



Strategy for Forest Landscape Restoration and biodiversity conservation between Chebera Churchura National Park and Kafa Biosphere Reserve

Final report



Implemented by:



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Client

GIZ Internationales Waldprogram (IWP) & GIZ Biodiversity and Forestry Program Ethiopia (BFP)

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DISCLAIMER

The content of this document is aimed at assessing options for Forest Landscape Restoration (FLR) in the area between Chebera Churchura National Park and Kaffa Biosphere reserve. The results of the assessment have been shared and socialized with relevant stakeholders. The study has been prepared by the consultancy firm UNIQUE forestry and land use contracted by GIZ-BFP. The information and views set out in this study are those of the author(s) and do not necessarily reflect the official opinion of GIZ. Neither GIZ nor any other person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

TABLE OF CONTENT

1	Introduction	1
2	Methodology	3
3	The candidate landscape and success factors	6
3.1	The study area	6
3.2	The candidate landscape	15
3.3	Key success factors	22
3.3.1	Motivation	22
3.3.2	Ecological conditions and enabling environment	25
3.3.3	Implementation capacity	33
3.4	FLR potential, opportunities and barriers	36
4	Proposed strategies and next steps	41
4.1	Proposed strategy	41
4.2	Recommended next steps	42
5	Reference list	43
	Annex	I
	Annex 1: Workshop participants	I
	Annex 2: Inputs from the stakeholder workshops	III
	Annex 3: Land cover and use assessment methodology	X
	A3.1 Data acquisition and preparation	X
	A3.2 Coarse land use classification	XIII
	A3.3 Fine land use classification and identification of potential wildlife corridors	XVIII
	Annex 4: Adjustments to the boundaries of Chebera Churchura NP	XIX
	Annex 5: Land cover in the study area	XX
	Annex 6: Land cover and use in the candidate landscape	XXII
	Annex 7: FLR success factors	XXIV
	Annex 8: Policies and regulations of relevance to FLR	XXV

TABLES

Table 1: FLR options in the candidate landscape	4
Table 2: Population in the study area	8
Table 3: Land cover and use in the study area.....	13
Table 4: Land cover and use in the candidate landscape	15
Table 5: Land cover and use as a function of elevation	16
Table 6: Carbon stocks in Ethiopian forests	23
Table 7: PFM in the candidate landscape	30
Table 8: FLR and conservation potential in the candidate landscape.....	37
Table 9: Barriers and opportunities for FLR in the candidate landscape	39

FIGURES

Figure 1: Study area	3
Figure 2: Workflow.....	5
Figure 3: Terrain in the study area	7
Figure 4: Rainfall in the study area.....	8
Figure 5: Land cover in the study area	9
Figure 6: Assessment of wildlife movement	10
Figure 7: Land cover classification	11
Figure 8: Prevailing land cover for kebeles surrounding Chebera Churchura NP	12
Figure 9: Candidate landscape	14
Figure 10: Variance in distribution of land cover classes across kebeles	16
Figure 11: Land cover and use in the candidate landscape	17
Figure 12: Forest transition in the candidate landscape.....	18
Figure 13: Human influence in the candidate landscape.....	20
Figure 14: Proposed wildlife corridor.....	21
Figure 15: Forests in the candidate landscape.....	26
Figure 16: Tree cover in the agricultural landscape	27
Figure 17: Remote villages	28
Figure 18: Forest uses prior to PFM	32
Figure 19: FLR and conservation potential in the candidate landscape	36

ACRONYMS

BFP	Biodiversity and Forest Program (GIZ)
BR	Biosphere Reserve
CRGE	Climate Resilient Green Economy
EWCA	Ethiopia Wildlife Conservation Authority
FLR	Forest Landscape Restoration
GIZ	German Development Cooperation
GTP	Growth and Transformation Plan
MEFCC	Ministry of Environment, Forests and Climate Change
NABU	Nature And Biodiversity Conservation Union
NFPA	National forest priority areas
NGO	Non-governmental organization
NP	National Park
NTFP	Non-timber forest product
PFM	Participatory Forest Management
REDD	Reduced Emissions from Deforestation and Degradation
SLM	Sustainable land management
SNNPRS	Southern Nations Nationalities and Peoples' Regional State

1 INTRODUCTION

The Government of Ethiopia recognizes the importance of reversing deforestation and forest degradation as prerequisites for ensuring sustainable economic development. As Ethiopia continues to experience rapid economic growth, the role of the forest sector becomes increasingly important for achieving the Government's ambitious climate resilient green economic growth goals. Ethiopia aims to achieve middle income status by 2025, i.e. by implementing the Climate Resilient Green Economy (CRGE) development strategy. Forestry is one of the four strategic pillars of this strategy. Against this background, protecting and restoring forests to enhance their socio-economic contributions and ecosystem services has been given emphasis in many of the official government documents such as the CRGE (FDRE, 2011), the country's REDD+ strategy and the Growth and Transformation Plan II (GTP II) (FDRE, 2015). If targeted interventions and policy adjustments are effectively realized, the forest sector has considerable potential to expand its contributions to sustainable economic development by creating green jobs, supporting the bio-economy and fostering climate change resilience.

Ethiopia has committed to restoring 15 million hectares of forest landscapes by 2030 in the context of the Bonn Challenge and it reconfirmed this target at the UN Summit in New York in 2014. Ethiopia is also part of the African Forest Landscape Restoration Initiative (AFR100), which pursues the restoration of 100 million hectares of deforested and degraded landscapes by 2030 across Africa. Forest Landscape Restoration (FLR) will "restore ecosystem services and landscape functionality, boost and stabilize land use productivity and enhance resilience to climate change through the restoration of forests and tree cover outside of forests" (AFR100).

The forestry sector is given strategic attention in the second Growth and Transformation Plan as a key sector that can contribute to Ethiopia's development goals, especially through the expansion and sustainable management of the forest resource base. Increasing the country's forest cover to 20% and the contribution of the sector to GDP to 8% by 2020 are some of the key targets planned in the GTP II. In that context, FLR is one of the key interventions expected to increase forest cover. Moreover, there is a plan to scale up community-based watershed development across 41.35 million ha, which includes interventions such as sustainable land management (SLM), free community labor mobilization and agroforestry.

Given Ethiopia's leadership as demonstrated in formulating very ambitious targets for its forest and land use sectors and the fact that it is one of the top 25 biodiversity-rich countries in the world (WCMC, 1994) – hosting two of the world's 34 biodiversity hotspots, namely the Eastern Afromontane and the Horn of Africa hotspots – many donor institutions and development co-operation partners support the government in the implementation of these targets.

Germany supports the Government of Ethiopia in the implementation of AFR100 within the framework of the International Forest Policy Program (IWP) and the Biodiversity and Forest Program (BFP) implemented by the German Development Cooperation (GIZ). BFP supports the management of selected protected areas, biosphere reserves and national forest priority areas (NFPAs) in Southern Nations Nationalities and Peoples' Regional State (SNNPRS), Oromia, Tigray and Amhara, as well as forestry in adjoining areas. In SNNPRS, GIZ works with the administration of Chebera Churchura National Park (NP), situated in Konta and Dawuro zones. The national park is part of a greater network of protected areas such as Mago/Omo NP in the south and the Kafa Biosphere Reserve (BR) in the northwest, as well as other NFPAs. These protected areas are

currently still relatively well connected through natural forests, savannah and grasslands, allowing seasonal migration of and exchange between animal populations. However, connectivity is increasingly threatened by the expansion of human influence and the related conversion of native ecosystems to agricultural land. Given this background and the findings of a previous study (Bauer et al., 2016), GIZ selected the area between Chebera Churchura NP and Kafa BR in SNNPRS to evaluate the potential of and identify opportunities for FLR in the context of maintaining and improving biodiversity connectivity between the two protected areas.

The objective of the study was to identify potential biodiversity corridors connecting Chebera Churchura NP and Kafa BR and to design strategies for their protection in the context of economic development and continued population growth. For this it applied “The Restoration Diagnostic” method developed by the World Resource Institute (WRI), in order to identify key success factors, barriers and a suitable strategy for FLR within the above-mentioned context. Moreover, based on the results of a field study and stakeholder consultations, and extensive GIS analysis, approaches for implementation activities were derived.

2 METHODOLOGY

For the assessment *The Restoration Diagnostic* method, developed by WRI (2015), was applied to the area of interest (Figure 1) to develop FLR options previously identified by the Ministry of Environment, Forests and Climate Change (MEFCC) with support from WRI¹. Table 1 summarizes these previous FLR options for the woredas of Konta Special, Esira and Tocha.

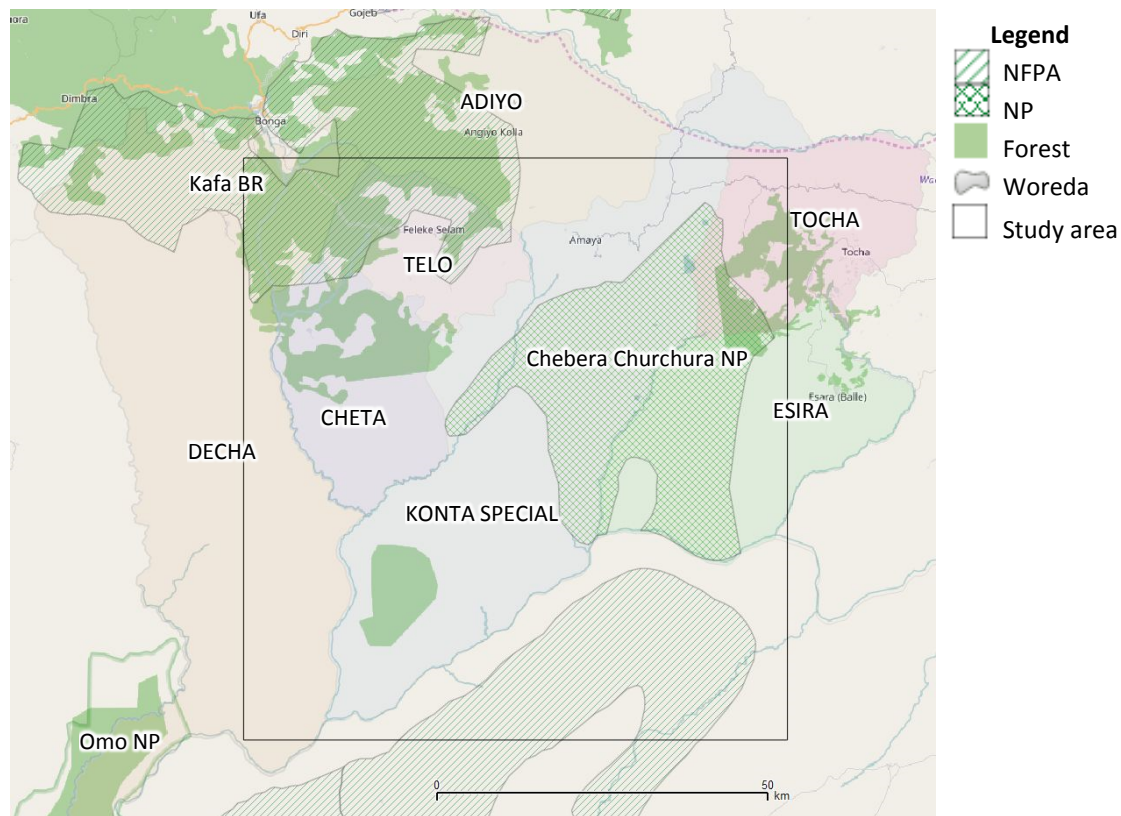


Figure 1: Study area

The study area includes the woredas of Cheta, Esira, Konta Special, Telo and Tocha.

Note: The boundaries of Chebera Churchura NP have been adjusted since its creation in 2005 (see Annex 4). However, the new shapefile was not available; hence, the boundaries as shown above were used in the analysis.

Source: GIZ (protected areas, administrative units), Open Street Map (base map including forested areas)

¹ National assessment and mapping of FLR options. Results for the woredas containing Chebera Churchura were only available in summarized form.

Table 1: FLR options in the candidate landscape

FLR option	Activities
Restoration of natural forests	▪ Planting of native tree species in deforested areas ▪ Protection (area closures), enrichment planting and sustainable management of degraded natural forest
Agroforestry	▪ Planting of fruit, fodder and timber trees in combination with agriculture and pasture, or near homesteads for subsistence and commercial use
Establishment of commercial plantations	▪ Planting of native and exotic species for commercial purposes (fuel wood, timber) in buffer zones around protected areas and NFPAs

The potential for implementing different FLR options across Ethiopia was assessed by MEFCC and WRI based on satellite imagery. Only FLR options relevant for the study area are listed here.

Source: MEFCC & WRI

An important aim of this study is to confirm the applicability of these general options for the landscape, including their potential scope, and to define the suitable options and required measures in detail.

The Restoration Diagnostic method, developed by WRI and described in detail in the corresponding guideline², encompasses three main steps:

1. **Defining the scope of the assessment**, resulting in the identification of the candidate landscape (Box 1)
2. **Assessing key success factors for the candidate landscape**, identifying policies, regulations and initiatives conducive to Forest Landscape Restoration (FLR), as well as gaps and barriers
3. **Identifying strategies** suitable for FLR, i.e. strategies that close gaps or overcome barriers for the candidate landscape.

Box 1: The “**candidate landscape**” is defined by geographic boundaries within which the diagnostic method is applied. The candidate landscape should encompass areas with similar socio-economic and ecological conditions. The boundaries of the candidate landscape can be defined using administrative boundaries, watersheds or other ecological features.

Including key stakeholders at an early stage is often a prerequisite for the uptake of results and later implementation of strategies and recommendations, in particular when working at landscape level and identifying strategic interventions that require a careful integration of different perspectives and interests. In order to create ownership of the process and to contribute to capacity building of relevant national, zonal and local authorities, the expert team consulted zonal and woreda authorities in the candidate landscape and was accompanied throughout the field work by selected representatives from the SNNPRS Culture and Tourism office (Chebera Churchura NP) and GIZ Biodiversity and Forest Program staff. Staff from the Woreda Offices supported the planning of field work and accompanied the team in their respective woredas.

² The method and corresponding tool is available here: <http://www.wri.org/publication/restoration-diagnostic>.

The study was implemented in three distinctive phases reflecting the three steps of the methodology (Figure 2):

A. Defining the scope of the assessment

- Land cover and use assessment using remote sensing data (Sentinel) to evaluate the current extent and distribution of forest cover in the woredas surrounding the national park and connecting it to Kafa BR.
- Stakeholder workshop – with participants from the zonal and woreda Environment and Forestry, and Agriculture offices and administrators as well as the NP administration – to list and understand ongoing efforts and key barriers to sustainable land management in general and forests in particular.
- Definition of the candidate landscape based on:
 - Land cover and use assessment,
 - Stakeholder feedback received in the workshop.

B. Assessing success factors

For the assessment of success factors the diagnostic method was used. The assessment involved:

- Consultations and site visits in the woredas in the candidate landscape.
- Ground truthing of land cover and use assessment.
- Refined land cover and use assessment for the candidate landscape to estimate the potential scale of the identified restoration opportunities.

C. Developing strategies

- Compilation of opportunities for FLR.
- Development of strategies to strengthen existing success factors and overcome barriers to the implementation of the FLR opportunities.
- Validation and ranking of the strategies in a second stakeholder workshop.

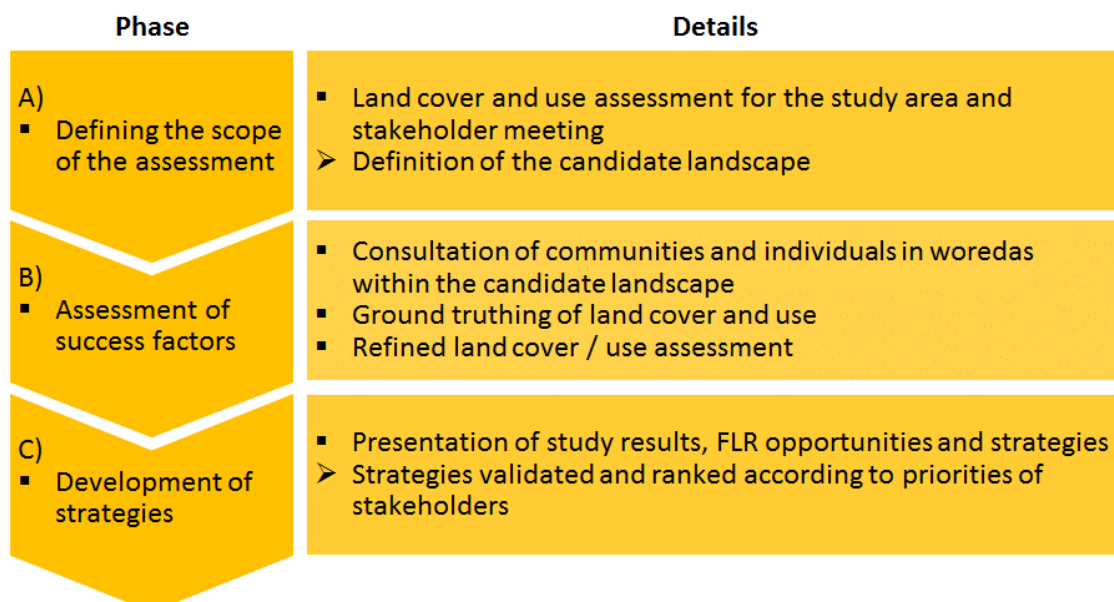


Figure 2: Workflow

Source: adapted from WRI (2015)

3 THE CANDIDATE LANDSCAPE AND SUCCESS FACTORS

In order to determine the boundaries of the candidate landscape, a preliminary analysis was necessary for the woredas surrounding Chebera Churchura NP. An overview for this study area is presented first, followed by more in-depth information on land cover and use for the candidate landscape – a smaller area of particular relevance to the objective of the study – and the identification of potential biodiversity corridors connecting Chebera Churchura NP and Kafa BR. Thereafter, the presence and quality of success factors, and lastly the potential for FLR in the candidate landscape are discussed in this chapter.

3.1 The study area

The study area is marked by its **rough terrain**, with considerable variation in elevation from north to south and steep valleys forming part of the Omo river watershed (Figure 3). The highest elevations of above 3,000m are found along the boundary between Telo and Adiyo woredas. Elevation changes drastically towards the southern part of the study area to about 600m in the lower reaches of the Dincha and Denchyia rivers and their confluence with the Omo river. The rivers form the southern boundary of the study area. The Chebera Churchura NP has similar terrain, with its highest points of above 2,000m descending to the Omo valley. The Zigina river valley roughly bisects the park.

Ecosystems and human settlement change with terrain, from the northern cool, moist and more densely populated highlands to the only sparsely populated southern lowlands with higher temperatures and relatively low rainfall.

Road **infrastructure** is largely limited to the highlands, with the exception of a road from Ameya to the site of the Gibe 4 hydropower plant. However, according to a report by USAID (2005), the secondary road network is poorly developed even in the more accessible highlands – a situation which was confirmed during field work.

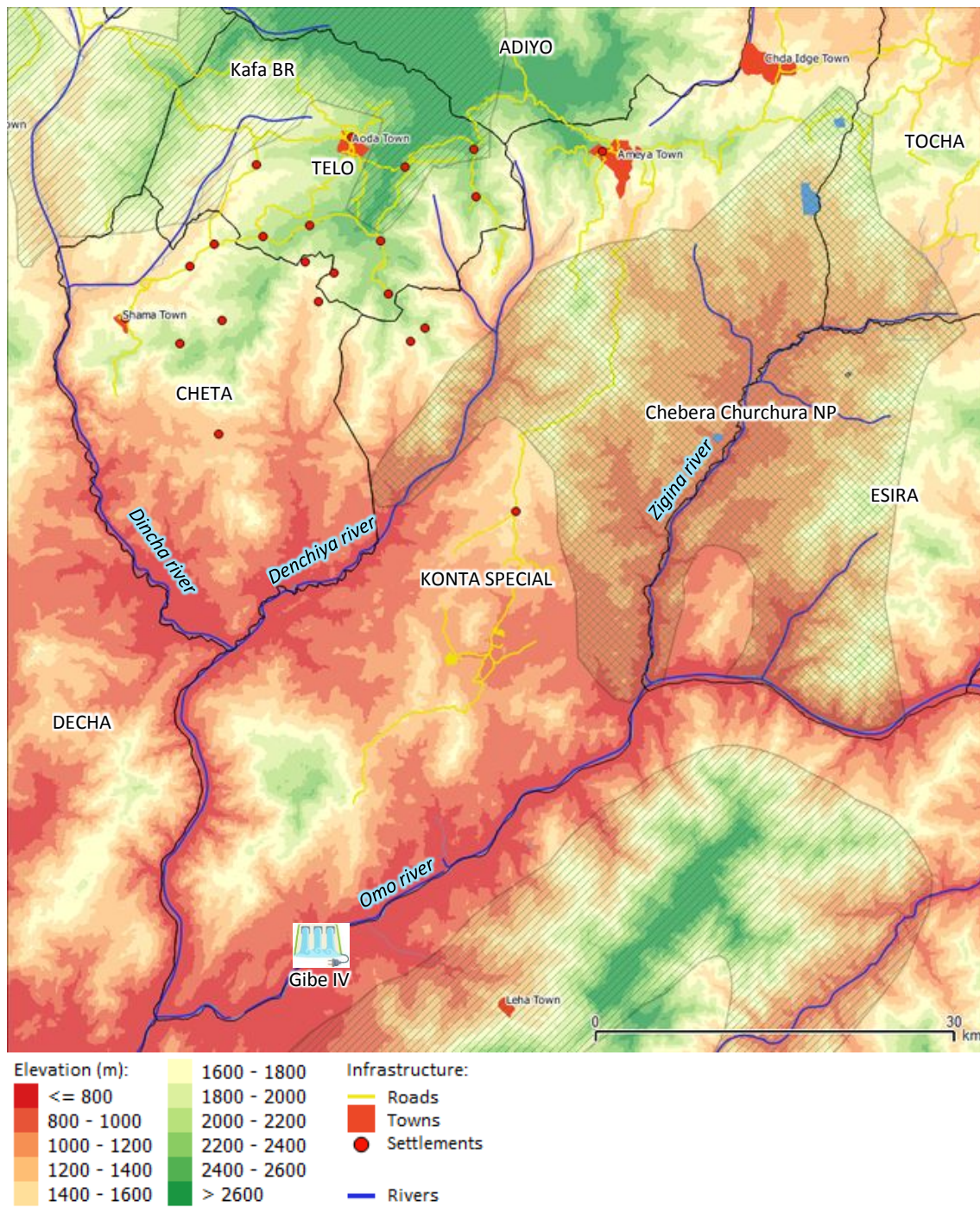


Figure 3: Terrain in the study area

Source: UNIQUE GIS database (DEM) and analysis (roads, settlements), GIZ (administrative boundaries, towns and rivers)

The area can be roughly classified into two **climatic zones**, the Weina-Dega zone above 1,500m with a temperature range between 16 and 20°C, and the Kola zone below 1,500m with average temperatures between 20 and 28°C (Dereje et al. 2006). Rainfall is distributed in a unimodal manner across the study area, with most rain falling between April and September. Annual precipitation is above 1,600mm/a in the highlands and circa 1,000mm/a in the lowlands (Hailu 2017).

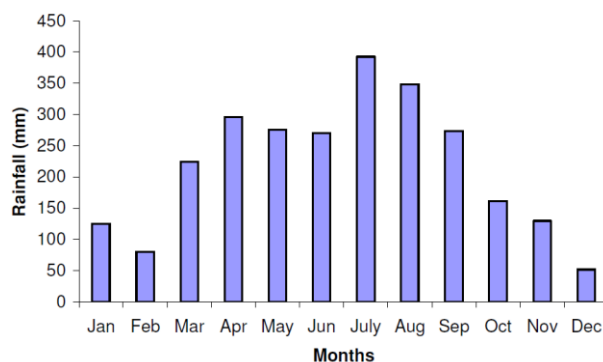


Figure 4: Rainfall in the study area

Source: Dereje et al. 2006

The **population** in the area is largely comprised of the indigenous Dawro, Konta, Bacha and Menja people. The latter two, formerly having largely forest-based livelihoods, were marginalized in the past but efforts are being made to integrate them into the farming society. The average land holding per household in the east and southeast is estimated to be circa 4ha, and 2ha in the northern and northeastern highlands (Dereje et al. 2006). Population density in the five woredas included in the study area is, at circa 0.1 inhabitant per km², fairly low and people largely live in rural settings (Table 2). Owing to the low population density and favorable conditions for agriculture, the area is deemed to be food secure (USAID 2005, personal communication 1st stakeholder meeting). However, the high population growth of 3%/a in SNNPRS is bound to result in increasing pressure on the remaining forests, woodlands and grasslands for conversion to agriculture in the future.

Table 2: Population in the study area

Woreda	Total #	Population		Area km ²	Population density #/km ²
		#	%		
Cheta	32,600	31,200	96%	686.028	0,05
Esira	65,700	61,035	93%	1.078.040	0,06
Konta Special	91,700	83,500	91%	2.381.630	0,04
Telo	64,300	60,800	95%	482.393	0,13
Tocha	103,400	97,500	94%	763.921	0,14

Source: CSA, 2008

Rain-fed agriculture and mixed **crop-livestock production systems** are common in the area. Staple crops are cereals such as maize, wheat, sorghum, barley, teff, pulses and the drought resistant enset. Most households own a few heads of small livestock such as goat and sheep. Wealthier households own 1–2 heads of cattle and in some cases a donkey or horse. Cash income is generated from excess staple crop production and to varying degrees from coffee, honey and spices collected/produced in forests or grown on-farm (Dereje et al. 2006, USAID 2005).

The largely intact vegetation in the national park provides a good overview of the **ecosystems** in their natural state. Prevailing vegetation forms are montane moist forest, woodland, wooded grassland (savannah) and riverine forest (Hailu 2017). Montane forest is dominant at elevations

above 1,800m, gradually transitioning to open forest and grassland which prevail below 1,200m, forming a wide corridor along the Zigina river (Figure 5). A similar distribution of vegetation can still be found outside the park where human presence is particularly low, i.e. in Cheta, Esira and Konta Special woredas. However, even Telo and Tocha woredas still retain substantial areas of montane forest.

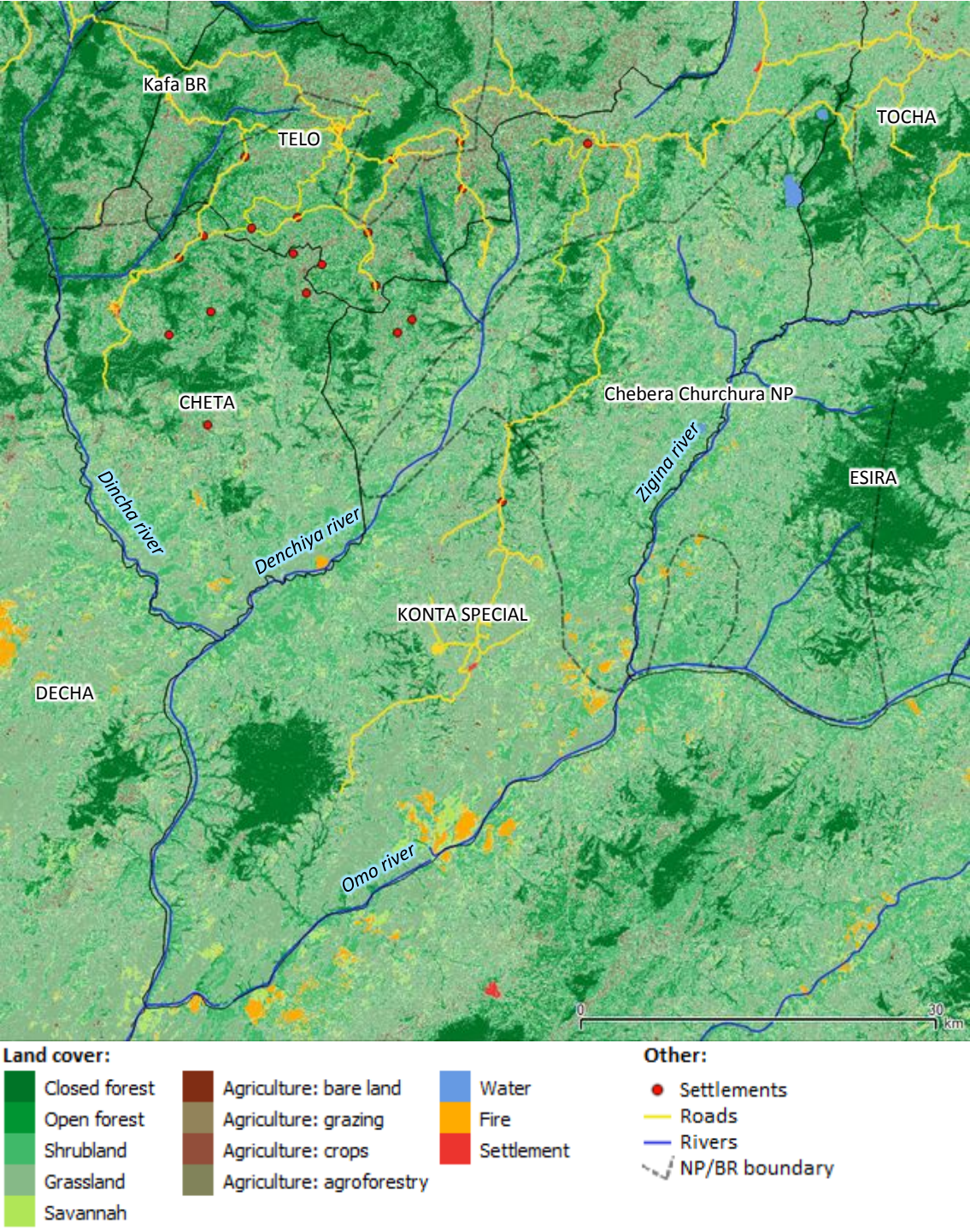


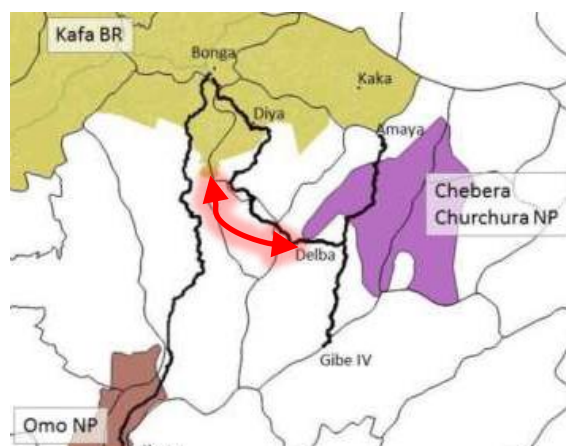
Figure 5: Land cover in the study area

Source: UNIQUE GIS analysis, GIZ (administrative boundaries and rivers)

The **Chebera Churchura NP**, considered one of the most intact national parks in Ethiopia, hosts a wide range of native flora and fauna, including endemic species and four of the “big five”: Elephant, Lion, Leopard and Buffalo. Groups of elephants and buffalo, as well as other herbivores migrate/disperse seasonally to areas outside the park, e.g. between Chebera Churchura NP and Kafa BR via Cheta and Decha woredas (Figure 6).

Wildlife, including smaller mammals such as primates (in particular baboons) is known to damage crops and livestock, and in a few cases cost human lives. In a survey by Alemayehu et al. (2015) focusing on livestock losses, communities identified lions, hyenas, leopards and baboons as the most problematic species. In a survey by Hailu (2017), baboons, giant forest hogs and buffalos were identified as the most problematic crop raiders.

The national park includes the areas of three woredas: Esira, Konta Special and Tocha. The park boundaries were demarcated together with the park scouts and elderly village people using natural land marks such as big trees. As a result, boundaries are disputable where paint marks have disappeared and/or the people present during demarcation are no longer available. Buffers of natural vegetation between villages and the park exist in some areas. However, especially along the more densely populated northern side of the park it is directly adjoined by farmland (see front cover).



Seasonal wildlife migration between Chebera Churchura NP and protected areas in its vicinity was assessed, highlighting the potential to install a dedicated wildlife corridor between the national park and Kafa BR (Bauer et al. 2016) via south Cheta woreda. Information on elephant movement collected by the park administration likewise indicates the need to protect natural ecosystems south of Chebera Churchura NP, into southern Cheta and towards Decha.

Note: According to the park management, GPS data of elephant movement outside the park collected by park rangers exists but was not available for this report.

-  Transects to assess wildlife presence outside the protected areas
-  Indicative seasonal wildlife migration corridor between Chebera Churchura NP and Kafa BR

Figure 6: Assessment of wildlife movement

Source: Bauer et al. 2016

Figure 8 shows kebeles where a given land cover group is dominant, as well as kebeles where fire is of particular relevance (based on area affected). Kebeles with high forest or grassland/savannah cover are those covered by the national park but are also common south and southwest of the park. Agriculture makes up a large proportion of land cover in the north, in particular in kebeles in Telo woreda. Fire is of relevance in the kebeles with high grassland/savannah cover, e.g. in the south of Konta Special woreda.

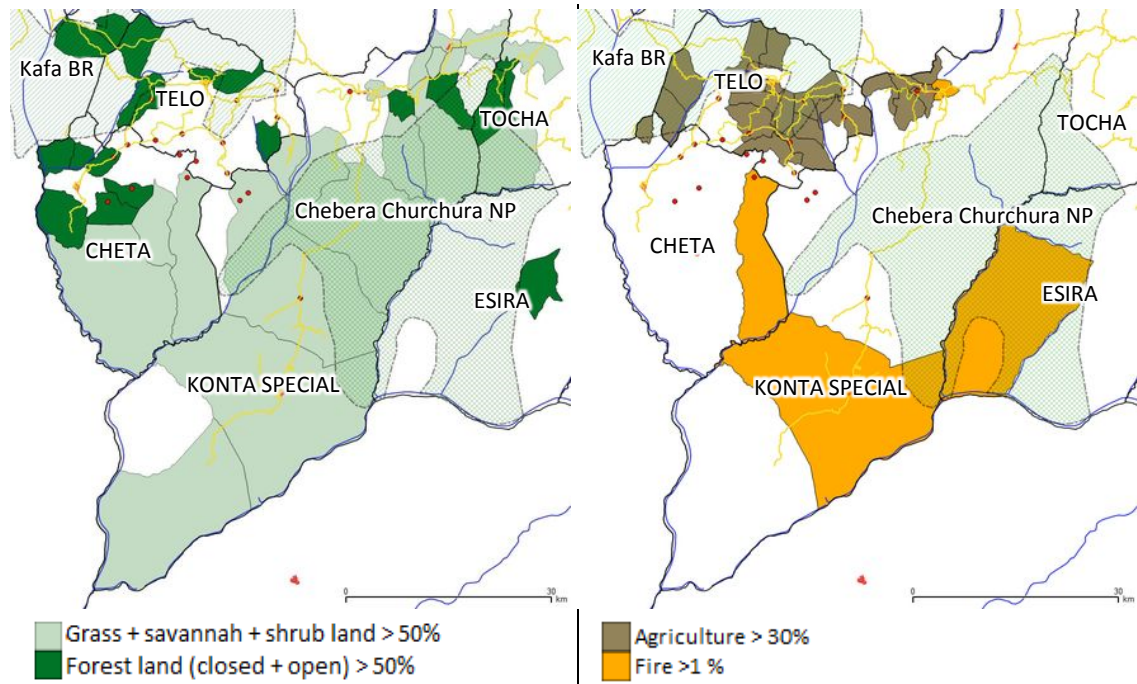


Figure 8: Prevailing land cover for kebeles surrounding Chebera Churchura NP

Source: UNIQUE GIS analysis, GIZ (administrative boundaries and rivers)

Overall, forest cover in the study area is high (at 28%), particularly when compared to the national forest cover of 12%.⁵ Other [near] natural vegetation forms make up an even higher proportion of the land cover, i.e. 60%, including degraded land cover forms such as shrubland in the highlands (likely resulting from forest conversion). The extent of agricultural land is minor, covering only 10% of land outside the national park (Table 3).

Table 3: Land cover and use in the study area

Land cover class	Chebera Churchura NP		Outside the NP	
	ha	%	ha	%
Agriculture	5,093 ¹	4 ¹	59,779	10
Human infrastructure	55	0	1,179	0
Burned land	764	1	6,592	1
Forest ²	33,271	26	161,626	28
Natural open vegetation ²	86,373	68	341,037	60
Water	966	1	2,085	0
Total	126,523		572,297	

¹ The boundary of the park was adjusted to exclude settlements at its fringes (see Annex 4). However, the shapefile for the adjusted boundary was not available for this assessment and could not be reflected in the statistics. As a result, the proportion of agricultural land in the park is likely smaller in reality.

² Includes degraded forest and former forest land classified as shrubland.

Note: A breakdown of land cover at woreda level is provided in Annex 5.

⁵ FAO Forest area statistics 2005; excluding "other wooded land" (<http://www.fao.org/forestry/country/32185/en/eth/>). A more recent study by MEFC (2017, unpublished) states a national forest cover of 15%.

Based on the above results – i.e. the combination of landscapes that are likely in need of forest restoration activities, wildlife presence/movement and tangible human presence/influence – the candidate area was selected as shown in Figure 9.⁶ It includes Cheta woreda, the southern and central kebeles of Telo woreda and four kebeles on the western side of Konta Special woreda.

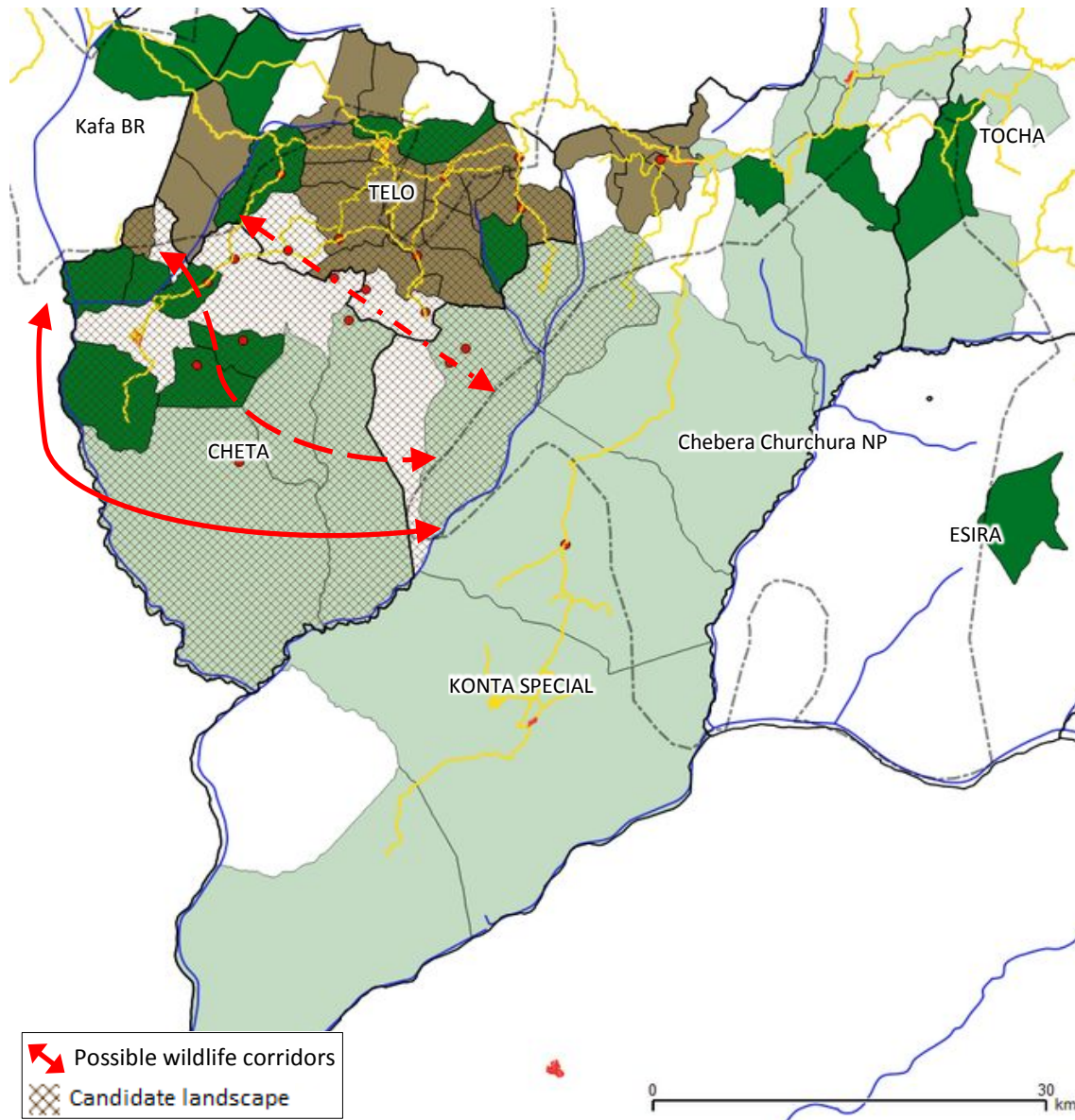


Figure 9: Candidate landscape

The candidate landscape includes selected kebeles in Cheta, Konta Special and Telo woredas, where wildlife movement between the NP and Kafa BR was indicated by participants in the 1st stakeholder workshop and Bauer et al. (2016). At the same time, the results from the land cover analysis show varying degrees of human presence in this landscape.

Source: UNIQUE GIS analysis, GIZ (administrative boundaries and rivers)

⁶ Given that ecosystems in Chebera Churchura NP are considered to be intact and little evidence of human activity within the park was observed, the national park was excluded from the candidate landscape.

3.2 The candidate landscape

The land cover and use assessment was further refined for the candidate landscape⁷, confirming the findings regarding land use (Table 4 and Figure 11). Forest, savannah, grass- and shrubland make up 80% of the total land cover in the candidate landscape. However, significant differences exist between the woredas and within the woredas (Figure 10). Relative to the total area assessed, forest as well as agricultural land is highest in the kebeles from Telo woreda. Correspondingly, the share of grass- and shrubland is relatively low. Many kebeles in Cheta likewise have high forest cover or high savannah/grassland cover depending on elevation. In Cheta the differences in land cover between kebeles are most pronounced, e.g. agricultural land constitutes between 4 and 83% of the corresponding total kebele area. Across the candidate landscape, smaller kebeles have a relatively higher share of agricultural land.

These differences in land cover and use have to be reflected in the design of strategies for FLR and wildlife conservation measures.

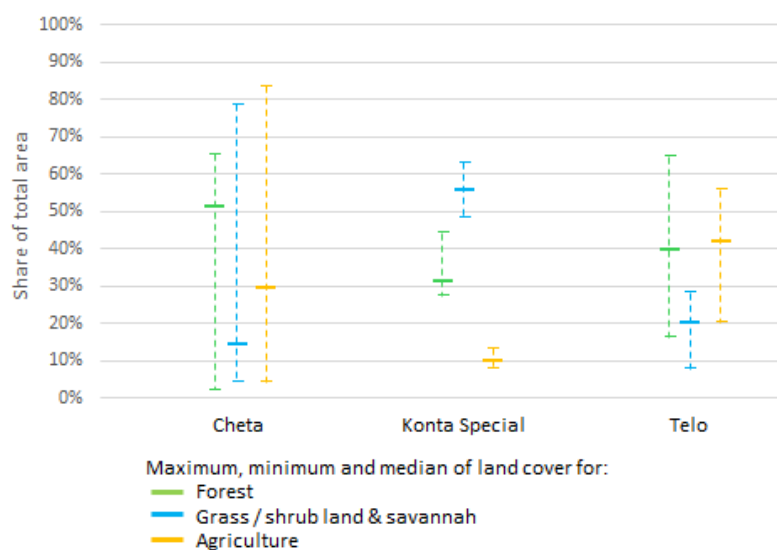
Table 4: Land cover and use in the candidate landscape

Woreda	Closed & open forest		Savannah, grass- & shrubland		Agriculture & grazing land		Settlements & roads		Rivers & lakes		Total area covered*
	ha	%	Ha	%	ha	%	ha	%	ha	%	ha
Cheta	21,186	32	34,578	53	9,081	14	100	0	441	1	65,386
Konta Special*	7,794	33	13,713	57	2,278	10	39	0	123	1	23,947
Telo*	11,553	41	5,718	20	10,798	38	265	1	23	0	28,357
Total/average	40,533	34	54,008	46	22,157	19	403	0	587	0	117,689

*Statistics only include the kebeles as shown in Figure 11 above. The list of kebeles included and respective land cover/use statistics are provided in Annex 6.

Source: UNIQUE GIS analysis

⁷ The methodology is provided in Annex 3.



Bars show the difference in land cover and use between kebeles in one woreda. Large differentiation in Cheta is related to changes in terrain and climatic zone favoring different ecosystems and differences in population density. Only 4 kebeles, with similar geographical features were assessed in Konta S. explaining the low heterogeneity. In Telo, forest cover is correlated with terrain, i.e. is greatest along higher elevation > 2,500m and slopes/valleys < 1,800m.

Figure 10: Variance in distribution of land cover classes across kebeles

Source: UNIQUE GIS analysis

The relationship between terrain and land cover / use is illustrated in Table 5. Below 1,000m grass- and natural shrubland dominates. Above 1,000m a transition to forest takes place. Above 1,500m, forests have, to a large extent, been converted to farmland. Shrubland at these elevations is likely a much degraded form of the former forests. Lastly, at high altitudes above 2,500m forests still make up a substantial proportion of land cover.

Table 5: Land cover and use as a function of elevation

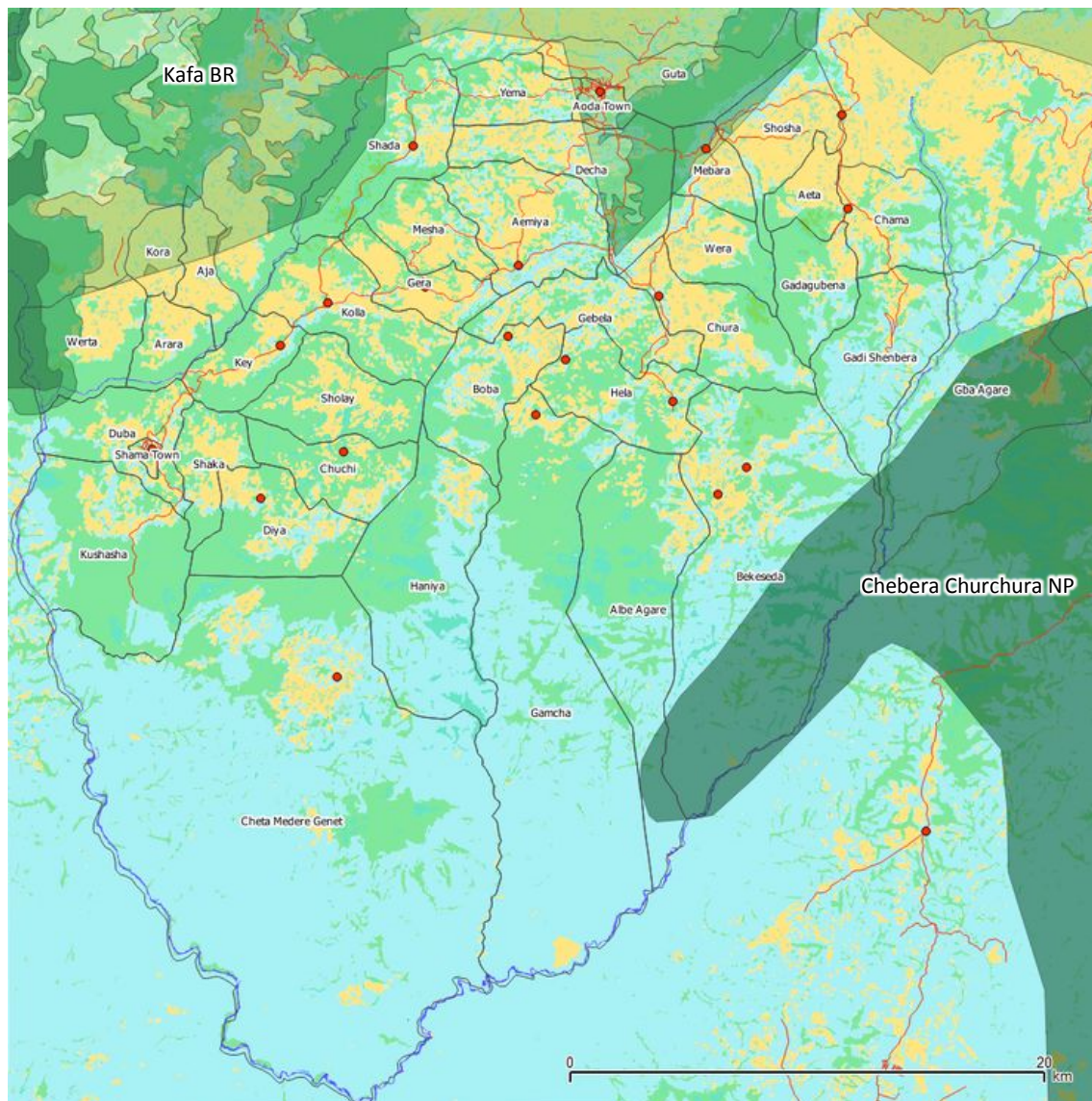
Land cover class	Land cover in % for elevation classes				
	≤ 1000	> 1000m	> 1500m	> 2000m	> 2500m
Savannah & grassland	54	36	8	2	0
Closed & open forest	8	35	49	32	60
Shrubland	35	23	15	19	25
Agriculture & grazing	1	6	28	46	15
Settlements & roads	0	0	0	1	0
Rivers & lakes	2	0	0	0	0

(near) natural vegetation: grass/bush land & savannah
 Forest (open and closed)
 Agricultural land

Highlighted cells indicate a high relative proportion of land cover/use in a given elevation class. Elevations favored by humans coincide with the areas with important natural forest resources. Shrubland above 1,500m is considered to be degraded forest land being gradually converted into permanent agricultural land or, potentially, in some cases reverting slowly to its natural state – forest.

Source: UNIQUE GIS analysis

The human threat to and pressures on natural ecosystems are highest at mid-elevation, stressing the need to develop FLR strategies that contribute to retaining and restoring the montane forests and woodlands.



Protected areas:

- Kafa BR: Buffer zone
- Kafa BR: Transition zone
- Kafa BR: Candidate core zone
- Kafa BR: Core zone; Chebera Churchura NP

Land cover / use classes:

- (near) natural vegetation: grass/shrub land & savannah
- Forest (open and closed)
- Agricultural land

Infrastructure:

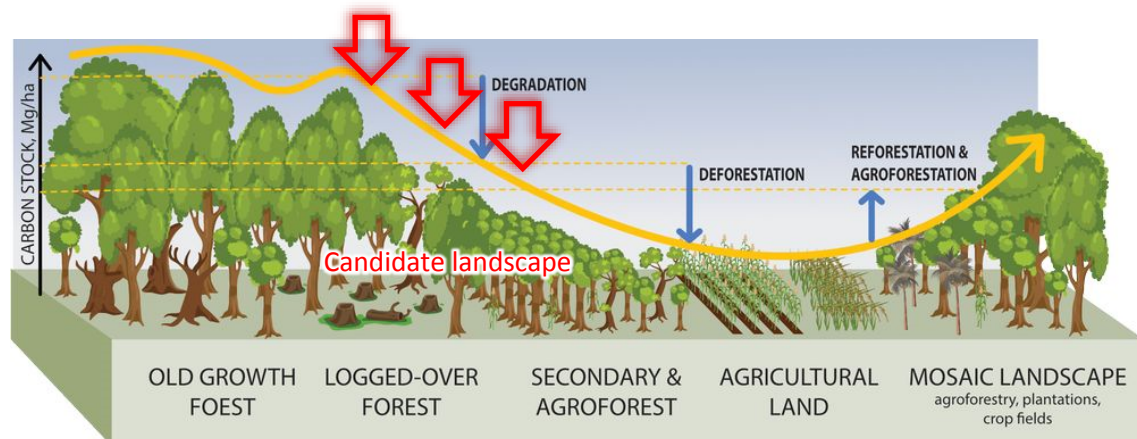
- Settlement
- Road

Forests are predominantly found in areas constituting the transition zone between the upland Weina-Dega climatic zone and the lowland Kola zone. A notable exception is the highland forest (> 2,500m) in Telo (Decha, Mebara, Guta woredas). Otherwise, the higher lying areas in all three woredas have been converted to agricultural and grazing land. Typical lowland vegetation types, grassland and savannah are found in the kebeles bordering the national park and in Cheta Medere Genet, Gamcha and Hanyia.

Figure 11: Land cover and use in the candidate landscape

Source: UNIQUE GIS analysis, GIZ (administrative boundaries and rivers)

The high forest cover and many trees distributed across the landscape indicate that the region is still at an early stage in the forest transition curve (which links changes in forest cover to factors such as population growth and economic development, Figure 12). Both deforestation and forest degradation are ongoing (and likely accelerating) but not yet complete. The lowest point of the curve, where forests are nearly depleted and forest products are scarce, has not been reached yet.



In the candidate landscape the original continuous forest cover has been transformed into a mosaic of agriculture, agroforestry and forests of different size and at different stages of degradation (red arrows). The remaining forests and trees in the landscape are sufficient to cover the local population's demand for fuel wood, timber and non-timber forest products (NTFPs). Continued population growth and the related growing need for agricultural land, fuel wood and timber is bound to lead to further deforestation and forest degradation.

Figure 12: Forest transition in the candidate landscape

Source: adapted from <https://www.slideshare.net/CIFOR/forests-trees-and-agroforestry>

In the candidate landscape, policy makers, government and development partners can show that economic development is possible without reaching the lowest point of the curve if measures for forest conservation, restoration and agricultural intensification are implemented across the landscape.

The following map (Figure 13) shows the approximate sphere of influence by humans around settlements and roads. Most agricultural land can be found within 3km of settlements and roads, constituting the intensively used “human sphere” in the landscape. At the same time, the “human sphere” still includes considerable forest cover⁸. Areas further than 6km away show little to no signs of human activities. Accordingly, wildlife presence and movement is least restricted by / in conflict with humans in the south of the candidate landscape, i.e. in Bekeseda, Albe Agare, Gamcha and Cheta Medere Genet. Additionally, some species can use the narrower and partly interrupted forested areas between Haniya and Kafa.⁹ Movement of lions from Adiyo (north of Telo) into Gimbo forest in Kafa BR was reported. If and to what extent wildlife does move further south from Gimbo and other northern forest areas could not be evaluated. These already very narrow forest corridors and forest islands are vulnerable to becoming completely disconnected with human population growth and improving infrastructure.

The uninhabited southern grasslands and savannah, as well as the woodlands and montane forests in close vicinity to human settlements need to be protected/managed sustainably to maintain biodiversity and guarantee exchange between otherwise isolated animal populations in order to keep them viable.

⁸ The status of forests could not be assessed in the framework of this study. However, visual observation as well as statements from interviewees indicate that forests range from being largely intact to highly degraded.

⁹ Interviewees in all three woredas reported the presence of buffalo and smaller mammals, and in some cases predators, in their forests – as well as the damages caused to crops and livestock by some of these species.

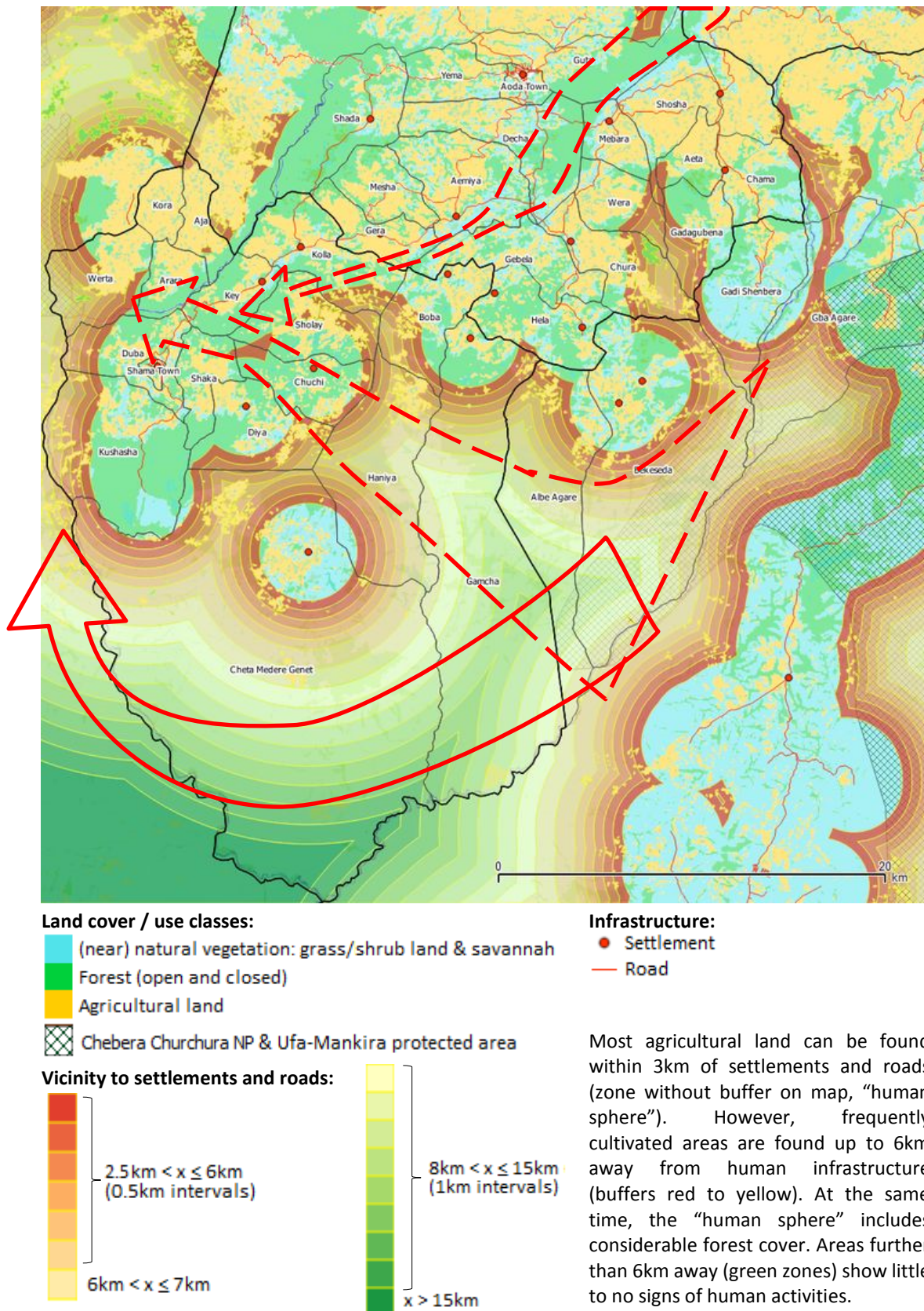


Figure 13: Human influence in the candidate landscape

Source: UNIQUE GIS analysis, GIZ (administrative boundaries and rivers)

The SNNPRS Bureau of Culture and Tourism, in cooperation with Wolayta Sodo University and the Wildlife Conservation Society, has started an initiative for the installation of a **protected area connecting Chebera Churchura NP and Kafa BR** along the Oumma river, aimed at ensuring movement of wildlife (Figure 14). The initiative is at a very early stage; a concept note or similar documentation was not yet available.



Figure 14: Proposed wildlife corridor

Starting point of the proposed wildlife corridor along the Oumma river connecting Chebera Churchura NP & Kafa BR ; picture taken near Delba, Konta Special woreda.

It is assumed that the Oumma river is synonymous with the Denchiya river (see Figure 3).

FLR can contribute with interventions at the intersection of forest conservation (focus on protected areas) and socio-economic development (sustainable natural forest management, commercial plantations and woodlots with fast growing tree species, agroforestry).

The development and implementation of human-wildlife conflict management strategies must be an important aspect of habitat and wildlife conservation strategies.

3.3 Key success factors

The Restoration Diagnostic identifies three groups of success factors for FLR and provides guiding questions for their assessment:

- The **motivation of stakeholders** to engage in FLR activities; e.g. awareness of FLR options, potential benefits of FLR and beneficiaries, crisis events strengthening motivation and legal requirements
- The **enabling environment and prevailing ecological conditions**; including existing policies, social conditions, markets for forest and agricultural products, institutional actors and coordination of activities
- The **implementation capacity** of stakeholders; e.g. ongoing FLR-related activities, technical know-how of actors and knowledge transfer mechanisms, and incentives and funding for FLR and agriculture.

The findings for each group are described below. An overview showing the responses to each success factor is provided in Annex 7.

3.3.1 Motivation

Awareness, benefits and beneficiaries of FLR options

Current efforts in the landscape related to forests and forestry are limited to forest conservation in the form of protected areas such as Chebera Churchura NP, and conservation and restoration of degraded forests outside protected areas through Participatory Forest Management (PFM). In this framework, substantial efforts are being made to raise **awareness** of the importance of forests and wildlife / biodiversity. As a result, people in the area have a positive attitude towards forests, the park and wildlife, and largely accept the existing boundaries and restrictions on forest use. However, there is no concept yet for FLR (or measures that would contribute to FLR) outside the existing forest remnants. (Refer to section 3.4 for the estimated potential for FLR including and beyond the current measures.)

Direct **financial benefit** from natural forests outside protected areas is limited to the use of dead wood and income from non-timber forest products (NTFPs) such as forest coffee, spices and honey.¹⁰ The group of beneficiaries depends on historic user rights¹¹, and formalization of forest access and use in the form of Participatory Forest Management (see box 2 in section 3.3.1). Harvesting timber for commercial purposes is prohibited.

Trees and bamboo on farmland belong to the land certificate holder. However, indigenous species can only be harvested with permission from the kebele and district authorities. Exotic species are exempt from this regulation.¹²

¹⁰ SNNP Proclamation No. 110/207; refer to Annex 8

¹¹ In some cases, user rights relating to forests in the vicinity of settlements may be divided amongst a limited number of community members, based on the historic use right of a certain part of the forest by a specific family. More recently, established households have no/limited user rights and have to rely on resources on their farmland. Such forms of traditional use rights are usually accepted by others. In the event of PFM, use rights will be adjusted to at least some degree of communal access through mutual consent of the community and those who hold customary use rights.

¹² Federal Proclamation No. 542/2007; refer to Annex 8

Financial income from the national park is to be shared with the local communities amongst other stakeholders.¹³ However, to date the park generates very little income. This may change in the future as efforts to increase accessibility for tourism continue. Furthermore, neighboring communities can have controlled access to natural resources within the national park at the park administration's discretion.¹⁴ However, formal agreements with the park authority on resource use are not yet in place. As a result, villagers perceive their activities as illegal and have little motivation to use resources in a sustainable manner.

The large extent and relative intactness of forests in the landscape means wildlife is relatively present across the entire landscape, i.e. also outside of protected areas. While this is positive in the sense of biodiversity, it also means significant economic losses for farmers brought about by wild animals damaging crops or killing livestock (and in few cases humans). This is not offset by any gains directly related to wildlife or by concerted efforts to reduce damage.

Public economic benefits within the landscape would include the protection of infrastructure such as roads from damage (e.g. landslides) and water resources, and the potential to develop tourism in the region.

Forest restoration can contribute significantly to the Ethiopian climate change mitigation targets, raising the carbon stocks of degraded forests as well as agricultural land (Table 6), while contributing to the achievement of the country's biodiversity target.¹⁵

Table 6: Carbon stocks in Ethiopian forests

Forest type	Carbon storage (CO ₂ /ha)*		
	Min	Average	Max
Woodland	6		49
Dry montane forest	31		440
Humid forest	64		284
Agroforestry	3		112
Plantation (all species)		148	
Bamboo	23		207

*Values show the range in the amounts of carbon stored in degraded (min) vs intact (max) forests, plantations and agroforestry systems.

Source: Mulugeta, 2015

¹³ SNNPRS Payment Regulation for visiting Tourist Attractions no. 65/2007

¹⁴ Wildlife Development, Conservation and Utilization Regulation, No.163/2008, Part 2, Art 5, paragraph 2e: Based on agreements made between a national park [...] and the surrounding communities, seasonal utilization of natural resource such as bee-keeping and honey harvesting, cutting and taking of forage and medicinal plant collection, may be permitted under controlled conditions.

¹⁵ Key biodiversity targets are to increase area coverage of ecologically representative and effectively managed protected areas from 14% to 20% by 2020 (FDRE, 2015). Furthermore, biodiversity and ecosystem services, including climate change adaptation and mitigation, shall be improved by increasing forest cover to 20%, and doubling the total area of designated wetlands as well as the area of restored degraded lands.

Crisis events and motivation for FLR

High forest cover and availability of forest products from trees and bamboo in farmland are appreciated by government and communities alike. At the same time, little initiative exists to manage and improve forest and tree/bamboo resources in a way that would ensure future availability of timber and fuel wood. As such, activities in PFM forests are geared towards provision of NTFPs and the maintenance of the rather theoretical, intrinsic values of forests (biodiversity and other ecosystem services) rather than tangible high value products such as timber. Additionally, there has not been active promotion of fast growing tree species needed for secure access to timber, fuel wood, fodder and fruit by the growing population.

The region is largely food secure and has experienced only few crisis events. Stakeholders reported impacts on farm income related to the El Nino event in 2016 in only a few areas, but landslides were mentioned in Cheta, Konta Special and Tocha woredas¹⁶. Without doubt, such events have strengthened the commitment of the federal and regional governments to incorporate environmental aspects more strongly into planning. Nonetheless, while the role of forests in protecting soil and water resources from degradation and catastrophic events is understood, the establishment and sustainable management of production forests is not (yet) a focus in a region where forest products are still available from the existing natural forest. At the moment only tourism seems to be clearly anchored in the minds of stakeholders interviewed as an income source directly linked to forests and the biodiversity they contain. The extent to which the more frequent and severe crisis events in the rest of the country are/can be used to leverage support for more engagement within the candidate landscape for FLR is unclear.

Legal requirements for FLR

Regulations of relevance to FLR exist at three levels. Resource use and land management is regulated at (i) national and (ii) regional level, and (iii) by community by-laws (including PFM). This includes forest ownership and use rights. However, to date only national and regional regulations can be enforced – and this often does not occur. In contrast, community by-laws have a strong influence at the local level but have no enforcement mechanisms beyond peer pressure from the community itself. A list of the relevant policies and legislations is provided in Annex 8. The region has set a target of 500m² of woodlots for rural households. However, this target is not translated into action within the candidate landscape, which is at least partly related to the existing capacity gaps (see chapter 3.3.3).

¹⁶ During the 1st stakeholder meeting, which included participants from woredas outside the candidate landscape (study area).

3.3.2 Ecological conditions and enabling environment

Ecological conditions

The ecological conditions in the landscape are highly conducive to FLR. The many natural forests and indigenous trees on farmland provide a good basis for natural regeneration as well as the collection of seeds and seedlings to be raised in nurseries for restoration of severely degraded forest land (see examples of forests and trees on farmland in Figure 15 and Figure 16).

Soils, even on steep slopes, remain suitable for crop production and would not pose any major challenges in the establishment of forests. Furthermore, the area has a long rainy season making the landscape highly suitable for the establishment of fast growing timber species which can cover the growing need for fuel wood and construction timber. Bamboo is native in the region and can be part of the wood/timber mix.¹⁷

Crop production in the highlands occurs on permanent agricultural land. In the lowland areas shifting cultivation is practiced, owing to the naturally lower soil fertility and difficulty of controlling weeds if land is used for more than one season. Accordingly, in the highlands trees are more likely to be part of the agricultural landscape in the form of tree lines or woodlots, whereas in the lowlands trees will be dispersed across the landscape.¹⁸

Livestock is managed in a mix of guided grazing of small herds (e.g. combining animals of several households) during the day and cut-and-carry systems. At the moment, it is not considered to pose a problem for forest establishment or regeneration. Given the relatively high abundance of wild grazers and browsers in the landscape, trees may have to be protected after establishment – in particular when planting for high performance (e.g. timber woodlots/plantations) near natural forests.

Large areas affected by fire were observed in remote sensing images from the southern kebeles of Cheta and Konta Special woredas. Stakeholders indicated different causes of forest fires. In some cases, they may be lit intentionally to rejuvenate grasses for livestock. In other cases, they result from escaped fires from shifting agriculture, fire used to harvest honey, to scare away wildlife or flush out wildlife for hunting. According to the zonal Office of Environment and Forestry (Kafa zone), shifting cultivation (lowland areas) and traditional honey harvesting (lowland and highlands) in particular are key causes of forest fires.

¹⁷ Telo woreda reported substantial bamboo resources : > 8,700ha of natural bamboo and > 600ha of planted bamboo.

¹⁸ Lowland areas could not be visited in the framework of this study due to their remoteness. As a result, vegetation patterns could only be established through GIS analysis (savannah, shrubland and grassland).



Above: Belt of montane forest along the lower slopes of the valley in the southern part of Aja, Cheta woreda; the forest is bordered by mixed farm land.



Woodlands inside Chebera Churchura NP along the boundary with Seri village, Konta Special woreda; in the foreground, the road to Delba and the Gibe IV construction site.



PFM forest above farmland in Guta, Tello woreda. The forest is severely degraded.

Figure 15: Forests in the candidate landscape



Farm landscape gradually transitioning into the native woodlands near Seri village, Konta Special woreda



Intensively used farm landscape with trees along borders and streams in Guta, near the Telo woreda headquarters (Aoda town); farmers also grow bamboo for household consumption (below) and local markets. In the background, the Guta PFM forest.



Figure 16: Tree cover in the agricultural landscape

Market conditions

Good market conditions, i.e. access to markets and high product prices, can have positive but also negative implications in the context of FLR. The ability to bring forest products such as timber and NTFPs to market is an incentive to plant trees in commercial woodlots, manage forests sustainably and reforest after harvesting. However, without control, high demand for timber from indigenous species or certain NTFPs is likely to lead to forest degradation.¹⁹ Good market infrastructure will also be an incentive to produce more agricultural cash crops. Forests, particularly if they are limited to the production of NTFPs only, can often not compete with the economic returns from agriculture, leading to increased pressure on forests for conversion to agricultural land.

Road infrastructure in the candidate landscape is poor, although efforts are underway to increase connectivity between towns. However, many villages can be reached only via very poor

¹⁹ For example, the promotion of forest coffee leads to a gradual replacement of forest tree species with coffee trees. Ultimately only a few, older trees providing shade will remain of the original forest.

roads or are not connected to the road network at all (Figure 17). As a result, agriculture is largely for subsistence. Excess production is traded in small quantities, often only locally or through a network of traders aggregating products from individual farmers at market days for onward trade to large urban centers such as Jimma and Addis Abeba. PFM was mentioned by interviewees in this context – facilitating market access not just for NTFPs but also for other products which can be aggregated and sold at better prices through the cooperative structures created for PFM. Timber or bamboo grown on farmland seems to be largely used for household consumption (fuel, construction), but is also traded locally. Eucalyptus poles and timber of exotic tree species such as Cypress and Pine can generate considerable income, as can bamboo traded on local markets. According to one respondent in Guta, Tello woreda income from fast growing bamboo and Eucalyptus is higher than from agricultural production.²⁰ If value chains are promoted properly, timber and bamboo resources can be an important income source for local communities.

In PFM, forest uses are limited to NTFPs regardless of the degradation status of the forest and its potential to sustainably yield high value timber. As a result, there is little incentive to actively promote or enrich forests with the high-value timber species, which in many cases were already extracted before forests came under sustainable management through PFM.

Basic factors for the development of tourism are in place: the landscape is incredibly scenic and situated within a complex of protected areas with abundant wildlife, and can be relatively easily reached from Addis Abeba via Jimma and Bonga. However, the necessary local infrastructure (accommodation, road infrastructure) needed to capitalize on this potential is missing.



Village in Gamcha, Cheta woreda. The village has no infrastructure such as roads, electricity or telephone network.

Figure 17: Remote villages

²⁰ Eucalyptus poles and bamboo culms were sold locally to other households. The statements of the farmer interviewed were not sufficient as a basis for economic analysis.

Policies and legal framework

Land tenure – a precondition for investment in the establishment of woodlots or sustainable forest management – is secure. As such, the issuance of land certificates giving clear user rights to farming households is completed or is near completion in all three woredas.²¹

The SNNPRS forest proclamation (147/2012) stipulates the active involvement of local communities in planning for, managing and utilizing state forests. Many forests are already under PFM, giving the forest user groups or cooperatives the duty and right to manage and use their forest according to the management plan.

The use of indigenous tree species from state forests as well as forests under PFM is in a grey zone. While not clearly prohibited in the regulation, the use of timber or fuel wood for commercial purposes has not been permitted anywhere in Ethiopia to date, with the exception of Bale eco-region in Oromia Regional State where dry and dying trees can be logged for commercial poles and posts.²² However, PFM households are usually allowed to collect fuel wood and timber for subsistence purpose.

Guaranteeing access to land for farming for rural residents is an important policy in Ethiopia (e.g. SNNP Proclamation No. 110/207) but constitutes an ever growing challenge in the face of high population growth and increasing land degradation. In the candidate landscape, pressure on land resources is still fairly low but is increasing, especially in kebeles in the more densely populated northern part of the study area.²³ Active resettlement was reported in the southern kebeles of Cheta woreda, leading to conversion of forest land to agricultural land. Despite successes in implementing the National Population Policy (1993) (e.g. Hailemariam et al., 2010), population growth, especially in remote rural areas such as the candidate landscape, remains an issue of concern.

Large-scale land investment is an important part of the Ethiopian government's development strategy. Under this policy, SNNPRS has allocated more than 450,000ha for large-scale commercial agriculture, part of which is included in the federal land bank for large-scale investments within the Agricultural Investment Land Administration Agency (AILAA) (Oakland Institute, 2011; IIED, 2012). Lands are commonly identified based on satellite imagery and expert opinion from the Bureau of Agriculture and Natural resource Management and the Investment Commission, including consultation of zonal and woreda administrations but without participation from other institutional stakeholders. Stakeholders interviewed in the candidate landscape indicated that areas earmarked for large-scale development include parts of Cheta and Decha woredas. The same area has been identified for the establishment of a formally protected wildlife corridor from Chebera Churchura NP to Kafa BR (and potentially southwards to Mago and Omo NPs).²⁴

²¹ SNNP Proclamation No. 110/207: Rural Land Administration and Utilization Proclamation

²² SNNP Proclamation No. 147/2012: Forest Development, Conservation and Utilization Proclamation

²³ For example, insufficient land for all residents and the intention to resettle them to other kebeles was reported in Keribela, Konta Special woreda (northern boundary of the Chebera Churchura NP).

²⁴ Details about land earmarked for investment were not available. In Annex 8 further details on the investment land bank are provided. A proposal or concept for the wildlife corridor was not available at the time of this study.

Social conditions for FLR

Participatory Forest Management provides a tool to involve communities living in and around forests in their management and protection, making them the direct beneficiaries of any products and revenues from these forests (box 2). PFM is commonly structured around forest user groups or cooperatives. Given that such groups rarely (if at all?) exist within the candidate landscape, PFM contributes to social development by establishing a structure which serves as a forum for information exchange and can be a basis for better access to finance or an entry point for organizations targeting other topics such as health or education. Less than 20% of forests are currently included in PFM (Table 7). However, resources and human capacity constrain the up-scaling of PFM.

The implementation of the first PFM groups started in 2005 with support from the EU funded project “Scaling up PFM” (finalized). Since then, further groups have been added and/or additional support has been provided by the Nature And Biodiversity Conservation Union (NABU) and the Government of Denmark. Forest utilization under PFM currently includes only NTFPs.

Table 7: PFM in the candidate landscape

Woreda	Kebele (forest)	PFM area	
		Ha	%*
Cheta	4 kebeles, not specified ¹	Planned 4,000	19% (out of 21,200ha)
Konta Special	Cheta Keche (Diza forest)	62	2% ² (out of 45,300ha)
	Duka Zabe (Garada forest)	86	
	Seri Shewa (Kuya forest)	102	
	Cheka Bocha (Malecho forest)	215	
	Medi Gotera (Garada forest)	316	
	Genji Genet (Madara forest)	1,002	
Tello	Oda (Shoresha)	128	17% (out of 11,550ha) ³
	Gura (Hasha-Gada)	530	
	Decha (Mara-ambocha)	565	
	Beqa (Dido)	625	
	Koba (Goma-wara)	104	

¹ PFM was started in the framework of the EU funded project “upscaling PFM”. However, the project was phased out before tangible/lasting results were achieved. A recently started project funded by the Danish government, including PFM aspects, will be implemented in selected kebeles and targeting the poorest households. The project document was not available.

² The majority of forests in Konta Special woreda are included in Chebera Churchura NP.

³ Only four kebeles were included in the analysis (see Annex 5)

Source: PFM area: Woreda forestry experts; Total forest area : UNIQUE GIS analysis and GIZ 2017

Box 2: Participatory Forest Management

Participatory Forest Management was introduced to Ethiopia in the mid-1990s mainly to address the problem of widespread deforestation observed in the country, triggered by the weak formal institutional forest management structures predisposing forests to an open access situation. PFM soon proved to be an effective forest management scheme, with many donors and development partners supporting upscaling across the country, and governments giving it policy recognition in federal and regional level forest policies. Today, about 1.5 million ha of forest across four regional states, but mainly in SNNPRS and Oromia, are under PFM. In SNNPRS, about 299,000 ha of natural forests, mainly in Kafa, Sheka and Bench Maji zones, are managed through PFM.

The formation of PFM groups is usually based on proximity and interest, but includes no formal restriction on membership. Members can be organized in forest user groups or PFM cooperatives. Membership and the rules guiding forest use and management are laid down in the forest management agreement and plan. Commercial forest uses are restricted to NTFPs such as spices, coffee, gum, bee-keeping. Group members are allowed to use timber and dead fuel wood for subsistence only. Commercial timber production has not been practiced and the law does not provide for this.

Forest management activities vary with the status of the forest. Enrichment planting with native tree species or coffee may take place in degraded forests. To avoid degradation of still largely intact forests, coffee production is restricted to wild coffee only, i.e. coffee plants are not liberated and no additional planting of coffee is allowed. Such coffee receives a price premium that creates incentive for the community to conserve forest. In some cases, e.g. in Biosphere Reserves, parts of the forest are set aside for strict conservation, i.e. no use is permitted. PFM is frequently linked to income diversification, value chain development (primarily improved marketing), as well as measures aiming at improved agricultural production and planting trees outside the PFM forest to offset any losses from reducing access to and use of forests (see Figure 18).

PFM can deliver positive environmental impacts such as slowing down or halting deforestation, reversing forest degradation and improving biodiversity conservation and water quality. Its contribution to livelihoods is highly dependent on the size of the forest, and the type and quantity of products used (coffee, honey and spices are most significant for income but are not available everywhere in significant quantities) (Winberg, 2011). The restrictions on timber utilization and poor NTFP-based enterprise development make financial sustainability unlikely. According to Aklilu et al. (2014), the impact of PFM on local livelihoods is falling short of expectations.

The establishment and organizational development of PFM groups/cooperatives into sustainable organizations takes several years. Related to this, one of the key challenges of PFM is the need for financial and technical support and backstopping beyond the average project cycle of 3–5 years. High turnover of government staff limits effective technical backstopping by local authorities for PFM groups. Leakage of pre-PFM forest uses to other non-PFM forest areas is possible. Other challenges to PFM in Ethiopia are the weak support provided to PFM groups in handling forest offenders and conflict with investors regarding land allocation.

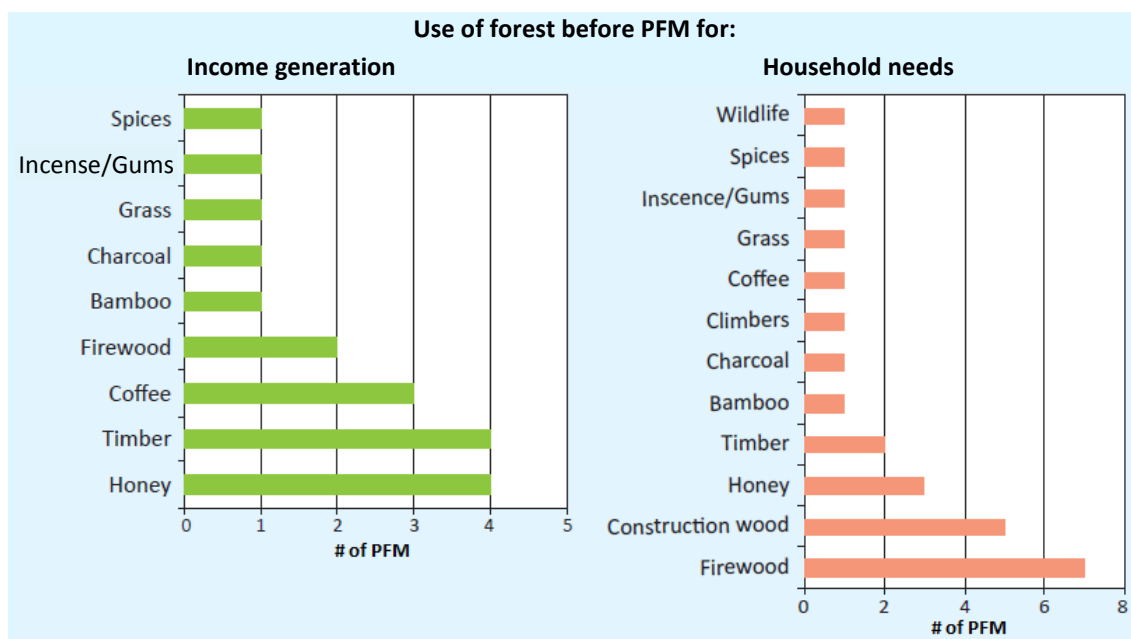


Figure 18: Forest uses prior to PFM

Source: adapted from Winberg, 2011

Institutions and organizations

The management of forest and protected areas is included in the portfolio of the Bureau of Environmental Protection and Forests and the Bureau of Culture and Tourism respectively.²⁵ The management of wildlife lies in the domain of either depending on the location.²⁶ These structures are reflected at zonal and woreda level. The zonal and woreda structures of the Bureau of Environmental Protection and Forests were established in 2016, transferring the responsibility for forest management from the Bureau of Agriculture and Natural Resource Management. The Bureau is still in the process of consolidating the newly founded administrative structures and processes. As a result, its capacity to implement and support activities on the ground is still limited. Based on the successful examples from Oromia and Amhara, SNNPRS is currently studying the feasibility of and potential for the establishment of an enterprise dedicated to commercial forest management.

The Rift Valley Basin Authority (under the federal Ministry of Water, Irrigation and Electricity) carries responsibility for sustainable watershed management within and around Rift Valley areas affecting the hydrological flow in the basin. The landscape under this study is the source of many tributaries of the Omo River. As such, the authority is a key stakeholder in the candidate landscape.

Within the candidate landscape only Konta Special woreda is covered by the Agricultural Growth Program (AGP) and the Sustainable Land Management Program (SLMP). However, interviewees

²⁵ Chebera Churchura NP, Mago NP and Kafa BR are managed by the regional government. Omo NP is managed by the Ethiopian Wildlife Conservation Authority of the federal government.

²⁶ Legislation does not specify the institutional responsibilities for wildlife which moves between protected areas and adjoining areas without protection status. According to stakeholders, the institutions have a common understanding of how wildlife is to be managed and protected.

from the kebeles included in the survey did not mention any activities implemented under these programs.

NABU supports the implementation of PFM, forest restoration, and is running an awareness program on wildlife, including a platform to report sightings of large wildlife and damages caused. The Danish government is funding a small forest and agroforestry project, including forest enterprise development such as honey production, tree nurseries and planting of trees in selected kebeles and selected households.

3.3.3 Implementation capacity

Leadership and commitment

PFM is a widely accepted tool to conserve and restore natural forests. However, while government shows commitment in forest-related regulations (see Annex 8), the actual role of PFM relies on strong support from donor funded projects and NGOs. PFM members interviewed always had a positive attitude towards PFM, which also related to the development of market linkages for both NTFPs and agricultural products. While the support for PFM in the framework of development projects is highly appreciated, the approach was criticized for being too short-lived for PFM organizations to become independent.

The establishment of a new national park, or an extension of Chebera Churchura, is at a very early stage but has the support of regional government and of the regional Bureau of Culture and Tourism. The acceptance of the idea by local, regional and national stakeholders will likely hinge on the proposed design of the national park and measures around it, i.e. whether or not it is a concept that can satisfy the need for local economic development and large-scale investments.

The federal and SNNPRS governments show their commitment to translating the ambitious climate and sustainable development targets into action by revising relevant regulation and creating institutional structures specific to forestry and environment at federal, regional and local levels. At the same time, conflicting policies exist, such as the guaranteed access to land for rural households through resettlement schemes and commitment to promoting large-scale agricultural investment. To ensure a balanced approach to development, the newly created institutions for environment and forestry will have to develop fast and need access to financial and personal resources to interact at eye level with other ministries and authorities.

Knowledge and technical design

The knowledge base for **PFM** in Ethiopia is substantial – covering a wide variety of ecosystems/forest types, forest status and societies. Much of this know-how is available within organizations such as NABU, as well from zone and woreda staff that have had the opportunity to participate in the establishment of, and provision of support to, PFM groups/cooperatives. However, turnover of woreda staff is high and external support in the framework of projects often short-lived, compromising the sustainability of the PFM organizations. Furthermore, little to no exchange between PFM organizations or with communities with relevant forest resources is taking place, foregoing the potential to learn from each other. Last but not least, PFM projects in Ethiopia exclude the use of timber, severely limiting the potential for sustainable (economically viable) forest management.

Support provided to farmers for **planting timber trees or bamboo** on their own land is minimal, i.e. government nurseries provide seedlings free of charge but no further technical support.²⁷ Furthermore, government nurseries focus primarily on the production of slow-growing indigenous tree species. Woreda forestry experts in Telo indicated that seed for fast-growing, exotic tree species is not readily available in the area.

Land use planning has not yet been implemented in the candidate landscape.²⁸ This absence of land use planning in combination with the utilization restrictions placed on protected natural forest (e.g. PFM, protected areas) and the absence of other FLR measures such as promoting woodlots on farms will lead to a displacement of forest degradation to other forests to satisfy the fuel wood and timber needs of the growing population.

Projects targeting **value addition** (opposed to improved market linkages under PFM) for NTFPs, timber and bamboo do not exist. Only Telo mentioned a project on improved honey production²⁹.

The protection and sustainable use of natural ecosystems and wildlife is clearly an important topic in the candidate landscape. As such, NABU includes educational aspects in its project, e.g., a biodiversity curriculum for schools and training spiritual leaders and youth to organize outdoor camps for children and talks about biodiversity and related topics. However, little support is given to farmers whose crops or livestock are damaged by the same wildlife that rural communities are expected to protect and treasure.

Similar to PFM, provisions for and experience with community involvement in, or around, protected areas (including e.g. controlled hunting) exist. These experiences, as well as those from strictly protected areas and game reserves in Africa, should be taken into account when drafting the concept for the extended/new national park for the wildlife corridor (see box 3 below).

²⁷ Telo woreda reported annual production of 1.2 million tree seedlings (fruit, fodder and timber species) in government and community nurseries. Each kebele has at least one nursery.

²⁸ Konta Special woreda talked about plans to pilot land use planning in Duka Zabe kebele in 2017. The pilot will use a bottom-up approach and include approx. 100 households.

²⁹ The project was at a very early stage at the time of field work, and hence, was not covered in a site visit.

Box 3: Benefit sharing and co-management of protected areas

There are a large number of protected area systems in Ethiopia. The total protected area is estimated to cover 166,756 km² or 14% of the country's land area. These protected area systems comprise different settings such as national parks, wildlife sanctuaries, wildlife reserves, controlled hunting areas, community wildlife conservation areas and open hunting areas. Biosphere reserves are not yet included. Hunting areas, including those in which local communities actively participate, make up a significant proportion of Ethiopia's protected areas covering ca. 100,444 sq. km. The SNNPRS has seven national parks (Maze, Loka Abaya, Gibe, Mago, Chebera Churchura, Nech Sar and Omo) and two biosphere reserves (Kafa and Sheka). Furthermore, two of Ethiopia's community wildlife conservation areas are in SNNPRS (Tama and Chelbi). It also contains two controlled hunting areas (Murulle and Welshet-Sala) run by the concession owner Ethiopian Rift Valley Safari. Another 18 controlled hunting areas exist in other regional states. Tama and Garamba are proposed Community Game Management Areas.

Policies and regulations on protected areas are increasingly pro-community, creating provisions for their involvement and sharing of benefits, including e.g. the Wildlife Policy of 2005, the Development Conservation and Utilization of Wildlife Proclamation No. 541/2007, and the Wildlife Development, Conservation and Utilization Regulations No. 163/2008. The SNNPRS also has a policy framework providing for the sharing of benefits from tourism and related incomes with local communities (Regulation No. 65/2007). The management structures used for community-based controlled hunting areas are similar to those used for PFM, with the exception of the multi-stakeholder benefit sharing.

Finance and incentives

Improved access to and economic benefit from forests by communities is without doubt the biggest incentive to manage them sustainably. In the case of PFM, forest use is on the one hand limited (i.e. excludes timber and live fuel wood) but often offers new or improved income streams from NTFPs. The extent to which these benefits can offset the constraints placed by PFM is not well understood and varies with the uses and income derived before and after PFM from a particular forest. As already indicated above, PFM on its own, i.e. without accompanying measures making available other fuel/timber resources and improving/diversifying household income, is likely to be unsustainable in the long run.

Examples from elsewhere (e.g. UNIQUE, 2016), but also the experiences shared by a farmer in Telo, show that planting timber trees and bamboo can compete economically with many agricultural crops. As for other products, marketing infrastructures and technical support are key for successful investments.

The only scarcely (if at all) inhabited woodlands and savannah as found in the south Konta Special and Cheta woredas are perceived as unproductive, low value lands by many policy makers, opening them up to large-scale investment and resettlement schemes. To protect such ecosystems, conservation concepts have to include concrete ideas for income generation such as tourism, controlled hunting and – where feasible – the identification of areas where commercial projects can be implemented without compromising/being compromised by wildlife.

Incentives or subsidies for tree planting applicable to the candidate landscape could not be identified. However, government-run nurseries do provide seedlings free of charge. Tax incentives exist for the establishment of forest plantations but are rarely applicable to small-scale farmers who do not pay any income taxes.

Monitoring, evaluation and support systems

The organization responsible for monitoring the development of forests is the Bureau for Environment and Forestry. However, given its recent installation, the Bureau does not yet have the capacity to monitor forest development and related activities.

PFM is monitored in the framework of project M&E. However, landscape aspects extending beyond the forest or community in question are usually not included in project monitoring. NABU's incidence-based reporting of wildlife may allow some conclusions to be drawn regarding the status of the environment and connectivity.

3.4 FLR potential, opportunities and barriers

The **potential area** of the three FLR measures – restoration of natural forests, agroforestry, and establishment of woodlots and plantations – was estimated taking into account the current land cover and use, terrain and distance to human infrastructure. Additionally, the potential for measures focusing on ecosystem conservation was assessed (Table 8 and Figure 19).

In line with the large share of forest land in the landscape, the potential to restore and sustainably manage these forests (across 25% of the total area) is high. Of similar magnitude, the mix of forest, savannah and grassland almost devoid of human influence in the south of the candidate landscape has potential for the establishment of a protected area. Land in the vicinity of human settlements already used for permanent agriculture, grazing or agroforestry, or severely degraded forest (shrubland) can be intensified to ensure the provision of agricultural crops and, on steeper slopes, fuel wood and timber.

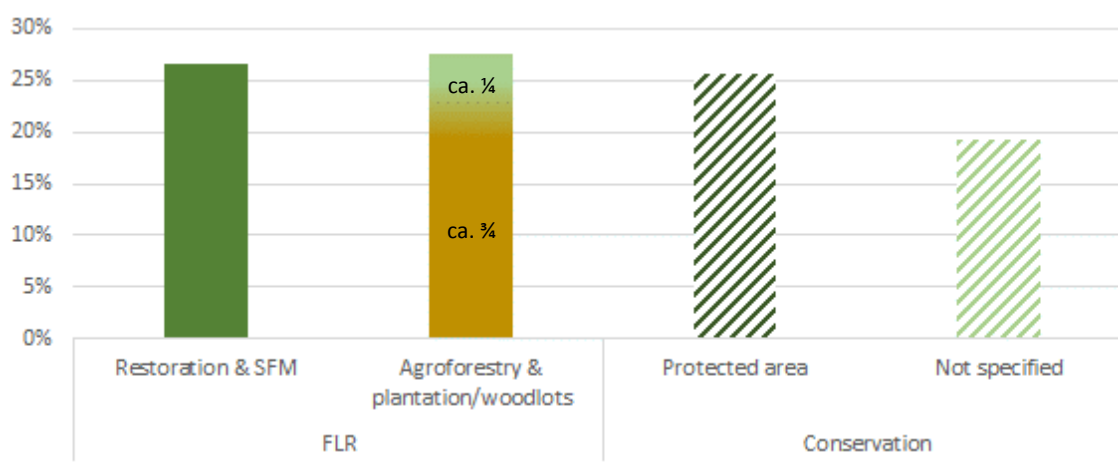


Figure 19: FLR and conservation potential in the candidate landscape

Source: UNIQUE GIS analysis

Table 8: FLR and conservation potential in the candidate landscape

Land use option		Lands included ¹	Area
Forest Landscape Restoration	Restoration and sustainable management of natural forests	Forests at a distance <3km from settlements and roads	26,024
		Shrubland at a distance >3km from settlements and roads	5,373
		Sub-total	31,397
	Agroforestry ²	Agriculture and grazing land <25° slope	18,388
		Shrubland at a distance <3km from settlements and roads and <25° slope	7,304
		Sub-total	25,692
	Establishment of commercial plantations and woodlots	Agriculture and grazing land ≥25° slope	3,770
		Shrubland at a distance <3km from settlements and roads and ≥25° slope	2,978
		Sub-total	6,747
Conservation	Establishment of protected areas ^{3,4}	Forest, savannah and grassland at a distance ≥6km from human settlements	30,175
	Not specified e.g. buffer zones to protected areas with limited resources use	Forests at a distance ≥3km and <6km from settlements and roads	10,864
		Savannah & grassland at a distance <6km from settlements and roads	11,823
		Sub-total	22,687
Other		Settlements, roads, water	991
Total area candidate landscape			117,689

¹ Refer to Section 3.2, Figure 13.

² Agriculture and grazing land including trees dispersed across the landscape, in lines and home gardens etc.

³ The area stated must not be taken as conclusive. Rather, it may serve as basis for further detailed studies in preparation for the establishment of a protected area.

⁴ The area stated includes part of the existing national park.

Source: UNIQUE GIS analysis

The implementation of FLR now, while forests are still abundant, provides a unique **opportunity**. If well harmonized across the landscape, the active promotion of best agricultural practices, forest restoration and ecosystem conservation in parallel has the potential to disconnect economic development from the forest transition curve (refer to section 3.2). However, in order to do so, a range of **barriers** related to the lacking infrastructure, the missing “need” for action, the low institutional capacity and the limited FLR-related know-how have to be addressed (

Table 9: Barriers and opportunities for FLR in the candidate landscape
).

Table 9: Barriers and opportunities for FLR in the candidate landscape

Barriers	Opportunities
Missing “need” for action and conflicting policies Relative food security, high availability of forest products, and the absence of major land-use related disasters make the area low priority for both government and donor community investments. Given the high forest cover, the need for investments in commercial forestry with fast growing species will not be easy for policy makers to understand. Ethiopian policies are geared towards fast economic growth, favoring large-scale investments in agriculture and “land for all”. In combination with low investments in agricultural productivity of smallholders and high population growth “low value forest” cannot compete.¹	Positive attitude of the population towards forests Forests are perceived as integral and important parts of the landscape. Pro-forest policies will be supported by the population – especially if linked to income generation. Commitment to green growth The Ethiopian government is strongly committed to economic development without undue harm to the environment. Land management related disasters elsewhere Other regions in Ethiopia have experienced major drought, declining soil fertility and floods amongst others, providing an incentive to implement mitigating measures at an early stage. High natural “capital” The region can build on its wild and beautiful landscape, high biodiversity and already established protected area network to further develop tourism as an alternative income earner.
Low institutional capacity The responsibilities for agriculture, forestry, wildlife and ecosystem conservation are divided between three different government institutions, governing different parts of the same landscape. Coordinating structures needed for harmonized action at the landscape level are not in place. The recently established Bureau of Environment and Forestry has yet to establish its operational [and power] structures. Extension services for forestry and related value chains are virtually non-existent outside (donor-funded) PFM projects.	Lessons learnt in Oromia and Amhara Considerable experience of the institutional and operational set-up of forest administrations is available from the earlier established regional forest administrations and forest management enterprises in Oromia and Amhara. Lessons learnt can be applied to refine and complete the organizational set-up and processes of the Bureau of Environment and Forestry and its relationship with other administrations.
Limited FLR-related know-how Forest-related projects in the landscape have a very singular focus on forest conservation, be it in the form of protected areas or PFM excluding fuel wood or timber. Expertise relating to, and investments² in, fast-growing timber species are low. Support services for capacity building of grass-roots organizations (e.g. PFM cooperatives) and for forest product value chains are not available outside/after donor-funded projects. Farmers receive little support on how to manage/prevent damage from wildlife. Compensation for damage caused by wildlife is not available.	Traditional knowledge Traditional knowledge on natural forest management, and trees and bamboo as part of agricultural production systems exists and can be built upon. Cooperative union structures Unions can take on the responsibility of backstopping for existing PFM cooperatives after project-funded support has ceased. Potential for public-private partnership Some NTFPs (honey, coffee) and tourism are attractive to private sector investors and can be developed in partnership with e.g. development organizations.

Table 9: Barriers and opportunities for FLR in the candidate landscape

Barriers	Opportunities
Lacking infrastructure The poor road infrastructure severally limits access to services and markets by communities. Poor accessibility poses a barrier for development and business-oriented investments alike.	Farmer to farmer networks Existing networks between communities can be used to pass on information and know-how, also reaching the more remote villages.

¹ In particular, forests of lower natural productivity (woodlands) or degraded forests with limited availability of NTFPs and/or without use of timber.

² For example, species research or seed production.

4 PROPOSED STRATEGIES AND NEXT STEPS

4.1 Proposed strategy

The proposed strategy for the candidate landscape is to implement a **comprehensive set of FLR measures to ensure the long-term sustainability of protected areas** and conservation of biodiversity within agricultural and forestry production systems. FLR measures will promote sustainable forest management and agriculture and the development of forest product value chains and tourism **outside protected areas**.³⁰

The proposed strategy has four key components:

- **Institutional capacity building**

Institutional capacity building of the Environment Protection and Forest Authority as the key government organization responsible for the implementation of FLR outside protected areas, focusing on the relevant zonal and woreda offices as well as the implementation of cross-sectoral coordination structures and processes. Furthermore, the Authority can be supported in the establishment of an enterprise responsible for the management of production forests.

- **Development of the proposed wildlife corridor, including buffer zones**

Supporting the design of the proposed wildlife corridor, taking into consideration environmental and economic development aspects, traditional land use rights, financial sustainability, and benefits to – and co-resource management with – neighboring communities, amongst other aspects.

- **Implementation of forest restoration**

Comprehensive design and implementation of forest restoration measures including the restoration of natural forests and their sustainable management, agroforestry, and establishment of woodlots and plantations for subsistence and commercial purposes. The design of FLR should be based on land use planning and take into consideration the conservation of biodiversity in the productive landscapes.

- **Forest product value chain development**

Improving the production of and marketing for NTFPs, wood and bamboo by promoting the establishment and capacity building of community-based organizations. Developing FLR business models for private sector investments and their implementation in pilot projects, e.g. for value addition to forest products and tourism.³¹

The likely **lead institution** for FLR is the Authority for Environment Protection and Forests, working in close cooperation with the Bureau for Agriculture and Natural Resources Management, the Bureau for Culture and Tourism, and the Rift Valley Basin Authority.

The implementation of the strategy in the candidate landscape would be complementary to other land use oriented programs such as the Sustainable Land Management Program and the Agricultural Growth Program. Given that the special circumstances in the landscape (high forest cover, high biodiversity values and many nearby protected areas) present both advantages and

³⁰ During the 2nd stakeholder workshop, participants pointed out the need to include wetland management in the strategy. As wetlands were not a focus of the assessment, they were not explicitly included here. However, wetlands can be understood as a landscape component embedded in the mosaics of agricultural, forested and protected area systems. Hence, they are indirectly included in the wider Forest Landscape Restoration context.

³¹ Early private sector engagement should be supported in the form of public-private partnership.

disadvantages for FLR, the implementation of the strategy would generate know-how which could be transferred to other areas with similar circumstances.

4.2 Recommended next steps

The following activities are recommended to prepare for the implementation of the strategy:

1. Conduct a detailed capacity building needs assessment for the Environment Protection and Forest Authority and develop an action plan, prioritizing the capacity gaps and identifying potential partners to close these gaps.
2. Assess options and the necessary institutional framework for integrated land use planning for the landscape. Land use planning should have at least two components:
 - Macro-level planning for the entire landscape, where the complex system of high conservation value ecosystems and wildlife movement, existing and planned infrastructure, and centers of human population can be reflected adequately.
 - Micro-level land use planning, to embed the needs and detailed knowledge of local communities.
3. Closely linked to land use planning, the Bureau of Culture and Tourism can be supported in conceptualizing the proposed wildlife corridor. Potential aspects of interest beyond the identification of suitable boundaries are:
 - Compilation of a balanced assessment of the pros and cons of establishing a protected area including, amongst others, the potential for and threats posed by other development options such as large-scale agricultural investments.
 - Assessment of the most suitable protection status, or combination of different ones using a zoning approach (e.g. national park, wildlife sanctuary, community wildlife conservation area, controlled hunting area) taking into consideration e.g. traditional land use rights, financial sustainability, and community participation and benefits.
 - Development of investment options in the buffer zone between the protected area and human settlements using FLR mechanisms to ensure a balance of ecological, social and economic benefits around the protected area.
4. Assess and design options to reduce damage caused by wildlife to crops, livestock and human lives:
 - Wildlife management outside protected areas.
 - Adjustments to crops, cropping systems, livestock management.
5. Assess the potential for timber utilization in PFM, the required investments and safeguards and the likely impact on the long-term sustainability of PFM schemes.
6. Start active promotion of fast-growing native and exotic timber species and bamboo for the establishment of communal and private woodlots, using existing structures, namely farmer training centers and PFM. Build the necessary capacity for provision of technical advice to farmers in district and kebele administrations, and in PFM cooperatives/groups.
7. Compile information on the current availability and potential scale of NTFPs to attract private sector investment. Develop business models and explore the potential for public-private partnership for the most promising value chains.

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ANNEX

Annex 1: Workshop participants

First stakeholder workshop held in Tarcha on 3rd April 2017

Participant	Organization	Position/department
Asefa mengesha	Ameya town, Konta special woreda	Environment & Forestry
Aragaw Wondimu	Esera woreda	Environment & Forestry
Meseret Yitna	Esera woreda	Natural Resources & Agriculture
Tikuye Batisa	Esera woreda	Woreda Administration
Mekonon azezo	Esera woreda	Park Expert
Teshome Kochito	Cheta woreda	Environment & Forestry
Atnafu Ambo	Tello woreda	Environment & Forestry
Niguse W/georgis	Tello woreda	Woreda Administration
Slomon Demisse	Tercha town, Tocha woreda	Zone NR & Agriculture
Tamirat Bogal	Tercha town, Tocha woreda	Zone Admin
Getachew Zeleke	Tocha woreda	Environment & Forestry
Zenebe Biramo	Tocha woreda	Natural Resources & Agriculture
Mulualem Amanuel	Tercha town, Tocha woreda	Natural Resources & Agriculture
Alemayehu Atano	Tercha town, Tocha woreda	Environment & Forestry
Adane Tsegaye	Chebera Churchura NP	Park Warden
Getachew Beyene	GIZ BFP	Seconded to Chebera Churchura NP
Hiwot Workagegnehu	GIZ BFP	Addis Abeba office

Source: List of participants provided by GIZ

Second stakeholder workshop held in Bonga on 13th June 2017

Participant	Organization	Position/department
Asefa Mengesha	Konta Special woreda	Environment & forestry, office head
Tesfaye Menu	Konta Special woreda	Environment & forestry, expert
Kassa Mengesha	SNNPRS Culture & Tourism Bureau	
Alemu Zewude	Cheta woreda	Agriculture & Natural Resources, office head
Atinafu Ambo	Tello woreda	Environment & forestry, office head
Alemayehu Kebede	Kafa zone	Administration advisor
Sisay H/Michael	Tello woreda	Administration advisor
Ashebir	Cheta woreda	Administration, office head
Bekele Gezahagn	Cheta woreda	Environment & forestry, expert
Atumo Ango	Cheta woreda	Environment & forestry, office head
Terefe Teka	Kafa Zone	Environment & Forestry, expert
Dereje Belachew	Konta Special Woreda	Agriculture & Natural Resources
Teferi W/michael	Kafa zone	Agriculture & Natural Resources
Endashaw	SNNPRS Culture & Tourism Bureau	
Tatek kebede	Kafa zone	Environment & Forestry, office head
Tagel	Tello Woreda	Agriculture & Natural Resources, office head

Source: List of participants provided by GIZ

Annex 2: Inputs from the stakeholder workshops

First stakeholder workshop

Key success factors: Motivation

Group-1 Motivation I

Q1 Beneficiaries of FLR

- * Community around the Restoring Area
- * Agricultural business/communities (local producers)
- * Climate Smart Agriculture (CSA)
- * Exporters

Through, beekeeping, spice dev's, for Herbal medication etc...

Q2 Stakeholders answers

- * There is no strong awareness
- * little awareness

Yes, all stakeholders have willing to participate.

Q3 the most suitable areas for the 3 FLR options.

- Chetara (Gamede, Harega)
- Tocha (Oda Gofa, Malipamacha, Manta)
- Essera (Guduma, Chawuda, Churichura, Adhara)
- Kofa (Madaja, Abene, Dalka Gofa)

Current (and USG) Motivation II

- * mixed farming

Biodiversity in (potential)

- * Dadi, Koma Okechicho, Wolla Gaba, Serikha, Ganga Gera, Shaga, etc.

- * (No accessible infra dev)

Q4 (Cheta 2015 (and side))

Q5. legal Refinements

- pro No 147/2004 E.C
- local by laws (community rule)

Q6. Incentives (Investments)

- AGP (Tocha, Essera, Kofa)
- SLM (Kofa) - Phase

Thank U!!

Group-2 Motivation I

Presentation

Discussion Title

MOTIVATION OF SHS

Zone - Kafa Woreda - Tello

Kebele - Gada Gubera

Forest beneficiaries - Chama

- Community - land use mainly for Agriculture, grazing

Charcoal from forest land as daily income.

Timber production Common

- Fuel wood.

Problems in Dawuro, Kafa, Dawuro (Tocha, Essera) in 3 Kebeles.

Group 2 Motivation II

Zone - Dawuro

Woreda - Tocha, Essera

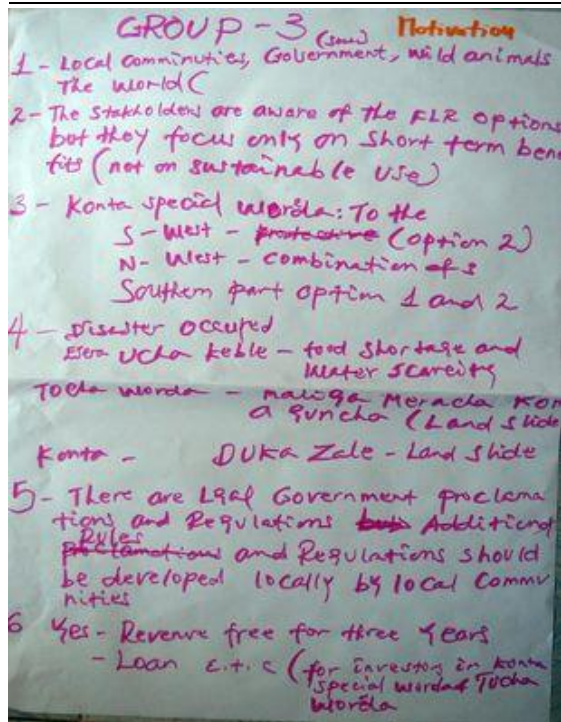
1. Tocha (Menta Guchuli, Maliga Mafacha, Oda Gofa)

- All problems are common in Tocha and Essera woreda (the same as Kafa Tello).

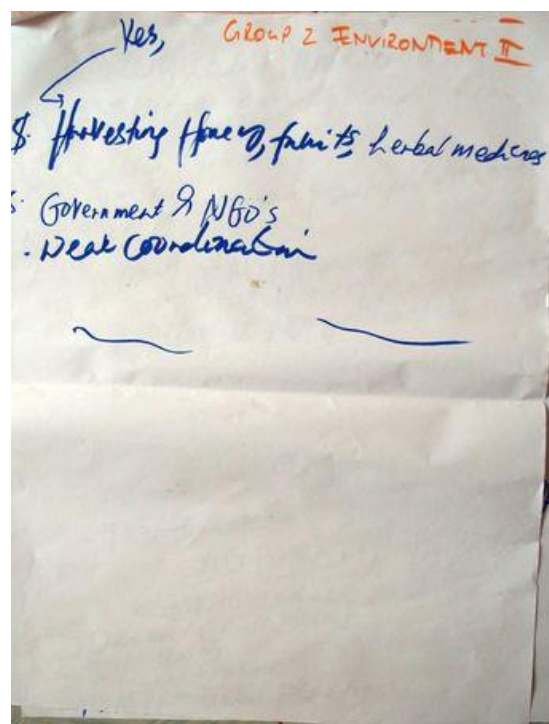
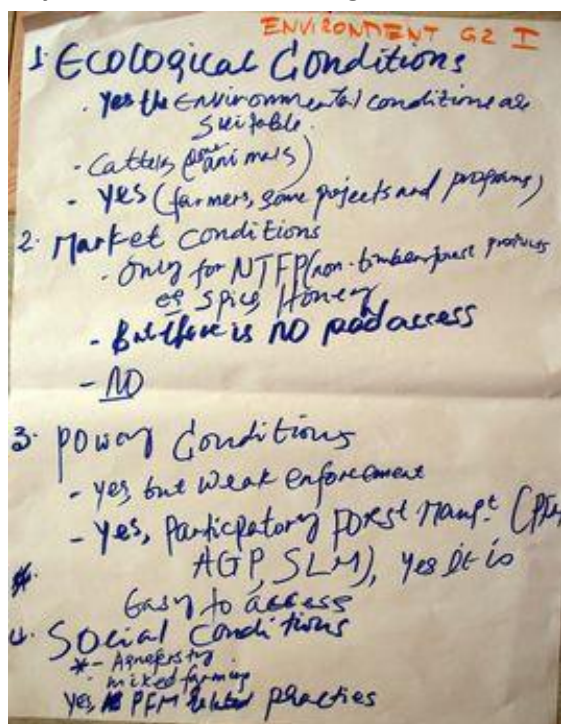
2. Essera (Chawuda, Churichura, Tulama, Kebele)

- legally, there is no forest protection & tree planting due to lack of community understanding.

Key success factors: Motivation



Key success factors: Enabling environment



Key success factors: Enabling environment

GROUP-2- Date 4/04/2015

Presentation title

Natural & Socio-Economic Environment.

1. Zone-Kafa
Woreda-Tello
Kebele-Gada Gubena, Chama & Toja

2. Ecological Condition.

- Normally, not suitable. B/c, lack of soil fertility, forest fire, climate change.
- Yes! (over grazing).
- NO! there is no available fruit & exotic native tree).

2. Market Conditions ENVIRONMENT II G2

- No market (for all Kebeles).
- No! B/c income from agricultural activities is higher than that of forest products.

3. Policy Condition

- Yes! But the policy is not functional based on rules. No, there is no suitable mg't.

4. Social Condition

- Yes! Local communities benefit from forests, (collecting firewood, timber, charcoal).

5. Institutional Condition

- Environmental & Forest mg't office by enhancing community participation.

ENVIRONMENT III G2

All the mentioned problems are common in Kafa Zone and Dawuro Zone (Tello, Tocha, Esera). Chata, Woredas.

GROUP-3 ENVIRONMENT I

1- IS NOT Suitable In areas where fire occurs outside the National park.

- fire is a management tool inside the park.
- Grazing animals (over grazing)
- Not Available there is only limited provision from Government bodies like, Agriculture office & P.F.E. office.

2- Yes! Spices, like Ginger, Coffee etc.

- Yes! Oshke dencha - oshken Agave, by collecting Adchacho, spices, honey and other forest products than agricultural products.

3- Yes there is a government rules and regulations to protect forest and natural resources, but, there is limited implementation and law enforcement.

- PFM - the local communities are allowed to collect non-timber forest products as an incentive, they are easy to access than only limited access.
- Yes -
- Yes, using forest products for subsistence, commercial, income generation, honey, spices, medicinal plants, micro climate regulation.

5 - protected areas, ETVHS protection of forest, participation of natural resource management, No of etc.

- partially

Key success factors: Capacity

(1) GROUP-1 MOTIVATION

Authorities

- Environmental protection forest office
- Agriculture and Natural Resource Management department (office)

projects: SLM, AGP

Companies, enterprises (6)

(2) Zone for supervision and coordination

Woreda technical support for DA

TOT

Kebele for field support in daily

* not in full potency

(3) Through TOT, practical displaying

Extension approach

(4) There is 'Conceptual frame work' but no accurate (and) clear plans are supported (2 moderators)

No land use monitoring yet.
But government is responsible for the implementation.

- PFM
- MERET
- REOD
- SLM
- AGP

11

GROUP-2 MOTIVATION

1 Zone - Kafa

Kireda - (Tello, Chata)

Kebele - Gada Gubera, Chama, Toja

Presentation Title

Implementation Capacity.

- 1. Authorities & Individuals (Farmers).
- 2. Zone, woreda & kebele.
- 3. Practically teaching the farmers, in the garden, field.
- 4. No land use plan in place.

Land use is monitored by preparing land use plan. All stakeholders are responsible.

GROUP-3 MOTIVATION

1- Authorities - EPR authority - Agriculture & N. Resource

- private companies, investors
- Orany wildlife & forest enterprise
- Individuals - farmers.
- projects - Salini - Gila - IV, III, GIZ RFP
- AGP, SLM, etc

2- by planning, implementing & monitoring

3- Woreda - Sherada forest by UNDP & AGP

4- Biru - Beera woreda

2 - At zone

3- Zone - then out specialized experience

Whistle - then is a gap

Kebele - then is a big gap

3- F.T.C (farmer training center) Awareness creation

4- Yes.

- by monitoring and certifying the available land for different use, or land for environment agriculture, building etc
- land management, Natural Resource and Land management, Urban Land management & planning, Kebele land management committee.
- In Jamp, Helaba special woreda, there is a big area rehabilitated and conserved by the government which was very degraded before

Second stakeholder workshop – Comments and inputs

On: Enabling environment

- Lack of coordination between the Bureau of Industry (issuing permits for forest product movement) and the Environment Protection and Forest Authority (responsible for harvest permits).
- Production of bamboo and value addition should move more strongly into the focus of production forests. However, related policies do not promote it, its use in natural forests is restricted (similar to commercial timber production) and value addition does not exist in the landscape.
- Support and extension structures for PFM are insufficient. For example, the 126 PFM groups and cooperatives existing in Kafa zone have to be covered by only one zonal officer, and two officers in each woreda.

On: Capacity

- Skillsets for implementation of PFM at authority/office level are insufficient. The trainings offered in the framework of projects are insufficient and project support to PFM is short-lived.
- The inclusion of commercial timber production in PFM could cause forest degradation unless growth and management is well understood. Furthermore, the high value timber species are on a red list, i.e. cannot be effectively harvested and transported legally unless policy and legislation are adapted.
- The Environment Protection and Forest Authority and offices lack the required skill in sustainable forest management (production).
- Protected areas are often designed without buffer zones, leading to friction with the local population. The technical design of protected areas has to be improved accordingly.
- Forestry extension services are available only at woreda level. At kebele level the agriculture and natural resources officers can provide extension but are trained in crop/livestock and watershed management rather than forestry.

On: Strategy

- Improving coordination across sectors and actors must be an integrative part of the strategy.
- Wetlands are important ecosystems in parts of the landscape and should be reflected in the strategy accordingly.

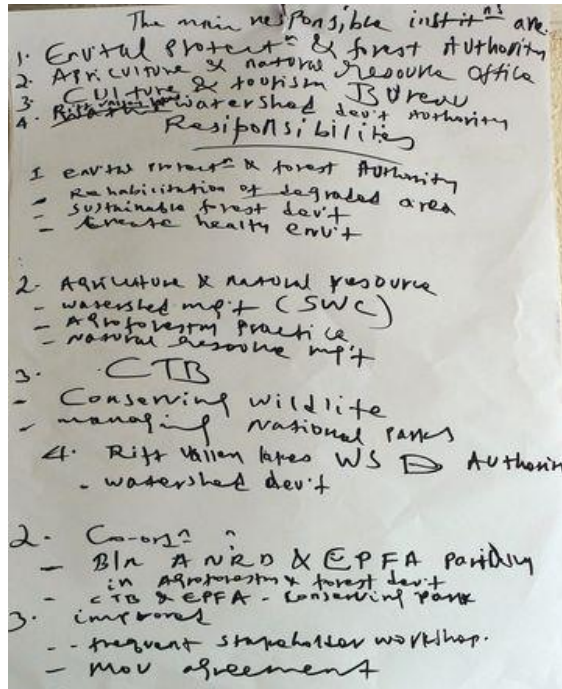
On: Recommendations regarding immediate next actions to prepare for strategy implementation

- Conduct rough macro-level land use plan as an entry point for further planning and strategy implementation.

Responses from group work

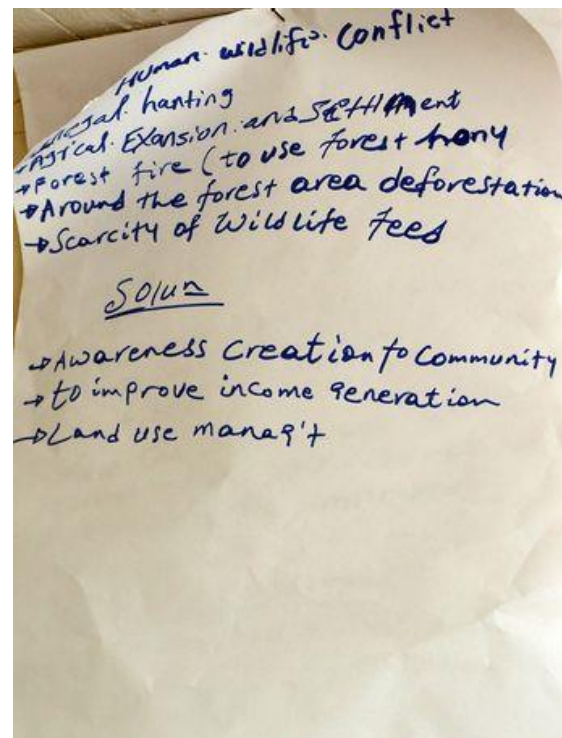
Institutional framework

- Describe the institutional responsibilities for trees, woodlots and forests, and wildlife management in the current institutional set-up.
- Are coordination structures/mechanisms in place? Please describe.
- How can institutions and coordination structures/mechanisms be improved?



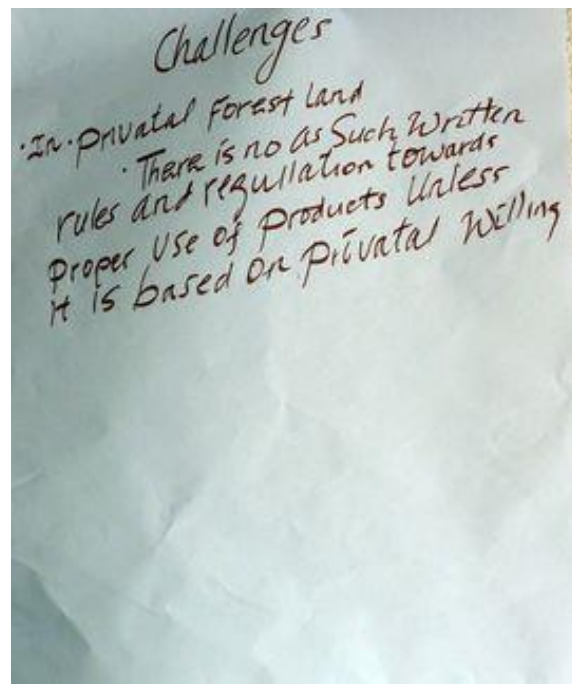
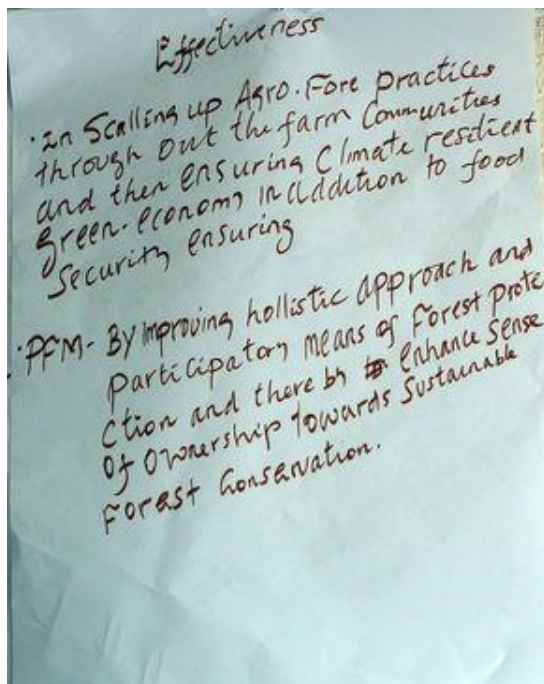
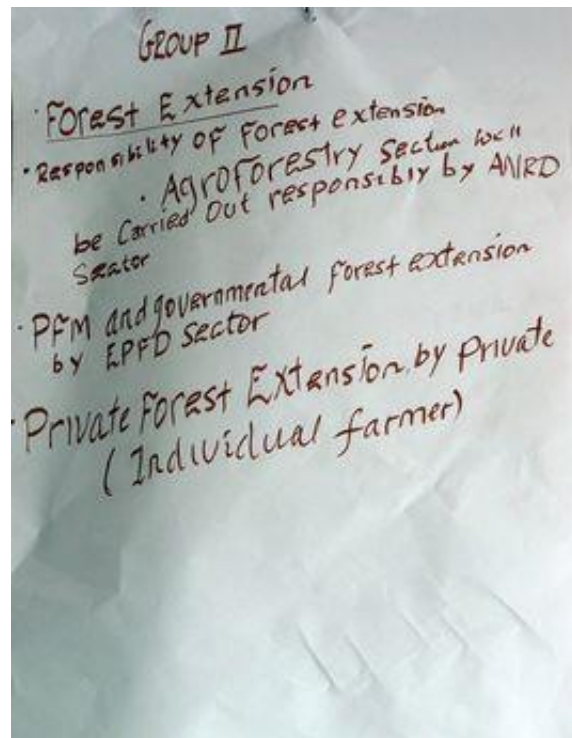
Human-wildlife conflict

- Collect ideas on how human-wildlife conflict can be addressed in the candidate landscape.
- Specify responsibilities and coordination mechanisms required.



Forestry extension

- Who carries the responsibility for forestry related extension (also include trees on farmland/private forest)?
- How effective is the system? What are key challenges and how do you think they can be addressed?



Annex 3: Land cover and use assessment methodology

The assessment was implemented in three phases:

1. Data acquisition and preparation
2. Coarse land use classification for the study area
3. Fine land use classification and identification of potential wildlife corridors for the candidate landscape

A3.1 Data acquisition and preparation

Data Acquisition

Data types used are distinguished in Raster and Vector data.

The Raster data (satellite pictures) were retrieved from ESA's (European Space Agency) Copernicus program. Sentinel 2 data was used.

Two datasets without significant cloud cover were selected, one at the beginning of the rainy season and one towards the end of it, allowing better identification of agricultural areas and open forest lands.

Vector data was provided by the client or from the Open Street Maps project. The location of larger communities and waterways were of particular interest.

Satellite data

Raw data was converted to the GeoTiff format and the two scenes were joined into one large picture using ArcGIS "Mosaic to New Raster" tool for each band individually. Merging of the individual scenes of each timeline was possible since they were recorded in a directly sequential order.

The merged image was resampled using the PROJECT tool in TerrSet, using the finest resolution available (10x10m), and projected to WGS84 (latlong in TerrSet). All bands and images used such as DEM were resampled to the matching resolution of band2 of the first time line.

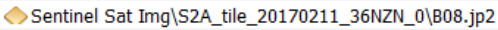
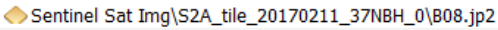
The image was cut to the area of interest using the WINDOW module in TerrSet to reduce processing time.

Mosaic to new Raster

 Mosaic To New Raster

Click error and warning icons for more information 

Input Rasters





Output Location

D:\1612 GIZ - IWP Forest Landscape Restoration Africa_TPI\03_Inhaltliche Bearbeitung\chebera_curchura\02_SatIm

 Raster Dataset Name with Extension

20170211_B8.tif

Spatial Reference for Raster (optional)

GCS_WGS_1984

Pixel Type (optional)

16_BIT_UNSIGNED

Cellsize (optional)

Number of Bands

1

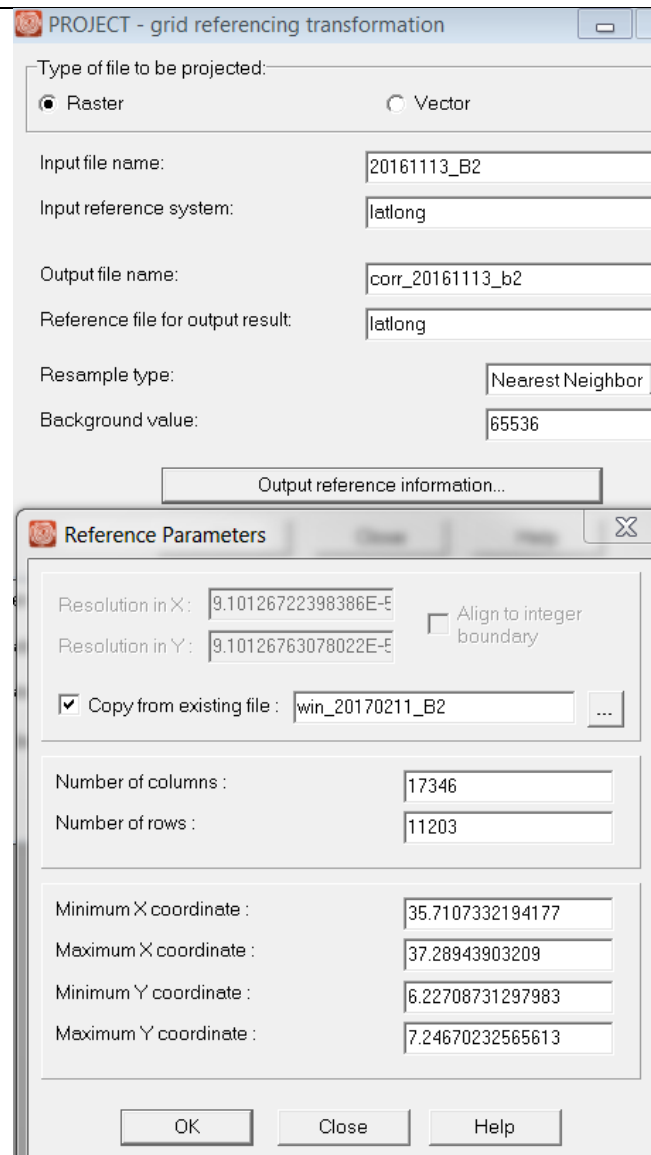
Mosaic Operator (optional)

LAST

Mosaic Colormap Mode (optional)

FIRST

Project



DEM data

The digital elevation model was resampled to the same resolution and spatial extent as the satellite image. A bilinear resampling method was used.

The created images of each band were topographically corrected using TerrSet as follows:

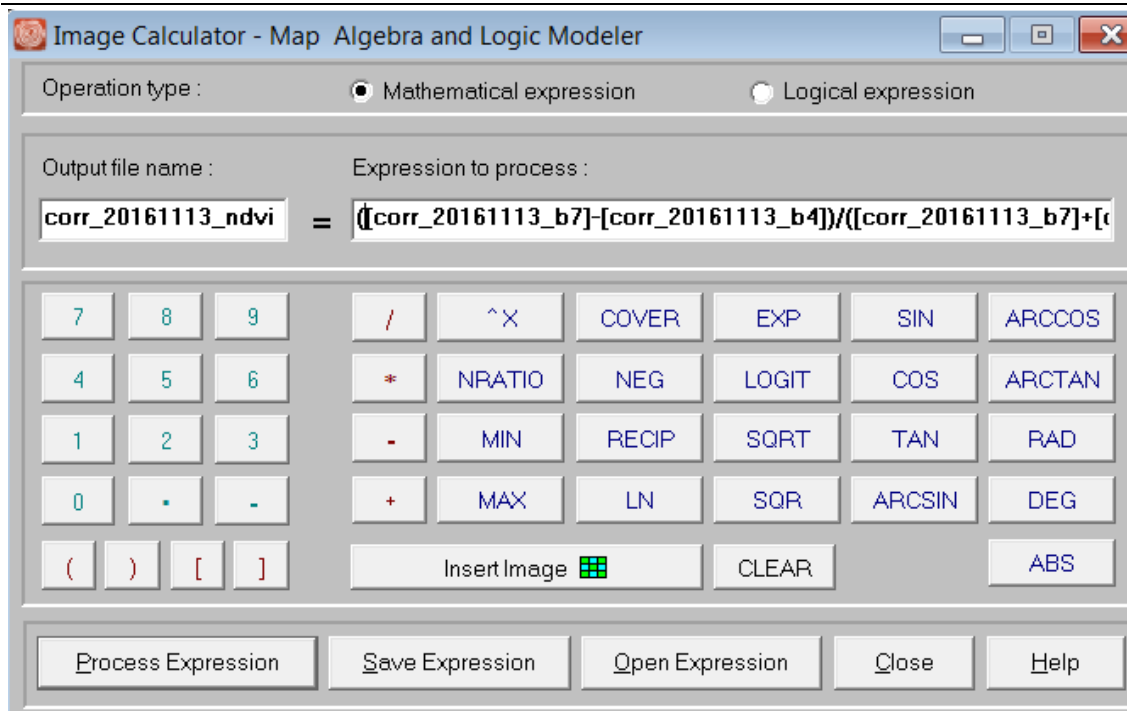
- HISTO to calculate the mean of the image band to be corrected.
- HILLSHADE (SURFACE) module to create a map of analytical hill shading.
- REGRESS to calculate the linear relationship between the hill shading map and the image to be corrected.
- CALIBRATE applying the offset and gain to the hill shading map. The result is a model of the terrain-induced illumination component.
- Image Calculator to correct the DEM image.

Calculation of natural density vegetation index

The natural density vegetation index (NDVI) was calculated on the basis of the 10m fine resolution 4 (red) and 8 (NIR), using the IMAGE CALCULATOR.

$$NDVI = \frac{NIR - red}{NIR + red}$$

NDVI



A3.2 Coarse land use classification

To classify the single pixels contained in this image an unsupervised pixel classification algorithm³² was chosen. The classification process sorts the pixels into clusters according to the values of the included bands.

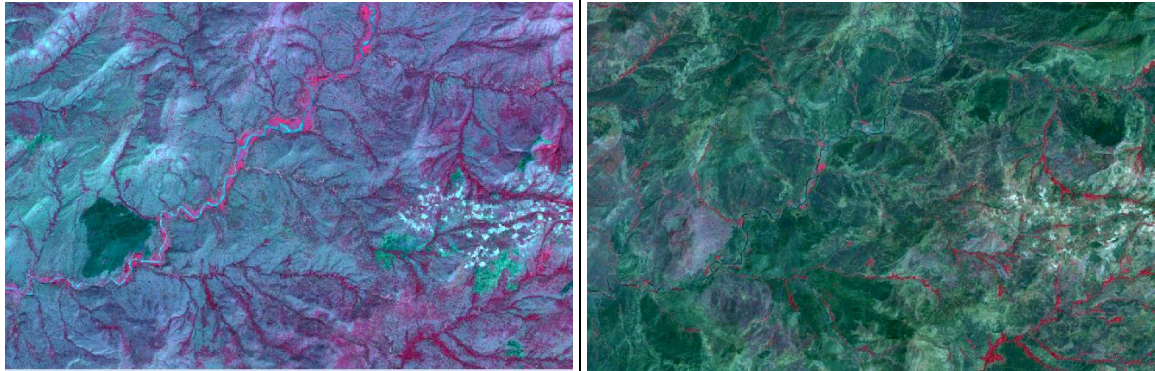
As band combination for this survey all relevant bands for vegetation analysis were chosen:

- RGB – 2 (blue), 3 (green) and 4 (red)
- NIR – 8 (NIR), 8a (NIR2)
- SWIR – 11 (SWIR1) and 12 (SWIR2)
- Red Edge – 5 (Red Edge 1), 6 (Red Edge 2) and 7 (Red Edge 3)

The processes included the image of both dates, helping to identify areas with large seasonal changes (e.g. agriculture and fire).

³² Supervised classification often results in algorithm errors based on the selected training areas or when creating training files.

Scene at two different points in time



Classification was narrowed down to 30 clusters per picture. Only the first image had 60 classes which were reclassified into the 5 initial mask images. The cluster size was chosen to have a standard deviation and Euclidean distance of each 200.

- No. of clusters: 30
- Standard deviation: 200
- Euclidean distance: 200
- Cluster centroid initialization rule: “Random partition”

The classification process was done in three steps:

1. Separation of macro classes: forest, agricultural land, savannah and forest fires.
2. Identification of micro classes within each macro class
3. Combination of the resulting images

Land use classes

In order to have one single image with all classes represented, the results of each mask were reclassified (RECLASS):

- Closed forest
- Open forest
- Shrubland
- Grassland
- Savannah
- Bare land
- Grazing
- Field
- Agroforestry
- Water / shadow
- Fire scars
- Settlement
- Roads

Images were connected using map algebra (IMAGE CALCULATOR).

Unsupervised classification process

The ISODATA dialog box is titled "ISODATA - iterative self-organizing data analysis". It contains several sections for configuring the unsupervised classification process.

Bands to be processed: A list box shows four files: corr_20170211_b7, corr_20161113_b5, corr_20161113_b6, and corr_20161113_b7. To the right, "Number of files:" is set to 20. Buttons for "Insert layer group..." and "Remove file..." are present.

Mask and Output: The "Use mask image:" checkbox is checked, with "mask_agri" selected in the text field. The "Output image:" field contains "iso_forest".

Cluster Parameters: "Initial number of clusters:" and "Maximum number of output clusters:" are both set to 30.

Cluster centroid initialization rule: Three radio buttons are shown: "Random partition" (selected), "Random seeds", and "Diagonal axis".

Stopping criteria: "Percentage of migrating pixels is less than or equal to:" is set to 1.0 %, and "Maximum iterations:" is set to 50.

Distance and Size Parameters: "Minimum cluster size:" is 100, "Standard deviation within a cluster for splitting:" is 200, "Euclidean distance between clusters for merging:" is 200, and "Maximum number of pairs to merge within an iterations:" is 2.

Buttons at the bottom include "OK", "Close", and "Help".

Reclassification of results

The RECLASS dialog box is titled "RECLASS - image classification / reclassification". It is used for reclassifying image data.

Type of file to reclass: Three radio buttons are shown: "Image" (selected), "Vector", and "Attribute values file".

Classification type: Two radio buttons are shown: "User-defined reclass" (selected) and "Equal-interval reclass".

Input and Output: "Input file:" is "iso_forest" and "Output file:" is "iso_forest_reclass".

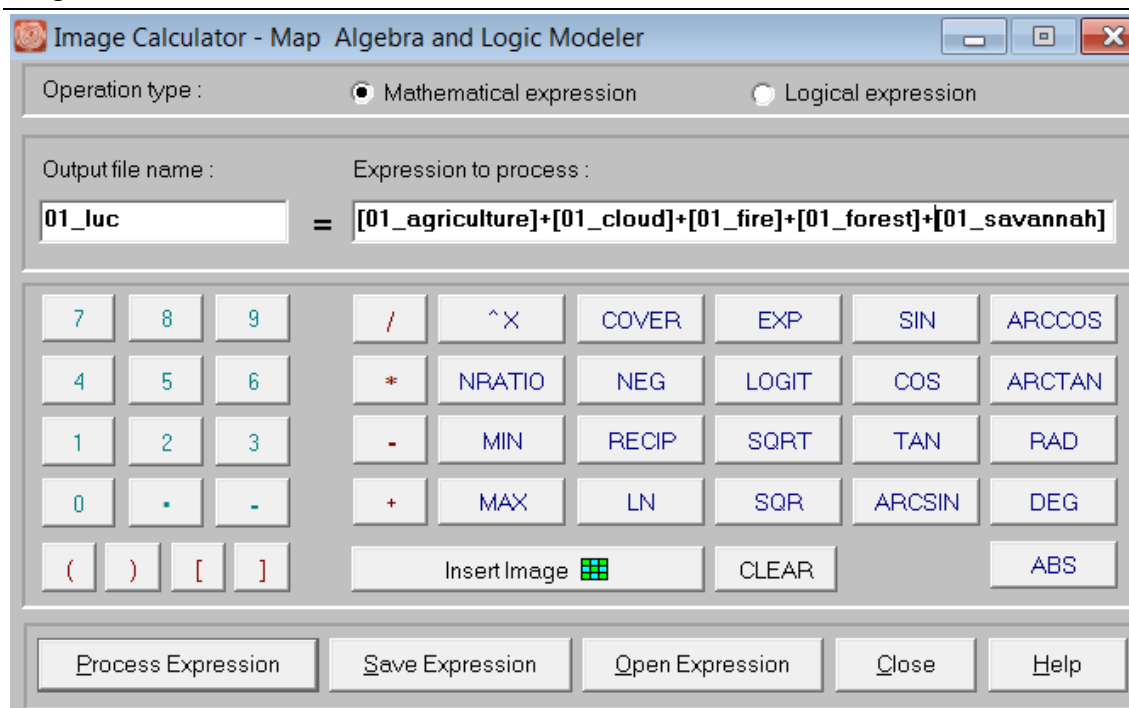
Reclass parameters: A table with three columns: "Assign a new value of", "To all values from", and "To just less than".

Assign a new value of	To all values from	To just less than
1	29	30
1	25	26
1	13	14
1	5	6

Buttons below the table: "Use .RCL file...", "Save as .RCL file...", "Remove line", and "Clear grid".

Buttons at the bottom: "OK", "Close", and "Help".

Image Calculator – connection of masks

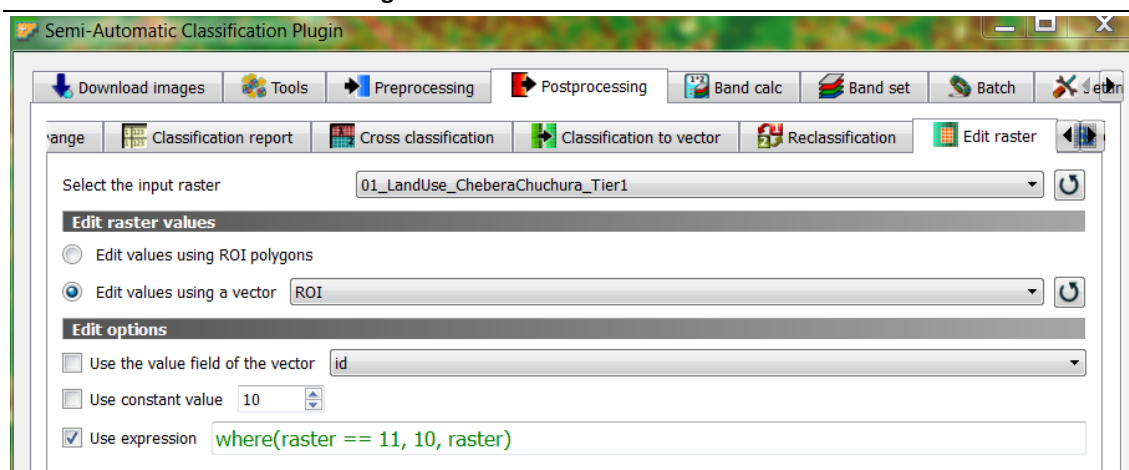


Post Processing

The post processing corrections were carried out using the semi-automatic classification plugin (SCP) in QGIS. The “edit raster” toolset makes it possible to change pixel values using polygons:

1. Create a polygon covering the area to be changed (e.g. shadows in forests)
2. Load polygon as ROI (region of interest) in the SCP
3. Specify the pixel values that are to be translated into another value or specify a certain value

Semi-Automatic Classification Plugin



Ground Truthing

On-site ground truthing was not possible. Therefore, a land use classification was crosschecked using Google Earth.

Infrastructure and Water

The information about infrastructure (roads) and waterlines was included using existing layers derived from Open Street Maps. The street layer was buffered according to its average width for each class (primary, secondary, tertiary, track). The buffered shape was used to change all pixel values underneath to the value of streets. Adjustments for “water” were conducted in a similar way, adding the new pixels to the ones already classified.

To distinguish areas of settlement, the “towns07.shp” feature was taken and the settlement areas within were delineated. These values were changed within the SCP. Values for grassland, bare soil and shrubland were changed to settlement.

Results

Ecosystems with anthropogenic influence can mainly be found in higher altitudes. Agricultural practices in the study area range from roughly 1,500m asl to 2,200m asl. Agricultural land is mostly located in accessible terrain i.e. with moderate slopes and distance to settlements. Canopy cover in agricultural land is sparse; agricultural areas are divided by bands of shrubland and open forest along the natural waterways.

Forests are mostly located at higher altitudes. Dense forests are found along ridges and the lower slopes of valleys. Dense forest is often surrounded by a fringe of open forests with crown cover of below 50%. Dense forests at lower altitudes are exclusively located along river streams. The southwestern part of the study area (altitudes <1,500m asl) is characterized by a high proportion of natural/very extensively used vegetation forms, grasslands, shrublands and sparsely stocked savannah ecosystems are dominant.

Restrictions

- Maps of waterways and roads in Open Street Maps may not be complete.
- Agricultural and agroforestry systems are often overlapping. An assessment of the proximity of forests and single trees could improve the classification towards agroforestry systems.
- Bare soil was assumed to be of anthropogenic origin. However, in some cases it could be natural rock formations, landslides or similar.
- The use of a single pixel image is better for the interpretation of structural attributes, whereas a smoothed image is better for interpretation of general landscape characteristics. The latter was used for maps and data presented in this report.
- The distinction of land cover classes containing few trees (agroforestry and savannah) is difficult using spectral signature. A more detailed manual separation was done in step 3.

A3.3 Fine land use classification and identification of potential wildlife corridors

Correction of Land Use Classification

Land use classification was refined manually, visually assessing the original raster (GeoTiff) in the area of interest (Aoi). The Aoi consisted of kebeles in three woredas: Tulo, Konta Special and Cheta.

Manual correction was done in QGIS in combination with the plugin “Semi-Automatic Classification Plugin” and the tool “Edit Raster”.

Classes of special interest were settlements and roads. These are especially hard to detect in an automated, pixel-based classification. In the raster, these classes were included using existing data from the open street maps project and visual interpretation as well as drawing.

Classes of human activity (Agriculture, Bare soil, Grazing and Agroforestry) were combined.

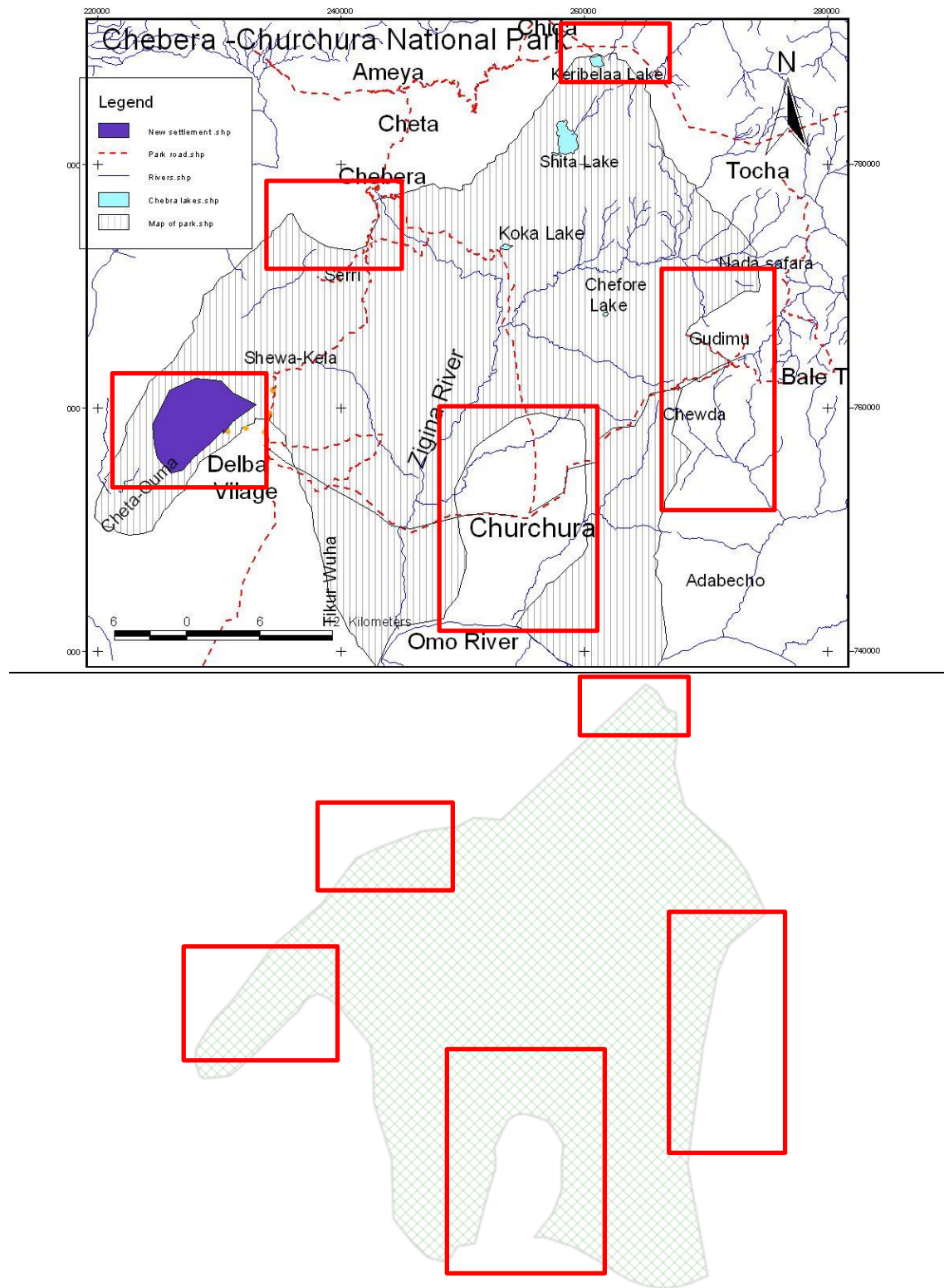
In QGIS, polygons for class changes were drawn and used in the “Edit Raster” tool, specifying certain values, e.g. changing all values with class 1 under the drawn polygon to class 2. This drawing process was done for each change needed before final processing.

The individual towns were identified and marked specifically.

Identification of areas suitable for wildlife

The areas suitable for wildlife corridors were identified in this step using a buffer around streets and settlements. Natural forest areas within the reach of human impact were included in the area suitable for wildlife regardless of their proximity to human infrastructure. Areas showing clear human activity (agriculture) were excluded regardless of their distance from human infrastructure.

Annex 4: Adjustments to the boundaries of Chebera Churchura NP



Maps of Chebera Churchura

Red rectangles show areas of substantial change when comparing the map and boundary shapefile.

Source: Chebera Churchura NP administration, 05/2017 (map) and GIZ (shapefile)

The map displays the Cheta District, which is divided into several administrative sub-districts. The districts shown are:

- TELO** (Northwest)
- CHETA** (West, shaded pink)
- KONTA SPECIAL** (Center, shaded orange)
- TOCHA** (Northeast)
- ESIRA** (East, shaded pink)

Neighboring districts include:

- Awasho** (Far West)
- Shasho** (North)
- Medigo Tera** (Northeast)
- Chawuda** (East)
- Bunanta** (Southwest)
- Shirakessa** (South)

Major towns and locations within the district include: Modiyu Bala, Modiyu Yemta, Modiyu Gonbora, Shida, Shupa, Aechiano, Shinato, Chaga, Shasha, Obara, Cheta Idge Town, Kacha, Roba, Cheta Shawura, Aba Eteri, Aba Bonga, Bedegocha Keradula, Menta Guchil, Misseyeja, Cheta Kechkacha, Ameya Town, Chere, Kodamaji, Opataso, Girawa, Mecha, Roshu, Cheta Shatera, Chama, Aeta, Wera, Mebara, Shosha, Tole, Guta, Aoda Town, Yema, Bega, Yanga, Budi, Yeha Echecha, Keshi, Kora, Koba, Werta, Arara, Key, Kolla, Gera, Sholay, Boba, Hela, Chura, Badi Shenbera, Gaba Agare, Cherebera Gora, Yara, Genji Shasho, Maliga Maracha, Chawuda, Churchurcha, Delba Genet, Kanta Aysha, Oka Agare, Anka Dencha, Banikagarasite, Bokireyaya, tobotsele, Leha Town, Tazatogalo, Shigahakesa, Telabola, Gayisa, Datalome, Aledaba, Shama Gobeno, Aziza Goyido, Dada Alza Dolcha, Felehakoyisha, Boreda golkoso, Baramekanit, Ganize, and Seri Shewa.

A scale bar at the bottom right indicates a distance of 30 km.

Land cover statistics are only provided for kebeles shown **and** falling within Cheta, Esira, Konta Special, Telo and Techo woredas.

Land cover and use in the study area

Land cover class	Cheta		Esira		Konta Special		Telo		Tocha	
	ha	%	Ha	%	ha	%	ha	%	ha	%
Agriculture	7.878	12	546	2	13.859	7	13.400	28	1.397	8
Infrastructure	81	0	0	0	499	0	290	1	43	0
Fire	305	0	468	1	2.252	1	9	0	2	0
Forest	21.769	32	10.320	29	45.281	21	19.867	42	6.746	39
Natural open	37.430	55	23.672	67	149.844	70	14.120	30	8.988	52
Water	393	1	264	1	1.454	1	49	0	59	0
Total	67.855		35.269		213.189		47.735		17.237	

The statistics only include kebeles as shown on the map above.

Annex 6: Land cover and use in the candidate landscape

Land cover and use for kebeles in ha

Woreda / kebele	Closed & open forest	Savannah, grass- & shrubland	Agriculture & grazing land	Settlements & roads	Rivers & lakes	
Cheta	Aja	199	104	573	3	6
	Arara	483	65	345	1	19
	Boba	833	548	656	2	0
	Cheta Medere Genet	4,060	20,068	1,152	4	239
	Chuchi	948	239	443	3	0
	Diya	1,264	397	573	3	0
	Duba	949	306	534	11	12
	Gamcha	2,844	8,248	433	2	72
	Haniya	1,899	2,476	247	0	0
	Key	750	99	341	15	3
	Kolla	1,239	248	908	23	2
	Kora	15	102	591	0	0
	Kushasha	2,693	1,183	521	0	45
	Shaka	590	128	417	0	0
	Shama Town	40	11	38	30	0
	Sholay	1,068	263	746	0	0
	Werta	1,313	92	563	2	42
	Sub-total	21,186	34,578	9,081	100	441
Konta Special	Albe Agare	2,213	2,407	372	0	6
	Bekeseda	2,757	6,393	937	12	17
	Gadi Shenbera	822	1,599	363	0	0
	Gba Agare	2,002	3,314	607	27	100
	Sub-total	7,794	13,713	2,278	39	123
Telo	Aemiya	719	623	1,150	30	0
	Aeta	354	64	408	1	0
	Aoda Town	132	86	88	67	0
	Chama	550	423	628	3	0
	Chura	856	441	844	6	0
	Decha	1,093	714	870	14	0
	Gadagubena	862	301	313	0	0
	Gebela	616	489	794	0	0
	Gera	414	102	640	27	0
	Guta	1,165	414	674	18	0
	Hela	1,032	407	662	8	0
	Mebara	239	240	438	0	0

Land cover and use for kebeles in ha

Woreda / kebele	Closed & open forest	Savannah, grass- & shrubland	Agriculture & grazing land	Settlements & roads	Rivers & lakes
Mesha	534	108	652	21	0
Shada	1,726	354	529	32	23
Shosha	296	516	1,018	1	0
Wera	527	220	570	0	0
Yema	439	217	518	37	0
Sub-total	11,553	5,718	10,798	265	23
Grand Total	40,533	54,008	22,157	403	587

Annex 7: FLR success factors

Theme	Feature	Key success factor	Re- sponse
Motivate	a. Benefits	Restoration generates economic benefits	Partially
		Restoration generates social benefits	Partially
		Restoration generates environmental benefits	Yes
	b. Awareness	Benefits of restoration are publicly communicated	Yes
		Opportunities for restoration are identified	Partially
	c. Crisis events	Crisis events are leveraged	No
	d. Legal requirements	Law requiring restoration exists	No
		Law requiring restoration is broadly understood and enforced	No
Enable	e. Ecological conditions	Soil, water, climate, and fire conditions are suitable for restoration	Yes
		Plants and animals that can impede restoration are absent	Yes
		Native seeds, seedlings, or source populations are readily available	Yes
	f. Market conditions	Competing demands (e.g., food, fuel) for degraded forestlands are declining	No
		Value chains for products from restored areas exists	Partially
	g. Policy conditions	Land and natural resource tenure are secure	Yes
		Policies affecting restoration are aligned and streamlined	Partially
		Restrictions on clearing remaining natural forests exist	Yes
		Forest clearing restrictions are enforced	Partially
	h. Social conditions	Local people are empowered to make decisions about restoration	Yes
		Local people are able to benefit from restoration	Yes
	i. Institutional conditions	Roles and responsibilities for restoration are clearly defined	Partially
		Effective institutional coordination is in place	No
Implement	j. Leadership	National and/or local restoration champions exist	Partially
		Sustained political commitment exists	Partially
	k. Knowledge	Restoration "know-how" relevant to candidate landscapes exist	Partially
		Restoration "know-how" transferred via peers or extension services	Partially
	l. Technical design	Restoration design is technically grounded and climate resilient	Partially
		Restoration limits "leakage"	Partially
	m. Finance and incentives	Positive incentives and funds for restoration outweigh negative incentives	No
		Incentives and funds are readily accessible	No
	n. Feedback	Effective performance monitoring and evaluation system is in place	No
		Early wins are communicated	Partially

Annex 8: Policies and regulations of relevance to FLR

Policy / proclamation / regulation	Details relevant to FLR
Ethiopian Constitution (1995)	▪ Vests the right to ownership of land and other natural resources, including forests, in the hands of state and people (Article 40); Government administers land on behalf of the people. ▪ Land may not be subject to sale or other means of exchange, therefore prohibiting any form of private or communal ownership. ▪ Guarantees the right of Ethiopian 'peasants' and 'pastoralists' to free allotment of land and to not be evicted therefrom. ▪ Private investors have the right to use land in accordance with "payment arrangements established by law".
Forest Policy (2007) (federal)	▪ The objective of the forest policy is to increase the forestry sector's contribution to economic growth by protecting and developing the forest resource and fulfilling the rising demand of forestry products and services. ▪ Stipulates provision of incentives to encourage investors, social and individual organizations to be engaged in forest resource development, which includes provision of professional and technical support, provision of seeds / seedlings at fair prices, facilitating access to credits, facilitating tax reduction schemes for farmers/pastoralists designating part of their land for agro-forestry. Green certificates for smallholder farmers and communities include tree crops. ▪ Some of these provisions are not yet implemented, limiting the flow of private investment to the forest development. ▪ Creation of awareness regarding the forest policy and strategies amongst the concerned stakeholders in order to mobilize support for implementation was not carried out properly at all levels.
Forest Conservation and Utilization Proclamation (2007) (federal)	▪ Aims to increase the contribution of forest resources to the national economy via sustainable management and utilization of forest resources. ▪ Promotes markets for forest development including private forest development. ▪ Recognizes State forest and private forest. ▪ Designation of all "major forestlands" as State forests; process should involve consulting respective communities to identify their priorities. ▪ Gives priority to community if designation and demarcation of state forest would result in the eviction of the local community. ▪ Emphasizes the participation of local communities in the management of, and sharing of benefits from, State forests. ▪ Forest rights may be granted to communities, associations or investors and are similar in substance to general land use rights. Forest Management Plans must be prepared. ▪ Private forest developers have to obtain licenses for harvesting and transporting products. ▪ The required regulation and guidelines are still in the draft stage and not yet approved in order to implement the forestry policy and proclamation. ▪ Unlike Oromia and the SNNPS, ANRS has no forest proclamation and regulation.
Federal Rural Land Administration and	▪ Ensures state and public ownership of land while establishing a framework for participation of peasants and pastoralists in managing rural land.

Policy / proclamation / regulation	Details relevant to FLR
Land Use Proclamation (2005) (federal)	▪ Mandates regions to establish land administration and land use proclamations appropriate to respective regional states. ▪ Entitles peasants and pastoralists whose livelihoods depend on farming to rural land free of charge. ▪ Provides private investors the rights to use rural land in accordance with the investment policies and laws at the federal and regional levels. ▪ Provides framework for transferring land rights to individual users, communities, and private investors through the issuance of land holding certificates, concessions, or other agreements. ▪ Provides the rights of transfer, lease or compensation for land and properties developed on it.
SNNP Proclamation No. 110/207: Rural Land Administration and Utilization Proclamation	▪ Rural youth has the right to be allocated land for agriculture by the community or government; any resident of the region who wants to engage in agriculture has the right to get land by settlement in conjunction with minimum land holdings of 0.5ha (rain-fed agriculture) leaving the option to allocate forest land for agriculture. ▪ Land $\leq$ 60% gradient shall not be used for farming and free grazing. Use is restricted to forestry, perennial plants, development of forage for animals, and similar activities. ▪ Land use rights certificates can be issued for individuals or groups, creating de-facto ownership as long as land is used in line with the regulation; land can be leased to third parties. ▪ Communities have the right to use NTFPs in state-owned forest.
SNNP Proclamation No. 147/2012: Forest Development, Conservation and Utilization Proclamation	▪ Recognizes community forest in addition to state and private forest ▪ Emphasizes the involvement of communities in planning for, management and utilization of state forest ▪ Includes the use of trees by communities in addition to NTFPs "...tree species..." in state forest ▪ Places no restrictions on the utilization of community forest

Large-scale investment in Ethiopia

Large-scale land investment is an important part of the Ethiopian government's development strategy. Ethiopia has experienced a significant increase in land allocation for domestic and foreign direct investment over the past two or so decades, attracting a significant number of investors and amount of investment. Information on land allocation for large-scale investment is not available to the public. Accordingly, reports on the total area of land set aside for investment and already allocated to specific investors include figures varying from 1.2 million to 3.5 million hectares (Oakland Institute, 2011; IIED, 2014).

Investment land is allocated through the federal land bank or through regional governments. For instance, out of around one million ha of land leased for agriculture between 2005 and 2012, around 380,000 ha was through the federal land bank; 335,000 ha by regional governments; and 335,000 ha for state-run sugar plantations. Foreign investors are important, but most land acquisition to date has been by domestic investors. Governments believe that investments in agriculture are a more productive use of the drier, less densely inhabited areas than sustainable use of the indigenous woodlands for timber and NTFPs. Additionally, conversion to agriculture is seen to contribute to ensuring food security (FDRE, 2010; Oakland Institute, 2011).

As of 2009 through the proclamation no. 29/2001 EC, plots of over 5,000 ha were to be administered by federal authorities and included in a land bank, managed by the Agricultural Investment Land Administration Agency (AILAA). Five key regions for land deals were chosen and asked to identify parcels of land of 5,000 ha and above, that would be suitable for large-scale commercial agriculture. A total of 3.31 million ha was identified in 2009 (MOARD, 2009) in Afar, SNNPRS, Gambella, Benishangul-Gumuz and Oromia. Lands included in the land bank were identified based on satellite imaging of the regions and, therefore, available information regarding their use by communities or the existence of important natural resources on the ground is imprecise. Maps of the land bank have not been made publicly available. A document from MOARD (2009) indicates that SNNPRS contributes 5% of the land registered in the federal land bank, which is about 165,500ha.

The SNNPRS has the largest amount of land allocated to large-scale investments (34% of the country's total), although only a small share of it is currently being developed (IIED, 2014). According to this study, out of the 1.06 million ha of land allocated for commercial agriculture, the SNNPRS allocated 348,009 ha land. The state-run sugar plantation in the lower Omo region (175,000ha) constitutes the largest share of land allocated for investment in the SNNPRS to date. Despite the protection guaranteed to National Parks in the most recent Wildlife Proclamation, the investment is affecting parts of the Omo and Mago National Parks as well as the livelihoods of local communities by reducing areas of rangeland and significantly constraining mobility.

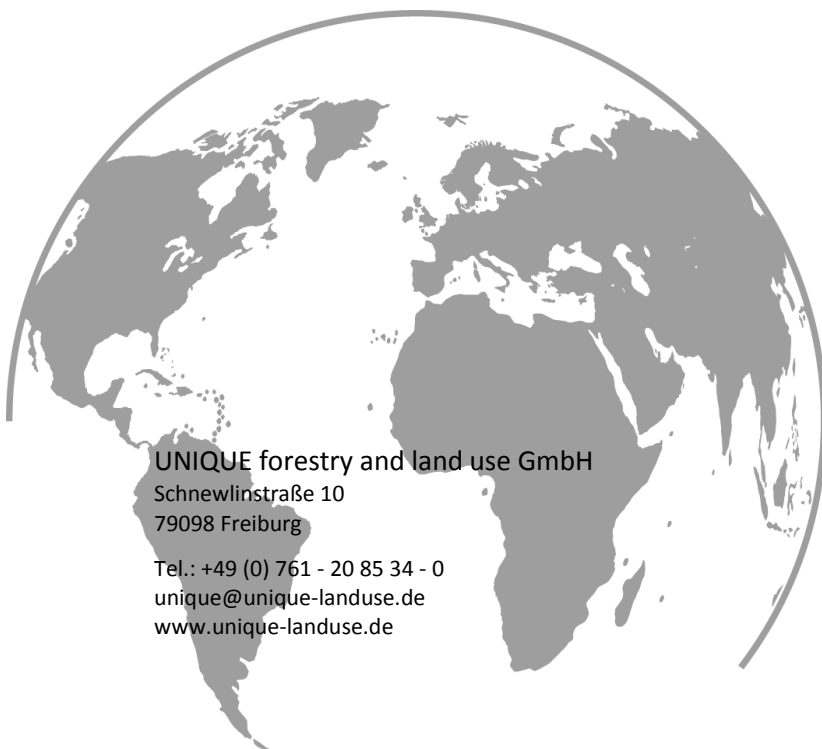
Another study by the Oakland Institute (2011) shows that about 3.62 million ha of land have been requested by domestic and foreign investors (see table below). Lands in the federal investment bank and actually allocated to investors are mainly located in four regional states namely Gambella, SNNPRS, Benishangul, and Oromia. However, the study also revealed a huge information gap with respect to the scale of investment and the precise numbers of hectares leased.

Table: Land investment statistics

Regional state	Land in the federal land investment Bank (ha)	Land estimated to have been allocated by federal and regional governments (ha)*
Gambella	829,199	256,000
SNNPRS	180,625	470,287
Benishangul	691,984	635,831
Afar	409,678	11,000
Oromia	ND	1,319,214
Tigray	ND	46,105
Somali	ND	6,052
Amhara	ND	175,000
Multi-regional	ND	500,020
Federal	ND	200,000
Total	2,111,486	3,619,509

*These figures have the potential to include double-counting. Numbers provided by the federal government may also be counted in region-specific numbers and vice versa. Therefore, all the figures should be interpreted with care.

(Source: Oakland Institute, 2011)



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