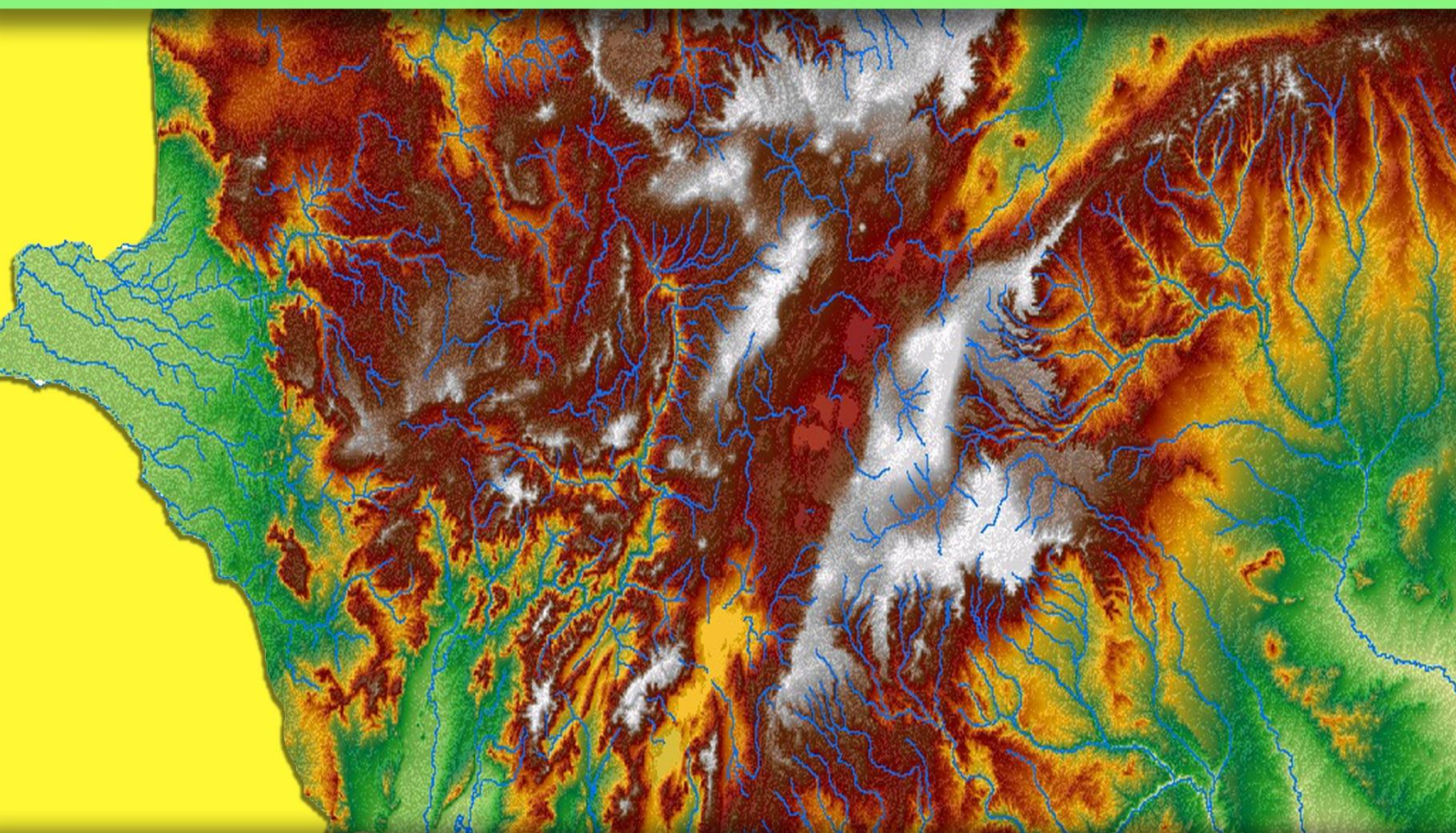


**Consultancy Report
on
Spatial Mapping of
Animal Health-Related Data in Ethiopia**



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July 2014
Addis Abeba, Ethiopia

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List of Acronyms

BoA	Bureaus of Agriculture
BoFED	Regional Bureaus of Finance and Economic Development
CD	Compact Disk
CSA	Central Statistical Authority
DEM	Digital Elevation Model
EMA	Ethiopian Mapping Agency
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information System
LAs	Livestock Agencies
LCNRDB	Bureaus of Livestock Crop and Natural Resource Development
LCNRDO	Livestock Crop and Natural Resource Development Office
MoA	Ministry of Agriculture
MoFED	Ministry of Finance and Economic Development
NAHDIC	National Animal Health Diagnostic and Investigation Centre
NRS	National Regional State
OoA	Office of Agriculture
REPLAA/B	Regional Environmental Protection and rural Land Administration Agency/Authority/Bureau
SNNPR	Southern Nations, Nationalities and People Region
SPS	Sanitary and Phytosanitary
TADs	Trans-boundary Animal Diseases
ToFEDs	Town administration Offices of Finance and Economic Development
ToR	Terms of Reference
VSD	Veterinary Service Directorate
WoFED	Woreda Offices of Finance and Economic Development
ZoFED	Zonal Offices of Finance and Economic Development

Executive Summary

The Ethiopian Veterinary Service Directorate (VSD) should establish effective animal disease surveillance and reporting systems as an early warning, disease tracking and response system in order for the directorate to control/prevent TADs outbreaks and confidentially sign SPS certificates for international trade. Incorporating mapping tools into the animal health information system of the directorate will assist data analysis for making timely decision on animal health, production and SPS issues.

To achieve the objective, the consultant collected and compiled updated digital shapefiles (in ArcGIS® format and other media) and other livestock related data from CSA and regions in the country including BoFED, REPLAA/B, BoA that can be uniformly used by the VSD and NAHDIC as well as Regional animal health services and other stakeholders for carrying out spatial mapping and analyses.

In general, the consultant has collected and compiled data as per the requirements indicated in the ToR.

Major findings and recommendations include:

- Weredas are the smallest administrative units in the country. The number of weredas is constantly increasing and over the last years, the number has increased from 500 to over 900. This was mainly due to the evolvement of new urban administrations often also called urban local government administrations which have the same status as weredas. As the urban administrations report directly to zones instead of weredas, it is recommended that they are treated separately from the surrounding weredas as substantial amount of data on livestock health, production and productivity may not be adequately captured.
- The CSA is the sole official source of GIS data in Ethiopia. Although the CSA maps may not serve as a reliable source whenever there is a change in administrative structures in the country (because CSA carries out census once every ten years), they are invaluable as a platform for predicting future administrative changes in the country because the kebele features included in the CSA maps are the most stable units and the administrative structure of the country starts from them. Therefore, it is recommended that future information gaps at the level of the VSD on administrative structural changes that may occur in regions need to be addressed based on the CSA's census maps for zones, weredas and kebeles and additional information on the ground.
- A more common problem is the fact that Zones/weredas/kebeles often have more than one naming/spelling, and the naming/spelling used on the map may differ from the name used locally in that specific region/zone/wereda/Kebele. Based on the findings in this report, it is recommended that the VSD prepares a register of wereda names and codes and update them periodically based on the CSA (findings included in this report can be used as a starting point), notify all weredas animal health services about the code of their particular wereda and update the Monthly Disease Outbreak report so that it has space for writing wereda codes.

- Boundary maps obtained from regions especially Somali, eastern Oromia and Afar do not precisely match with what was produced by the CSA some years back. The maps collected from these regions during the present consultancy also are not precisely aligning to each other. Therefore, it is recommended that Oromia, Somali and Afar regional maps should be used separately (unmerged) when dealing with these regions such as carrying out joint planning or organizing training/workshops in these regions. A national map should be prepared to show e.g. the distribution of a particular disease by merging all regions except Somali. Data for Somali region can be shown separately.
- In Ethiopia much has been tried to improve disease reporting in general but less in improving livestock related data collection and recording at national level. Based on this, it is recommended that the existing monthly disease outbreak reporting format be modified to include additional columns for entering livestock population, crop production in quintals (cereal and pulses), animal health personnel and infrastructure at wereda levels.
- Regional animal health services are often very much concerned about animal and temporal dimensions because of lack of capacity and awareness in geospatial analysis. Therefore, it is recommended that some of the following GIS capacities need to be incorporated into the regional disease surveillance training programs for spatial analysis of data and also to help regions to periodically update any change in administrative structure that may take place in each region. These may include overlay analysis of thematic data, buffer generation, neighbourhood analysis, grid Generation, spartial analysis, spatial intersection, surface modelling and network analysis.

1. Background Information

In order to prevent, control and avoid the risk of TADs on animal health and production and promote export trade, the Ethiopian Veterinary Service Directorate (VSD) should establish effective animal disease surveillance and reporting systems. The data supplied by surveillance systems will serve as an early warning system to track trends of Trans-boundary Animal Diseases (TADs) by monitoring their impacts on animal health and production, identifying livestock populations that are at great risk, implementing control measures including quarantine and movement restrictions, etc. More importantly, surveillance data will enhance the competence and knowledge of the VSD in order to confidentially sign SPS certificates for international trade.

In addition to many problems associated with the country's surveillance system, the animal health information database of the Directorate is based on files of documents, tables and graphs. This type of reporting system is often inconvenient for easy and quick understanding by officials for making quick decisions on animal health and production policies. Incorporating mapping tools into the animal health information system of the Directorate will assist data analysis for making timely decision on animal health, production and SPS issues by developing spatially-based disease detection systems, improving disease reporting and other animal health statistics by geographical areas; enabling ecological analysis of the natural maintenance and transmission mechanisms of TADs, etc.

There is no standardized mapping system at federal and regional levels. There is a huge disparity on the uses of wereda naming, coding, etc and wereda names are often reported with many different spellings. In addition, the administrative system is changing quite frequently, both in naming and area and it has become difficult to map time series data at federal levels. There is also an information gap at the federal level in terms of the changes in the administrative systems and it has become difficult to introduce and run meaningful GIS system at national level.

2. Data collection methods and approaches

The main objective of this consultancy was to obtain lists and shapefiles (in ArcGIS® format) of Zones and weredas and possibly kebeles currently used in each of the regions in the country and accordingly, standardize/relate these data with the latest CSA list of the administrative areas (regions, zones, weredas and maybe kebeles). Eventually, it is aimed at providing the latest foundation upon which the VSD and NAHDIC as well as Regional animal health services and other stakeholders can have updated and uniform mapping systems for use throughout the country.

To address the assignment as indicated above, the data collection effort was preceded by adopting the latest list of weredas from the CSA comprising of 673 weredas excluding Addis Abeba City Administrative Council which was subdivided into sub-city and Kebele administrations and Somali Regional State which was not included in the latest CSA census.

To achieve the proposed objective, the consultant collected and assembled relevant data and information from different sources. These included visit to the

- Regional Bureaus of Finance and Economic Development (BoFED). The CSA and EMA are part of the Ministry of Finance and Economic Development at federal level with the CSA having many branches at regional levels.
- Regional Environmental Protection and rural Land Administration Agency/Authority/Bureau (REPLAA/B) responsible for the development and implementation of land administration and land use system in regions.
- Regional Bureaus of Agriculture (BoA) which also includes Livestock Agencies (LAs)/ in all regions except Somali and Afar which are also named as Bureaus of Livestock Crop and Natural Resource Development (LCNRDB).

Digital (in ArcGIS® format and other media) and printed data were collected from the above mentioned institutions.

3. Source and types of data collected

a. BoFED

There is a regional equivalent of the Ministry of Finance and Economic Development (MoFED) located in all Regional capitals, in short also known as BoFED. The zonal Offices of Finance and Economic Development (ZoFED) form the equivalent of BoFED at the next level of government down, Woreda Offices of Finance and Economic Development (WoFED) and town administration Offices of Finance and Economic Development (ToFEDs) are the equivalent of the zonal levels. Therefore, BoFED has administrative structures down to the lowest administrative structure.

At the regional level, BoFED is mandated, among many other things, to organize data centers for the backup and restoration of information. Accordingly, almost all the BoFED offices visited have GIS units for facilitating collection of government taxes by organizing economic, demographic, geographic, mapping, etc statistics.

Therefore, BoFED served as the main source of data during the field trip as it has the latest list of zones/weredas and associated shapefiles in ArcGIS® format.

b. EMA

The Ethiopian Mapping Agency (EMA) was originally set up in 1954 as a small section within the Ministry of Education for preparing various maps for schools in Ethiopia. The need for a national mapping was felt vital soon after, and since then, it has passed through various organizational setups until it was establishment as an autonomous agency under Proclamation No 193 of 1980.

Currently, the EMA is awaiting the endorsement of the Council of the House of Representative so that it can make boundary maps of the country.

On the other hand, the national atlas of Ethiopia was produced by EMA more than twenty years ago. During this time, the geo-political administration, socio-economic and the physical/environmental landscape of the country have changed significantly and the existing edition is to a large extent out-dated and out of circulation. The EMA is in the process of producing an updated national atlas of Ethiopia in order to provide up-to-date information on natural resources,

environment, population, healthcare, education and investment opportunities. Although the EMA was visited as a possible source of updated geo-spatial data, it has currently very old thematic data which was of no help for this consultancy.

EMA is accountable to MoFED.

c. CSA

The CSA is designated to undertake all surveys and censuses at national level which can be used to monitor economic and social growth. Similarly, CSA is part of MoFED.

The CSA has 25 branch offices including Ambo, Arba Minch, Asebe Teferi, Asayita, Assosa, Awasa, Bahir Dar, Debre Berhan, Dessie, Dire Dawa, Gambela, Goba, Gondar, Harar, Hosaena, Ina Selassie, Jijiga, Jimma, Mek'ele, Mizan Teferi, Nazreth, Negele Boran, Nekemte, and Sodo.

During the field trip, CSA offices in the regional capitals were visited and shapefiles comprising of regional, zonal, wereda and Kebele boundaries were obtained for all regions of the country with the exception of Somali Regional State. The CSA shapefiles also do not include data for the north eastern part of Afar Regional State.

Accordingly, the CSA list of weredas/GIS data was considered as a starting point for exploring administrative changes in more recent years, by comparing it with data obtained from BoFED and other regional offices.

d. REPLAA/B

During the field trip, REPLAA/B in regions were also visited as additional sources of GIS data.

REPLAA/B were established under the Proclamation No. 295/2002 in order to encourage farmers and pastoralists to implement measures to safeguard land against soil erosion by introducing a rural land holding certificate, which provides a level of security of tenure. MoA is tasked with implementing the proclamation by providing support and co-coordinating the activities of the REPLAA/B. Accordingly, REPLAA/B have GIS units for keeping inventories and implementing rural land administration and land use law.

However, most of these REPLAA/B get their GIS base maps from BoFED as the latter is responsible to periodically update regional shapefiles.

e. BoA/ LCNRDB

Each region has a BoA/LCNRDB which are responsible for implementing agricultural/livestock development policy, coordination, and evaluation. The BoA/LCNRDB provide technical and administrative support, as well as supervision and monitoring for the wereda- and Kebele-level extension offices.

At the lowest level, the wereda OoA/LCNRDO are the main frontline structures implementing agricultural extension services in all regions. In general, BoA/LCNRDB or OoA/LCNRDO are composed of five main sectors: agricultural development, natural resources, environmental protection and land administration, water supply and rural roads, and input supply and cooperative promotion.

The largest sector which is agricultural development is responsible for extension services and is usually divided into crop production, livestock production, natural resource management, and extension services.

Almost all BoA/ LCNRDB are not equipped with GIS skills and technical knowhow for collecting and managing spatial data for their frequent use. On the other hand, BoA/ LCNRDB have been important sources of zonal/wereda lists for this assessment as they collect data related to livestock, crop, etc. Accordingly, these data were used in the process of standardizing zonal/wereda names.

4. Shape files collected from regions

Shapefiles in ArcGIS® 10.1 formats will accompany this report in a CD containing the following map data.

- Regional (mainly BoFED) shapefiles for each region (this contains all weredas currently existing in the country)
- CSA (2005) shapefiles containing region, zone, wereda, rural kebeles and other data for all regions except Somali
- Adjusted regional shapefiles for each region based on CSA (2005) boundary map so that they can align to each other
- Merged countrywide shapefiles based on the above (by doing so, quite a number of weredas are lost from each of Oromia and Somali regions). To avoid this, the rest of the regions in the country can be merged leaving Somali to be used separately.
- Animal health, livestock and crop data which are in digital, scanned or hard copies (the latter is not included in the CD)

The contents of the shapefiles obtained from regions and CSA include the following features.

Table 1. Types of shapefiles collected

s/n	Region	Types of shapefiles (ArcGIS® formats)	
		Regional offices	CSA
1	TIGRAY	Region, zone, wereda	Region, zone, wereda, rural kebele (666), town (56), localities (9,279) lake,
2	AFAR	Region, zone, wereda	Region, zone, wereda, rural kebele (371), town (47), localities (2,881) lake, river, road
3	AMHARA*	Region, zone, wereda	Region, zone, wereda, rural kebele (3,233), town (203), localities (48,707) lake, river, road
4	OROMIA	Region, zone, wereda	Region, zone, wereda, rural kebele (6,814), town (367), locations (63,083) lake, river, road

s/n	Region	Types of shapefiles (ArcGIS® formats)	
		Regional offices	CSA
5	SOMALI	Region, wereda	-
6	BENISHANGUL GUMUZ	Region, zone, wereda	Region, zone, wereda, rural kebele (437), town (23), localities (2,097), river, road
7	SNNP	Region, zone, wereda	Region, zone, wereda, rural kebele (3,806), town (174), localities (29,868), river, road, park
8	GAMBELA	Region, zone, wereda	Region, zone, wereda, rural kebele (198), town (11), localities (625), river, road, park
9	HARARI	Region, wereda	Region, rural kebele (19), localities (189), river, road,
10	ADDIS ABEBA	Region, sub-city, wereda, block, locality, sub-wereda	Region, sub-city, urban kebele
11	DIRE DAWA	Region, wereda	Region, rural kebele (33), localities (430), river, road,

5. Other data

One of the assignments of the consultant was to collect as much information as possible on wereda level livestock population, crop production, public and private animal health personnel and infrastructure and minimum requirements for establishing private animal health clinic in regions.

a. Livestock population

The main sources of these data were regional animal health and livestock services. These data are presented either in scanned copies or digital formats on the CD accompanying this report. Out of the 914 weredas reported by regions, livestock data was available for 574 weredas and it was mainly because data from Amhara (154 weredas) were not available at wereda levels and Addis Abeba weredas (116 in total) are being established and data are only available at the level of sub-cities. However, livestock data for Amhara can be collected from the zones using the following contact details in zonal livestock offices (Table 1). It should be noted that the study was designed to collect data from regional animal health and other offices and there was no time to visit zones as they are far apart from each other.

Table 2. Names and telephone numbers of contact persons in Amhara zones

s/n	Zone	Contact person	Telephone number
1	NORTH GONDER	Dr Awoke Tsega	0918-776595
2	SOUTH GONDER	Mekuant Damite	0918-010275
3	AWI	Zelalem Abebe	0918-707197
4	WEST GOJAM	Yenegedam Tesfa	0918-730594
5	EAST GOJAM	Assefa Redae	0920-554856
6	NORTH SHEWA	Zenbaba Tekila	0922-461312
7	OROMIA	Tadesse Nego	0911-703168
8	SOUTH WELLO	Ali Hussein	0914-602227
9	NORTH WELLO	Kassa Mersha	0925-008613
10	WAGHEMRA	Kemal	0910-565163

Table 3. Status of wereda level livestock population data by regions

s/n	Region	Completeness of data	Remarks
1	TIGRAY	for 35 weredas	In MS Excel® format
2	AFAR	for 29 weredas	Scanned document
3	AMHARA*	for 13 weredas	Scanned document
4	OROMIA	for 266 weredas	In MS Excel® and MS Word formats
5	SOMALI	for 47 weredas	In hard copy
6	BENISHANGUL GUMUZ	for 20 weredas	Scanned document
7	SNNP	for 143 weredas	In MS Excel® format (Amharic)
8	GAMBELA	for 14 weredas	Scanned document (Amharic)
9	HARARI	for the region	In Adobe Acrobat® format
10	ADDIS ABEBA	Not available**	
11	DIRE DAWA	for the region	In MS Excel® format

*In Amhara, the livestock agency collects animal health and livestock related data only at zonal levels and some data indicated here were collected from the agronomy section of the BoA; **Weredas are just being established and there is only data at sub-city levels.

b. Public/private animal health services

The main sources of these data were regional animal health and livestock services. These data are presented either in scanned copies or digital formats on the CD accompanying this report. Out of the 914 weredas reported by regions, livestock data was available for 439 and 312 weredas (public and private, respectively) and it was mainly because data from Amhara (154 weredas) were not available at wereda levels and Addis Abeba weredas (116 in total) are being established and data are only available at the level of sub-cities (data for Amhara can be collected from zones Table 2). In addition, it was very difficult to get data from Somali region while data on private animal health services is being requested from SNNPR and will be fulfilled in due course.

Table 4. Status of wereda level public/private animal health service data by regions

s/n	Region	Completeness of data*		Remarks
		Public*	Private*	
1	TIGRAY	for 35 weredas	for 35 weredas	Scanned documents
2	AFAR	for 32 weredas	for 32 weredas	Scanned and digital (MS Word®)
3	AMHARA	Not available	Not available	Only at zonal levels
4	OROMIA	for 177 weredas	for 204 weredas	MS Excel® format
5	SOMALI	Not available	Not available	
6	BENISHANGUL GUMUZ	for 20 weredas	for 20 weredas	Scanned documents
7	SNNP	for 154 weredas	Not available	Private (on process to get it)
8	GAMBELA	for 14 weredas	for 14 weredas	Scanned documents
9	HARARI	for the region	for the region	Adobe Acrobat® format
10	ADDIS ABEBA	Not available**	for the city	Private (hard copy)
11	DIRE DAWA	for the region	for the region	Digital

*Includes manpower and infrastructure**Only at sub-city level

c. Crop Production

Similarly, the sources of these data were the regional bureaus of agriculture responsible for crop extension. Data on the amount (quintal) and type of crop produced (as cereal and pulses) at wereda level was also collected from most regions except Oromia and Somali regions. These data are presented either in

scanned copies or digital formats on the CD accompanying this report. Out of the 914 weredas reported by regions, livestock data was available for 792 weredas.

Table 5. Status of wereda level public/private animal health service data by regions

s/n	Region	Completeness of data*		Remarks
		Cereal	Pulses	
1	TIGRAY	for 35 weredas	for 35 weredas	In MS Excel® format
2	AFAR	for 36 weredas	for 36 weredas	In MS Word® format
3	AMHARA	for 133 weredas	for 133 weredas	Scanned document
4	OROMIA	for 16 weredas*	for 16 weredas*	MS Excel® format
5	SOMALI	Not available	Not available	
6	BENISHANGUL GUMUZ	For 20 weredas	For 20 weredas	MS Excel® format
7	SNNP	for 136 weredas	for 136 weredas	MS Excel® format
8	GAMBELA	for 13 weredas	for 13 weredas	MS Word®
9	HARARI	For the region	For the region	Hard copy
10	ADDIS ABEBA	For the region	For the region	Hard copy
11	DIRE DAWA	For the region	For the region	MS Excel® format

*Oromia Pastoral Development Commission

6. Findings and recommendations

Changes in administrative structure: Ethiopia is administratively divided into regional states and chartered cities, zones, weredas/town administrations and kebeles. However, the number of weredas is constantly changing and it has been steadily increasing over the last few years because of frequent splitting of existing weredas to create new ones.

Over the last years, the number of weredas has increased from 500 to over 900 as a result of further restructuring and division of bigger weredas. The increase in the number of weredas is mainly because of the evolvement of new urban administrations often also called urban local government administrations which have the same status as weredas. These urban administrations perform state and municipal functions.

State functions include:

- Health,
- Education, and
- Agricultural services.

Municipal functions include:

- preparation, approval, and implementation of development plans;
- assessment and collection of allowable municipal revenues;
- provision of internal roads and bridges;
- provision of markets, slaughter houses, terminals, public gardens, recreational areas, and other public facilities;
- regulation of cleanliness and provision of solid waste, water, sewerage, and drainage services;
- management of urban land and provision of urban land services; and
- delivery of miscellaneous services, including fire protection, libraries, public toilets, street lighting, nursery schools, and ambulance services.

These urban administrations have urban and peri-urban agriculture with many inhabitants involved in livestock production. As the urban administrations report directly to zones instead of weredas, it is important that they are treated separately from the surrounding weredas as substantial amount of data on livestock health, production and productivity may not be adequately captured.

Table 6. Administrative changes since the CSA census (2005)

s/n	Region	CSA, 2005				Current data (2014)			
		No of zones	No of Weredas	No of Town Admins	Total	No of zones	No of Weredas	No of Town Admin	Total
1	TIGRAY	5	35	11	46	7	36	11	47
2	AFAR	5	32	-	32	5	32	4	36
3	AMHARA	12	130	9	139	10	131	36	167
4	OROMIA	21	254	21	275	21	265	28	293
5	SOMALI	-	-	-	-	-	64	4	68
6	BENISHANGUL	3	20	-	20	3	20	-	20

s/n	Region	CSA, 2005				Current data (2014)			
		No of zones	No of Weredas	No of Town Admins	Total	No of zones	No of Weredas	No of Town Admin	Total
	GUMUZ								
7	SNNP	22	136	9	145	19	136	10	146
8	GAMBELA	4	12	1	13	4	13	1	14
9	HARARI	-	2	-	2	-	4	-	4
10	ADDIS ABEBA	10*	-	-	-	10*	116	-	116
11	DIRE DAWA	-	1	-	1	-	3	-	3
TOTAL		82	622	51	673	79	820	94	914

*sub-cities are equivalent to zones

The relevance of CSA data to administrative structural changes: In the past, boundary maps showing administrative divisions were not readily available at national level. Maps available at regional offices were usually sketch maps with no link to topographic maps and they were often grossly distorted. Too often, it was extremely difficult to link them to topographic maps or even to fit, one or more neighboring weredas, reasonably well together. As a result, it was very time-consuming to work with low-quality maps as it is always difficult to make information fit together.

The maps produced by the CSA census of 2005 addressed many of these problems as CSA maps can be linked to topographic maps of the country without major difficulties. Similarly, the quality of most of the regional maps has improved quite considerably, probably because they were sketched on the basis of the maps produced by the CSA. One can easily notice the level of distortions in least covered Somali and partially covered Afar and eastern Oromia regions (bordering Somali region of Ethiopia). Such distortions are not significant in the rest of the regions (including the rest of Oromia) which have been extensively covered by the CSA censuses.

The administrative structure of Ethiopia has frequently changed. In recent years, the wereda boundaries in some areas have changed every two to three years. This may to some extent explain the lack of quality in administrative maps. This problem is illustrated by the fact that even the CSA maps, which are the most recent series of maps available, no longer reflect the current administrative structure. Although the CSA maps may not serve as a reliable source in such a situation (because CSA carries out census once every ten years), they are invaluable as a platform for predicting future administrative changes in the country.

The kebele features included on the CSA maps can be regarded as the primary cells from which the administrative structure of the country is made up. Changes too often take the form of merging and splitting of weredas and higher units, while the kebele structure is much more stable. Only in a very few cases are there changes in the primary cells. Therefore, it is still possible to redraw wereda borders quite easily based on the CSA maps, supplemented by information on the specific changes on the ground such as rivers, mountain chains, etc. The resulting map can be precise enough for most purposes.

As the aim of the present consultancy has been to relate the current administrative divisions of the country with that of the CSA maps and know how a particular wereda

was created or split apart, this analysis was straight forward in other regions of the country with the exception of Somali and Afar regions which have grossly distorted regional maps and which are extremely difficult to link them to the CSA maps. One major correction made, by the consultant, to the maps obtained from the rest of the regions include adjustment made to link the various regional maps to geographical coordinates and CSA boundaries in order to bring the information from the various regional maps into a common reference system.

Despite their great value, the CSA maps have so far not been much used and one problem is that these maps are not generally available. They have been prepared primarily for the internal use of the CSA, as a tool for interpreting the census data. However, it is recommended that future information gaps at the level of the VSD on administrative structural changes that may occur in regions need to be addressed based on the CSA's census maps for zones, weredas and kebeles and additional information on the ground. Above all, there is no any other office other than the CSA which is the sole official source of GIS data in Ethiopia.

Naming of zones/weredas/kebeles: A more common problem is the fact that Zones/weredas/kebeles often have more than one naming/spelling, and the naming/spelling used on the map may differ from the name used locally in that specific region/zone/wereda/Kebele. Although it is well known to the local officials and creates no problem for them, it can be very confusing for planners and policy makers at federal levels, especially when they don't have adequate local knowledge.

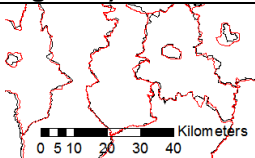
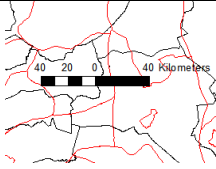
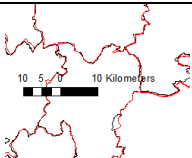
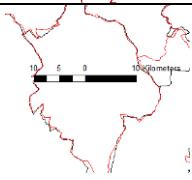
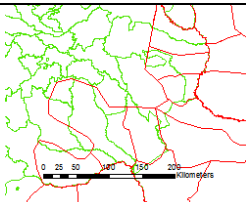
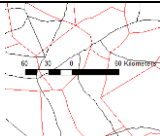
The current report has reflected the names as found from the regional BoFED, CSA and BoA/CLNRDB and it is believed to be a good platform for minimising the problem by registering all known names. In addition, coding system was used based on the CSA census map (2005) to address the problem and standardize wereda names. For those new weredas where geographic identifying codes are not available, codes were created in line with the CSA coding system. Therefore, the VSD/epidemiology unit need to take the following actions:

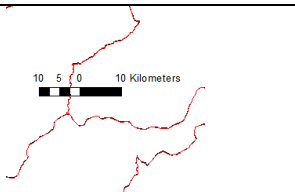
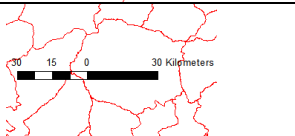
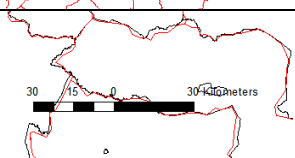
- prepare a register of wereda names and codes and update them periodically based on the CSA (findings included in this report can be used as a starting point).
- notify all weredas animal health services about the code of their particular wereda and
- update the Monthly Disease Outbreak report so that it has space for writing wereda codes.

Alignment of maps: Boundary maps obtained from regions do not precisely match with what was produced by the CSA some years back. The maps collected for these region during the present consultancy are not also precisely aligning to each other. However, these maps are somehow adjacently outlined with that of the CSA and it is probably because they are sketched on the basis of the maps produced by the agency. However, there are significant deviations on maps obtained from Afar and Somali NRS from that of the CSA (2005) and FAO maps (unofficial), respectively. Afar map is somehow closer in outline to the "unofficial" map of the FAO (obtained through personal communication).

In response to this, some topographical features, like rivers, mountain chains and DEM (in the form of images and contour maps) were also collected. In principle these features can be used to edit maps for Afar, Somali and partly Oromia (bordering Somali and Afar regions). For instance, when the CSA map shows that a particular border follows a river, the border could be adjusted to follow that particular river. If done very carefully, this could improve the quality of the map but it is very laborious besides that it can also reduce the quality of the map, e.g. if the wrong river is selected as there are so many small rivers and gorges. Furthermore, it is very difficult to check the quality of the CSA boundary maps for some regions since they are not aimed at making political boundaries but for the sole purpose of carrying out national census. For instance, there is a clear disparity between the CSA map and the eastern part of Oromia map obtained from BoFED. On the other hand, the boundary maps obtained from BoFED in Oromia and Somali are so disarranged that it is impossible to align them without losing a number of weredas from each side. Therefore, it is recommended that Oromia, Somali and Afar regional maps should be used separately (unmerged) when dealing with these regions such as carrying out joint planning with or organizing training/workshops in these regions. A national map can only be prepared to show e.g. the distribution of a particular disease by merging all regions except Somali (data for Somali need to be shown separately until an official map is produced by CSA or EMA at national level).

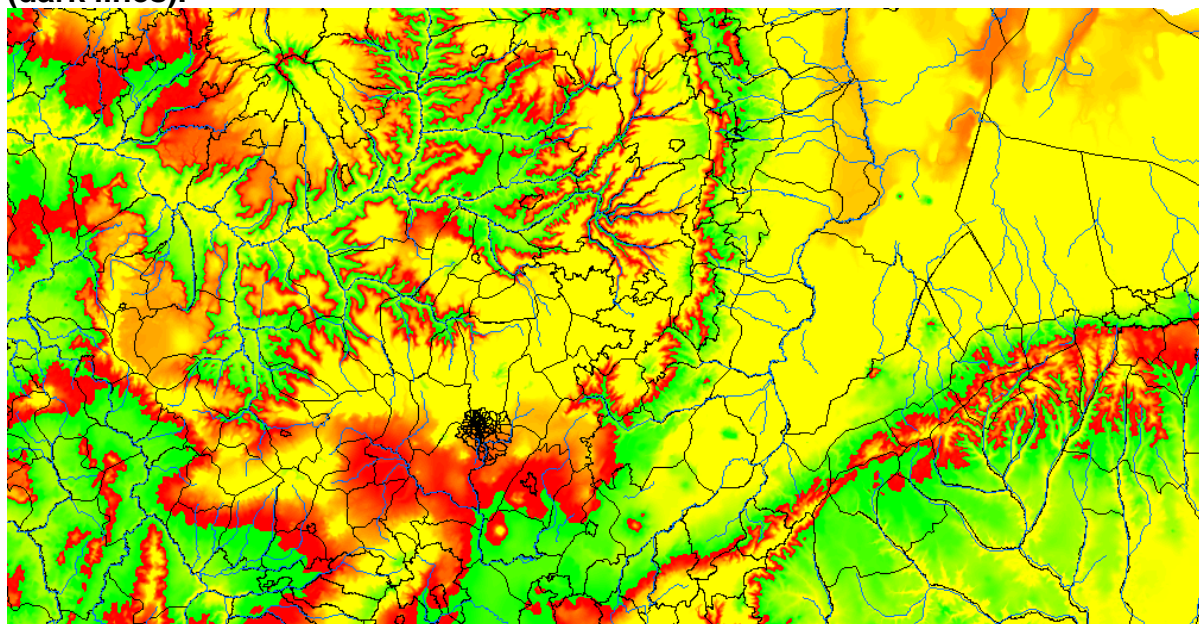
Table 7. Alignment of CSA (2005) maps and regional maps as obtained from BoFED and other offices

s/n	Regional shapefiles	Map alignment (CSA vs regional)	Remarks
1	TIGRAY		Maps match to each other
2	AFAR		Maps do not match at all
3	AMHARA		Maps match to each other
4	OROMIA	 The rest of Oromia	 Maps are not fitting at all (a crossover of up to 200 km of area between Oromia and Somali)
5	SOMALI	No CSA map for the region	

s/n	Regional shapefiles	Map alignment (CSA vs regional)	Remarks
			Not matching at all with the “unofficial” map of FAO Ethiopia
6	BENISHANGUL GUMUZ		Maps match to each other
7	SNNP		Maps match to each other
8	GAMBELA		Maps match to each other

NB: CSA/FAO Ethiopia maps – in dark lines; regional maps – in red lines; look at eastern Oromia bordering somali not matching and extending far beyond what the CSA has mapped.

Fig. 1. Map showing water courses (blue lines) versus regional boundary maps (dark lines).



Data on livestock health, production and productivity: Information plays decisive role in the identification of geographic areas which need immediate attention and to make a timely decisions. This is particularly important now where resources are becoming scarce and there is a pressing need for designing and implementing a rational strategy in the country.

Much has been tried to improve disease reporting in general but less in improving livestock related data collection and recording at national level. In Ethiopia, this problem is evident at all levels and the consultant believes that it is one of the areas that need due attention. Collection of wereda based data on animal health, crop and livestock production and productivity etc. is crucial for planning and programing

purposes and disease reporting should be scaled up to encompass all pertinent data at wereda levels. For instance, the existing monthly disease outbreak reporting format can be modified to include additional columns for entering livestock population, crop production in quintals (cereal and pulses), animal health personnel and infrastructure at wereda levels.

The VSD covers all regions in the country in collecting disease outbreak reports as part of the national surveillance program for TADs. Each item of animal health data collected by regions has a spatial (wereda, kebele, locality, etc) as well as an animal (disease, species, age, population at risk, etc) and temporal (date, month, year) components. However, regional animal health services are often very much concerned about animal and temporal dimensions because of lack of capacity and awareness in geospatial analysis. Therefore, incorporating GIS capacities into the regional disease surveillance information system will allow regions to develop and plan refined and timely control measures against TADs by combining both visualization and analytical functions of maps and graphics which is far much better tool for managing myriad of livestock related information.

In addition, It will also help regions, and through it the VSD, to periodically update any change in administrative structure that may take place in each region.

Some of the main GIS analyses tools include.

a. Overlay analysis of thematic data for calculating the distance of all case sites to the nearest stream even though the actual data reside in different layers. If thematic layers represent an event's status at a particular time, then temporal analysis methods can be used to show patterns and trends of cases over time.

b. Buffer generation, for example, in an outbreak, buffers can be created around case site premises and then the buffer polygon can be used to select other premises within that area. Using this method, new premises can be selected for surveillance, special testing, or to restrict the movement of animals away from the affected area.

c. Neighbourhood analysis, for example, if we have an attribute data of producers and if we were interested in a disease affecting only one species of animal, we could query and select all those specific animal producers within 5 miles, or other distance, of case site. More advanced functions of neighbourhood analyses involve the creation of weighting factors, such as distance, or the presence of identified risk factors along with the distance.

d. Grid Generation: One of the primary uses of grids is for surveillance. Grid cells are used in the random selection of sample sites over an area. Grids can also be used to plan and manage control efforts during an outbreak, as well as monitor the status of clean-up operations during the recovery phase.

e. Spatial analysis, for instance, for finding a site for establishing a new veterinary facility in area with low livestock density, away from human habitations, game reserves, livestock trekking routes and markets but in close proximity to livestock feed and water source areas and also in areas with good terrain and suitable land use situations.

f. Spatial intersection for example, if the geographic distributions of two species of animals overlap, then this common area can be saved as a distinct region. This new region will contain the combined attributes associated with each of the original data layers.

g. Surface modelling: This technique can be used to describe a site where a disease agent is found and then to identify other sites where a similar set of conditions occur for forecasting disease spread.

h. Network analysis: for example, in tracing movements of animals or animal products from infected sites to specific destinations and this type of analysis can be applied to any linear feature organized into a network.

7. Annex: Naming, coding and changes in administrative structure and names

7.1.1. Tigray

a. Tigray zones: According to the CSA map (2005), Tigray NRS was divided into 5 zones, named after their directions/locations in the region. Recent municipal reforms promoted the regional capital MEKELE to zonal administration level as “DEBUB & SEMEN MEKELE”.

Table 8. Names, codes and changes in administrative structure of zones in Tigray region

s/n	Region Name	Code	Zone Name (Current, BoA, 2014)	Code	CSA, 2005
1	TIGRAY	01	NORTH WESTERN	0101	NORTH WESTERN
2			CENTRAL	0102	CENTRAL
3			EASTERN	0103	EASTERN
4			SOUTHERN	0104	SOUTHERN (SPLIT)
5			WESTERN	0105	WESTERN
6			MEKELLE SPECIAL ZONE	0106	MEKELLE SPECIAL ZONE
7			SOUTH EASTERN	0107	SOUTHERN (SPLIT)

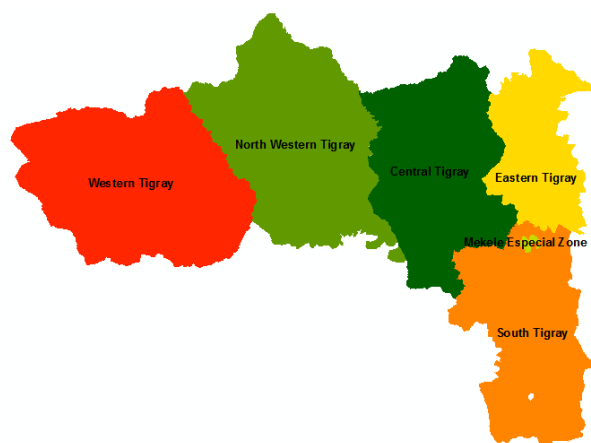


Fig. 2. CSA zone map of Tigray

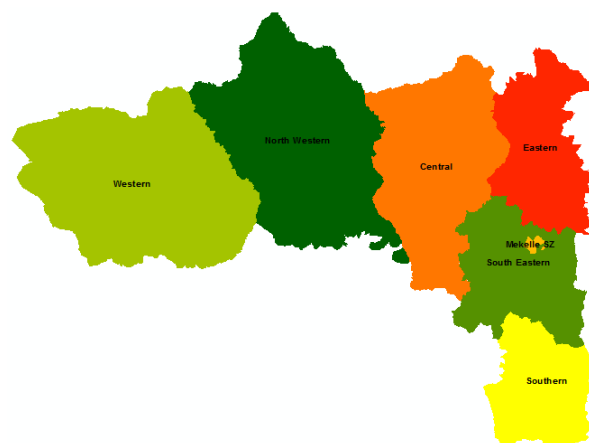


Fig 3. Regional zone map of Tigray

b. Tigray weredas: Each zone is subdivided into weredas and Tigray Regional State had 46 weredas including 10 towns having a wereda status. Since then, DEBUB & SEMEN MEKELE is split into two town administrations, namely, DEBUB MEKELE WEREDA and SEMEN MEKELE WEREDA. As a result, the number of weredas in Tigray is currently 47.

Table 9. Names, codes and changes in administrative structure of weredas in Tigray region

s/n	Region Name	Code	Zone Name	Code	Wereda Name (Current, BoA, 2014)	Code	CSA, 2005
1	TIGRAY	01	CENTRAL TIGRAY	0102	ABIY ADI TOWN	010211	ABIYI ADI TOWN
2					ADWA	010204	ADWA
3					ADWA TOWN	010212	ADWA TOWN
4					AHFEROM	010202	AHIFEROM

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s/n	Region Name	Code	Zone Name	Code	Wereda Name (Current, BoA, 2014)	Code	CSA, 2005
5					ALAMATA	010407	ALAMATA
6					DEGUA TEMBEN	010209	DEGUA TEMBEN
7					KILTE AWLAELO	010306	KLITE AWLALO
8					LAELAY ADIYABO	010102	LAELAY ADIABO
9					MEDEBAY ZANA	010103	MEDEBAY ZANA
10					MEREB LEKE	010201	MEREB LEHA
11					TAHTAY ADIYABO	010101	TAHITAY ADIYABO
12					TAHTAY MAYCHEW	010206	TAHITAY MAYCHEW
13					WEREI LEKE	010203	WEREILEHI
14			EASTERN TIGRAY	0103	ADIGRAT TOWN	010308	ADI GIRAT TOWN
15					AXUM TOWN	010213	AKISUM TOWN
16					EROB	010302	EROP
17					GANTA AFESHUM	010304	GANTA AFESHUM
18					GULUMEKEDA	010301	GULO MEHEDA
19					HAWZEN	010305	HAWZEN
20					KAFTA HUMERA	010501	QAFTA HUMERA
21					SAESIE TSAEDA EMBA	010303	SAESI TSADAMBA
22					TSELEMTI	010106	TSELEMT
23			MEKELE ESPECIAL ZONE	0106	DEBUB MEKELE	010602	DEBUB & SEMEN MEKELE (SPLIT)
24					ATSBI WENBERTA	010307	ATSBI WONBERTA
25					KOREM TOWN	010410	KOREM TOWN
26					MAYCHEW TOWN	010409	MAYCHEW TOWN
27					SEMEN MEKELLE	010601	DEBUB & SEMEN MEKELE (SPLIT)
28					SHIRARO TOWN	010108	SHIRARO TOWN
29					SHIRE ENIDA SILASE TOWN	010107	SHIRE ENIDA SILASE TOWN
30					TAHTAY KORARO	010104	TAHITAY QORARO
31					TSEGEDE	010503	TSEGEDE
32			SOUTH TIGRAY	0104	ALAMATA TOWN	010411	ALAMATA TOWN
33					AMBA'ALAJE	010404	AMBALAGE
34					ASGEDE TSIMBLA	010105	ASEGEDE TSIMBILA
35					ENDAMEHONI	010405	ENDAMEHONE

s/n	Region Name	Code	Zone Name	Code	Wereda Name (Current, BoA, 2014)	Code	CSA, 2005		
36					ENDERTA	010402	ENDERTA		
37					HINTALO WEJIRAT	010403	HINTALO WAJIRAT		
38					KOLA TEMBEN	010208	KOLA TEMBEN		
39					LAELAY MAYCHEW	010205	LAILAY MAYICHEWU		
40					NAEDER ADET	010207	NADER ADET		
41					RAYA AZEBO	010406	RYA AZEBO		
42					SAHARTI SAMRE	010401	SEHARTI SAMRE		
43			WESTERN TIGRAY	0105			HUMERA TOWN	010504	HUMERA TOWN
44							OFLA	010408	OFLA
45							TANQUA ABERGELE	010210	TANQUA ABERGELE
46							WELKAIT	010502	WELQAYET
47			EASTERN TIGRAY	0103			WUKRO TOWN	010309	WEKERO TOWN

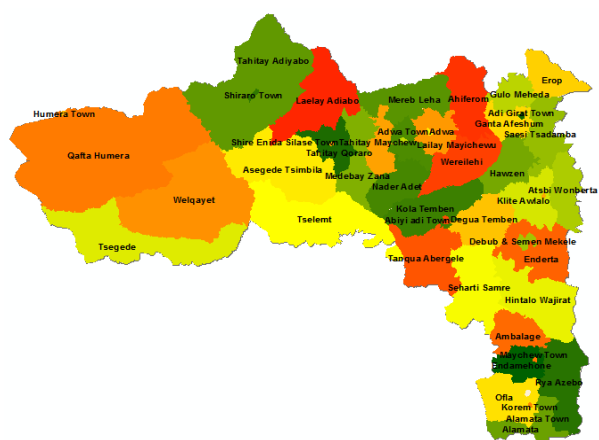


Fig. 4. CSA wereda map of Tigray

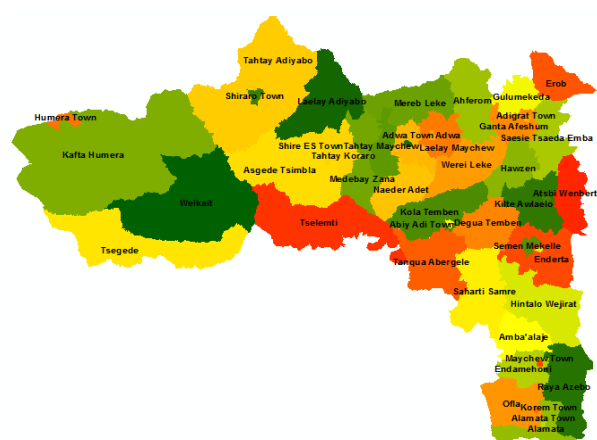


Fig. 5. Regional wereda map of Tigray

7.1.2. Afar

a. Afar zones: According to the CSA (2005), Afar NRS was divided into 5 zones, named by zone numbers (1-5). Since then, the number of zones remains the same except that they were named as KILBETI (FORMERLY ZONE 2), AWSI (ZONE 1), FENTI (ZONE 4), GEBI (ZONE 5) and HARI (ZONE 3).

Table 10. Names, codes and changes in administrative structure of zones in Afar region

s/n	Region Name	Code	Zone Name (Current, BoFED, 2014)	Code	CSA, 2005
1	AFAR	02	AWSI	0201	ZONE 01
2			KILBETI	0202	ZONE 02
3			GEBI	0203	ZONE 03
4			FENTI	0204	ZONE 04
5			HARI	0205	ZONE 05

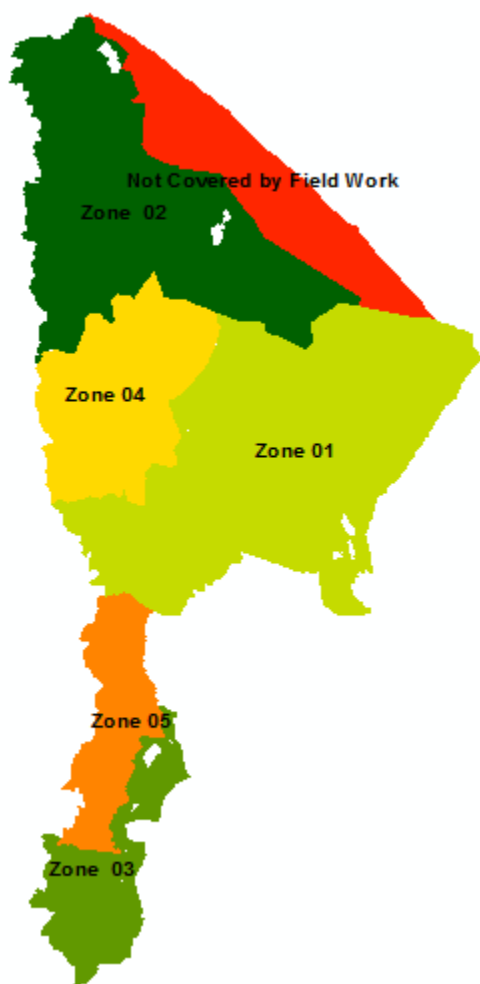


Fig. 6. CSA zonal map of Afar

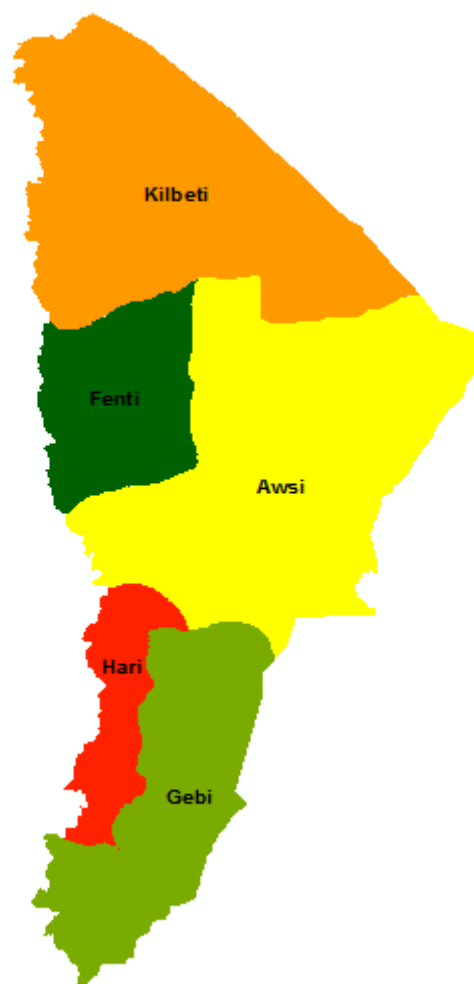


Fig. 7. Regional zonal map of Afar

b. Afar weredas: As per the 2005 CSA census map, Afar NRS had 32 weredas. Since then, municipal reforms in the region promoted SEMERA, ASA'ITA, SHEHET and AWASH 7 TOWNS to wereda administration levels and the number of weredas in the region has increased to 36.

Table 11. Names, codes and changes in administrative structure of weredas in Afar region

s/n	Region	Code	Zone Name	Code	Wereda Name (Current, BoFED, 2014)	Code	CSA, 2014
1	AFAR	02	ZONE 02 (KILBETI)	0200	MEGALE	020204	MEGALE
2					AB'ALA	020203	ABALA
3					AFDERA	020207	AFDERA
4					AWASH 7 TOWN	020307	NEW
5					AWASH FENTALE	020302	AWASH FENTALE
6					BUROMODAITU	020305	BURE MODAYITU
7					DUBTI	020101	DUBTI

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s/n	Region	Code	Zone Name	Code	Wereda Name (Current, BoFED, 2014)	Code	CSA, 2014		
8					GULINA	020405	GOLINA		
9					KUNEBA	020202	KONABA		
10			ZONE 03 (GEBI)	0203	AMIBARA	020301	AMIBARA		
11						ARGOBA	020306	ARGOBA LIYU	
12						ASA'ITA TOWN	020109	CREATED INSIDE ASA'ITA WER	
13						AWRA	020401	AWURA	
14						DALOL	020206	DALOL	
15						ELIDA'AR	020102	ELIDAR	
16					ZONE 01 (AWSI)	0201	ADA'AR	020107	ADEAR
17								AFAMBO	020104
18				ASA'ITA			020103	ASAYTA	
19				BEREHALE			020205	BEREHALE	
20				DALIFAGE			020504	DALIFAGI	
21				DEWE			020503	DEWE	
22				HADELE'ELA			020505	HADELEALA	
23				KURRI			020108	KORI	
24			ZONE 04 (FENTI)	0204	AWA	020402	EWA		
25						DULECHA	020304	DULECHA	
26						EREBTI	020201	EREBTI	
27						SEMEROBI	020502	SEMUROBIN A GELALO	
28						SHEHET TOWN	020209	NEW	
29						TERU	020403	TERU	
30						YALO	020404	YALO	
31			ZONE 05 (HARI)	0205	BIDU	020208	BEDU		
32						CHIFRA	020106	CHEFERA	
33						GEWANE	020303	GEWANE	
34						MILE	020105	MILE	
35						SEMERA TOWN	020107	NEW	
36						TELALAK	020501	TELALAK	

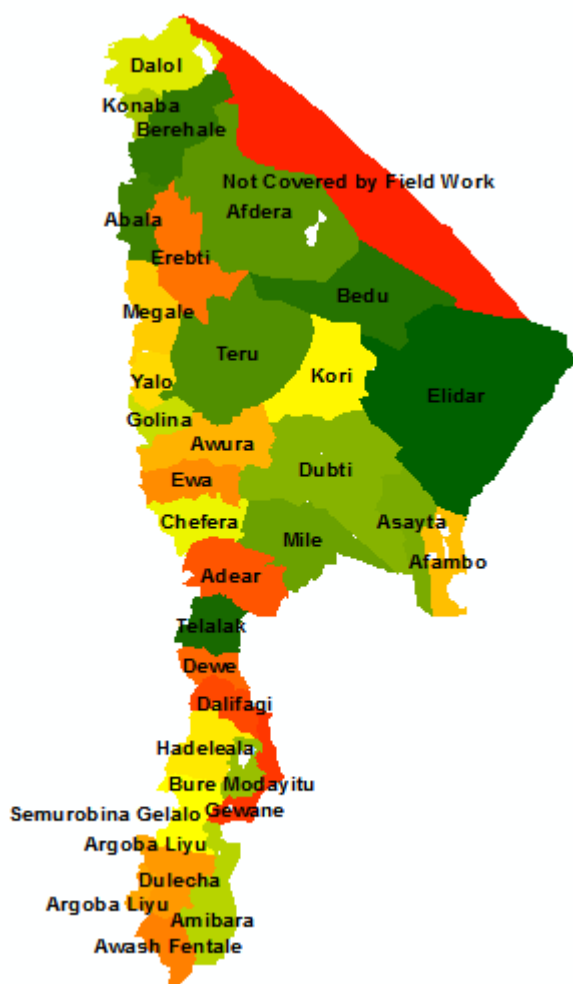


Fig. 8. CSA wereda map of Afar

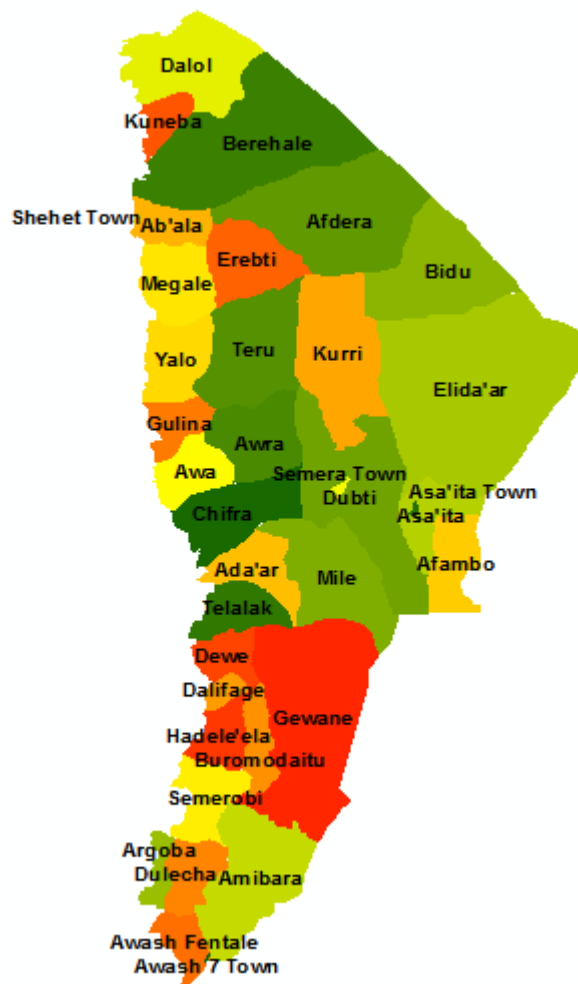


Fig. 9. Regional wereda map of Afar

7.1.3. Amhara

a. Amhara zones: According to CSA (2005), Amhara NRS was divided into 12 zones including ARGOBA SPECIAL WEREDA. Regional municipal reforms had promoted the regional capital Bahir Dar to zonal level administration. However, data gathered from various offices in the region including BoFED, REPLAA/B and BoA show that the current number of zones in the region is reduced to 10, and excludes ARGOBA SPECIAL WEREDA and BAHIR DAR TOWN from the status of zones.

Table 12. Names, codes and changes in administrative structure of zones in Amhara region

s/n	Region Name	Code	Zone Name (BoFED, 2014)	Code	CSA, 2005
1	AMHARA	03	ARGOBA SPECIAL WOREDA	0312	ARGOBA SPECIAL WOREDA
2			AWI	0309	AWI
3			BAHIR DAR SPECIAL ZONE	0311	BAHIR DAR LIYU
4			EAST GOJJAM	0306	EAST GOJJAM
5			NORTH GONDAR	0301	NORTH GONDAR
6			NORTH SHEWA	0305	NORTH SHEWA

s/n	Region Name	Code	Zone Name (BoFED, 2014)	Code	CSA, 2005
7			NORTH WOLLO	0303	NORTH WOLLO
8			OROMYA	0310	OROMIYA
9			SOUTH GONDAR	0302	SOUTH GONDER
10			SOUTH WOLLO	0304	SOUTH WOLO
11			WAGHIMRA	0308	WAG HIMRA
12			WEST GOJAM	0307	WEST GOJJAM

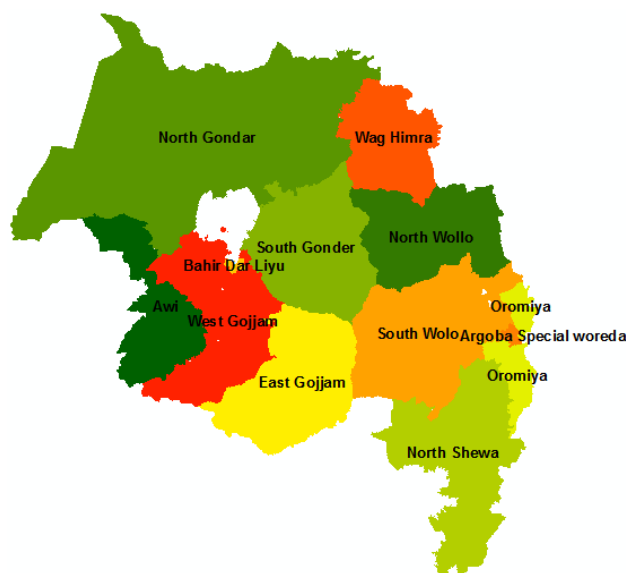


Fig. 10. CSA zonal map of Amhara

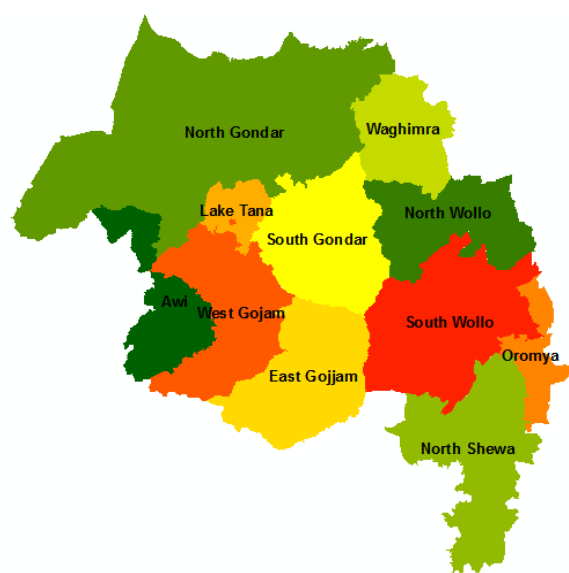


Fig. 11. Regional zonal map of Amhara

b. Amhara weredas: According to CSA (2005), Amhara NRS had 139 weredas including 10 towns having a wereda status. However, the present survey has shown that the region has a total of 167 weredas including 27 towns which have been upgraded to a wereda status and evolvement of a new wereda called “ZIGEM”.

Table 13. Names, codes and changes in administrative structure of weredas in Amhara region

s/n	Region	Code	Zone name	Code	Wereda Name (BoFED, 2014)	Code	CSA, 2005
1	AMHARA	03	AWI	0309	ANKESHA GUAGUSA	030903	ANKASHA GUAGUSA
2					BANJA	030902	BANJA SHEKUDAD
3					CHAGNI TOWN ADMIN	030911	CREATED INSIDE GUANGUA WER
4					DANGILA	030901	DENGILA
5					DANGILA TOWN ADMIN	030910	CREATED INSIDE DANGILA WER
6					FAGITA LEKOMA	030905	FAGITA LEKOMA
7					GUAGUSA SHIKUDAD	030907	GUAGUSA SHEKUDAD
8					GUANGUA	030904	GUANGUA (SPLIT)

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s/n	Region	Code	Zone name	Code	Wereda Name (BoFED, 2014)	Code	CSA, 2005
9					INJIBARA TOWN ADMIN	030909	CREATED INSIDE BANJA SHEKUDAD WER
10					JAWI	030906	JAWI
11					ZIGEM	030908	GUANGUA (SPLIT)
12			EAST GOJAM	0306	ANEDED	030617	ANEDED
13					AWABEL	030612	AWABEL
14					BASO LIBEN	030611	BASO LIBEN
15					BIBUGN	030601	BIBUGN
16					BICHENA TOWN ADMIN	030618	CREATED INSIDE ENEMAY WER
17					DEBAYTELATGIN	030607	DIBAY TILATGIN
18					DEBRE ELIAS	030608	DEBERE ELIAS
19					DEBRE MARKOS TOWN AD	030615	DEBRE MARKOS TOWN
20					DEJEN	030613	DEJEN
21					DEJEN TOWN ADMIN.	030619	CREATED INSIDE DEJEN WER
22					ENARJI ENAWUGA	030605	ENARJ ENAWUGA
23					ENEBSE SAR MIDER	030604	ENEBISE SAR MIDIR
24					ENEMAY	030606	ENEMAY
25					GONCHA SISO ENESE	030603	GONCHASISO ENESE
26					GOZAMIN	030610	GOZAMIN
27					HULET IJU ENESIE	030602	HULETEJ ENESE
28					MACHAKEL	030609	MACHAKEL
29					MOTTA TOWN ADMIN	030620	CREATED INSIDE HULETEJ ENESE WER
30					SHEBEL BERENTA	030614	SHEBEL BERENTA
31					SINAN	030616	SENAN
32			NORTH GONDAR	0301	ADARKAY	030101	ADIARIKAY
33					ALEFA	030115	ALEFA
34					AYKEL TOWN ADMIN	030122	CREATED INSIDE CHILGA WER
35					BEYEDA	030102	BEYEDA
36					CHILGA	030112	CHILGA
37					DABAT	030105	DABAT
38					DEBARK	030104	DEBARK
39					DEBARK TOWN ADMIN	030123	CREATED INSIDE DEBARK

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s/n	Region	Code	Zone name	Code	Wereda Name (BoFED, 2014)	Code	CSA, 2005
							WER
40					DEMBEYA	030111	DEMBIA
41					GENDAWUHA TOWN ADMIN	030124	CREATED INSIDE METEMA WER
42					GONDAR TOWN ADMIN	030118	GONDAR TOWN
43					GONDAR ZURIA	030110	GONDAR ZURIYA
44					JANAMORA	030103	JAN AMORA
45					LAY ARMACHIHO	030108	LAY ARMACHEW
46					METEMA	030113	METEMA
47					MIRAB ARMACHIHO	030106	MIRAB ARMACHO
48					MIRAB BELESA	030116	MERAB BELESA
49					MISRAK BELESA	030117	MISRAK BELESA
50					QUARA	030114	QAURA
51					TACH ARMACHIHO	030120	TACH ARMACHO
52					TAKUSA	030121	TAKUSA
53					TEGEDE	030107	TEGEDE
54					TELEMT	030119	TSELEMET
55					WOGERA	030109	WEGERA
			NORTH SHEWA	0305			CREATED INSIDE MEREHABETE WER
56					ALEM KETEMA TOWN ADMIN	030524	MEREHABETE WER
57					ANGOLELANA TERA	030513	ANGOLELANA TERA
58					ANKOBER	030515	ANKOBER
59					ANTSOKIYA GEMZA	030507	ANTSOKIYA GEMZA
60					ASAGIRT	030514	ASAGERT
							CREATED FROM EFRATANA GIDIM WER
61					ATAYE TOWN ADMIN	030525	EFRATANA GIDIM WER
62					BASONA WORENA	030519	BASONA WERANA
63					BEREHET	030517	BEREHET
							DEBRE BIREHAN TOWN
64					DEBRE BIREHAN TOWN ADMIN	030520	DEBREBIREHAN TOWN
65					EFRATANA GIDIM	030508	YIFRATANA GIDIM
66					ENSARONA WAYO	030503	ENSARO
67					GISHE RABEL	030506	GISHE
68					HAGERE MARIAM KESEM	030516	HAGERE MARIAM

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s/n	Region	Code	Zone name	Code	Wereda Name (BoFED, 2014)	Code	CSA, 2005
69					KEWET	030512	KEWET
70					MEHALMEDA TOWN ADMIN	030527	CREATED INSIDE MENZ GERA MEDER WER
71					MENZ GERA MIDER	030505	MENZ GERA MEDER
72					MENZ LALO MIDER	030522	MENZ LALO MEDER
73					MENZ MAMA MIDER	030509	MENZE MAMA MIDER
74					MENZ QEYA GEBREAL	030521	MEZ KEYA GEBERAL
75					MEREHABETE	030502	MERHABETE
76					MIDA WOREMO	030501	MIDA OROMO
77					MINJARINA SHENKORA	030518	MINJAR SHENKORA
78					MOJANA WODERA	030511	MOJANA WEDERA
79					MORETINA JIRU	030504	MORETNA JURU
80					SEYA DEBERNA WAYU	030523	SAYA DEBIRNA WAYU
81					SHEWA ROBIT TOWN ADM	030526	CREATED INSIDE KEWET WER
82					TARMA BER	030510	TARMA BER
83			NORTH WOLLO	0303	BUGNA	030301	BUGNA
84					DAWUNT	030310	DAWUNT
85					GIDAN	030303	GIDAN
86					GUBA LAFTO	030306	GUBA LAFTO
87					HABRU	030307	HABRU
88					KOBO	030302	KOBO
89					KOBO TOWN ADM	030313	CREATED INSIDE KOBO WER
90					LAL YIBELA TOWN ADMIN	030312	CREATED INSIDE LASTA WER
91					LASTA	030309	LASTA
92					MEKET	030304	MEKET
93					MERSA TOWN ADMIN	030311	CREATED INSIDE HABRU WER
94					WADLA	030305	WADLA
95					WOLDIA TOWN ADM	030308	WELDIYA TOWN ADMIN
96			OROMYA	0310	ARTUMA FURSI	031004	ARTUMA FURSI
97					BATI	031002	BATI
98					BATI TOWN ADMIN	031007	CREATED INSIDE BATI WER

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s/n	Region	Code	Zone name	Code	Wereda Name (BoFED, 2014)	Code	CSA, 2005
99					DEWA CHEFA	031001	DAWA CHEFA
100					DEWA HAREWA	031005	DEWE HAREWA
101					JILENA TIMUGA	031003	JILE TIMUGA
102					KEMISIE TOWN ADMIN	031006	KEMISE TOWN
103			SOUTH GONDAR	0302	ADDIS ZEMEN TOWN ADMIN	030212	CREATED INSIDE LIBO KEMKEM WER
104					DEBRE TABOR TOWN AD	030210	DEBRETABOR
105					DERA	030209	DERA
106					EBINAT	030201	EBINAT
107					FARTA	030204	FARTA
108					FOGERA	030203	FOGERA
109					LAY GAYINT	030205	LAY GAYINT
110					LIBO KEMKEM	030202	LIBOKEMKEM
111					MEKANE EYESUS TOWN ADMIN	030215	CREATED INSIDE MISRAK ESTE WER
112					MIRAB ESTIE	030211	MIRAB ESTE
113					MISRAK ESTIE	030208	MISRAK ESTE
114					NEFAS MEWUCHA	030213	CREATED INSIDE LAY GAYINT WER
115					SIMADA	030207	SIMADA
116					TACH GAYINT	030206	TACH GAYINT
117					WORETA TOWN ADMIN	030214	CREATED INSIDE FOGERA WER
118			SOUTH WOLLO	0304	ALEBUKO	030408	ALIBUKO
119					AMBASSEL	030404	AMBASEL
120					AREGOBA SPECIAL WEREDA	030424	ARGOBA
121					BORENA	030412	DEBRESINA
122					DELANTA	030423	DELANTA WEREDA
123					DESSIE TOWN ADM	030418	DESE TOWN
124					DESSIE ZURIA	030409	DESE ZURIYA
125					HAIKE TOWN ADMIN	030422	CREATED INSIDE TEHULEDERE WER
126					JAMMA	030414	JAMA
127					KALU	030407	KALU
128					KELELA	030413	KELALA
129					KOMBOLCHA TOWN	030417	KOMBOLCHA TOWN
130					KUTA BER	030403	KUTABER

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s/n	Region	Code	Zone name	Code	Wereda Name (BoFED, 2014)	Code	CSA, 2005
131					LEGAMBO	030410	LEGAMIBO
132					LEGEHIDA	030420	LEGEHIDA
133					MEHAL SAYINT	030419	MEHAL SAYIT
134					MEKANE SELAM TOW	030421	CREATED INSIDE DEBRESINA WER
135					MEKEDELA	030401	MEKDELA
136					SAYINT	030411	SAYINIT
137					TEHULEDERIE	030405	TEHULEDERE
138					TENTA	030402	TENTA
139					WOGEDI	030416	WOGIDI
140					WORE ILLU	030415	WERE ILU
141					WOREBABU	030406	WEREBABO
142			WAG HIMRA	0308	ABARGELIE	030805	ABERGELE
143					DEHENA	030803	DEHENA
144					GAZGIBLA	030804	GAZGIBILA
145					SEHELA	030806	SEHALE SEYEMT
146					SEKOTA TOWN ADMIN	030807	SEKOTA TOWN
147					SEQOTA	030802	SEKOTA
148					ZEQUALA	030801	ZIKWALA
149			WEST GOJAM	0307	ADET TOWN ADMIN	030715	CREATED INSIDE YILMANA DENSA WER
150					BAHIR DAR TOWN ADMIN	030719	BAHIR DAR LIYU
151					BAHIR DAR ZURIA	030702	BAHIR DAR ZURIYA
152					BURE	030710	BURE
153					BURE TOWN ADMIN	030716	CREATED INSIDE BURE WER
154					DEGA DAMOT	030707	DEGA DAMOT
155					DEMBECHA	030708	DEMBECHA
156					DEMBECHA TOWN ADMIN.	030717	CREATED INSIDE DEMBECHA WER
157					FINOTESELAM TOWN ADM	030714	FINOTE SELAM TOWN
158					GONJI KOLELA	030712	GONJI KOLELA
159					JABI TEHINAN	030709	JEBITENAN
160					MECHA	030704	MECHA
161					MERAWI TOWN ADMIN	030718	CREATED INSIDE MECHA WER
162					NORTH	030701	NORTH

s/n	Region	Code	Zone name	Code	Wereda Name (BoFED, 2014)	Code	CSA, 2005
					ACHEFER		ACHEFER
163					QUARIT	030706	QUARIT
164					SEKELA	030705	SEKELA
165					SOUTH ACHEFER	030713	SOUTH ACHEFER
166					WOMBERMA	030711	WENBERMA
167					YILMANA DENSA	030703	YILMANA DENSA

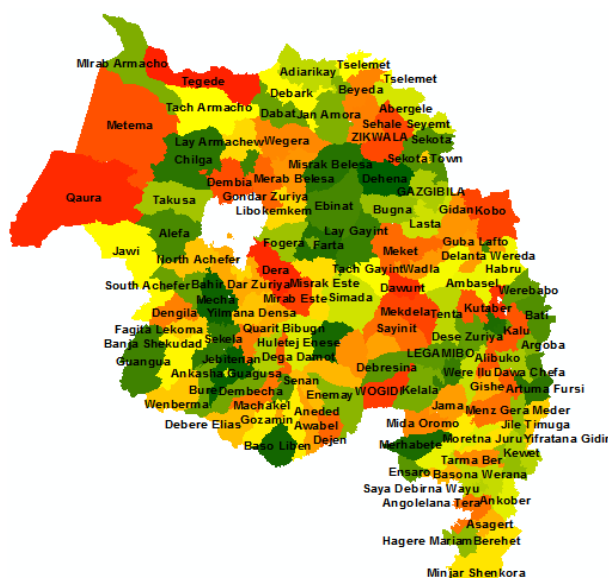


Fig. 12. CSA wereda map of Amhara

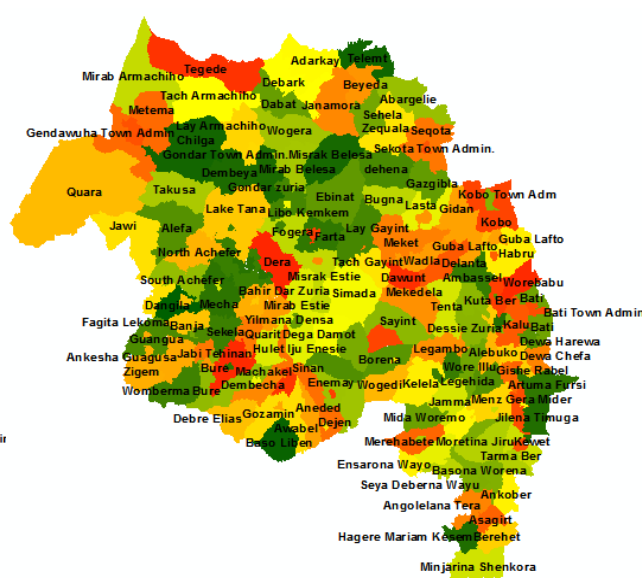


Fig. 13. Regional wereda map of Amhara

7.1.4. Oromia

a. Oromia zones: According to the CSA (2005), Oromiya NRS was divided into 21 zones and this number remains unchanged still now (BoFED, 2014). Recent municipal reforms promoted the towns of ADAMA, JIMMA and BURAYU to zonal level administrations.

Table 14. Names, codes and changes in administrative structure of zones in Oromia region

s/n	Region	Code	Zone Name (BoFED, 2014)	Code	CSA, 2005
1	OROMIA	04	WEST WELLEGA	0401	WEST WELLEGA
2			EAST WELLEGA	0402	EAST WELLEGA
3			ILU ABA BORA	0403	ILU ABA BORA
4			JIMMA	0404	JIMMA
5			WEST SHEWA	0405	WEST SHEWA
6			NORTH SHEWA	0406	NORTH SHEWA
7			EAST SHEWA	0407	EAST SHEWA
8			ARSI	0408	ARSI

9			WEST HARARGE	0409	WEST HARARGE
10			EAST HARARGE	0410	EAST HARARGE
11			BALE	0411	BALE
12			BORENA	0412	BORENA
13			SOUTH WEST SHEWA	0413	SOUTH WEST SHEWA
14			GUJI	0414	GUJI
15			ADAMA SPECIAL ZONE	0415	ADAMA SPECIAL ZONE
16			JIMMA SPECIAL TOWN	0416	JIMMA SPECIAL TOWN
17			WEST ARSI	0417	WEST ARSI
18			QELEME WELLEGA	0418	QELEME WELLEGA
19			HORO GUDRU WELLEGA	0419	HORO GUDRU WELLEGA
20			BURAYU SPECIAL ZONE	420	BURAYU SPECIAL ZONE

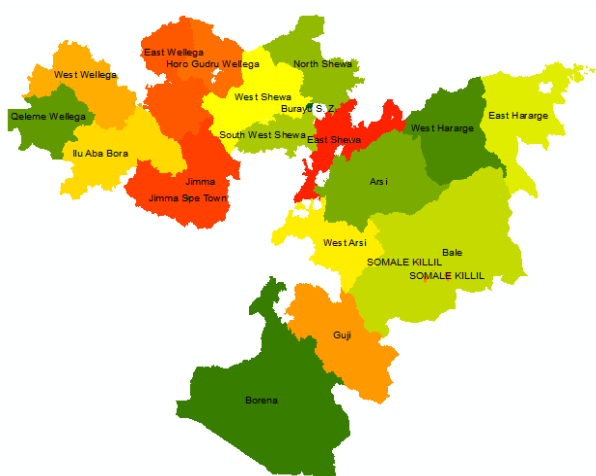


Fig. 14. CSA zonal map of Oromia

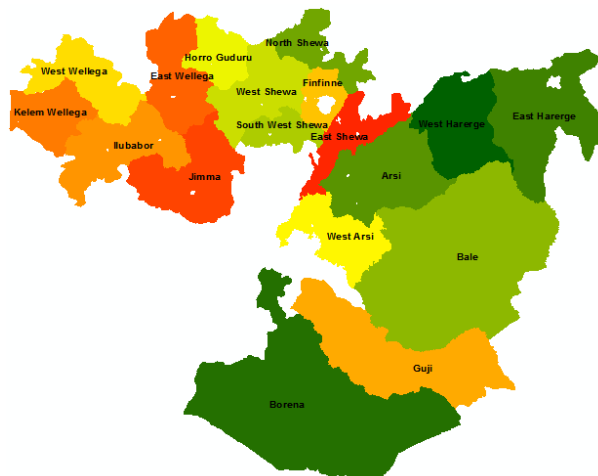


Fig. 15. Regional zonal map of Oromia

b. Oromia weredas: Oromiya NRS had 275 weredas including 22 towns having a wereda status (CSA, 2005). According to Oromia BoFED (2014), the number of weredas in the region is now increased to 293 including 24 towns promoted to wereda administrative status.

Table 15. Names, codes and changes in administrative structure of weredas in Oromia region

s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
1	OROMIA	04	ARSI	0408	AMIGNA	040810	AMIGNA
2					ASEKO	040802	ASEKO
3					ASELA TOWN	040825	ASELA TOWN
4					BELE GESGAR	040823	BALE GASERA
5					BOKOJI TOWN		CREATED INSIDE LIMUNA BILBILO WER
6					CHOLE	040809	CHOLE
7					DIGELU-TIJO	040815	DIGELUNA TIJO

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
8					DIKSIS	040822	DEKSIS
9					DODOTA	040805	DODOTA
10					GOLOLCHA	040803	GOLOLCHA
11					GUNA	040819	GUNA
12					HITOSA	040807	HITOSA
13					INKOLO WABE	040824	ENKELO WABE
14					JEJU	040804	JEJU
15					LIMU-BILBILO	040818	LIMUNA BILBILO
16					LUDE HITOSA	040821	LUDEHETOSA
17					MERTI	040801	MERTI
18					MUNESA	040817	MUNESA
19					ROBE	040812	ROBE
20					SERU	040811	SERU
21					SHIRKA	040814	SHIRKA
22					SIRE	040820	SIRE
23					SUDE	040808	SUDE
24					TENA	040813	TENA
25					TIYO	040816	TIYO
26					ZIWAY DUGDA	040806	ZEWAY DUGDA
27			BALE	0411	AGERFA	041104	AGARFA
28					BERBERE	041114	BERBERE
29					DAWE KACHEN	041121	DAWE QACHEN
30					DAWE SERER		CREATED PARTLY FROM DAWE QACHEN WER
31					DINSHO	041122	DINSHO
32					GASERA	041106	GASERA
33					GINIR	041108	GINIR
34					GOBA	041110	GOBA
35					GOBA TOWN	041120	GOBA TOWN
36					GOLOLCHA	041105	GOLOLCHA
37					GORO	041116	GORO
38					GURA DAMOLE	041115	GORA DAMOLE
39					HARENA BULUK	041111	ARENA BULUQ
40					LEGE HIDA	041107	LEGEHIDA
41					MEDA WELABU	041113	MEDA MELABU
42					MENNA	041112	DELO MENA
43					RAYITU	041117	RAITU
44					ROBE TOWN	041119	ROBE TOWN

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
45					SEWEYNA	041118	SEWEYNA
46					SINANA	041109	SINANA
47			BORENA	0412	ABAYA	041213	ABAYA
48					ARERO	041208	ARERO
49					BULE HORA	041206	BULE HORA
50					DHAS		CREATED PARTLY FROM EACH OF ARERO, DIRE, MEYO, MOYALE AND LIBEN WER
51					DILO		CREATED PARTLY FROM DIRE AND TELTELE WER
52					DIRE	041211	DIRE
53					DUGDA DAWA	041215	DUGDADEWA (SPLIT)
54					GELANA	041217	GELANA
55					MELKA SODA		DUGDADEWA (SPLIT)
56					MIYO	041216	MEYO
57					MOYALE	041210	MOYALE
58					TELTELE	041212	TELTELE
59					YABELO	041207	YABELO
60					EAST HARERGE	410	BABILE
61			BEDENO	041013			BEDENO
62			CHINAKSEN	041015			CHINAKESEN
63			DEDER	041011			DEDER
64			FEDIS	041005			FEDIS
65			GIRAWA	041016			GIRAWA
66			GOLA ODA	041017			GOLA ODA (SPLIT)
67			GORO GUTU	041010			GORO GUTU
68			GURSUM	041003			GURSUM
69			HARO MAYA	041006			HAROMAYA
70			JARSO	041002			JARSO
71			KERSA	041008			QERSA
72			KOMBOLCHA	041001			KOMBOLICHA
73			KUMBI				GOLA ODA (SPLIT)
74			KURFA CHELE	041007			KURFA CHELE
75			MELKA BELO	041012			MELKA BELO
76			META	041009			META

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
77					MEYU MULUKE	041018	MEYU MULEKE
78					MIDHAGA TOLA	041014	MIDEGA TOLE
79			EAST SHEWA	0407	ADA'A	040706	ADEA
80					ADAMA	040703	ADAMA
81					ADAMA TOWN	041501	ADAMA TOWN
82					ADAMI TULU JIDO KOMBOLCHA	040708	ADAMI TULU JIDO KOMBOLCHA
83					BORA	040710	BORA
84					BOSET	040702	BOSET
85					BUSHOFTU TOWN	040709	BISHOFTU TOWN
86					DUGDA	040707	DUGDA
87					FENTALE	040701	FENTALE
88					GIMBICHU	040705	GIMBICHU
89					LIBEN CHUKALA	040711	LIBEN
90					LOME	040704	LOMME
91					ZEWAY TOWN	040713	ZEWAY TOWN
92					EAST WELLEGA	0402	BONEYA BOSHE
93			DIGA	040210			DIGA
94			GIDA AYANA				GIDA KEREMU (SPLIT)
95			GIDA KIREMU	040203			GIDA KEREMU (SPLIT)
96			GOBU SAYO	040208			GOBU SEYO
97			GUDEYA BILA	040207			GUDEYABILA
98			GUTO GIDA	040213			GUTO GIDA
99			HARO LIMU	040204			LIMU
100			IBANTU	040202			EBANTU
101			JIMMA ARJO	040214			JIMMA ARJO
102			LEKA DULECHA	040212			LEQA DULECHA
103			LIMU	040201			LIMU
104			NEKEMTE TOWN	040217			NEKEMTE TOWN
105			NUNU KUMBA	040215			NUNU QUMBA
106			SASIGA	040211			SASIGA
107			SIBU SIRE	040209			SIBU SIRE
108			WAMA HAGALO	040216			WAMA HAGELO
109			WAYU TUKA	040206	WAYU TUQA		
110			FINFINNE	0407	AKAKI	040712	AKAKI
111				0413	ALEM GENA	041306	SEBETA HAWAS

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
112				0406	BEREH	040611	BEREH
113				0420	BURAYU TOWN	042001	BURAYU
114				0405	HOLETA TOWN	040520	HOLETA TOWN
115				0406	MULO	040616	MULO
116				0406	SULULTA	040612	SULULLTA
117				0405	WELMERA	040512	WELMERA
118			GUJI	0414	ADOLA REDE	041403	ADOLA
119					ADOLA TOWN		CREATED INSIDE ADOLA WER
120					ANNA SORA	041402	BORE (SPLIT)
121					BORE	041402	BORE (SPLIT)
122					DAMA	041408	DIMA
123					GIRJA	041410	GIRJA
124					GORO DOLA		LIBEN (SPLIT)
125					HAMBELA WAMENA	041409	HAMBELA WAMENA
126					KERCHA	041406	QERCHA
127					LIBEN	041407	LIBEN (SPLIT)
128					NEGELE TOWN	041411	NEGELE TOWN
129					ODO SHAKISO	041405	ODO SHAKISO (SPLIT)
130					SEBA BORU		ODO SHAKISO (SPLIT)
131					URAGA	041401	URAGA
132					WADERA	041404	WADERA
133			HORRO GUDURU	0419	ABAY CHOMEN	041905	ABAY CHOMEN
134					ABE DONGORO	041910	ABE DENGORO
135					AMURU	041909	AMURU
136					GUDURU	041903	GUDRU
137					HABABO GUDURU	041904	HABABO GUDURU
138					HORRO	041901	HORO
139					JERDEGA JARTE	041908	JARTE JARDGA
140					JIMMA GENETE	041906	JIMA GENETI
141					JIMMA RARE	041907	JIMA RARE
142					SHAMBU TOWN	041902	SHAMBU TOWN
143			ILUBABOR	0403	ALGE SACHI	040302	ALGESACHI
144					ALLE	040311	ALE
145					BECHO	041309	BECHO
146					BEDELE	040322	BEDELE ZURIYA

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
147					BEDELE TOWN	040321	BEDELE TOWN
148					BILONOPHA	040315	BILONOPA
149					BORECHA	040307	BORICHA
150					BURE	040312	BURE
151					CHEWAKA	040323	CHEWAQA
152					CHORA	040303	CHORA
153					DABO HANA	040305	DABO HANA
154					DARIMU	040301	DARIMU
155					DEDESA	040308	DEDESA
156					DEGA	040304	DIGA
157					DIDU	040317	DIDU
158					DORANI	040324	DORENI
159					GECHI	040306	GECHI
160					HALU	040319	HALU
161					HURUMU	040316	HURUMU
162					MEKO SACHI	040318	MEKO
163					METU	040310	METU
164					METU TOWN	040320	METU TOWN
165					SALE NONO	040313	NONO SELE
166					YAYO	040309	YAYU
167			JIMMA	0404	AGARO TOWN ADMIN	040417	AGARO
168					CHORA BOTOR	040415	CHORA BOTER
169					DEDO	040410	DEDO
170					GERA	040408	GERA
171					GOMMA	040407	GOMMA
172					GUMAY	040416	GUMA
173					JIMMA TOWN	041601 0	JIMMA SPE TOWN
174					KERSA	040405	KERISA
175					LIMMU KOSA	040402	LIMU KOSA
176					LIMMU SEKA	040401	LIMU SEKA (SPLIT)
177					MANNA	040406	MANA
178					NONNO BENJA		LIMU SEKA (SPLIT)
179					OMO NADA	040411	OMONADA
180					SEKA CHEKORSA	040409	SEKA CHEKORSA
181					SETEMA	040413	SETEMA
182					SHEBE SAMBO	040414	SHEBE SENBO
183					SIGMO	040412	SIGMO
184					SOKORU	040403	SEKORU

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005		
185					TIRO AFETA	040404	TIRO AFETA		
186			KELEM WELLEGA	0418	ANFILO	041807	ANFILO		
187					DALE SEDI	041808	DALE SEDI		
188					DALE WABERA	041803	DALE WABERA		
189					DEMBI DOLO TOWN		CREATED INSIDE SEYO WER		
190					GAWO KEBE	041804	GAWO QEBE		
191					GIDAMI	041809	GIDAME		
192					HAWA GELAN	041801	HAWA GELAN		
193					JIMMA HORO	041810	JIMMA HORO		
194					LALO KILE	041811	LALOQILE		
195					SAYO	041805	SEYO		
196					YAMA LOGI WELEL	041802	YEMALOGI WELEL		
197					NORTH SHEWA	0406	ABICHU GNE'A	040609	ABICHUGNA
198							ALELTU	040617	ALEILTU
199							D/ LIBANOS	040607	DEBRE LIBANOS
200			DEGEM	040605			DEGEM		
201			DERA	040602			DERA		
202			FICHE TOWN	040613			FICHETOWN		
203			GERAR JARSO	040606			GIRAR JARSO		
204			HIDABU ABOTE	040603			HIDABU ABOTE		
205			JIDA	040615			JIDO		
206			KEMBIBIT	040610			KIMBIBIT		
207			KUYU	040604			KUYU		
208			SENDAFA TOWN	40618			SENDAFA TOWN		
209			WERA JARSO	040601			WERE JARSO		
210			WUCHALE	040608			WUCHALE		
211			YAYA GULELE	040614			YAYA GULELE		
212			SOUTH WEST SHEWA	0413	AMEYA	041301	AMEYA		
213					BECHO	040314	BECHO		
214					DAWO	041304	DAWO		
215					GORO	041312	GORO		
216					ILU	041305	ILU		
217					KERSA MALIMA	041307	KERSANA MALIMA		
218					SEBETA TOWN	041314	SEBETA TOWN		
219					SEDEN SODO	041310	SEDEN SODO		
220					SODO DACHA	041313	SODO DAC'HA		
221					TOLE	041308	TOLE		

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
222					WELISO	041303	WELISO
223					WELISO TOWN	041311	WELISO TOWN
224					WENCHI	041302	WONCHI
225			WEST ARSI	417	ADABA	041710	ADABA
226					ARSI NEGELE	041703	ARSI NEGELE
227					DODOLA	041707	DODOLA
228					GEDEB ASASA	041706	GEDEB ASASA
229					KOFELE	041704	KOFELE
230					KOKOSA	041708	KOKOSA
231					KORE	041705	KORE
232					NENSEBO	041709	NENSEBO
233					SHALA	041702	SHALA
234					SHASHEMENE	041712	SHASHEMENE
235					SHASHEMENE TOWN	041711	SHASHEMENE TOWN
236					SIRARO	041701	SIRARO
237					WENDO		CREATED FROM PARTLY FROM EACH OF SHASHEMENE AND KOFELE WER
238			WEST HARERGE		ANCHAR	040906	ANCHAR
239					BEDESA TOWN	040914	BEDESA TOWN
240					BOKE	040910	BOKE (SPLIT)
241					BURKA DIMITU		BOKE (SPLIT)
242					CHIRO	040913	CHIRO ZURIYA
243					CHIRO TOWN	040905	CHIRO TOWN
244					DARO LEBU	040909	DARO LEBU (SPLIT)
245					DOBA	040902	DOBA
246				0409	GEMECHIS	040912	GEMECHIS
247					GUBA KORICHA	040907	GUBA QORICHA
248					HABRO	040908	HABRO
249					HAWI GUDINA		DARO LEBU (SPLIT)
250					MESELA	040904	MESELA
251					MIESO	040901	MEISO
252					ODA BULTUM	040911	QUNI
253					TULO	040903	TULO
254			WEST SHEWA	0405	ABUNA G/BERET	040516	ABUNA GINDEBERET
255					ADEA BERGA	040513	ADEA BERGA

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
256					AMBO	040503	AMBO
257					AMBO TOWN	040515	AMBO TOWN
258					BAKO TIBE	040506	BAKO TIBE
259					CHELIYA	040505	CHELIA (SPLIT)
260					DANO	040507	DANO
261					DENDI	40510	DENDI
262					EJERE	040511	EJERIE
263					GINDE BERET	040501	GINDE BERET
264					ILFATA	040519	ELIFATA
265					ILU GELAN		CHELIA (SPLIT)
266					JELDU	040502	JELDU
267					JIBAT	040518	JIBAT
268					META ROBI	040514	METAROBI
269					MIDA KEGN	040504	MIDAKEGNI
270					NONNO	040508	NONO
271					TIKUR INCHINI	040509	TIKUR ENCHINI
272					TOKE KUTAYE	040517	TOKO KUTAYE
273			WEST WELLEGA	0401	AYIRA	040120	AYIRA
274					BABO GEMBEL	040111	BABO GEMBEL
275					BEGI	040116	BEGI
276					BOJI CHEKORSA	040110	BOJI CHEQORSA
277					BOJI DIRMEJI	040106	BOJI DERMEJI
278					GENJI	040113	GENJI
279					GIMBI	040103	GIMBI
280					GIMBI TOWN	040117	GIMBI
281					GUDATU KONDOLE	040109	KUNDALA
282					GULISO	040107	GULISO
283					HARU	040114	HARU
284					HOMA	040119	HOMA
285					JARSO	040108	JARSO
286					KILTU KARA	040105	QILTU KARA
287					LALO ASABI	040104	LALO ASABI
288					MANA SIBU	040101	MENE SIBU
289					NEJO	040102	NEJO
290					NEJO TOWN		CREATED INSIDE NEJO WER
291					NOLE KABA	040115	NOLE KABA
292					SEYO NOLE	040118	SEYO NOLE
293					YUBDO	040112	YUBDO

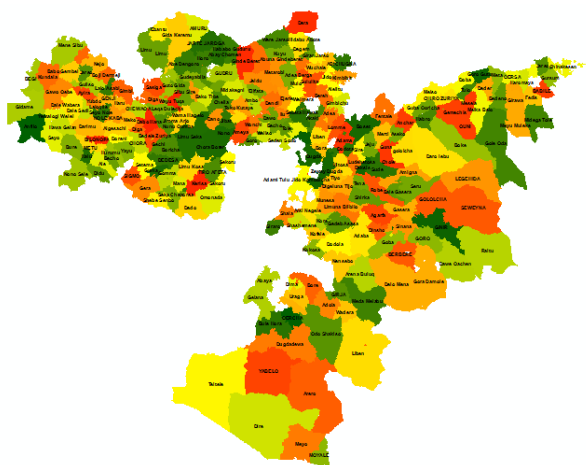


Fig. 16. CSA wereda map of Oromia

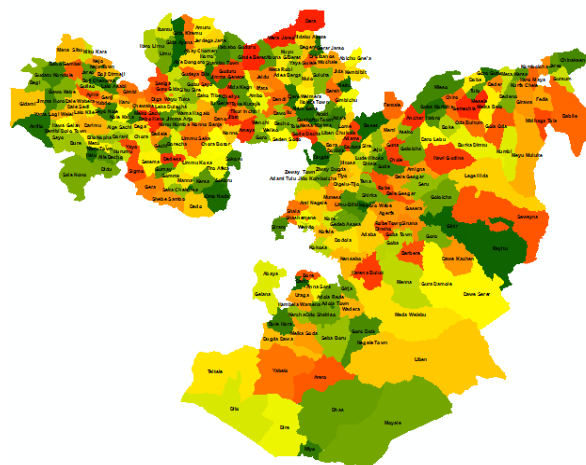


Fig. 17. Regional wereda map of Oromia

7.1.5. Somali

CSA data for 2005 doesn't include map for Somali NRS. Accordingly, unofficial map data obtained from FAO was used for comparing changes in administrative structure over the last years. On the other hand, the consultant has obtained only wereda boundary maps from Somali BoFED as the bureau has not yet finalized the new zonal boundary for the region.

a. Somali weredas: According to the "unofficial" map of FAO, Somali region had 52 weredas. Current data obtained from Somali BoFED shows that the number of weredas in the region has increased to 68 including 4 town administrations (JIJIGA, DHEGAHBOUR, KEBRI DAHER and GODE) which have been upgraded to wereda administrative status. However, the current map data contains shapefiles for only 65 weredas and AWARE wereda is yet to be split further into YO'GLE, GUNEGADO and DAROOR weredas.

Table 16. Names, codes and changes in administrative structure of wredas in Somali region

s/n	Region	Code	Wereda Name (BoFED, 2014)	Code	FAO
1	SMALI	05	ADADLE	041114	ADADLE
2			AFDEM	050101	AFDEM
3			ARARSO		DEGEHABUR (SPLIT)
4			AWARE	050104	AWARE
5			AW-BARE	050105	AWBERE
6			AYSHA	050103	AYISHA
7			BABILE	050201	BABILE
8			BAREY	050102	BARE
9			BER ANNO		GODE (SPLIT)
10			BIRKOT		NEW FROM WOREDAS
11			BOKH	050106	BOH
12			CHERATI	050202	CHERETI
13			DAGAH MADO	050205	DEGEHAMEDO

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s/n	Region	Code	Wereda Name (BoFED, 2014)	Code	FAO
14			DAGAHBUR TOWN	050206	DEGEHABUR (SPLIT)
15			DAMBEL	050402	DEMBEL
16			DANAN	050403	DENAN
17			DANOT	050203	DANOT
18			DARATOOLE		CREATED INSIDE WARDER WER
19			DEKA SUFTU		FILTU (SPLIT)
20			DOBA WEIN	050204	DEBEWEYIN
21			DOLO BAY	050305	DOLOBAY
22			DOLO ODO	050401	DOLO ODO
23			DUHUN	050404	DIHUN
24			EAST IMI	050501	EAST IMI
25			ELKERE	050301	ELKERE
26			EELWEYN		CREATED PARTLY FROM EACH OF DENAN AND GUDIS WER
27			ERAR	050306	ERER
28			FERFER	050502	FERFER
29			FIK	050302	FIK
30			FILTU	050307	FILTU (SPLIT)
31			GALADI	050303	GELADIN
32			GARBO	050601	GERBO
33			GASHAMO	050308	GASHAMO
34			GODEY TOWN	050504	GODE (SPLIT)
35			GOLCHANO		NEW FROM WOREDAS
36			GOROBAKAKS	050602	GORO BAQAQSA
37			GURA-DAMOL	050702	GURADAMOLE
38			GURSUM	050503	GURSUM
39			HADIGALA		NEW FROM WOREDAS
40			SPLIT TO WEREDAS	050304	GUDIS
41			HAMARO	050703	HAMERO
42			HARGELE	050707	HARGELE
43			HARSHIN	050604	HARESHEN
44			HUDAT	050808	HUDAT
45			JIJIGA TOWN	050801	JIJIGA (SPLIT)
46			KABRIBAYAH	050802	KEBRIBEYAH
47			KABRIDAHAR TOWN	050603	KEBRIDEHAR
48			KALAFO	050701	KELAFO
49			KARSADULA		NEW
50			KUBI		NEW
51			LAGAHIDA	050708	LAGAHIDA
52			MAESO	050804	MIESSO
53			MARSIN	050704	NEW FROM WOREDAS

s/n	Region	Code	Wereda Name (BoFED, 2014)	Code	FAO
54			MAYAMALUK	050705	MEYUMULUKA
55			MOYALE	050706	MOYALE (SPLIT)
56			MUBARAK		MOYALE (SPLIT)
57			MUSTAHIL	050806	MUSTAHIL
58			RASO		NEW
59			SAGAG	050803	SEGEG
60			SALAHAD	050805	SELAHAD
61			SHAYGOSH	050903	SHEKOSH
62			SHILABO	050901	SHILABO
63			SHINILE	041114	SHINILE
64			TULI		JIJIGA (SPLIT)
65			WEST IMI		WEST IMI
66			WARDER	041203	WARDER

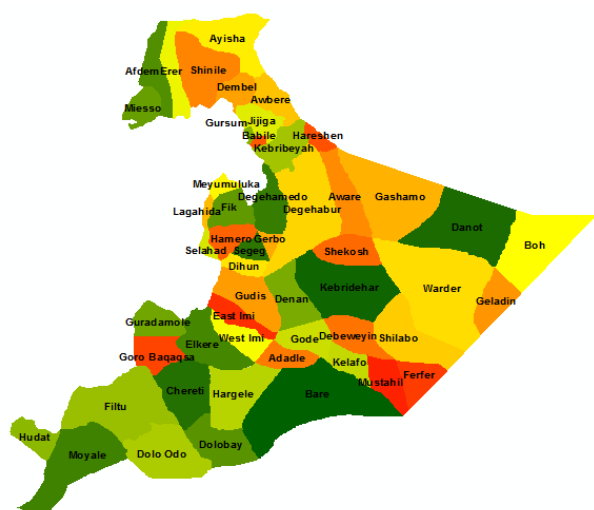


Fig. 18. FAO Ethiopia wereda map of Somali

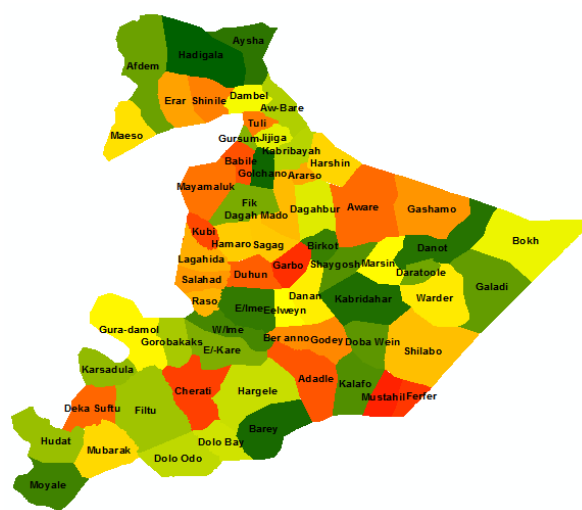


Fig. 19. Regional wereda map of Somali

7.1.6. Benishangul Gumuz

a. Benishangul Gumuz zones: According to CSA (2005), Benishangul Gumuz NRS was divided into three zones and two Special weredas and according to regional BoFED, the number remains unchanged since then.

Table 17. Names, codes and changes in administrative structure of zones in Benishangul Gumuz region

s/n	Region	Code	Zone Name (BoFED, 2014)	Code	CSA, 2005
1	BENISHANGUL GUMUZ	06	METEKEL	0602	METEKEL
2			ASSOSA	0603	ASSOSA
3			KAMASHI	0604	KAMASHI

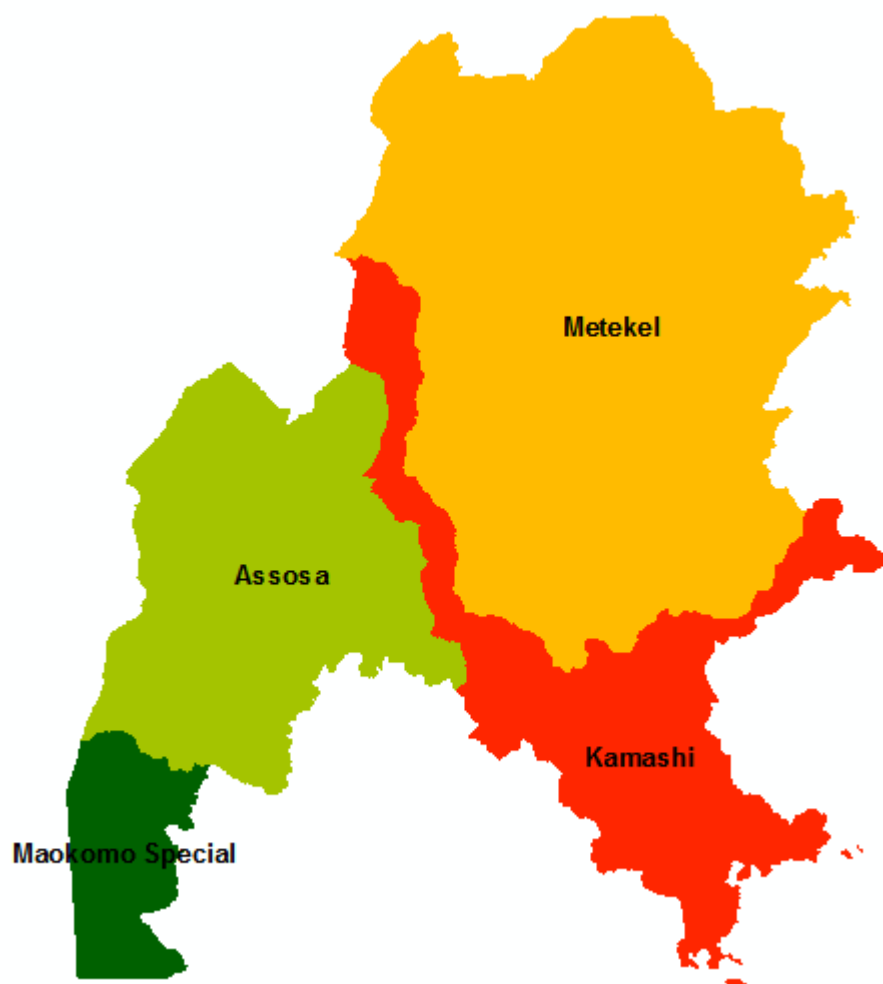


Fig. 20. CSA/Regional zonal map of Benishangul Gumuz

a. Benishangul Gumuz weredas: According to the CSA data (2005), Benishangul gumuz NRS had 20 weredas with two weredas (PAWE AND MAOKOMO) designated as special weredas and the number remains the same to-date.

Table 18. Names, codes and changes in administrative structure of weredas in Benishangul Gumuz region

s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
1	BENISH ANGUL GUMUZ	06	ASSOSA	0603	ASSOSA	060303	ASSOSA
2					BAMBASI	060305	BAMBASI
3					HOMOSHA	060307	HOMOSHA
4					KAMASHI	060403	KAMASHI
5					MAOKOMO	060601	MAOKOMO
6					MENGE	060301	MENGE
7					PAWE SPECIAL	060206	PAWE SPECIAL
8			KAMASHI	0604	AGALOMETI	060404	AGALOMETI
9			BLO JIGANIFADO		060405	BLO JIGANIFADO	
10			SEDAL		060402	SIRBA ABAY	

s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
11					WENBERA	060203	WENBERA
12					YASO	060401	YASO
13			MAOKOMO SPECIAL	0606	MANDURA	060204	MANDURA
14			METEKELE	0602	BULEN	060207	BULEN
15					DANGUR	060201	DANGUR
16					DIBATE	060205	DIBATE
17					GUBA	060202	GUBA
18					KURMUK	060302	KURMUK
19					SHERKOLE	060304	SHERKOLE
20			PAWE SPECIAL	0605	ODA BILDIGLU	060306	ODA BILDAGUL

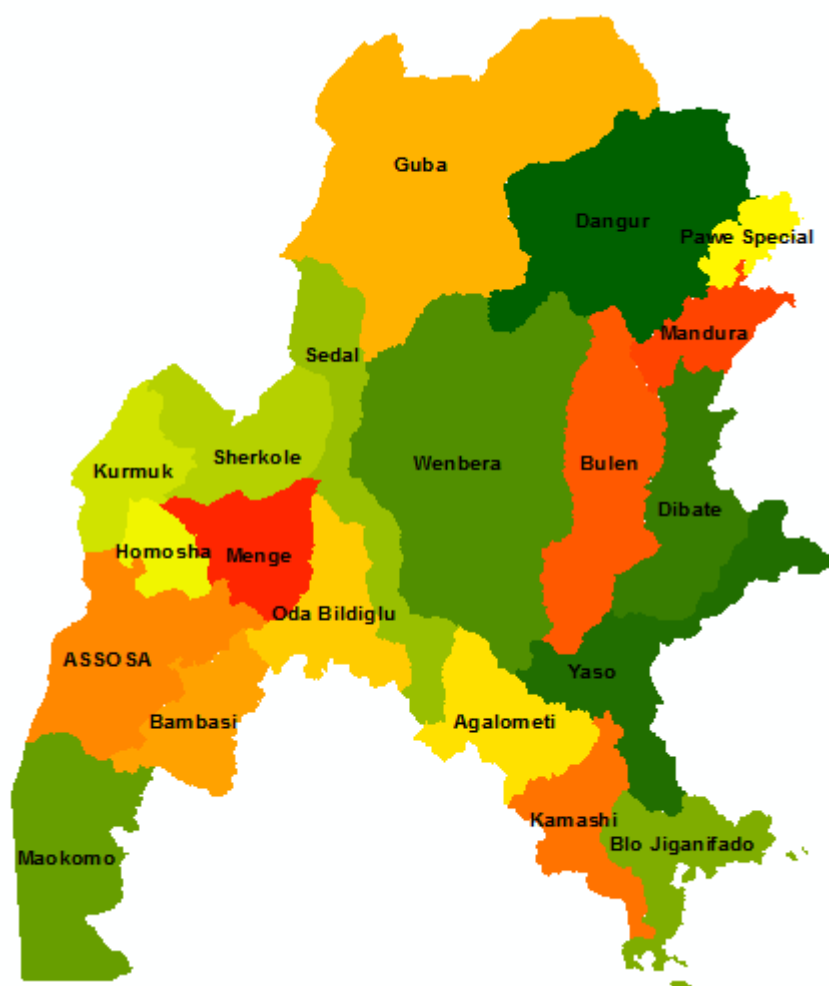


Fig. 21. CSA/Regional wereda map of Benishangul Gumuz

7.1.7. SNNPR

a. **SNNPR zones:** According to CSA (2005), SNNP NRS was divided into 22 zones. Since then, AMARO SPECIAL, BURJI SPECIAL, DERASHE SPECIAL, KONSO

SPECIAL WEREDAS were merged and to form SEGEN AREA PEOPLE ZONE. Accordingly, the number of zones is now reduced to 19 (BoFED, 2014).

Table 19. Names, codes and changes in administrative structure of zones in SNNP region

s/n	Region	Code	Zone Name (BoFED, 2014)	Code	CSA, 2005
1	SNNP	07	BASKETO SPE.	716	BASKETO
2			BENCH MAJI	711	BENCH MAJI
3			DAWURO	712	DAWURO
4			GAMOGOFA	710	GAMO GOFA
5			GEDEO	705	GEDEO
6			GURAGE	701	GURAGE
7			HADIYA	702	HADIYA
8			HALBA SPE.	718	ALABA
9			HAWASSA TOWN	719	AWASSA TOWN
10			KAFFA	709	KEFA
11			KEMBATA TIMBARO	703	KEMBATA TIMBARO
12			KONTA SPE.	717	KONTA
13			SHEKA	708	SHEKA
14			SIDAMA	704	SIDAMA
15			SILTE	713	SILITI
16			SOUTH OMO	707	SOUTH OMO
17			WOLAYITA	706	WOLAYITA
18			YEM	715	YEM
19			SEGEN AREA PEOPLE ZONE	714	AMARO SPECIAL MERGED
20			BURJI SPECIAL MERGED		
21			DERASHE LYIU WEREDA MERGED		
22			KONSO SPECIAL MERGED		

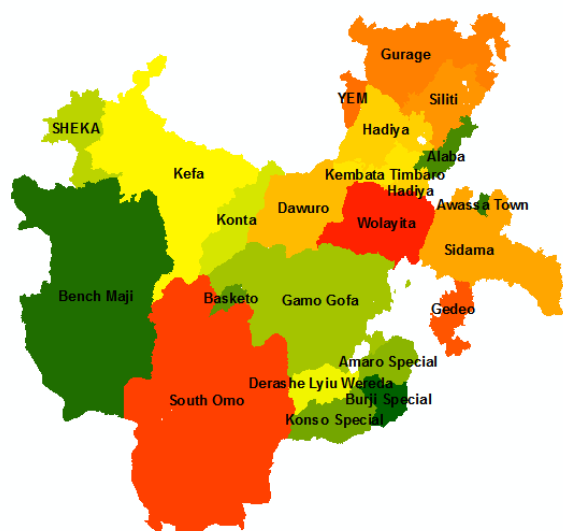


Fig. 22. CSA zonal map of SNNPR



Fig. 23. Regional zone map of SNNPR

a. SNNPR weredas: According to CSA (2005), there were 145 weredas in SNNPR NRS. According to SNNP BoFED, the current number of weredas in the region is only 146.

Table 20. Names, codes and changes in administrative structure of weredas in SNNP region

s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
1	SNNP	07	BASKETO	0716	BASKETO	071601	BASKETO
2			BE CH MAJI	0711	MAJI	071107	MAJI
3					BERO	071108	BERO
4					GURAFERDA	071102	GURAFERDA
5					MEANT GOLDIYA	071105	MEANT GOLDIYA
6					MINIT SHASHA	071106	MINIT SHASHA
7					MIZAN AMAN TOWN	071111	MIZAN AMAN TOWN
8					SEMEN BENCH	071110	SEMEN BENCH
9					SHAY BENCH	071104	SHAY BENCH
10					SHEKO	071101	SHEKO
11					SOUTHERN BENCH	071103	SOUTHERN BENCH
12					SURIMA	071109	SURIMA
13					DAWURO	0712	ESIRA
14			GENA BOSA	071204			GENA BOSA
15			LOMA	071203			LOMA
16			MAREKA	071202			MAREKA
17			TOCHA	071201	TOCHA		
18			GAMO OFA	0710	ZALA	071010	ZALA
19					ARBA MINCH TOWN	071016	ARBA MINCH TOWN
20					ARIBA MINICHI	071006	ARIBA MINICHI

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
					ZURIYA		ZURIYA
21					BONKE	071013	BONKE
22					BOREDA	071004	BOREDA
23					CHENCHA	071007	CHENCHA
24					DEMBA GOFA	071002	DENIBU GOFA
25					DERAMALO	071009	DERAMALO
26					DITA	071008	DITA
27					GEZE GOFA	071014	GEZE GOFA
28					KEMBA	071012	KEMBA
29					KUCHA	071003	KUCHA
30					MELEKOZA	071001	MELEKOZA
31					MIRAB ABAYA	071005	MIRAB ABAYA
32					OYIDA	071015	AYIDA
33					SAWULA TOWN	071017	SAWULA TOWN
34					UBA DEBRETSEHAY	071011	UBA DEBRETSEHAY
35			GEDEO	0705	BULE	070504	BULE
36					DILA TOWN	070507	DILA TOWN
37					DILAZURIA	070505	DILAZURIA
38					GEDEB	070506	GEDEB
39					KOCHORE	070503	KOCHORE
40					WENAGO	070501	WENAGO
41					YIRGACHEFE	070502	YIRGACHEFE
42			GURAGE	0701	ABESHEGE	070102	ABESHEGE
43					BUTAJIRA TOWN	070115	BUTAJIRA TOWN
44					CHEHA	070110	CHEHA
45					ENDEGAGN	070108	ENIDGUAGN
46					ENEMOR ENER	070111	ENEMOR ENER
47					EZHA	070103	EZHA
48					GETA	070113	GETA
49					GUMER	070109	GUMER
50					KEBENA	070101	KEBENA
51					KOKIR GEDEBANO	070104	KOKIR GEDEBANO
52					MAREQO	070107	MAREQO
53					MESKAN	0	MESKAN
54					MUHUR NA AKLIL	070112	MUHUR NA AKLIL
55					SODO WEREDA	070105	SODO WEREDA
56					WELEIKITE TOWN	070114	WELEIKITE TOWN
57			HADIYA	0702	ANALEMMO	070208	ANALEMMO

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
58					DUNA	070207	DUNA
59					GIBE	070202	GIBE
60					GOMBORA	070210	GOMBORA
61					HOSAENA	070211	HOSAENA
62					LEMMO	070203	LEMMO
63					MERAB BADAWOCHO	070209	MERAB BADAWOCHO
64					MISHA	070201	MISHA
65					MISRAK BADAWOCHO	070205	MISRAK BADAWOCHO
66					SHASHAGO	070204	SHASHAGO
67					SORO	070206	SORO
68			HALABA	0718	HALABA	071801	ALABA
69			HAWASSA TOWN	0719	HAWASSA TOWN	071919	AWASSA TOWN
70			KEFA	0709	ADIYO	070905	MENJWO
71					BITA	070910	BITA
72					BONGA TOWN	070911	BONGA TOWN
73					CHENA	070909	CHENA
74					CHETA	070907	CHETA
75					DECHA	070908	DECHA
76					GESHA	070902	GESHA
77					GEWATA	070903	GEWATA
78					GIMBO	070904	GIMBO
79					SAYILEM	070901	SAYILEM
80					TELLO	070906	TULO
81			KEMBATA TIMBARO	0703	ANIGACHA	070302	ANIGACHA
82					DAMBOYA	070307	DANIBOYA
83					DOYO GENA	070306	DOYO GENA
84					DURAME TOWN	070308	KEDIDA GAMELA
85					HADARO TUNITO	070305	HADARO TUNITO
86					KACHA BIRA	070304	KACHA BIRA
87					KEDIDA GAMELA	070303	KEDIDA GAMELA
88					TEMBARO	070301	TIBARO
89			KONTA	0717	KONTA	071701	KONTA SPECIAL
90			SEGEN AREA PEOPLE	0714	ALLIE	071404	DERASHE SPECIAL (SPLIT)
91					AMARO	071401	AMARO SPECIAL WEREDA
92					BURJI	071402	BURJI SPECIAL

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
93					DERASHE	071405	DERASHE SPECIAL (SPLIT)
94					KONSO	071403	KONSO SPECIAL
95			SHEKA	0708	ANDERACHA	070802	ANDERACHA
96					MASHA	070801	MASHA
97					YEKI	070803	YEKI
98			SIDAMA	0704	ALETA WONDO	070405	ALETA WONDO
99					ARBEGONA	070403	ARBEGONA
100					ARORESA	070409	ARORESA
101					BENSA	070408	BENSA
102					BONA ZURIYA	070418	BONA ZURIYA
103					BORICHA	070410	BORICHA
104					BURSA	070416	BURSA
105					CHIRE	070415	CHIRE
106					CHUKO	070417	CHUKO
107					DALE	070404	DALE
108					DARA	070406	DARA
109					GORCHE	070411	GORCHE
110					HAWASA ZURIYA	070402	AWASA ZURIYA
111					HULA	070407	HULA
112					LOKO ABAYA	070414	LOKO ABAYA
113					MALGA	070412	MALGA
114					SHEBEDINO	070401	SHEBEDINO
115					WENDO GENET	070420	WENDO GENET
116					WENSHO	070413	WENSHO
117			SILITI	0713	ALICHO WORIRO	071301	ALICHO WORIRO
118					DALOCHA	071305	DALOCHA
119					LANIFARO	071303	LANIFARO
120					MIRAB AZERNET BERBERE	071304	MIRAB AZERNET BERBERE
121					MISIRAK AZERENET BERBERE	071307	MISIRAK AZERENET BERBERE
122					SANKURA	071306	SANKURA
123					SILITE	071302	SILITE
124					WILBAREG	071308	WILBAREG
125			SOUTH OMO	0707	BENA TSEMAY	070705	BENA TSEMAY
126					DASENECH	070706	DASENECH
127					GNANGATOM	070708	GNANGATOM
128					HAMER	070704	HAMER

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s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
129					MALE	070707	MALE
130					SELAMAGO	070701	SELAMAGO
131					SEMEN ARI	070703	GELILA
132					SOUTH ARI	070702	SOUTH ARI
133			WOLAYITA	0706	BOLOSSA BONIBE	070608	BOLOSSA BONIBE
134					BOLOSSO SORE	070601	BOLOSSA SORE
135					DAMOT GALE	070602	DAMOT GALE
136					DAMOT PULASA	070611	DAMOT PULASA
137					DAMOT SORE	070609	DAMOT SORE
138					DAMOT WOYIDE	070603	DAMOT WOYIDE
139					DEGUNA FANIGO	070612	DEGUNA FANIGO
140					HUMBO	070604	HUMBO
141					KINDO DIDAYE	070610	KINDO DIDAYE
142					KINDO KOYISHA	070606	KINDO KOYISHA
143					OFA	070607	OFA
144					SODO TOWN	070613	SODO TOWN
145					SODO ZURIYA	070605	SODO ZURIYA
146			YEM	0715	YEM	071501	YEME SPECIAL WEREDA

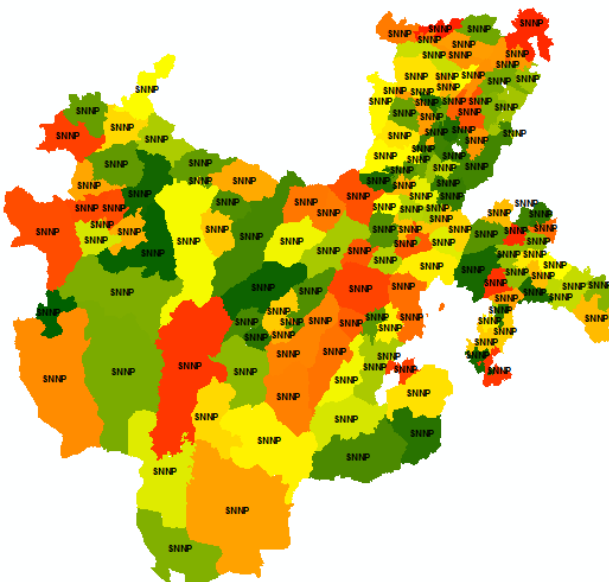


Fig. 24. CSA wereda map of SNNPR

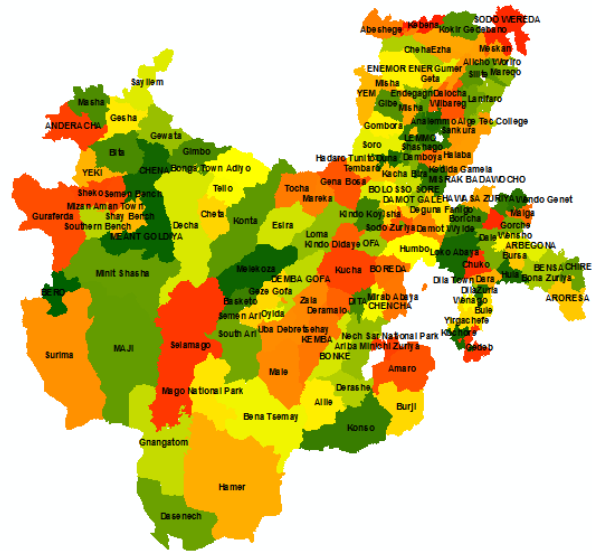


Fig. 25. Regional wereda map of SNNPR

7.1.8. Gambela

a. Gambela zones: According to the CSA (2005), Gambela NRS was divided into 4 zones. The number of zone in Gambela NRS remains the same to date (Gambela BoFED, 2014).

Table 21. Names, codes and changes in administrative structure of zones in Gambela region

s/n	Region	Code	Zone Name (BoFED, 2014)	Code	CSA, 2005
1	GAMBELA	12	AGNUWAK	01201	AGNUWAK
2			ETANG SPECIAL	01202	ETANG SPECIAL
3			MEJENGER	01203	MEJENGER
4			NUWER	01204	NUWER



Fig. 26. CSA/Regional zone map of Gambela

a. Gambela weredas: The number of weredas in Gambela NRS was 13 (CSA, 2005) and over the past years, JIKAWO wereda has been split into two weredas (JIKAWO and MEKWAY) which increases the number of weredas in the region to 14 (BoFED, 2014).

Table 22. Names, codes and changes in administrative structure of weredas in Gambela region

s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
1	GAMBELA	12	AGNUWAK	1201	ABOBO	120102	ABOBO
2			AGNUWAK	1201	DIMA	120105	DIMA
3			AGNUWAK	1201	GAMBELA TOWN	120106	GAMBELA TOWN
4			AGNUWAK	1201	GAMBELA ZURIA	120101	GAMBELA ZURIYA
5			AGNUWAK	1202	GOGE	120103	GOGE
6			AGNUWAK	1202	JORE	120104	JORE
7			ETANG SPE.	1204	ETANG	120401	ETANG
8			MEJENGER	1201	GODERE	120301	GODERE
9			MEJENGER	1202	MAKWAY	120205	JIKAWO (SPLIT)
10			NUWER	1202	AKOBO	120204	AKOBO
11			NUWER	1202	JIKAWO	120202	JIKAWO (SPLIT)
12			NUWER	1203	LARE	120201	LARE
13			NUWER	1202	MENGESH	120302	MENGESH
14			NUWER	1202	WANTAWO	120203	WANTAWO

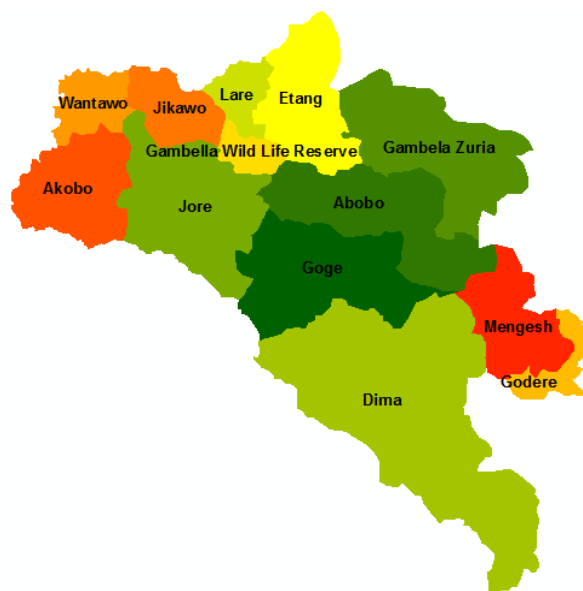


Fig. 27. CSA wereda map of Gambela



Fig. 28. Regional wereda map of Gambela

7.1.9. Harari

Harari was divided into two town weredas, namely HARER and HUNDANE (CSA, 2005). According to the regional BoFED, the region is now divided into 4 “clusters” which have the same status as wereda administrations.

Table 23. Names, codes and changes in administrative structure of weredas in Harari region

s/n	Region	Code	Zone Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
1	HARARI	13	HARER	1301	DIRE	130102	HUNDENE (SPLIT)
2					ERER	130103	HUNDENE (SPLIT)
3					HARER TOWN	130101	HARER KETEMA
4					SOFI	130104	HUNDENE (SPLIT)

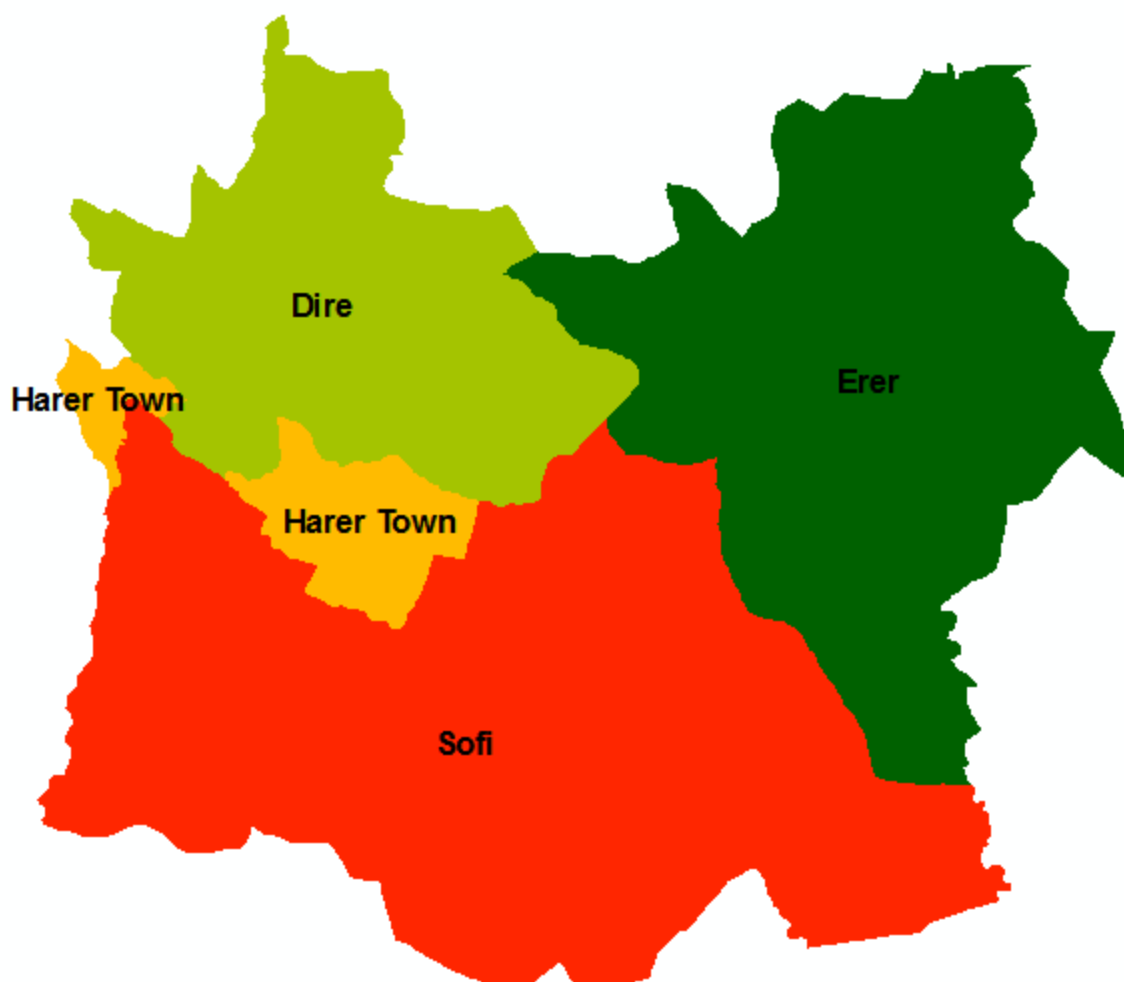


Fig. 29. CSA/Regional wereda map of Harari

7.1.10. Addis Abeba

a. Addis Abeba sub-cities: According to CSA (2005), Addis Abeba City Administration was divided into ten sub cities and 99 kebeles. Although the number and naming of sub-cities is the same, kebeles are now annulled by the city council.

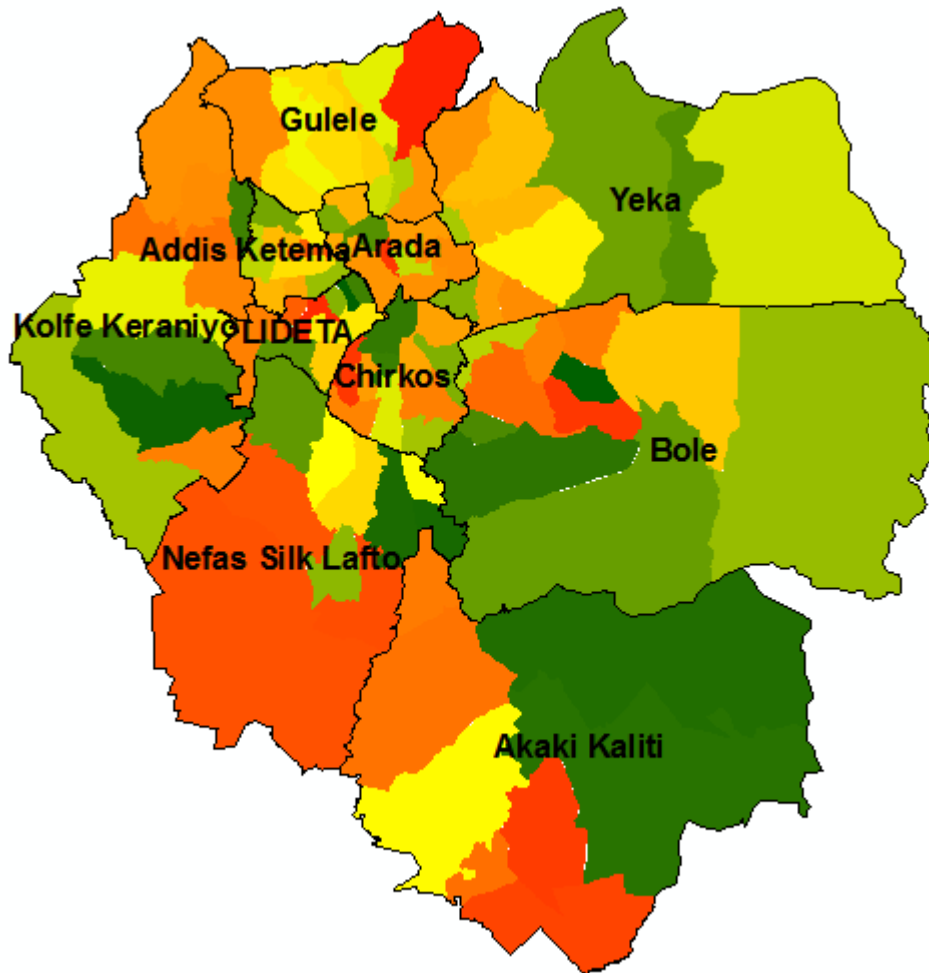


Fig. 29. CSA/Regional sub-city map of Addis Abeba

b. Addis Abeba weredas: Based on the Integrated GIS Center (2014), Addis Abeba City Administration has 116 weredas..

Table 24. Names, codes and changes in administrative structure of weredas in Addis Abeba region

s/n	Region	Code	Sub-city Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
1	ADDIS ABEBA	14	ADDIS KETEMA	1408	ADK_W01	140801	NO WEREDA
2					ADK_W02	140802	
3					ADK_W03	140803	
4					ADK_W04	140804	
5					ADK_W05	140805	
6					ADK_W06	140806	
7					ADK_W07	140807	
8					ADK_W08	140808	
9					ADK_W09	140809	
10					ADK_W10	140810	
11			AKAKI KALITY	1401	AK_W02	140102	
12			AK_W05		140105		

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s/n	Region	Code	Sub-city Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
13					AK_W09	140109	
14					AK_W06	140106	
15					AK_W04	140104	
16					AK_W03	140103	
17					AK_W01	140101	
18					AK_W08	140108	
19					AK_W10	140110	
20					AK_W11	140111	
21					AK_W07	140107	
22			ARADA	1407	AR_W01	140701	
23					AR_W02	140702	
24					AR_W03	140703	
25					AR_W04	140704	
26					AR_W05	140705	
27					AR_W06	140706	
28					AR_W07	140707	
29					AR_W08	140708	
30					AR_W09	140709	
31					AR_W10	140710	
32			BOLE	1410	BO_W01	141001	
33					BO_W02	141002	
34					BO_W03	141003	
35					BO_W04	141004	
36					BO_W05	141005	
37					BO_W06	141006	
38					BO_W09	141009	
39					BO_W12	141012	
40					BO_W13	141013	
41					BO_W14	141014	
42					BO_W11	141011	
43					BO_W10	141010	
44					BO_W08	141008	
45					BO_W07	141007	
46			GULELE	1404	GU_W01	140401	
47					GU_W02	140402	
48					GU_W03	140403	
49					GU_W04	140404	
50					GU_W05	140405	
51					GU_W06	140406	
52					GU_W07	140407	

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s/n	Region	Code	Sub-city Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
53					GU_W08	140408	
54					GU_W09	140409	
55					GU_W10	140410	
56			KIRKOS	1406	KIR_W01	140601	
57					KIR_W02	140602	
58					KIR_W03	140603	
59					KIR_W04	140604	
60					KIR_W05	140605	
61					KIR_W06	140606	
62					KIR_W07	140607	
63					KIR_W08	140608	
64					KIR_W09	140609	
65					KIR_W10	140610	
66					KIK_W11	140611	
67			LIDETA	1405	LID_W01	140501	
68					LID_W02	140502	
69					LID_W03	140503	
70					LID_W04	140504	
71					LID_W05	140505	
72					LID_W06	140506	
73					LID_W07	140507	
74					LID_W08	140508	
75					LID_W09	140509	
76					LID_W10	140510	
77			NIFASSILK LAFTO	1402	NL_W01	140201	
78					NL_W02	140202	
79					NL_W03	140203	
80					NL_W04	140204	
81					NL_W05	140205	
82					NL_W06	140206	
83					NL_W07	140207	
84					NL_W08	140208	
85					NL_W09	140209	
86					NL_W10	140210	
87					NL_W11	140211	
88					NL_W12	140212	
89			KOLFE KERANIO	1403	KK_W01	140301	
90					KK_W02	140302	
91					KK_W03	140303	
92					KK_W04	140304	

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s/n	Region	Code	Sub-city Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
93					KK_W05	140305	
94					KK_W06	140306	
95					KK_W07	140307	
96					KK_W08	140308	
97					KK_W09	140309	
98					KK_W10	140310	
99					KK_W11	140311	
100					KK_W12	140312	
101					KK_W13	140313	
102					KK_W14	140314	
103					KK_W15	140315	
104			YEKA	1409	YE_W01	140901	
105					YE_W02	140902	
106					YE_W03	140903	
107					YE_W04	140904	
108					YE_W05	140905	
109					YE_W06	140906	
110					YE_W07	140907	
111					YE_W08	140908	
112					YE_W09	140909	
113					YE_W10	140910	
114					YE_W11	140911	
115					YE_W12	140912	
116					YE_W13	140913	

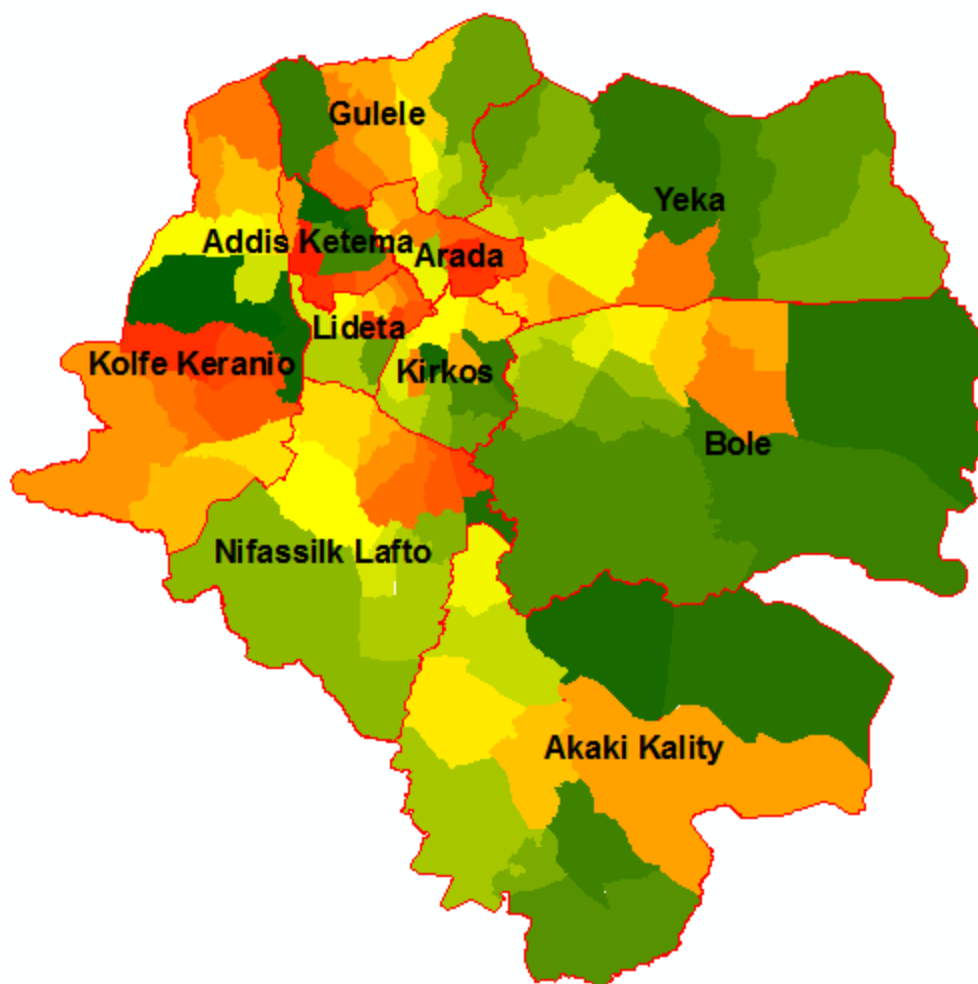


Fig. 30. Regional wereda map of Addis Abeba

7.1.11. Dire Dawa

According to CSA (2005), Dire Dawa City Administration had one wereda named GORGORA. Data obtained from the city BoFED (2014), shows that Dire Dawa City Administration is divided into three clusters which have the status of weredas.

Table 25. Names, codes and changes in administrative structure of weredas in Dire Dawa region

s/n	Region	Code	Sub-city Name	Code	Wereda Name (BoFED 2014)	Code	CSA, 2005
1					GORGORA	150101	GORGORA (SPLIT)
2					ASELISO	150102	GORGORA (SPLIT)
3					BIYO AWALE	150104	GORGORA (SPLIT)



Fig. 31. CSA regional map of Dire Dawa



Fig. 32. Regional wereda map of Dire Dawa