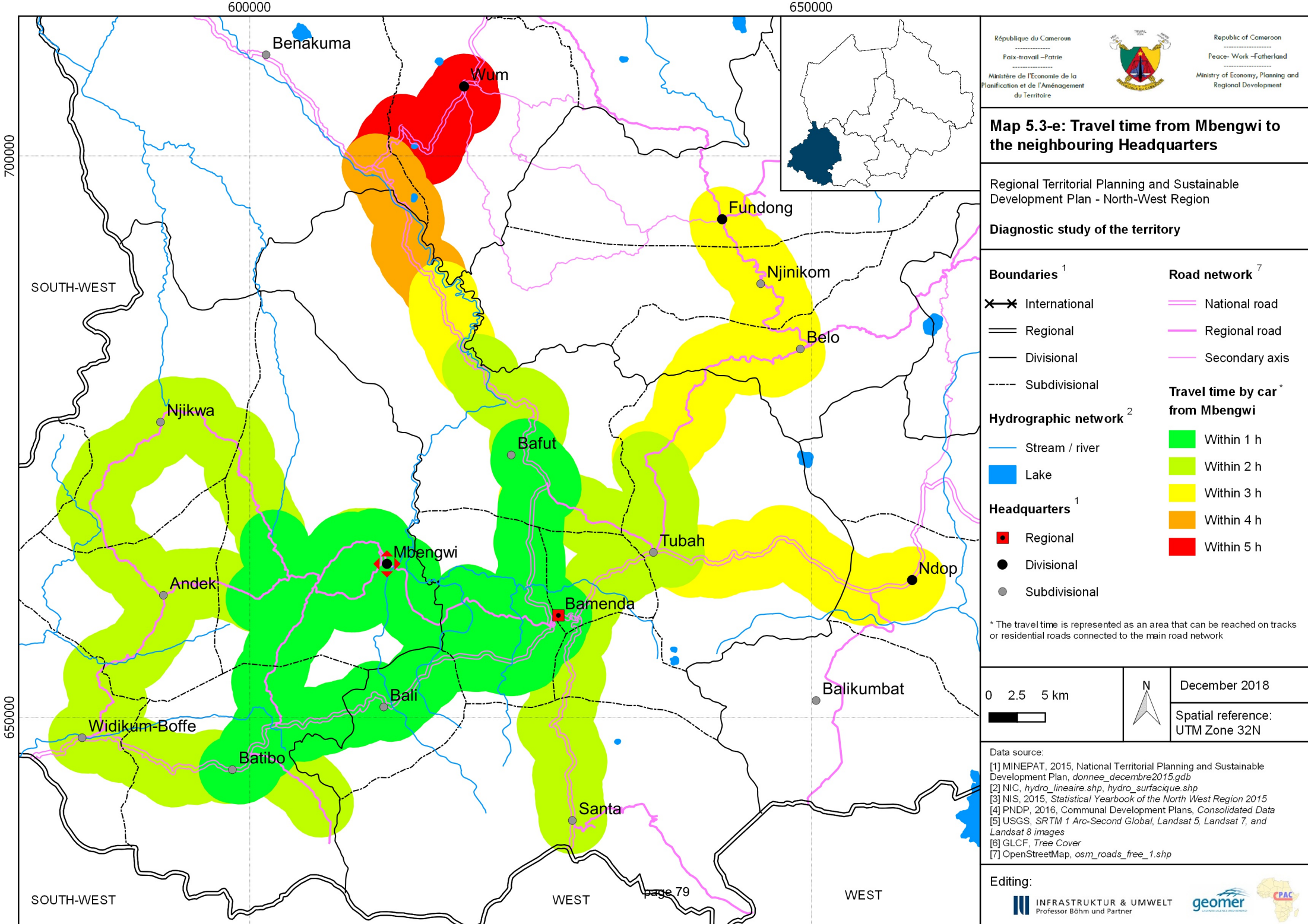
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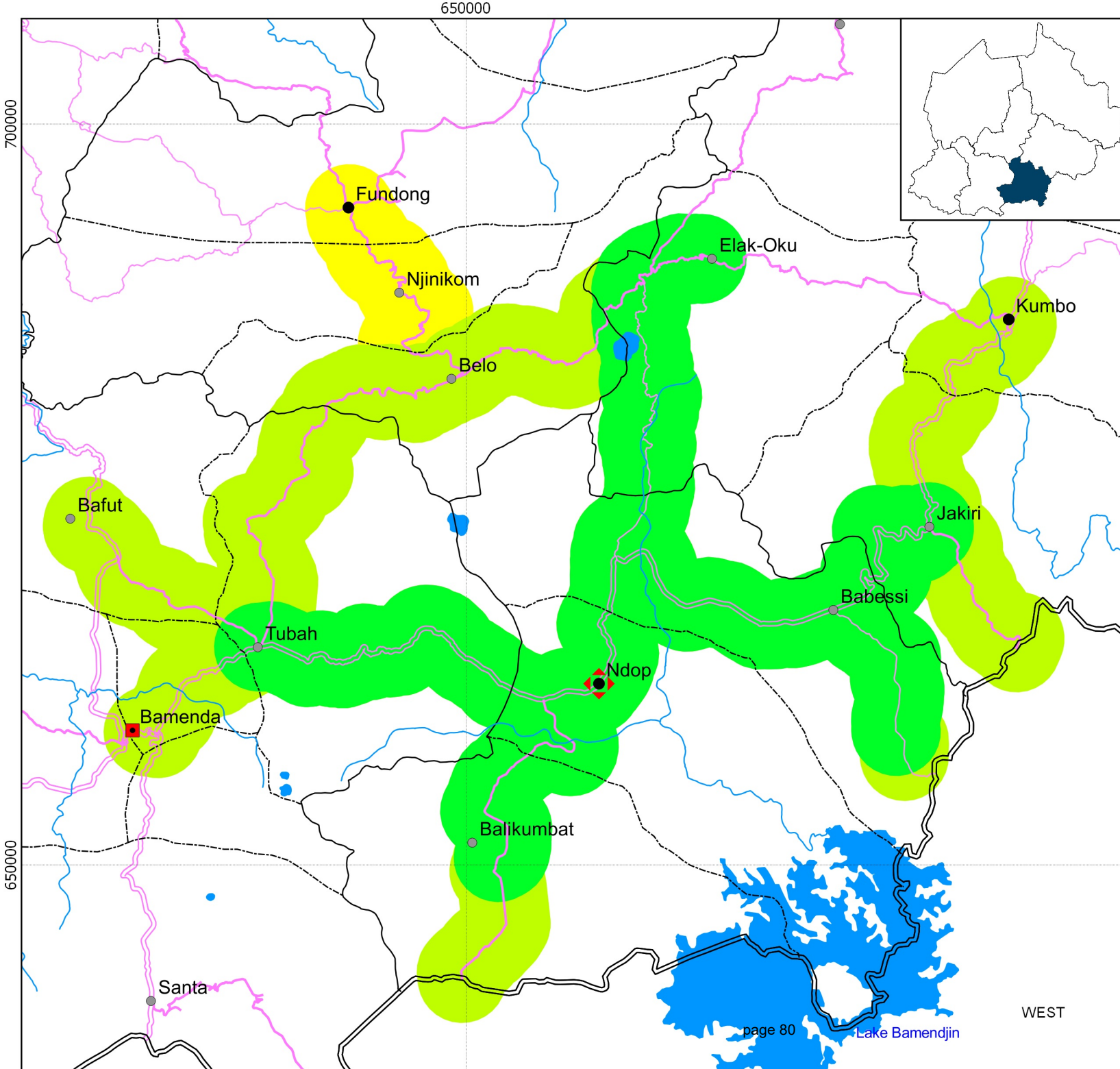












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Map 5.3-f: Travel time from Ndop to the neighbouring Headquarters

Regional Territorial Planning and Sustainable
Development Plan - North-West Region
Diagnostic study of the territory

Boundaries ¹
 International
 Regional
 Divisional
 Subdivisional

Hydrographic network ²
 Stream / river
 Lake

Headquarters ¹
 Regional
 Divisional
 Subdivisional

Road network ⁷
 National road
 Regional road
 Secondary axis

**Travel time by car*
from Ndop**
 Within 1 h
 Within 2 h
 Within 3 h

* The travel time is represented as an area that can be reached on tracks or residential roads connected to the main road network

0 2.5 5 km

N

December 2018
Spatial reference:
UTM Zone 32N

Data source:
[1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
[3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
[5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
[6] GLCF, *Tree Cover*
[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 5.4: State of electrification (as of December 2017)

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road

Power production

- ★ Thermal plant

Connection of villages to the power grid⁴

- Connected
- Not connected
- No information³
- Ongoing rural electrification³
- Subdivisional HQ not connected to national grid³

Percentage of villages connected to the grid⁴

- [0 - 20%]
- [20 - 40%]
- [40 - 60%]
- [60 - 80%]
- [80 - 100%]

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] MINEE, 2018
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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6 Social infrastructures (see report chapter 8)

6.1. Health infrastructures..... 83

The map 6,1 shows the location of the health facilities across the North-West Region. With the exception of the most remote rural areas in the Donga-Mantung and Menchum Divisions, all the villages in the region are within 20km of a medical center.

Used sources/data for the content of the map:
<ul style="list-style-type: none">• Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, <i>donnees_decembre2015.gdb</i>, MINEPAT• Hydrographic network: data of the National Institute of Cartography, <i>hydro_lineaire.shp</i>, <i>hydro_surfacique.shp</i>• Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, <i>osm_road_free_1.shp</i>• Health facilities and district: data of the National Institute of Cartography, <i>aire de santé 2016.shp</i>

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Map 6: Health infrastructures

Regional Territorial Planning and Sustainable
 Development Plan - North-West Region

Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional

Road network⁷

- National road
- Regional road
- Secondary axis

Health facilities²

- Ⓜ Hospital / Clinic
- Ⓜ Divisional hospital
- Ⓜ Subdivisional Medical Centre
- Health Centre / IHC
- Health district

0 10 20 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp, aire de santé 2016*
- [3] NIS, 2015, *Statistical Yearbook of the North West Region 2015*
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images*
- [6] GLCF, *Tree Cover*
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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7 Land use conflicts (see report chapter 10.3)

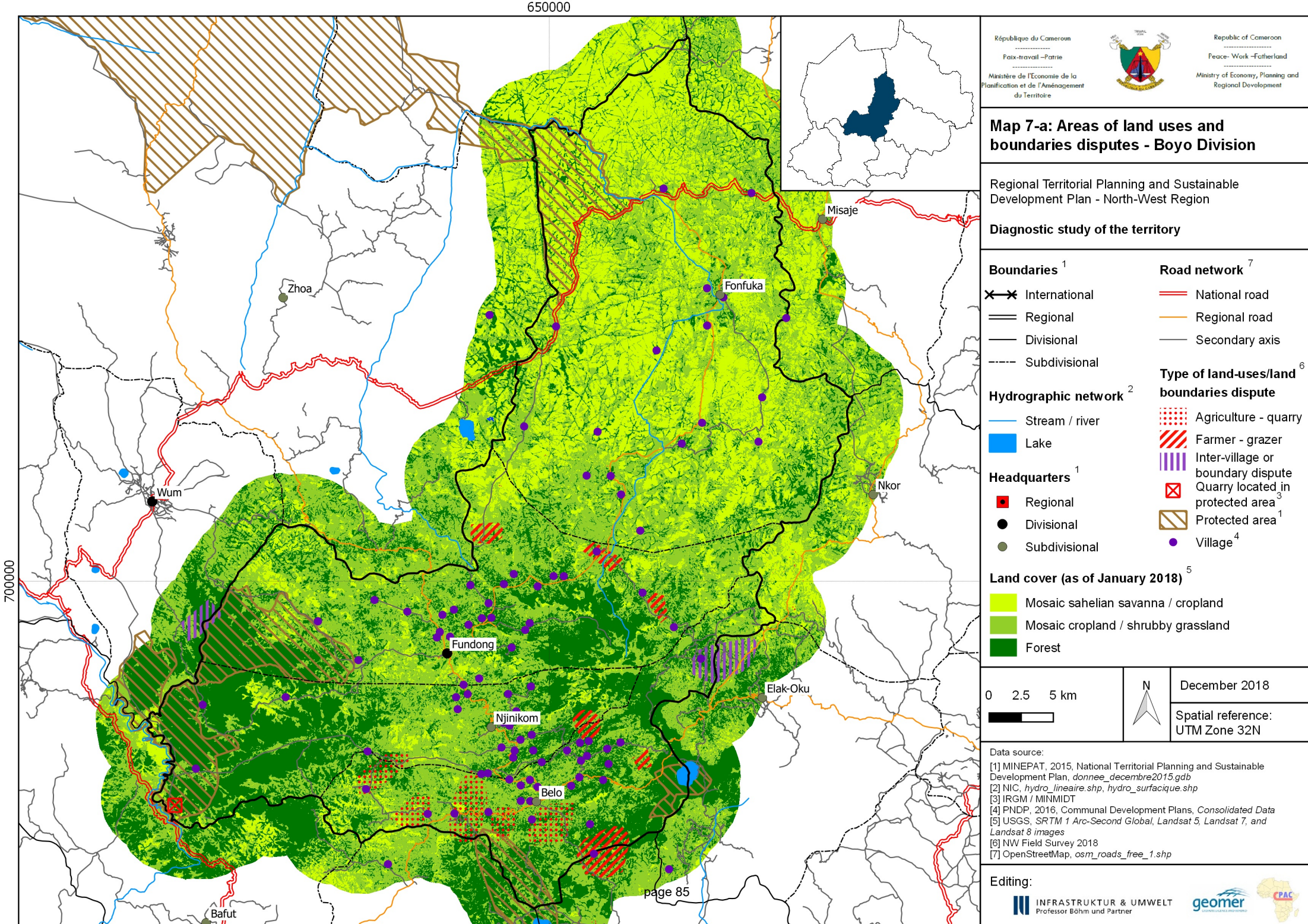
7.1. Areas of land uses and boundaries disputes

Map 7-a: Areas of land uses and boundaries disputes – Boyo Division.....	85
Map 7-b: Areas of land uses and boundaries disputes – Bui Division..	86
Map 7-c: Areas of land uses and boundaries disputes – Donga-Mantung Division.....	87
Map 7-d: Areas of land uses and boundaries disputes – Menchum Division.....	88
Map 7-e: Areas of land uses and boundaries disputes – Mezam Division.....	89
Map 7-f: Areas of land uses and boundaries disputes – Momo Division.....	90
Map 7-g: Areas of land uses and boundaries disputes – Ngo-Ketunjia Division.....	91
....	

The maps 7.1 show the areas of land uses and boundaries disputes. By analysing the different relevant sectors in the North-West Region land use conflicts were identified and mapped. Showing their geographic location always runs the risk of subjectivity. However, to support the transparency and the discussion on land use conflicts and boundary disputes the maps 7.1 show them for the North-West Region. The locations were identified with PNDP-officers and stakeholders, but they are expected to be not complete for all stakeholders points of view. Because of the particular nature of the land tenure in the North-West and due to the fact that herding and farming are the main economic activities, the main disputes are between farmers and grazers both in term of surface and number.

Used sources/data for the content of the map:

- Boundaries: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Headquarters: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Hydrographic network: data of the National Institute of Cartography, *hydro_lineaire.shp*, *hydro_surfacique.shp*
- Road network: OpenStreetMap contributors, data downloaded from geofabrik.de, *osm_road_free_1.shp*
- Land disputes: layer digitalised by local experts based on the information gathered by the PNDP as part of the NW field survey of 2018 commissioned by IU/CPAC
- Location of quarries: data of the Ministry of Mines, Industry and Technological Development
- Protected areas: data of the National Territorial Planning and Sustainable Development Plan, 2015, *donnees_decembre2015.gdb*, MINEPAT
- Location of villages: consolidated data of the Communal Development Plans by the National Community Driven Development Program (PNDP)
- Land cover: classified from *Landsat 5*, *Landsat 7*, and *Landsat 8* satellite imagery, United States Geological Survey

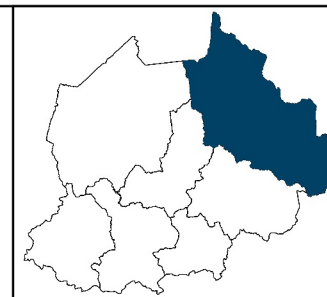


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Map 7-c: Areas of land uses and boundaries disputes - Donga-Mantung Div.

Regional Territorial Planning and Sustainable
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Diagnostic study of the territory

Boundaries¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional
- Subdivisional

Road network⁷

- == National road
- Regional road
- Secondary axis

Type of land-uses/land boundaries dispute⁶

- Agriculture - quarry
- Farmer - grazer
- Inter-village or boundary dispute
- Quarry located in protected area³
- Protected area¹
- Village⁴

Land cover (as of January 2018)⁵

- Mosaic sahelian savanna / cropland
- Mosaic cropland / shrubby grassland
- Forest

0 2.5 5 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] IRGM / MINMIDT
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images
- [6] NW Field Survey 2018
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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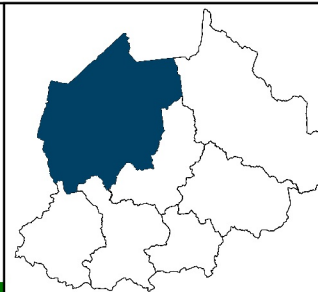
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Map 7-d: Areas of land uses and boundaries disputes - Menchum Division

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Diagnostic study of the territory

- | | |
|---|---|
| Boundaries ¹ | Road network ⁷ |
| ✕✕ International | — National road |
| == Regional | — Regional road |
| — Divisional | — Secondary axis |
| --- Subdivisional | |
| Hydrographic network ² | Type of land-uses/land boundaries dispute ⁶ |
| — Stream / river | ▤ Agriculture - quarry |
| ■ Lake | ▨ Farmer - grazer |
| | ▤ Inter-village or boundary dispute |
| Headquarters ¹ | ▤ Quarry located in protected area ³ |
| ■ Regional | ▨ Protected area ¹ |
| ● Divisional | ● Village ⁴ |
| ● Subdivisional | |
| Land cover (as of January 2018) ⁵ | |
| ■ Mosaic sahelian savanna / cropland | |
| ■ Mosaic cropland / shrubby grassland | |
| ■ Forest | |

0 2.5 5 km



December 2018

Spatial reference:
 UTM Zone 32N

Data source:

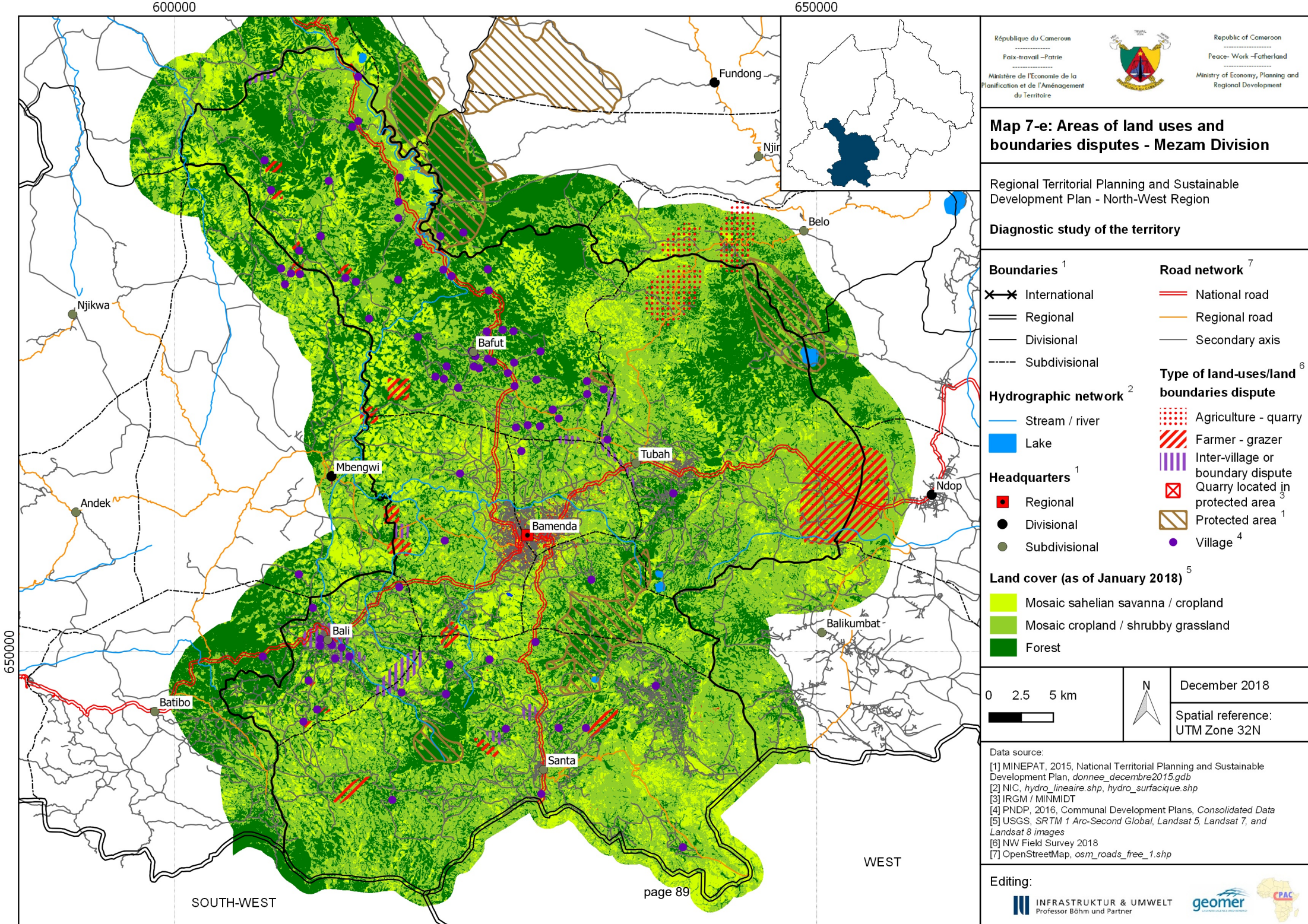
- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
 [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
 [3] IRGM / MINMIDT
 [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
 [5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images
 [6] NW Field Survey 2018
 [7] OpenStreetMap, *osm_roads_free_1.shp*

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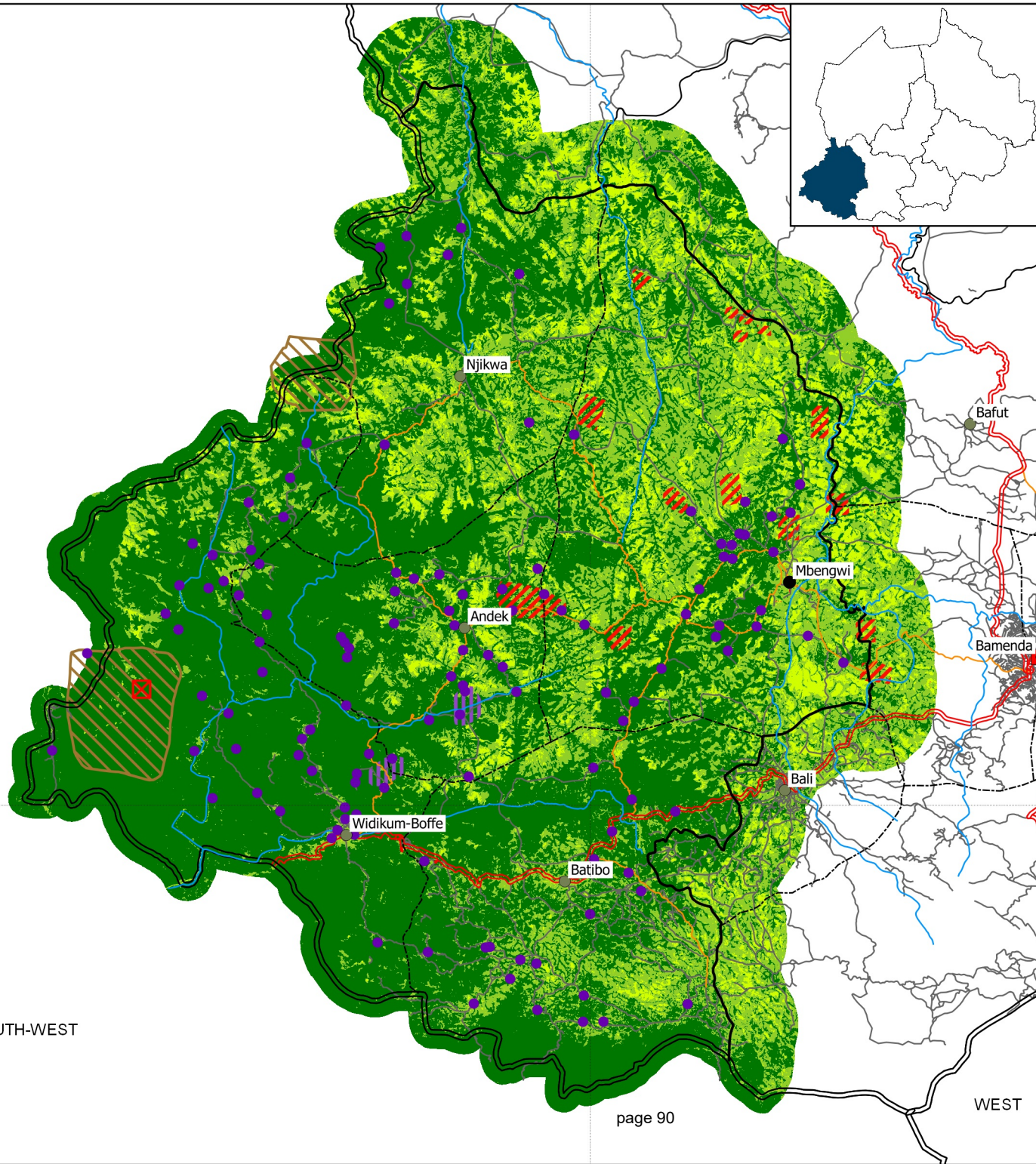


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Map 7-f: Areas of land uses and boundaries disputes - Momo Division

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Diagnostic study of the territory

Boundaries¹

- International
- Regional
- Divisional
- Subdivisional

Road network⁷

- National road
- Regional road
- Secondary axis

Hydrographic network²

- Stream / river
- Lake

Headquarters¹

- Regional
- Divisional
- Subdivisional

Land cover (as of January 2018)⁵

- Mosaic sahelian savanna / cropland
- Mosaic cropland / shrubby grassland
- Forest

**Type of land-uses/land
boundaries dispute**⁶

- Agriculture - quarry
- Farmer - grazer
- Inter-village or
boundary dispute
- Quarry located in
protected area³
- Protected area¹
- Village⁴

0 2.5 5 km

December 2018

Spatial reference:
UTM Zone 32N

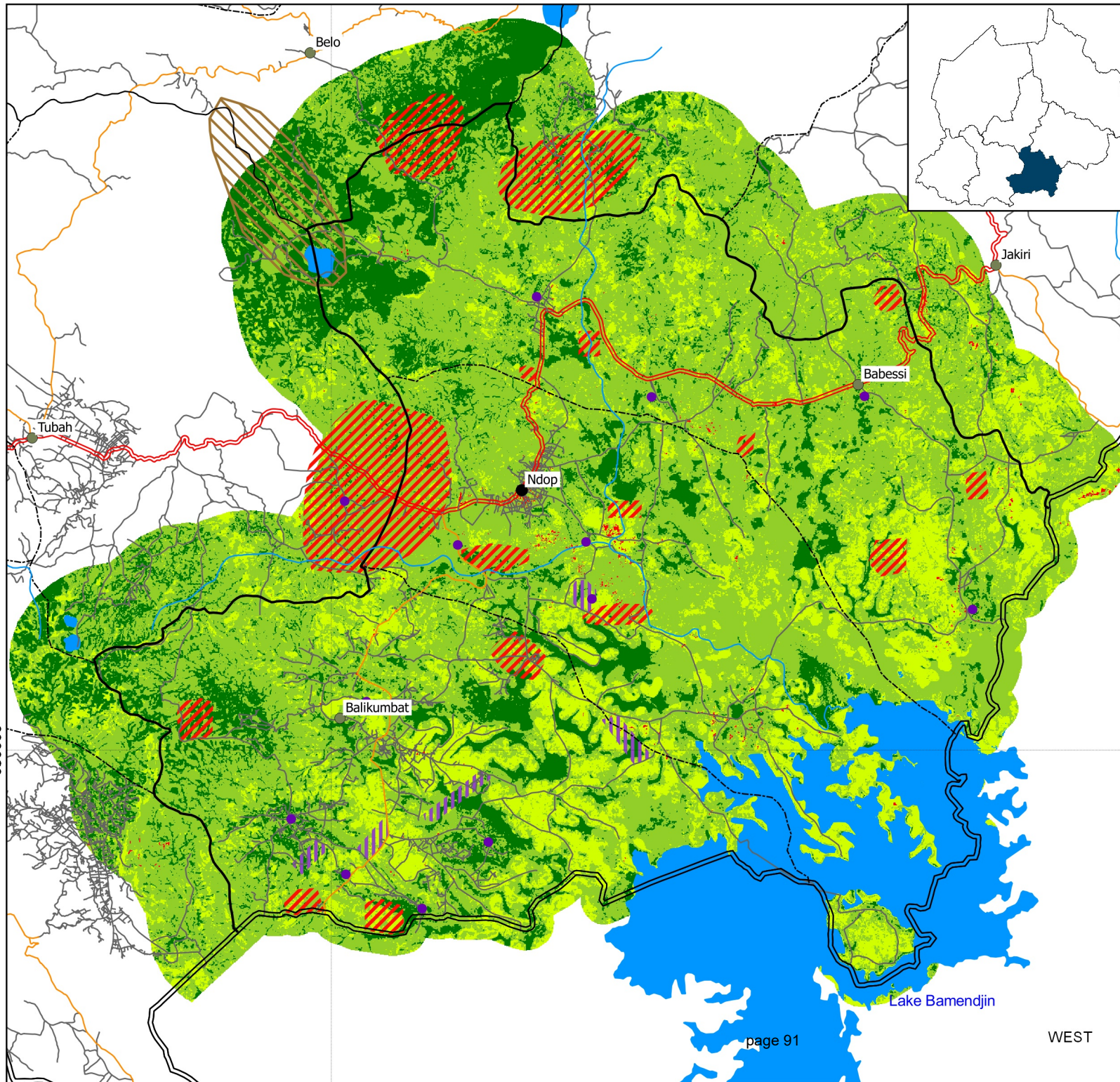
Data source:

[1] MINEPAT, 2015, National Territorial Planning and Sustainable
Development Plan, *donnee_decembre2015.gdb*
[2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
[3] IRGM / MINMIDT
[4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
[5] USGS, *SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and
Landsat 8 images*
[6] NW Field Survey 2018
[7] OpenStreetMap, *osm_roads_free_1.shp*

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Map 7-g: Areas of land uses and boundaries disputes - Ngo-Ketunjia Div.

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Diagnostic study of the territory

Boundaries ¹

- ✕✕ International
- == Regional
- Divisional
- Subdivisional

Hydrographic network ²

- Stream / river
- Lake

Headquarters ¹

- Regional
- Divisional
- Subdivisional

Land cover (as of January 2018) ⁵

- Mosaic sahelian savanna / cropland
- Mosaic cropland / shrubby grassland
- Forest

Road network ⁷

- National road
- Regional road
- Secondary axis

Type of land-uses/land boundaries dispute ⁶

- Agriculture - quarry
- Farmer - grazer
- Inter-village or boundary dispute
- Quarry located in protected area ³
- Protected area ¹
- Village ⁴

0 2.5 5 km



December 2018

Spatial reference:
UTM Zone 32N

Data source:

- [1] MINEPAT, 2015, National Territorial Planning and Sustainable Development Plan, *donnee_decembre2015.gdb*
- [2] NIC, *hydro_lineaire.shp, hydro_surfacique.shp*
- [3] IRGM / MINMIDT
- [4] PNDP, 2016, Communal Development Plans, *Consolidated Data*
- [5] USGS, SRTM 1 Arc-Second Global, Landsat 5, Landsat 7, and Landsat 8 images
- [6] NW Field Survey 2018
- [7] OpenStreetMap, *osm_roads_free_1.shp*

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