Simien Mountains National Park

Grazing Pressure Reduction Strategy

October 2015

AFRICAN WILDLIFE FOUNDATION®

Ministry of Education, Culture and Science of the Netherlands

Developed by:

African Wildlife Foundation

www.awf.org

In collaboration with the:

Ethiopian Wildlife Conservation Authority

In partnership with the UNESCO World Heritage Centre

Financially supported by the UNESCO/Netherlands Funds-in-Trust (NFiT)

October 2015

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LIST OF ACRYNOMS

AWF	African Wildlife Foundation
BNB	Blue Nile Basin
CSA	Central Statistics Authority
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
EPE	Environmental Policy of Ethiopia
EWCA	Ethiopian Wildlife Conservation Authority
EWNHS	Ethiopian Wildlife Natural History Society
GIS	Global Information System
GMP	General Management Plan
IBA	Important Bird Area
NTDP	National Tourism Development Policy
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PaDPA	Parks Development and Protection Authority
PAs	Protected Areas
SMNP	Simien Mountains National Park
TLU	Tropical Livestock Unit
TTC	Tourism Transformation Council
UNESCO	United Nations Educational, Scientific and Cultural Organization
USGS	United States Geological Survey
UNESCO-WHC	UNESCO-World Heritage Centre
WHS	World Heritage Sites
AWC	Africa Wildlife Capital
KPAC	Kebele Park Advisory Committee
WPAC	Woreda Park Advisory Committee
HWC	Human Wildlife Conflict
LULC	Land Use/Land Cover
HH	Household

EXECUTIVE SUMMARY

Ethiopia has the largest extent of afro-alpine and sub-afro-alpine habitats in Africa. The Simien Mountains National Park (SMNP) is one of the protected areas of the country set aside to conserve its exceptional habitats and the unique flora and fauna. SMNP is home to a number of threatened and endemic species including the Walia ibex *Capra walie* and the Ethiopian wolf *Canis simensis*. Recognizing its spectacular landscape and global significance for biodiversity, SMNP was inscribed on the UNESCO World Heritage List in 1978. Despite this status the park is under serious threat from expansion of settlement and cultivation, overgrazing and deforestation. Given these conditions, the World Heritage Committee inscribed the park on the List of World Heritage in Danger at its 20th session in 1996.

Communities in and around SMNP earn their livelihood from traditional mixed-farming that consists of crop production and livestock rearing. Livestock plays an important, multi-facetted role in their economy as indispensable for food supply, provision of draught power, and income generation. Environmental pressures from improper livestock production and overgrazing in SMNP is resulting in severe land degradation and disturbance of wildlife habitat, making it the most damaging land use in and around the park. Livestock in the Simien Mountains is dependent on grazing pasture and crop residues with great seasonal variations. The planning process for this strategy showed that grazing lands outside the park have been transformed to farm lands due to shortage of land for farming. As a result, communities are increasingly encroaching into the park for livestock grazing and fuel wood collection. Cattle, sheep, goats, donkeys and horses are herded throughout the SMNP, with many areas heavily overgrazed. At present, out of the total area 41,200 ha of the park, 29 % is overgrazed by livestock coming mainly from the neighboring Woredas. To date, only 37 % of the park area is free from livestock grazing. Moreover, the cultivated land for crop production inside the park covers 8.7% of the total area of the park.

The total livestock number of the 38 Kebeles is estimated at 129, 270 Tropical Livestock Units (TLU) and the average stocking rate is more than 7 TLUs per ha. For highland areas as the Simien, a maximum stocking density of only 0.5 TLU is recommended. Therefore, the current stocking rate is by far greater than the recommended level. Overgrazing due to overstocking has led to the deterioration of quality in grasslands with an increase of unpalatable grasses and reduction in biodiversity. Ultimately, soil productivity has declined and erosion intensified when vegetation cover is lost. In the sub afro-alpine areas, overgrazing is preventing regeneration of shrubs and trees. As human population is increasing these factors are expected to intensify.

Ethiopia has the largest livestock population in Africa which could play an important role in improving food security and alleviating poverty. However, grazing pressure coupled with the other anthropogenic pressures facing areas such as SMNP, it is clear that livestock production practices in and around the Simien Mountains require urgent strategic interventions. Taking cognizance of the severity of the negative ecological impacts of anthropogenic pressures on SMNP, this Grazing Pressure Reduction Strategy (GPRS) was developed through a consultative participatory process involving local communities and other key stakeholders.

This GPRS aims to reduce grazing pressure on the park and its surroundings through measures that harmonize grazing and conservation needs. Its implementation will help EWCA achieve the desired state of conservation for the removal of the property from the list of World Heritage in Danger, and the programme for corrective measures adopted by the World Heritage Committee. The strategy will serve as a guideline to significantly reduce livestock grazing in and around SMNP and thereby ensure the maintenance of the ecosystem and its ecological services. Additionally the strategy will help safeguard the outstanding universal value for which the site was inscribed on the World Heritage List.

Significant information and data was generated in the strategy development process. The strategy provides specific information on: existing socio-economic and ecological condition of the community, SMNP and its surroundings; land use/cover change of the park and its surroundings; zoning of the park for different grazing areas; a listing of activities allowed in each zone; and approaches for effective implementation.

1. BACKGROUND

1.1. Introduction

Ethiopia covers an area of 1.12 million square kilometers land with a wide variety in topography, geography, climate and culture. Ethiopia has a population of about 80 million; 85% of its population live in the rural areas (CSA, 2007). There are eight terrestrial ecosystems within Ethiopia. These range from afro alpine and sub-afro alpine grasslands, through to moist evergreen and montane forest to desert and semi-desert scrubland ecosystems. In addition there are wetlands and aquatic ecosystems. Because of the diversity of ecosystems within the country and its long history, Ethiopia is endowed with a wide diversity of fauna and flora. The country is also a center of origin and diversity for a number of crop and animal genetic resources, reflecting its long history of agriculture. Ethiopia has over 6,000 species of vascular plants (with 625 endemic species and 669 near-endemic species, and one endemic plant genus), 860 avian species (16 endemic species and two endemic genera), and 279 mammal species (35 endemic species and six endemic genera).

Ethiopia has the largest livestock population in Africa (Hussen *et al.* 2008; Solomon *et al.* 2003), which could play an important role in improving food security and alleviating poverty. However, performance in the production of the livestock food commodities in Ethiopia has been poor compared to other African countries, including neighboring Kenya (Degefe and Nega, 2000). Inadequate feed and nutrition, widespread diseases and poor health, poor breeding stock, and inadequate livestock policies with respect to credit, extension services, marketing, and infrastructure are major constraints to livestock performance (Degefe and Nega, 2000).

The Ethiopian Highlands, which cover major parts of the Blue Nile Basin, are highly populated by people and livestock whose density ranges from 37-120 person/km^2 and 27-130 TLU/km^2 (CSA, 2008). This is one of the major reasons for severe ecological degradation in this part of the country. Approximately 88% of the human, 75% of the cattle, 75% of the sheep and 34% of the goat population in Ethiopia are found in the Highlands (CSA, 2008).

The agrarian population prefers to stay in higher altitudes though declining soil quality and general environmental degradation is often reported to drive the farming population into lower altitudes. The interplay between the physical environment and population distribution in Ethiopia explains to a great extent, the ever worsening problem of environmental degradation and the problem of land degradation (Aklilu, 2001).

Ethiopia has the largest extent of afro-alpine and sub-afro-alpine habitats in Africa. One of the protected areas of the country set aside more than five decades ago to conserve its exceptional habitats and the unique flora and fauna is the Simien Mountains National Park (SMNP). It is home to a number of threatened and endemic species of which the Walia ibex *Capra walie* and the Ethiopian wolf *Canis simensis* are listed in the IUCN Red List as Endangered. Recognizing its spectacular landscape (criterion vii) and global significance for biodiversity (criterion x), the park was inscribed on the UNESCO World Heritage List in 1978.

The park has been under serious threat from expansion of settlement and cultivation, overgrazing, deforestation and associated perturbation. These anthropogenic pressures result in deterioration of the park habitats in general and decline of populations of flagship species such as Walia ibex and Ethiopian wolf in particular. Based on a report from UNESCO's monitoring mission, the World Heritage Committee at its 20th session in 1996 inscribed the property on the List of World Heritage in Danger due to the following reasons:

- A decline in the population of the Ethiopian wolf and Walia ibex;
- Continued human pressure in the park through expansion of agriculture and settlement,
- Overgrazing of the park habitats by livestock; and
- The presence of a significant road crossing the core area of the Park.

The issue of settlement extensions within the park dates back to the time of its creation, as several villages' agricultural and livestock grazing areas were included in the park. According to the rapid assessment carried out by Amhara Regional State Parks Development and Protection Authority in October 2007, 582 households were found living in the park (amounting to 3,173 people), whilst 1,477 households living in its immediate vicinity are cultivating plots inside the park and grazing livestock.

Past and present anthropogenic disturbances have impact on ecological processes of SMNP ecosystem. A 2015 land use/cover change assessment by AWF found that more than 40% of SMNP is highly disturbed by anthropogenic activities, 62.9% of the grassland area is intensively grazed by livestock and 8.7% of SMNP is currently under cultivation largely for barley and wheat. These land uses have contributed significantly to a reduction and degradation of key habitats and likely impacted key ecological processes. Households from all Kebeles around the park use it for grazing livestock.

In connection with the aforementioned human induced activities and associated perturbations, World Heritage Committee adopted correctives measures, largely based on the recommendations of the 2000 World Heritage Centre/IUCN mission, to guide a removal of the property from the List of World Heritage in Danger. The 2006 mission updated the corrective measures, which were adopted by the World Heritage Committee at its 30th session.

a) Finalize the extension of SMNP to include the Silki Yared - Kiddis Yared Mountains and the Ras Dejen Mountain with the interlinking corridors;
b) Gazetting of the new park boundaries, including the extensions of Lemalimo, Mesarerya, the Silki Yared - Kiddis Yared Mountains and the Ras Dejen Mountain as well as the realignment of the boundary to exclude certain villages;
c) Develop a strategy and action plan, as part of the planned management plan revision, to significantly reduce the impact of livestock grazing on the conservation of the property by introducing no grazing and limited grazing zones based on ecological criteria and by setting up a strict management regime in zones where grazing will still be tolerated in the short to medium term, and secure funding for its implementation;
d) Develop a strategy and action plan, as part of the planned management plan revision to support the development of alternative livelihoods for the people living within the park as well as its immediate vicinity, in order to limit in the medium term their impact on the natural resources of the property, and secure funding for its implementation.

The Committee revisited them at its 34th session based on the 2009 mission recommendations, and considered that the indicators, that describe the Desired State of Conservation and measure the restoration of the values and ecological integrity of the property, as established by the 2009 monitoring mission, should be reached to enable the removal of the property from the List of World Heritage in Danger.

It is clear that livestock production practices in and around SMNP entail urgent and strategic practices to ensure proper benefits to communities and the maintenance of ecosystem services. In response to the negative consequences of over grazing inside the park and in an effort to minimize ecological damage and introduce a management program, this study was initiated by the World Heritage Centre and undertaken by African Wildlife Foundation (AWF) in collaboration with Ethiopian Wildlife Conservation Authority (EWCA) with financial support from UNESCO- Netherlands Funds-in-Trust. The ecology of the region, animal husbandry, socio-cultural conditions and other institutional conditions were considered as part of this study, as well as engagement with the local community and a diversity of stakeholders. This grazing pressure reduction strategy is believed to play a significant role in addressing the human induced threats associated with livestock grazing to the ecological integrity of SMNP and contribute towards effective conservation of its unique fauna and flora.

1.2 Statement of the Problem

The local communities in and around the Simien Mountains earn their livelihood from traditional mixed-farming that consists of crop production and livestock rearing. Livestock farming plays an important, multi-facetted role in the Simien Mountains rural economy. Livestock production is indispensable for food supply, provision of draught power, and income generation. It has the potential to enhance the lives of the people living in the region however, for these benefits to persist this must be done in a way that safeguards and maintains the ecosystem processes and services of the landscape. The environmental pressures from improper livestock production result in severe land degradation, over-exploitation of natural resources and disturbance of wildlife habitats. Overgrazing in the SMNP has resulted in adverse environmental consequences making it the most damaging land use in and around the park.

At present, out of the total area 41,200 ha of the park 12,047.18 ha (29.29 %) is overgrazed mainly livestock coming from the neighboring Woredas of Debark, Janamora and Beyeda. Similarly, from the total grass land coverage 12,047.18273 ha of the park (62.855%) is highly affected by livestock. The grasslands with scattered trees covers about 27,708 ha (67.24%) of the total area of the park which is extensively used for livestock grazing. Therefore, 19,166.589 ha (37.145%) of the park area is free from livestock grazing. Moreover, the cultivated land for crop production inside the park covers 3,586.90 ha or (8.72%) of the total area of the park. With the total livestock number of the 38 Kebeles estimated at 129, 270.2 TLU, the average stocking rate is more than 7 TLUs per ha. For highland areas, a maximum stocking density of only 0.5 TLU is recommended. Therefore, the stocking rate is by far greater than the recommended level.

Feed availability is the most important input in livestock production, and its adequate supply (quantity and quality) throughout the year is an essential prerequisite for any substantial and sustained expansion in livestock output. Livestock in the study area is dependent on grazing pasture and crop residues with great seasonal variations. The results of this study showed that grazing lands have been transformed to farm lands outside the park due to shortage of land and fragmentation as a result the local people are encroaching the park for livestock grazing and fuel wood collection. Since grazing is providing the majority of annual feed requirements of livestock in the SMNP, the challenge is high in reducing the livestock density to mitigate the negative environmental impacts (environmental degradation) while simultaneously improving local livelihoods.

Overgrazing has led to the deterioration of quality in grasslands with an increase of unpalatable grasses and reduction in biodiversity. Ultimately, soil productivity has declined and erosion intensified when vegetation cover is lost. In the sub afro-alpine areas, overgrazing is preventing regeneration of shrubs and trees. As human population is increasing, grazing lands have been transformed to farm lands outside the park due to shortage of land as a result the local people are encroaching in the park for grazing and fuel wood collection.

Degradation inside the park area around Michibign area due to overstocking. Photo: Zaleke Tigabe

Livestock is in direct competition with Walia ibex for grazing areas, confining the ibex to the steeper and less accessible areas, and is also impacting on small mammal populations, which are the major food source for the Ethiopian wolf. Contact between wildlife and livestock are also increasing the risk for transmission of diseases.

The major driving force behind most of the problems in and surrounding areas of the SMNP is believed to be the population pressure. Population data from Central Statistical Agency (CSA) indicates that there has been significant population change in park adjacent Woredas between 1994 and 2007. The increase in human population and unsustainable use of natural resources by the local people in the SMNP is a major cause for ecological degradation and loss of biodiversity. It is well understood that the livelihood of the population in the Simien Mountains depends on mainly agriculture, thus further aggravated land degradation and biodiversity loss. Cattle, sheep, goats, donkeys and horses are herded throughout the property, with many areas heavily overgrazed. Thus, coupled with the other anthropogenic pressures, it was strongly believed that livestock production practices in and around the Simien Mountains require urgent strategic interventions.

Taking cognizance of the severity of the negative ecological impacts of anthropogenic pressures on SMNP, the Grazing Pressure Reduction Strategy (GPRS) aims to reduce grazing pressure on the park and its surroundings through measures that harmonize grazing and conservation needs. Its implementation will help EWCA achieve the benchmarks set by the World Heritage Committee.

1.3 Objectives of the Study

The general objective of this study was to develop a concrete and up to date strategy that will serve as a guideline to significantly reduce livestock grazing in and around SMNP and thereby ensure the maintenance of the ecosystem and its ecological services. The specific objectives of the study were to:

1. Assess the existing socio-economic and ecological condition of the community, SMNP and its surroundings;
2. Examine the land use/cover change of the park and its surroundings;
3. Produce a strategy that contributes to effective implementation of the SMNP general management plan;
4. Devise practical, concrete and effective mechanisms to reduce the grazing pressure on the park; and
5. Raise awareness amongst stakeholders of sustainable development and conservation of the SMNP.

1.4 Policy Analysis

The constitution of Ethiopia recognizes the importance of the environment in the overall development and well-being of the Ethiopian people. The environmental policy and conservation strategy of Ethiopia is the umbrella policy and strategy for the conservation and sustainable development of the environment and it is guided by the national policies and strategies. Ethiopia is a signatory to a number of Multilateral Environmental Agreements (MEAs), such as the World heritage Convention, United Nations Convention to Combat Desertification (UNCCD), the United Nations Framework Convention on Climate Change (UNFCC)-Kyoto Protocol, Convention on Biological diversity(CBD), Convention on Migratory Species (CMS), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which all commit the country to put in place a comprehensive and integrated management natural resources and the environment at large.

In Ethiopia, policy, laws and legal frameworks that pertain to conservation and maintenance of PAs have slowly evolved. Wildlife Development, Conservation and Utilization Policy and Strategy, Proclamation, Regulation and guidelines have been put in place in the recent past to provide for the conservation, development and utilization of wildlife in Ethiopia. The objective of the legislative framework is to create a conducive policy environment for sustainable conservation and management of the country's wildlife and their habitats and harnessing the economic benefits from the sector. The legislative framework has five major sections: wildlife resources development and protection; wildlife resources utilization; investors' participation in management of protected areas; wildlife research; and education and training and information on wildlife resources. It is also indicated that the regional states can formulate their own wildlife policies and strategies under the umbrella of the federal government wildlife policy and strategy document.

The national laws that are currently applied to wildlife conservation in Ethiopia are:

- Proclamation No. 94 of 1994 to provide for the conservation, development and Utilization of forests
- Wildlife Development, Conservation and Utilization Proclamation No. 541/2007
- Wildlife Development, Conservation and Utilization Regulation 163/2008
- Ethiopian Wildlife Conservation Authority Establishment, Proclamation No. 575/2008
- Regulation No. 337/2014 to provide re-gazettal of Simien Mountains National Park

Other Supporting Policies, Strategies, Proclamations and Regulations specifically relevant to the wildlife development, conservation and utilization include:

- Conservation Strategy of Ethiopia, 1997
- Environmental Policy of Ethiopia, 1997
- National Biodiversity Conservation and Research Policy, 1998
- Rural Development Policies and Strategies, 2002
- National Biodiversity Strategy and Action Plan, 2005
- A Plan for Accelerated and Sustained Development to End Poverty (PASDEP), 2006
- Proclamation for Government Council Ratification of the International Treaty of Endangered Wildlife and Plants Trade, Proclamation No.14/1989

- A Proclamation to amend the Institute of Biodiversity Conservation and Research Establishment Proclamation, No. 167/1999
- A Proclamation to Provide Environmental Impact Assessment, Proclamation No 299/2002
- A Proclamation to amend the Reorganization of the Executive Organs of the Federal Democratic Republic of Ethiopia, Proclamation No. 380/2004
- A Proclamation to amend the Institute of Biodiversity Conservation and Research Establishment, Proclamation No 381/2004
- Federal Democratic Republic of Ethiopia Rural Land Administration and Land Use Proclamation, Proclamation No. 456/2005
- Proclamation for Genetic Resource and Public Rights, Proclamation No.482/2005

The Environmental Policy of Ethiopia (EPE) provides a broad policy framework for management of the country's natural resources. The overall policy goal of the EPE is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, man-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to do so.

Although a variety of policies, strategies and proclamations exist, there are still some areas that need explicit legal provisions to effectively manage the PAs of Ethiopia. These areas include modalities of public-private partnerships, co-management governance systems, national categorization of PAs, financing mechanisms and resettlement issues for communities settled within PAs.

1.5 Significance of the Study

The Simien Mountains in general and the SMNP in particular, are under heavy population pressure which has threatened the wildlife resource of the mountain ecosystem through considerable reduction in the range and quality of habitats available for wildlife. SMNP illustrates the complex dilemma of reconciling conservation with development in the area of rural poverty (Hurni and Ludi, 2000). Problems of biodiversity and livelihood needs are intricately linked: without the achievement of one, the other cannot be fulfilled.

Several efforts have been initiated by the government in collaboration with conservation partners to tackle the aforementioned problems of the SMNP. However, the challenge of overgrazing persists and is escalating. A comprehensive grazing management strategy is needed to complement the SMNP General Management Plan (GMP) that considers all aspects such as: vaccination of domestic animals against easily transmittable diseases; mechanisms that separate wildlife habitats and grazing areas of domestic animals; and alternative livelihoods for communities.

A draft 'Grazing Pressure Reduction Strategy Document' was developed in July 2007 by a consultant hired from Bahir Dar University under the contract by the then Amhara Regional State Parks Development and Protection Authority. The draft strategy document identified a series of interventions aimed at zonation of the park for different levels of grazing, limiting grazing rights, reducing animal numbers, improving animal health and engaging local communities. Unfortunately, the aforementioned document had a number of shortcomings. The strategic objectives were vague and did not take into account the real and achievable solutions towards the same. The objectives also lacked verifiable and realistic targets for the grazing pressure reduction. The proposed resource uses were neither clearly explained nor spatially supported by maps. Furthermore, the draft grazing reduction strategy document was not developed through close consultation with the local community, relevant stakeholders and partners, which made its implementation difficult. It was not implemented.

To contribute to the implementation of the corrective measures adopted by the WHC which pave the way to address the key threats to the Outstanding Universal Values (OUVs) of SMNP and create suitable conditions

for a removal of the property from the List of World Heritage in Danger, the WHC, at its 37th session in Phnom Penh, Cambodia, encouraged the State Party to request international assistance from the World Heritage Fund to review the draft GPRS to identify priorities for immediate implementation as recommended by the 2009 monitoring mission. Following this, UNESCO World Heritage Centre prepared a project in collaboration with EWCA, which received financial support from the UNESCO Netherlands Funds-In-Trust. Due to AWF's close engagement with EWCA at SMNP, it was chosen as the implementing partner to carry out the review and update the strategy in collaboration with EWCA and close consultation with local communities and other key stakeholders.

1.6 Methods

To achieve the objectives of the study, different datasets were used from primary sources, secondary sources and spatial sources. The initially step involved a review of the former strategy, which enabled AWF to determine key gaps in data and recommendations. The ecology of the region, animal husbandry, socio-cultural conditions, land use/cover changes and other institutional conditions were considered as part of this study, as well as in depth consultation with the local community and different stakeholders.

To revise the GPRS in a participatory manner, a multidisciplinary team of experts in wildlife, livestock and other relevant subject areas from AWF and EWCA/SMNP were assigned to work on the development of the document as per the proposed work plan. During the review, the shortcomings of the previous draft document were identified and prioritized. A problem analysis was completed.

The development of the strategy was undertaken in a participatory way through the involvement and consultation of the representatives of the local community and relevant stakeholders. Core to the development of the strategy was the involvement of the local communities. Their participation in natural resources management decision-making processes creates a sense of ownership and increases the community's willingness to participate in implementation of solutions. Starting in November 2014, thirty community representatives from park neighboring Woredas were visited and consulted to create awareness on the project and to gather initial information. These initial meetings helped to establish a positive working relationship with the community, crucial to the long-term success of the grazing management strategy.

Further to the community contributions a consultative meeting that was held in Debark from 28 – 29 March, 2015 with EWCA park staff. At this meeting the draft resource use zones were presented and inputs from participants present were captured for the draft GPRS. In total, 23 EWCA staff members participated in the consultative meeting, including 12 selected rangers for this purpose, lawyers, park wardens and officers of GIS, ecological monitoring, wildlife protection, community development and tourism. To allow for maximum input from participants, the meeting was partially conducted through smaller groups' discussions and participants were assigned into groups representing the five Woredas. The groups were based on individual participants' experiences within each of the Woredas to ensure appropriate representation of each area.

An output from the meeting was consensus among participants on the precise location of resource use zones along the agreed areas of the park which were then recorded by Geographical Positioning System (GPS). The AWF team then worked with Global Information System (GIS) and remote sensing officers from EWCA and Bahir-Dar University to incorporate the GPS data. Maps for land use/cover change of the park and the different types of resource use zones were generated. Participants also identified salient data gaps to be filled. Moreover, the neighboring park community and the different stakeholders were engaged for primary data collection and demarcation of resource use zones using GIS and remote sensing techniques.

The draft revised GPRS developed in line with the project proposal and the agreed work plan was shared among AWF staff for internal review. After incorporating comments from AWF staff, the draft strategy was shared with UNESCO for more inputs. Comments and inputs were in cooperated and six consecutive workshops were held at different levels. Workshops were organized by AWF in collaboration with EWCA and

Amhara Regional State President office with the objective of soliciting for more inputs, creating awareness and rafting the way forward for the implementation of GPRS. The workshops were held in Debark, Mekne-Birhan, Dil-Yibza, Adi-Arkay, Dejach-Meda and brought together 500 participants drawn from the relevant federal institutions including EWCA and SMNP, Gondar and Bahir-Dar Universities, administration bodies of Amhara Regional State, local community representatives, journalists, religious leaders, Community Based Organizations (CBOs), local NGOs, opinion leaders and resource persons.

A total of 50 participants attended the workshop organized in Gondar including top level officials from the local and federal governments that comprised of invitees from EWCA, SMNP, Regional President office, Bureaus of Culture, Tourism and Parks Development, Environmental Protection, Land Use and Administration, Justice and Agriculture, Livestock Agency, Gondar and Bahir-Dar Universities, Regional and Zonal high courts, North Gondar Zone Administrator, Culture and Tourism Department, Department of Agriculture, Department of Justice, Department of Environmental Protection, Land Use and Administration, the five Woredas Administrators, the five Woredas Environmental Protection, Land Use and Administration office heads, guide association, ecotourism association, a representative from Austrian Development Cooperation financed program and religious leaders.

Strategy development workshop in Gondar. Photo: Zeleke Tigabe

Similarly, the workshops organized at the five Woredas were attended by Woredas cabinet members, the kebele cabinet members, local community representatives, religious leaders, kebele ecotourism association representatives, key informants, local NGOs working in the area and government officials.

AWF collected secondary sources of information through review of available literatures from government publications, reports, previously conducted surveys, published and unpublished research reports, CSA survey results and evaluation reports made in SMNP and surrounding Woredas.

To develop land use/cover change Landsat 5 and 8 images with 30 m resolution was downloaded from United States Geological Survey (USGS) (www.usgs.gov) to drive land use/cover information. Using ground truthing

data supervised image classification was developed for the year 2015 whereas unsupervised image classification was done for the year 1986 using Earth Resource Data Analysis System (ERDAS) imagine 9.2 software. The mapping and statistical analysis was done using ArcGIS 10 software. ArcGIS 10 was also used for manipulation, editing and viewing of geographic and tabular data. To validate the supervised image classification, Google earth image was used.

Data collection formats were developed for vegetation surveys and the collection of information on wildlife. Based on the preliminary land cover map and in consultation with wildlife officers and other key informants, data and information on wildlife habitats in the park were collected. These include data on habitat use, seasonality, and routes frequented. Further, location of animal watering places, frequent wildlife-vehicle collision areas and man-made features were registered. In areas that lacked vegetation information, survey of vegetation classes was also carried out. Information gathered and observations made were registered in formats developed and in reference with registered points (GPS location). In addition, representatives from the following offices were consulted: Bureau of Agriculture, CSA, Ethiopian Mapping Agency, Bureau of Culture and Tourism, Bureau of Environmental Protection and Land Use, Livestock Agency, Gondar and Bahir-Dar Universities.

Information collected in the study area was qualitative and quantitative. For the qualitative data, simple analyses techniques were used. Descriptive statistics and matrix were used to analyze the quantitative like use of matrix. Computer software such as Excel and SPSS were utilized to analyze collected data. GIS and Remote Sensing techniques were used to generate land use/cover maps, different resource use zones and potential wildlife habitat map. To resolve the challenge of getting up to date and reliable data a number of activities were undertaken which included:

- Consecutive workshops were organized with different stakeholders and local community to raise awareness, solicit input and outline way forward for the implementation of the strategy;
- Consultations with experts/managers in relevant subject areas including community representatives;
- Synthesizing and analyzing primary sources of information;
- Developing GIS layers for the park;
- Resource use zones and boundary mapping was developed;
- Spatial information on land use/cover change was generated from field assessments using GPS;
- Assessment and mapping of potential wildlife habitats were generated to guide the field work;
- Synthesizing and analyzing secondary data/information from existing reports and literatures;
- Informal group discussions were held with elders who have in-depth knowledge of the landscape;
- Maps developed by the Ethiopian mapping agency was used to verify the year 1986 land use/cover changes information; and
- Using Landsat 5 and 8 images for the year 1986 and 2015 the land use/cover change with spatial extent was generated;

Generally the strategy development process provided clarity on key areas of concern and agreement among stakeholders and partners on the causes and drivers of the same issues and indicated the way forward in addressing them. Stakeholders are now clear on and agree on many issues including:

- The primary threat in to the ecosystem is overgrazing driven by human activities;
- Based on the vision of co-existence and mutual benefit of park and people, the strategy for reducing grazing pressure has been formulated by AWF in consultation with EWCA and other stakeholders;
- Grazing pressure reduction should be an integral part of the 10 years general management plan (GMP) of the property;
- Awareness and agreement on resource use zones for the different grazing levels among stakeholders including EWCA and communities;

- Information on resource use zones, land cover classification, mapping of potential wildlife areas and land use/cover changes are readily available on maps and accessible for all stakeholders;
- This GPRS is achievable as priorities and targets for immediate implementation have been clearly identified and articulated;
- A common understanding and sense of ownership among stakeholders including EWCA regarding the updated strategy, thus agreement on integration of the strategy into the management of SMNP;
- The developed strategy is clear on technical and funding needs, and potential sources for the same takes into account the available technical and financial means from AWF, EWCA and other partners;
- Consensus has been reached on the roles and responsibilities of stakeholders and partners for implementation of the GPRS;
- Agreement has been reached among the stakeholders and partners on the importance of integration for the successful implementation of the GPRS;
- A common understanding was reached among stakeholders on the need to enhance alternative livelihood options for the park neighboring community to promote the implementation of the GPRS;
- Devising a mechanism for the fair and equitable sharing of revenues generated from tourism among the five Woredas, creating employment opportunities and income generating activities will create sense of ownership and plays a major role in enhancing the conservation and development of the park; and
- Strengthening the task force will enhance the implementation of the strategy.

1.7 Scope and Limitations of the Study

The study area covers the SMNP and its surrounding Woredas of Debark, Janamora, Beyeda, Adi-Arkay and Tellemit on grazing reduction strategy development and land use/cover change. Some of the major problems and challenges encountered during the study include lack of the required data from web sites, inconsistency in the available data, lack of commitment on some stakeholders to provide the required information and data on time. Moreover, time limitation was one of the challenge to conduct the study. In addition to this lack of high resolution images were the limitations for land use/cover change assessment. Scarcity of seasonally developed top map that shows the 1986 land use/cover change of the study area.

2. STUDY AREA

Simien Mountains landscape. Photo: African Wildlife Foundation

2.1 The Simien Mountains National Park

The Simien Mountains landscape is comprised of the SMNP, the Simien Mountain massif, adjacent forest areas and the surrounding community lands in northern Ethiopia (Figure 1). Characteristics of the area are its topographical ruggedness with steep escarpments, rolling hills in the highlands and flat terraces dissected by rivers in the lowlands. The massif was formed some 25 million years ago and the igneous basalts have since been eroded to form precipitous cliffs and deep gorges. Some cliffs reach 1,500 m in height and extend for long distances (the north escarpment extends 35 km).

The SMNP is situated on the northern edge of the Simien Mountains massif, some 132 km from Gondar, the capital of North Gondar Zone of the Amhara National Regional State (ANRS) (Figure 1), one of the major highlands of Africa. It was formally established in 1966, and gazetted on 31 October 1969. The Simien Mountains are the highest parts of the Ethiopian Plateau (more than 2,000 meters; 6,560 feet). They rise to the highest point in Ethiopia at Ras Dejen (4,543 m a.s.l), the fourth highest peak in Africa. The park extends from $37^0$51'26.36"E to $38^0$29' 27.59"E longitude and from 13^0 06' 44.09" N to 13^0 23' 07.85" N latitude.

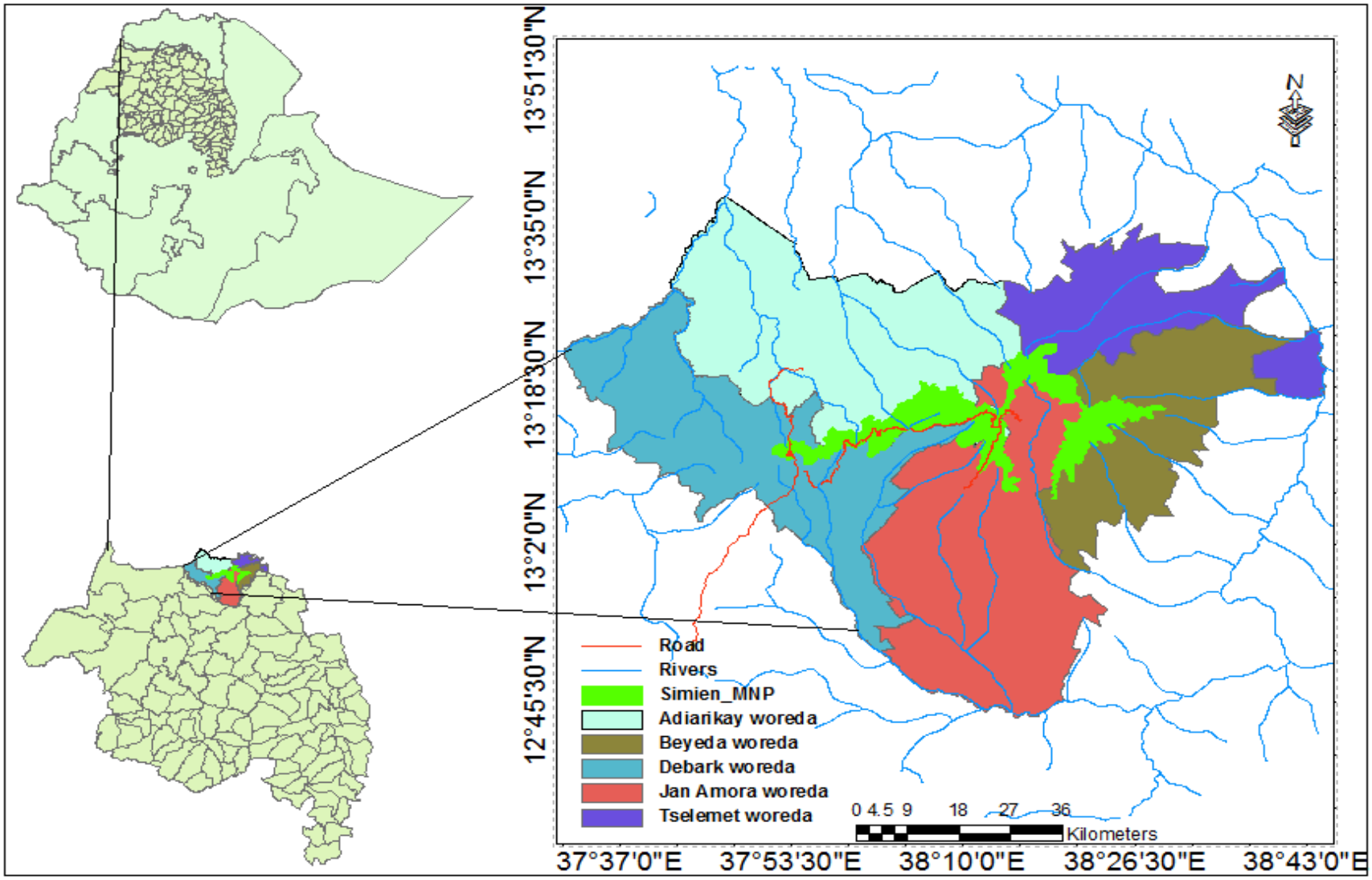

Figure 1: A map showing the location of Simien Mountains Landscape. Source: AWF (2015).

The Park is surrounded by a steep, ragged escarpment, with dramatic vertical cliffs, pinnacles, and rock spires. Although not far from the equator, snow and ice appear on the highest points, and night temperatures often fall below zero. SMNP's dramatic rocky massif slopes down to grasslands and is cut by streams and gorges. Extension of the SMNP to include the Silki, Mesarerya, Limalimo Kidus Yared Mountains and Ras Dejen Mountains within the interlinking corridors was finalized in 2007 and thus area coverage of the park increased from the original 136 to 412 km.^{2}. The subsequent park boundary extension was undertaken to protect and safeguard the key habitats for the flagship and endangered species; namely: the Walia ibex and Ethiopian wolf.

Approximately 50 percent of Ethiopia can be defined as mountainous because of altitude above about 1,500 m, or because of steep slopes. The country's highland areas include about 90% of its arable lands and are occupied by 90 percent of the human population and 60 percent of all livestock (Hurni *et al.*, 2010). Since 150,000 years ago population has expanded all over the highland parts of Ethiopia as they are more suitable for living and agriculture than the malaria infested harsh lowland areas surrounding the highlands. The majority of Ethiopia's highlands are developed and cultivated, making SMNP ecologically significant. The Park is a World Heritage Site and an Important Bird Area (IBA) and plays a key role in safeguarding life support systems as a key watershed in Africa.

The SMNP is managed by the EWCA, with direct management by a warden based in Debark which is the nearest major town to the park, about 20 kilometers from the entrance gate. Access to SMNP is via Bahir-Dar, the capital for Amhara region and Gondar, the zonal town of North Gondar Administrating Zone. Gondar one hour flight from Addis Ababa, is well served by Ethiopian Airlines and is a tourist site itself as the beginning of a wider cultural tourism circuit to the north. From Gondar it is approximately a two hour trip to Debark and from Debark it is less than one hour to the Park entry gate.

Climate

The Simien Mountains have a wet and dry season, with approximately 75 percent of annual rainfall between June and September. The SMNP lies within the isohyets of 1,350 - 1,600 mm annual rainfall with an annual average of rainfall of around 1,500 mm at 3,600 m a.s.l. Temperatures are relatively constant throughout the year; however there is huge diurnal variation ranging from a minimum of -2°C to -4 °C at night to a maximum of 11°C to 18°C during the day. Generally, the climate of the Simien Mountains could be classified into four altitude based climatic zones: Wurch zone (above 3,700 m a.s.l.) alpine climate; High Dega zone (3,400 - 3,700 masl) cool climate; Dega zone (2,400 - 3,400 m a.s.l.) temperate climate; and Woina Dega zone (1,500 – 2,400 masl) sub-tropical climate.

Soils/Geology

The Simien area was built up by plateau basalt (Trapp series). A 3,000 – 3,500 m thick sequence of basaltic volcanic layers was deposited on Mesozoic sandstone and limestone that form a 500 m thick cover over the Precambrian crystalline basement (Kazmin, 1973 in Hurni, 1982). These layers are composed of numerous 5 to 50 m thick olivine-basalt lava flows, interbedded with tuff layers. The main part of the Simien area consists of remnants of a Hawaiian-type shield volcano, overlying the volcanic flows of the Trapp series. The shield volcano was mainly built up by augite-basalt flows several meters thick. The center of this volcano probably lies northwest of the peak of Kidus Yared, with Ras Dejen, Silki and Bwahit forming the outer rim of the crater. The extreme escarpment appeared to be preconditioned by an extended uplift of the whole massif during the Tertiary, comprising major faults which can be attributed to the Rift system extending over most of East Africa to the Red Sea. Harder rocks on the foot of the escarpment preconditioned the development of the terrace-like steps which today form a favorable area for settlement and agriculture (Hurni, 1986).

The extreme escarpment in Simien appears to be a precondition for the formation of the extended uplift of the whole mountain massif 75 million years ago. The dramatic views are due to this volcanic activity. Continued erosion has enhanced the display of the escarpments that exist today. There are different types of soils as a result of difference in geological formation, glaciations, topography and climate. The Humic Andosol is the

dominant soil type which is mainly found at an altitude of 3,000 m. The other types of soil are shallow Andosols, Lithosols and Haplic Phaeozems that are mainly common in the area between 2,500 and 3,500 m.

Ecology

The Simien Mountains are part of the Afro-alpine center of plant diversity. The lower slopes have been cultivated and grazed, while the alpine regions (up to 3,600 m) are forested. The vegetation is a mixture of afro-alpine woods, heath forest and high montane vegetation. Higher altitudes support montane savanna grasslands with fescue grasses as well as heathers, and montane moorlands with tree heath, giant lobelia, yellow primrose, lady's mantle and mosses. Lichen drapes the high altitude forest trees. The Simien Mountains are part of the Eastern Afromontane hotspot of plant diversity, have over 1, 200 plant species and three known endemic species: *Festuca gilbertiana* (only known from Gich plateau), *Rosularia simensis* and *Dianthus longiglumi.*

The Simien Mountain landscape serves as a key water tower for downstream users. Several rivers emanate from SMNP and form tributaries to the Tekeze River, which is a water source for millions of users downstream in Ethiopia, Sudan and Egypt. Most rivers in this area are ephemeral, flowing only after the rainy season, therefore the rivers that originate from Simien and flow year-round are a particularly important water source.

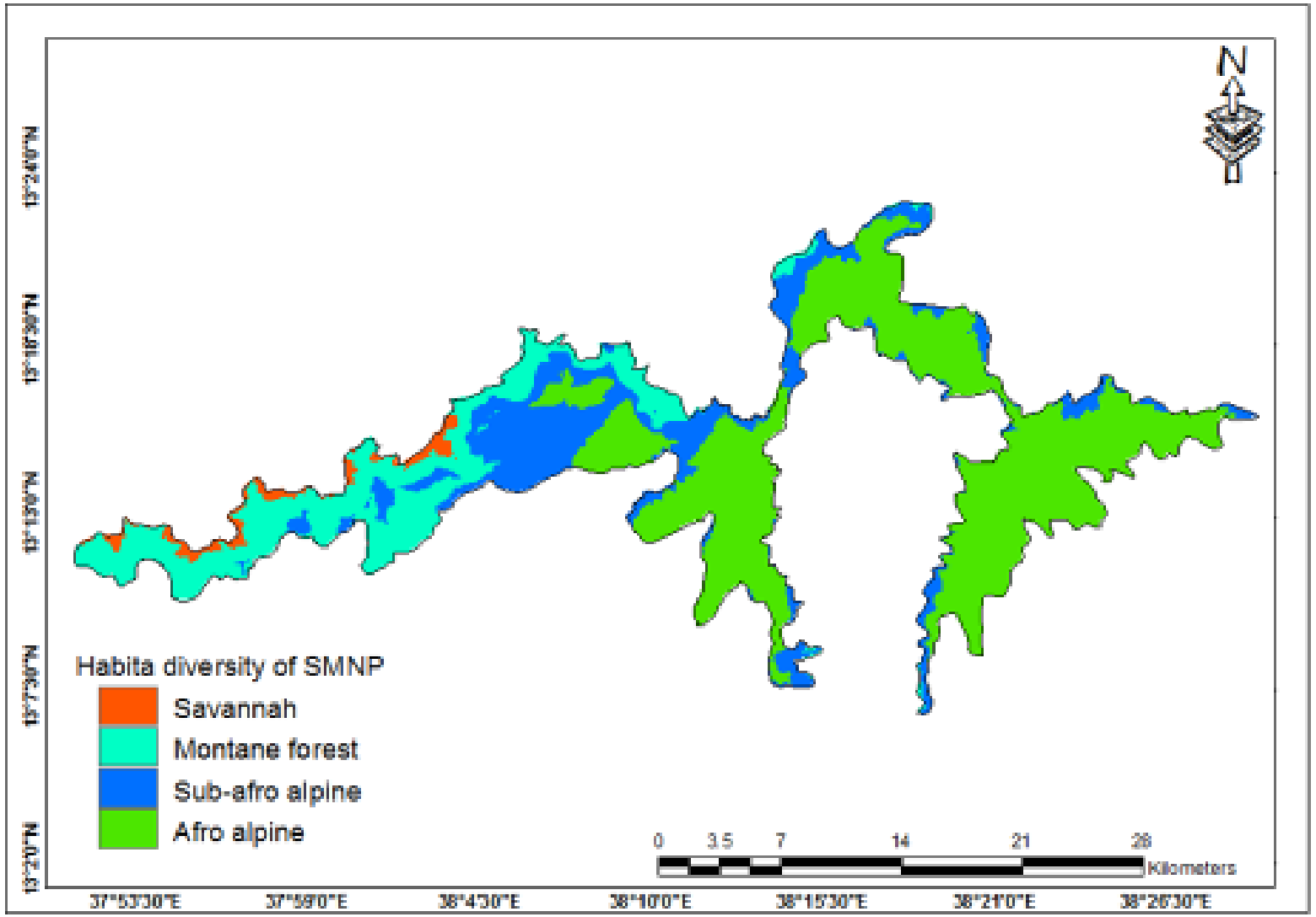

Figure 2: Map showing Altitudinal Zones of SMNP. Source: AWF (2015).

Flora

The Simien Mountains are part of the Afro-alpine center of plant diversity and are characterized by a high but yet unquantified level of plant endemism. The vegetation in Simien Mountains are of characteristics of the Ethiopian Tropical Seasonal Highland Biome, demonstrates the evolutionary links to both Palearctic and Afro tropical realms, and contains vegetation which are characteristics of each. The floristically rich vegetation grows in four vegetation belts: Afro montane forest, Erica/Hypericum forest, Afro montane Grasslands and Alpine Moorlands. There are approximately 253 species of plants which belong to 176 genera and 100 families. Of these, approximately 20 species of plants are endemic to the country, and four to five plant species are near endemic to Simien Mountains (Hurni, 1986).

The common vegetation includes *Erica arborea*, *Lobelia rhynchopetalum*, *Solanum spp.*, *Rosa abyssinica,* everlasting *Helichrysum spp., Hagenia abyssinica*, *Rapamea mesanophloeos*, *Pittosporum viridi florum*, *Ekebergia apensis*, *Allophylus abyssinicus*, *Hypericum revolutum*, *Fastuca gelbertiana*, *Rasularia simiensis* and mosses. In addition to this, herbs like *Tymus spp.*, *Trifolium spp.*, *Geranium arabicum*, *Rumexnervosus*, *Otostegia minucci*, *Clematis simiensis* and *Galium spurium* grow on the top of ridges and sides of gorge (Hurni and Ludi, 2000).

There are three vegetation belts: afro alpine (>3700 m a.s.l.); sub-afro alpine (>2700 - 3700 m a.s.l.); and montane forest (1900 – 3000 m a.s.l.).

Fauna

SMNP harbours 21 mammal species with ten endemics. The Walia ibex (*Capra walie*), a wild mountain goat with long, heavy scimitar-like horns, is found nowhere else except the SMNP. Their numbers were below 200 individuals in the 1990s and are now more than 800. The park was created primarily to protect the Walia ibex, an endangered species restricted to the park. The Ethiopian wolf (*Canis simensis*), one of the rarest and most endangered canines in the world, is found in the park. SMNP also supports a healthy population of Gelada monkey *(Theropithecus gelada),* a major draw for tourists. Other mammals include hamadryas baboon (*papio hamadryas*), serval cat (*Felis serval*), leopard (*Panthera pardus*), caracal (*Felis caracal*), wild cat (*Felis Silvestris*), spotted hyena (*Crocuta crocuta*), golden jackal (*Canis aureus*), and some large herbivores including bushbuck (*Tragelaphus scriptus),* common duiker (*sylvicapra grimmia*), and klipspringer (*Oreotragus oreotragus*).

Birds

According to EWNHS (1996), over 130 species were recorded in the park. However, the observations of the park staff suggest a higher figure of 182 species and there may be over 200 species in all (Falch, 2000). Of these, seven are endemic to Ethiopia - these include the Abyssinian catbird (*Parophasma galinieri*), black-headed siskin (*Serinus nigriceps*), Ankover sirin (*Serinus ankoberensis*), spot-breasted plover (*Vanellus melanocephalus*), Abyssinian woodpecker (*Dendropicos abyssi*nicus), Abyssinian longclaw (*Macronyx flavicollis*). A considerable population of red-billed chough are also known to occur on the Gich plateau, while white-collared pigeon (*Columba albitorques*), white-winged cliff-chat (*Myrmecocichla semirufa*) and the range-restricted Rüppell's chat (*Pentholaea melaena*) occupy the escarpments (EWNHS, 1996). The other well-known species recorded in the park are the wattled Ibis (*Bostrychia carunculata*), the thick-billed raven (*Corvus crassirostris*) and the tawny eagle (*Aquila rapax*). Flagship birds include lammergeier (*Gypaetus barbatus*), Verreaux's eagle (*Aquila yerreauxii*), kestrel (*Falco tinnunculus*), lanner falcon (*F. Biarmicus*) and augur buzzard (*Buteo rufofuscus*).

World Heritage Site

SMNP was one of the first parks to be inscribed on the World Heritage List in 1978, on the basis of its importance for biodiversity (criterion x) and its exceptional natural beauty (criterion vii). Although Ethiopia has considerable number of World Heritage Sites, SMNP is the only natural heritage site in the country. As SMNP is inscribed on the World Heritage List, it is considered unique in the World and therefore a common heritage of humankind.

Even with this status, the park has been under serious threat from various anthropogenic pressures which result in deterioration of the park habitats in general and decline of populations of flagship species such as Walia ibex

and Ethiopian wolf in particular. Given these threats, the World Heritage Committee at its 20th session in 1996 included the property in the List of World Heritage in Danger.

Progressive measures have been taken to address the benchmarks set by World Heritage Committee. The developments towards effectively addressing the corrective measures include:

a) Finalize the extension of SMNP to include the Silki Yared - Kiddis Yared Mountains and the Ras Dejen Mountain with the interlinking corridors

Extension of the SMNP to include the Lemalimo, Mesarerya, Silki Yared – Kidus Yared Mountains and Ras Dejen Mountain within the interlinking corridors was finalized in 2007 and thus area coverage of the park increased from the original 136 to 412 km². The subsequent park boundary extension was undertaken to protect and safeguard the key habitats for the flagship and endangered species; namely the Walia ibex and Ethiopian wolf. Moreover the realignment of the park's boundary to exclude certain villages and extension to the above mentioned wildlife habitats has been undertaken and considerable numbers of beacons (3000) were put in place, particularly along the realigned and extension boundaries.

Wildlife corridors are important as a link between wildlife habitats for wildlife movement. Such corridors help wildlife move to other habitats without having to go through and cause damage to agricultural and village areas adjacent to the park. The corridors areconnecting Chenek area to Beroch Wuha or Silki, through Arkwazye. A wildlife corridor is also in place between Menta Ber and Tiguna villages to pass through the narrow lane close to the Ras Dejen Mountain. The alignment of the road through the park will help ensure that critical wildlife corridors are kept open.

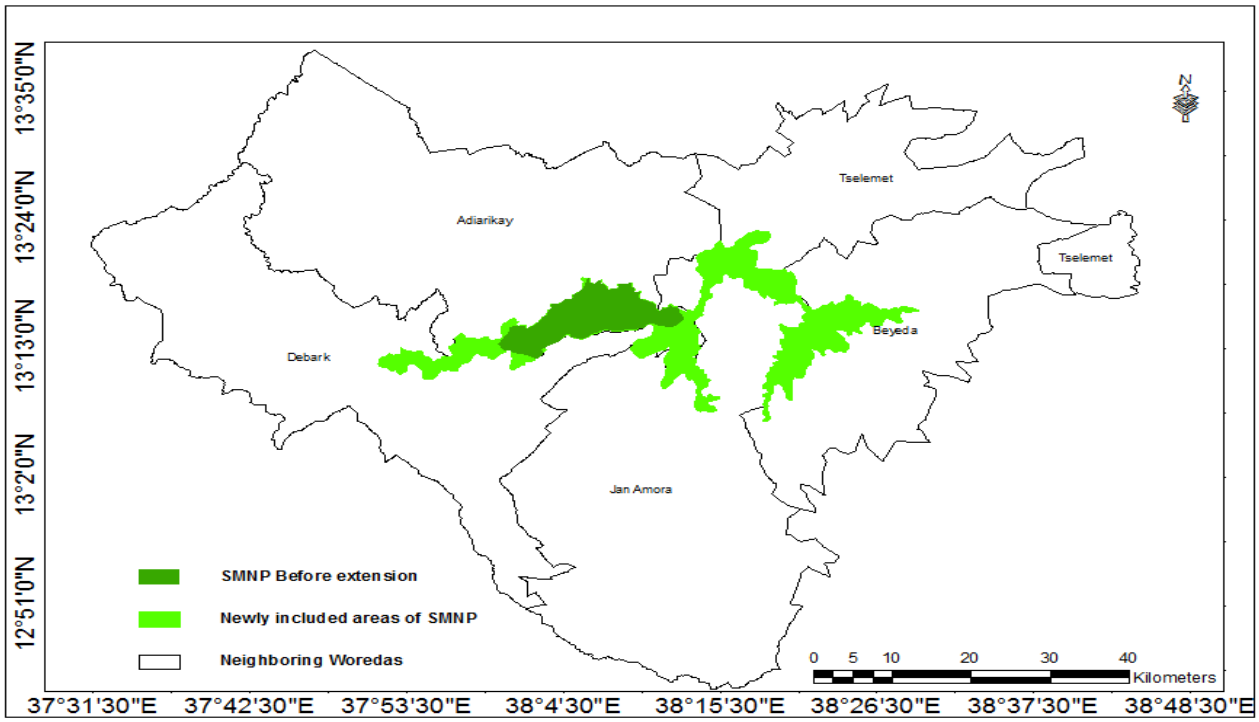

Figure 3: Map of SMNP showing areas of extension. Source: AWF (2015).

b) Gazetting of the new park boundaries, including the extensions of Lemalimo, Mesarerya, the Silki Yared – Kiddis Yared Mountains and the Ras Dejen Mountain as well as the realignment of the boundary to exclude certain villages

The Council of Ministers approved the re-gazettal process of SMNP through regulation no. 337/2014 and thus approval of the re-gazettal of the park boundary including the new extension areas into national law is believed to provide adequate legal protection for the property.

Boundary Modification Dossier Development

Following the gazettement of SMNP, the boundary modification dossier was finalized and the State Party is expected to submit the document and request the World Heritage Centre for the recognition of the re-gazettal of the extended Park boundaries in the World Heritage list.

Efforts to Replicate the Positive Experience of Arkuasiye Voluntary Relocation

The Ethiopian government had a successful experience conducting a voluntary relocation of 167 households from Arkuasiye corridor outside the SMNP. The State Party is fully committed itself to scale up the 2008/09 Arkuasiye village voluntary relocation experience to Gitch village located at the core area of the park. The relocation of Gich Villagers is on a voluntarily basis. They will move to Debark town outside the park.

To this end, an action plan supported by different studies and assessments was prepared for resettling 418 households outside the property. The asset valuation and resettlement action plan study pointed out around 8 million USD is required for compensation of 418 households at Gitch village only. This budget doesn't include provision of alternative livelihood and social service. The Ethiopian government has allocated the 8 million USD to date and the relocation process is expected to be completed in June 2016.

c) Develop a strategy and action plan, as part of the planned management plan revision, to significantly reduce the impact of livestock grazing on the conservation of the property by introducing no grazing and limited grazing zones based on ecological criteria and by setting up a strict management regime in zones where grazing will still be tolerated in the short to medium term, and secure funding for its implementation

A comprehensive 10-year GMP for SMNP was completed in 2009. Together with separate (more detailed) strategy documents focusing on tourism development, settlement strategy, alternative livelihoods and grazing pressure reduction strategy the plan will direct management of park. Thus, the updated GPRS is an integral part of the GMP and will assist in effective implementation of the same.

Key Wildlife Conservation and Development

SMNP is considered as part of the Conservation International's Eastern Afro-montane biodiversity hotspot due to its global biodiversity importance and highly threatened status. The park is home of several endemic biodiversity species. There was substantial decline in number of the endemic species such as the Walia ibex and Ethiopian wolf due to the Ethiopian civil unrest around the SMNP from 1989-1990 and ecological degradation; however, more recently these numbers have increased.

Considerable measures have been taken over the past few years to strengthen wildlife conservation. These endeavors include: inclusion of new habitats and habitat conservation, improved relation with local communities and establishment of active anti-poaching team and as a result, the number of Walia ibex and Ethiopian wolves has significantly increased in the national park as shown below (Figure 4 and 5).

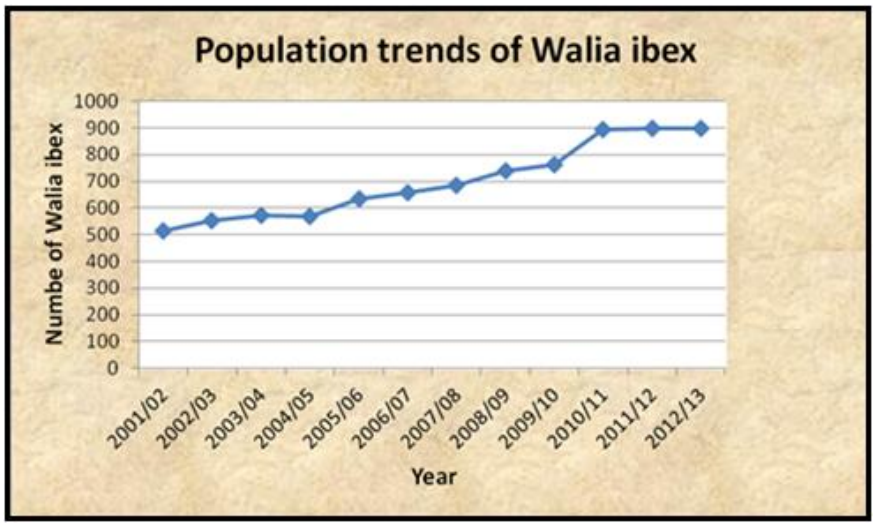

Figure 4: Walia Ibex Population Trend, from 2001/02 to 2012/13. *Source*: *EWCA 2001/02 to 2012/13*

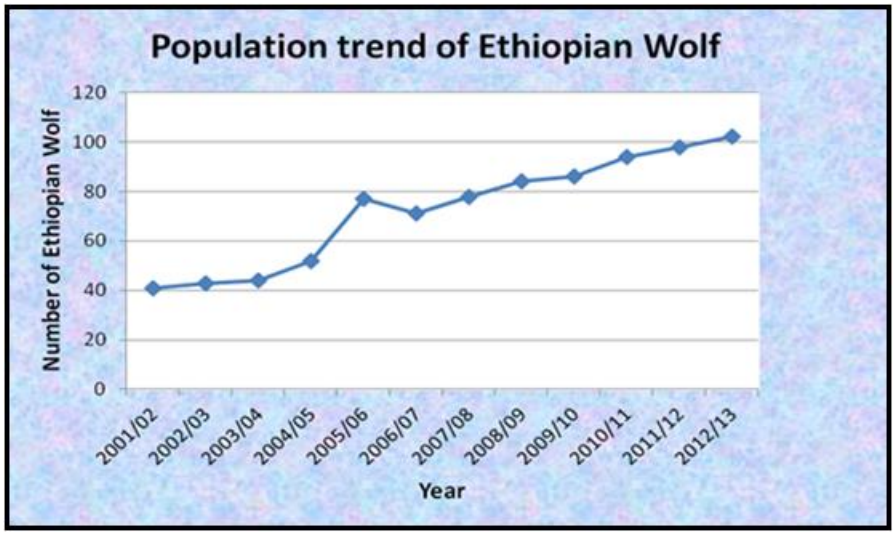

Figure 5: Ethiopian wolf Population Trend, from 2001/02 to 2012/13 Source: EWCA 2001/02 to 2012/13.

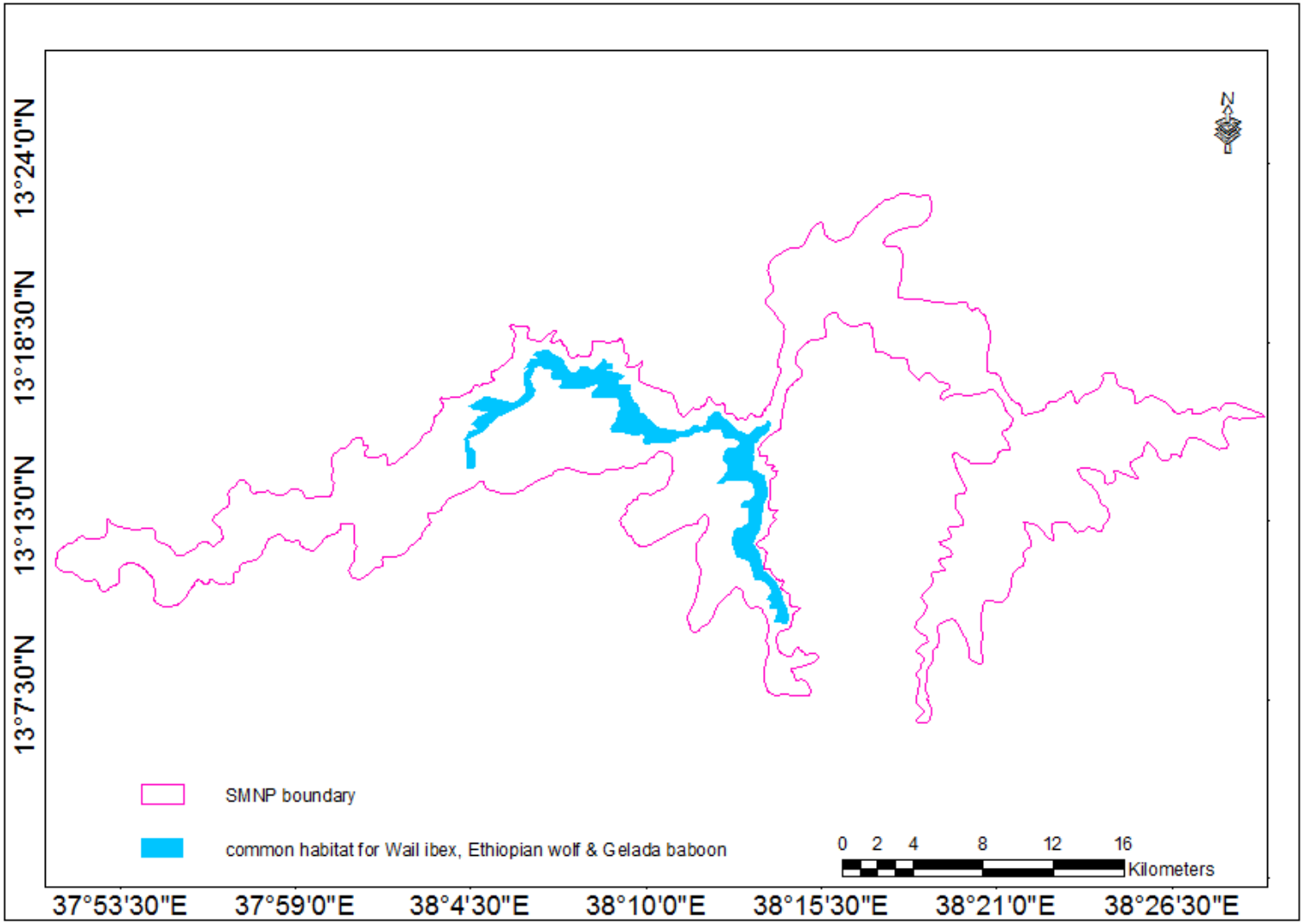

Figure 6: Map showing common habitat for Walia ibex, Ethiopian wolf and Gelada baboon. Source: AWF (2015).

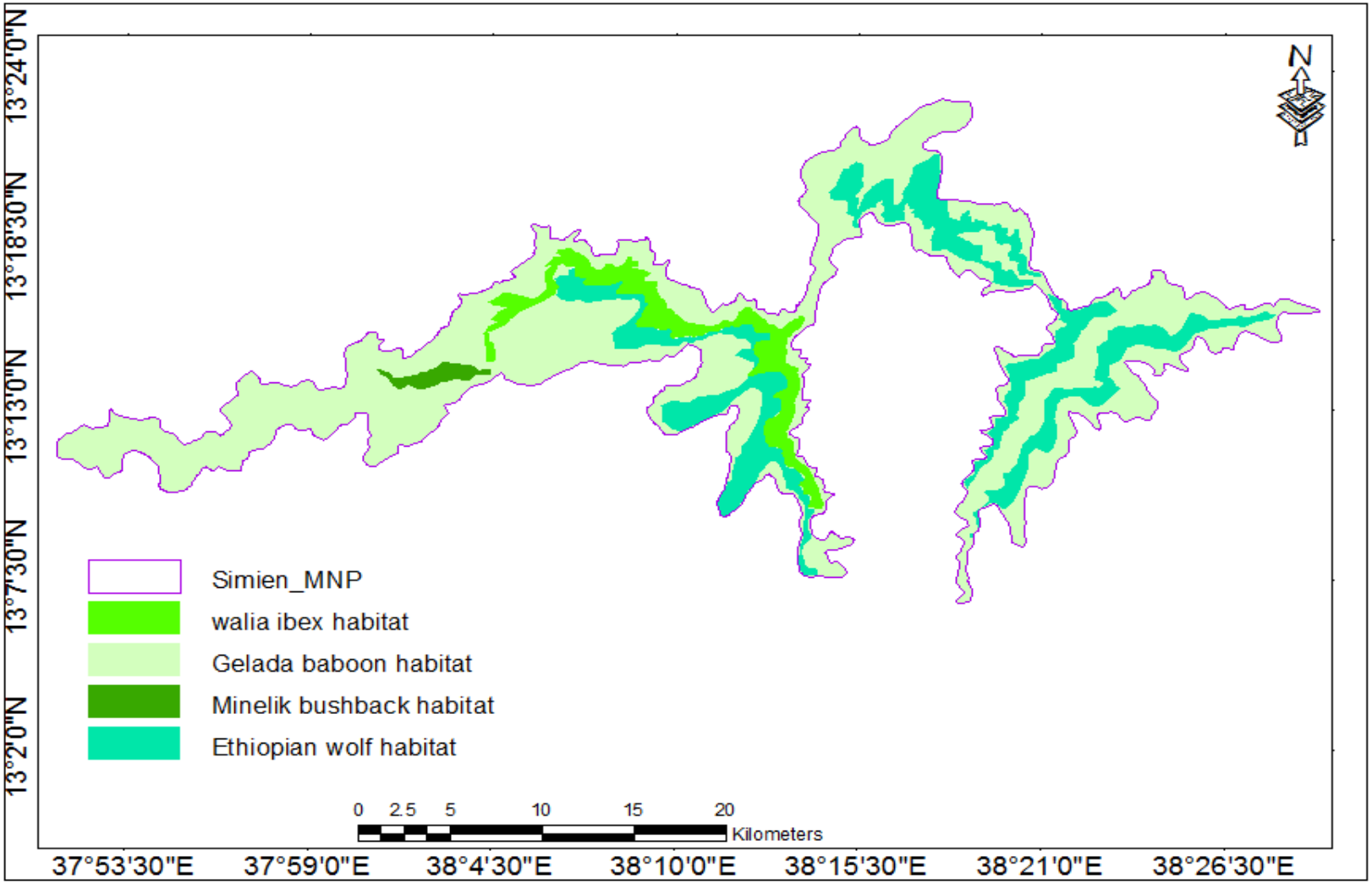

Figure 7: Map showing the present distributions of key wildlife species at SMNP. Source AWF (2015).

The main impacts of increasing human induced impacts in and around SMNP is deforestation for firewood, land degradation (soil depletion) due to crop cultivation and livestock grazing that has intensively exploited the natural resources in the park exacerbated by climate change and its impacts. These human induced activities have resulted in exposing the fragile soil to water and wind erosion, and such ecological degradations have forced the rare and locally endemic species like Walia ibex and Ethiopian wolf to evacuate from their original habitats and push them further to remote and inaccessible areas where human interferences is minimal (Fig. 7).

Debark – Mekane Berhan Road Re-alignment

There has been growing effort towards mitigating and managing the negative impact of the road passing through the park through re-routing. The re-alignment of the road was accepted by the Ethiopian Roads Authority and construction of the road through an alternative route passing through Debark - Sawrie - Beless - Inchet kab - Mekane berhan, which is completely beyond the boundary of the park, is being undertaken. This endeavor will benefit the park and its wildlife and has received strong support from local communities who are going to enjoy the services of this new road.

2.2 Tourism

Ethiopia enjoys a moderate level of tourism, which mainly focuses on cultural tourism and Ethiopia's rich history. Since the 1990s there has been a steady albeit slow recovery of the tourism industry which had been constrained by a series of challenges including the lack of appropriate tourism and support infrastructure and low capacity in terms of human resources. More recently, significant institutional developments have taken place in the country's tourism sector including the establishment of the Ministry of Culture and Tourism (MoCT) in 2005, the formulation of the National Tourism Development Policy (NTDP) in 2009, the formation of the Tourism Transformation Council (TTC) and the Ethiopia Tourism Organization (ETO) in 2014. Arguably, this is a demonstration of a higher prioritisation of the tourism sector, though challenges still persist (MoCT, 2009).

The NTDP recognises the challenges facing the sector as both internal (such as limitations in basic tourism supply and lack of capacity in general) and external (such as poor national image and instability in the Horn of Africa). The NTDP strives to provide a conducive environment for the development of the sector in a responsible and sustainable manner and in line with the country's broader development goals including poverty alleviation.

Ethiopia's wildlife tourism is also poorly developed; even though the SMNP is arguably more developed than other parks and wildlife sanctuaries in the country, its tourism product is generally poor. Approximately 17,000 (Fig. 8) people visit SMNP annually. Trekking is a major activity in the mountains with several trekking routes offered in the Park and the wider Simien Mountains.

The SMNP has great potential as an ecotourism destination. Benefit-sharing with local communities is now generating more than 30 million Ethiopian Birr per year and with another 4 million Ethiopian Birr income to central treasury (Fig. 9). With proper planning, capacity building and infrastructure development, SMNP can generate substantially more revenue to support the conservation of the park and enhance the lives of the adjacent communities.

A number of challenges and constraints face the delivery of a quality tourism product in SMNP, ranging from a lack of accommodation facilities, limitations in skilled manpower, poor quality and insufficient tourism infrastructure. Moreover the volume of tourists in peak season is beginning to impact the quality of tourism experience. Tourism is at a critical stage in the SMNP. Visitor numbers have been increasing steadily over the past 15 years and the SMNP is now a key element of many visitors' itineraries in Ethiopia. There is however a general sense among stakeholders that the SMNP is reaching maximum visitor carrying capacity within the context of current tourism management approaches, tourism services and infrastructure. Without robust

tourism development planning, there is significant risk that in the near term tourism will become problematic for the SMNP as a result of overcrowding and poorly regulated tourism development. Tourists visiting the park in the peak season are concentrated in certain camp sites found in the high land areas of the park however the tourism product is not well distributed through the park; therefore, certain parts of the park, including core areas are degraded from over-use.

AWF in collaboration with EWCA developed a new tourism plan for SMNP that will ensure responsible tourism development as well as an increase in revenue that could result in better conservation and management of the park. The tourism plan is providing a strategic framework for tourism development and related investment in the SMNP and is annexed to the 2009-2019 GMP already developed in 2009. The plan is serving to guide present and future tourism development and investment in SMNP.

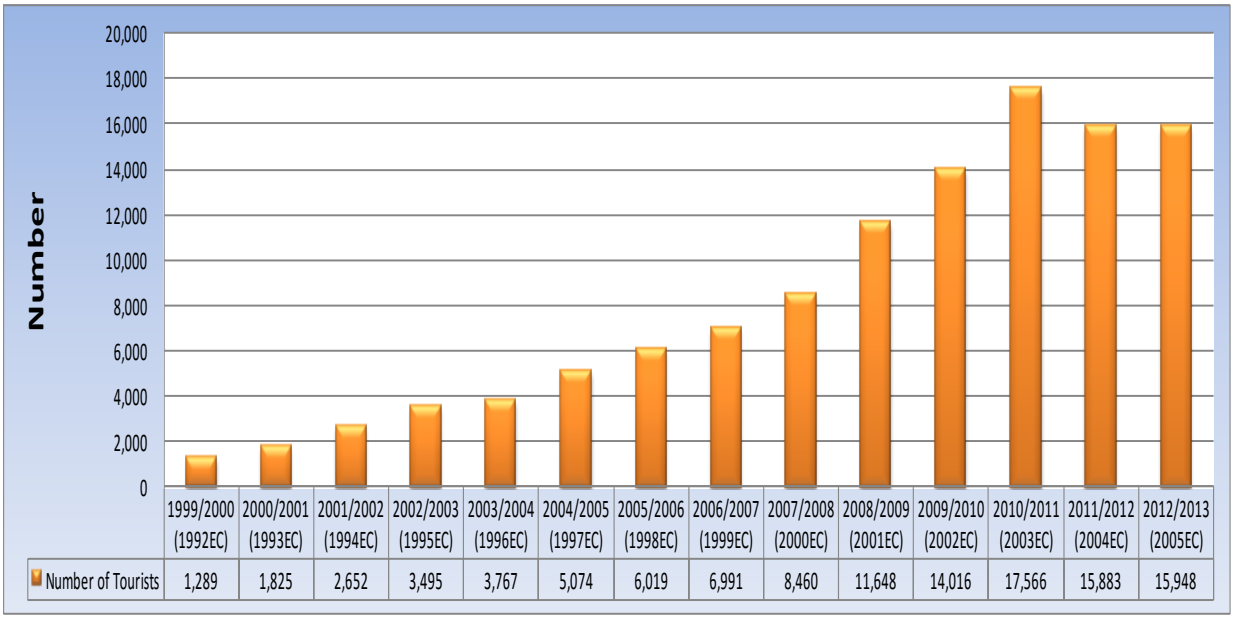

Figure 8: Visitor Trends in SMNP, (1999/2000 - 2012/13). Source: SMNP office (2013).

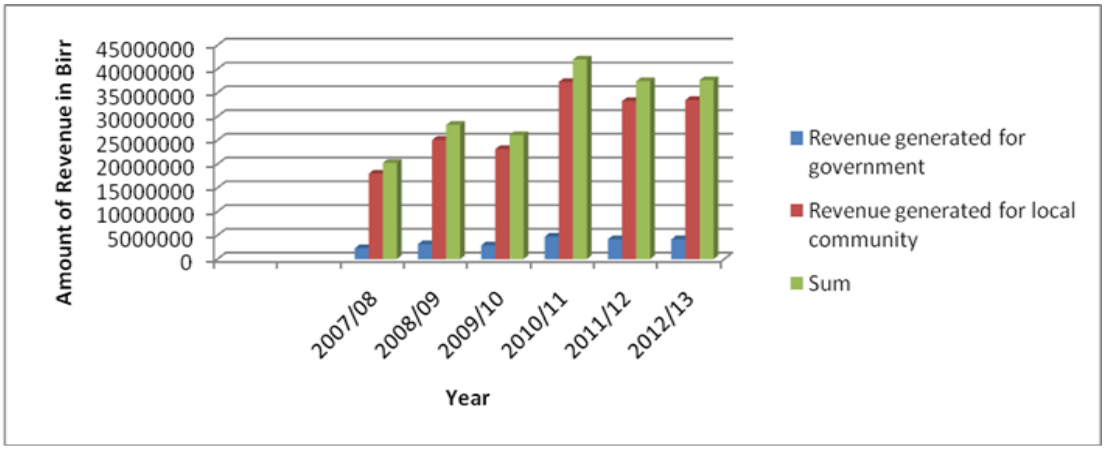

Figure 9: Income generated for the government and community from Tourism. Source: SMNP office (2013).

2.3 Population and Local Community Livelihoods

Population data from CSA for the year 1994 and 2007 have generally indicated that there has been significant population increase in the Woredas adjacent to the park during this period, which has created significant pressure on the park ecosystem due to agricultural encroachments (cultivation and grazing) and the demand for fuel wood and construction as human settlements are sprawling in and around the park. The declining trend in some Woredas is due to out-migration of population primarily for economic reasons.

Table-1: Distribution human population in park adjacent Woredas (1994-2007)

Name of Woreda	Population Size. 1994	Population Size. 2007	Percentage increase %
Debark	120,754	160,130	32.6
Janamora	125,516	167,110	33.1
Adiarkay	106,983	89,049	-16.8
Beyeda	76,680	96,953	26.4
Tselemit	140,214	157,189	12.1

Source: CSA, 1994; CSA, 2007

Like other highlanders of the country, the local communities in and around SMNP practice small holder crop-livestock mixed farming agricultural production system as major source of income and employment. Thus, traditional crop cultivation and animal husbandry are the main stay of their economy. Crops and community grazing fields occupy large areas of land. Vegetables and fruits are important crops cultivated using traditional methods around homesteads.

Climatic factors, primarily the rainfall patterns and temperature, mainly influence the cropping practices. The Simien Mountains has a typical northern Ethiopia's high-altitude climate where various crops can be cultivated. Barley, wheat and pulses are cultivated on smallholdings with generally thin soils varying from fertile, plateau vertisols to eroded land on slopes so steep that hand-cultivation rather than ox-plowing is required. The middle-altitude peripheries usually produce a valuable surplus of teff.

The soil fertility management in traditional subsistence farming includes shifting cultivation/fallowing, crop rotation, manure utilization and mineral fertilization. These highlands are facing a threat of land degradation than ever before due to the increasing human settlements and traditional smallholder agricultural production systems that intensify soil erosion on such a fragile landscape. As population pressure increased, the clearing of forests for cultivated land on a steeper slopes and marginal areas has accelerated soil erosion over a long period of time leading to the deterioration of soil fertility in these areas. Land degradation in the form of soil erosion causes severe damage to croplands, particularly in these highlands. The steep terrain, erosive rains, improper cultivation practices, rapid and dependence on fragmented subsistence farming are major causes of the ongoing land degradation.

As crop production is not promising in the Simien Mountains alone it cannot support the highland population without being complemented with livestock farming and other off-farm economic activities.

The North Gondar Administrative Zone where the SMNP is located shares administrative boundaries with five Woredas (Debark, Janamora, Adi Arkay, Beyeda and Telemit) and has the largest livestock resource in Amhara Region. Accordingly, CSA (2007) sample survey indicated that there were 1,860,538 cattle, 673,416 sheep, 1,243,194 goats, and 242,659 equines (horses, mules and donkeys, camels) in North Gondar Zone. Livestock rearing is closely linked to the social and cultural lives of millions of resource-poor farmers for whom livestock ownership ensures varying degrees of sustainable farming and economic stability. Livestock production helps

to improve food and nutritional status of households through providing nutrient-rich food products, generating income, employment and serve as insurance to protect against crop failure, provide drought power and source of manure as an important source of energy and maintaining soil fertility for crop production, and contribute to foreign exchange earnings through livestock export trade. The contribution of livestock farming to rural economy is increasing more rapidly than those of crop cultivation, especially for the poorest farmers who have limited access to land, capital and labor in the Simien Mountains.

The local cattle breeds adaptive to the North Western Highlands and Western Lowland agro ecological zones of North Gondar Zone include the Fogera, Barka, Zebu, and the Sanga-Zebu crosses. The local sheep breeds of the North Western Highlands include those locally known as Dangila/Washera/Agew found predominantly in the north western tepid to cool, moist and sub humid, mid altitude-mountains and plateaus, at an altitude range of 2000 – 3600 m. a.s.l. The sheep are managed under mixed crop-livestock systems (Aklilu and Eshete, 2009).

In the Simien Mountains, especially for highland villages, where crop production reaches its limits because of altitude and poor soil quality, relying more on livestock for securing the household income is a strategy of growing importance. One example are the people grazing Gich plateau, located in the central part of SMNP. This area is heavily overgrazed, yet, community members aspire to increase their herd size. During a count on one evening of all animals returning to Gich from the Saha – Imet Gogo area, a total of 1, 200 animals – cattle, equines, sheep – were counted, equaling roughly 600 Tropical Livestock Units (TLU), representing about 60% of the total livestock number reported for Gich (ANRS, 2007). The grasslands, not including forests, which are also used for grazing, or the cropland – stretching from Gidr Got to Imet Gogo covers about 9 km². With the total livestock number of Gich estimated at 1,000 TLU, the number of TLU is more than 1 per hectare. For highland areas, a maximum stocking density of only 0.5 TLU per hectare is recommended; thus, this area is more than double the recommended stocking rate.

2.3.1 Roles of Gender in Natural Resource Management and Livelihood

Rural women and men have different roles, responsibilities, and knowledge in managing natural resources. Rural women's and men's different tasks and responsibilities in food production and provision result in different needs, priorities, and concerns. Although rural women's and men's roles and responsibilities vary across regions and cultures, they often follow similar gender divisions of labor. In most regions men use natural resources in agriculture, logging, and fishing for commercial purposes more than women. In crop production in many regions of the developing world, men tend to focus on market-oriented or cash crop production, whereas women often work with subsistence crops, minor crops, and vegetable gardens. Women often grow a wider diversity of crops. In some cases men and women perform complementary roles, for example, men clear land, women plant and tend crops, and men harvest and market crops. However, observers have come to learn that these gender patterns are neither simplistic nor static. For example, women often work with their husbands in producing cash crops. Gender divisions of labor vary substantially by age, race, ethnicity, and marital status. Consequently, their water use and management will vary accordingly. In livestock management men often care for cattle and larger animals, and women care for smaller animals such as poultry and small ruminants. In many instances women also have responsibility for collecting fodder for animals, often depending on common property resources that are threatened in many cases.

Because women (and sometimes girls) are often responsible for providing their households with the basic necessities of life: food, fuel, and water rely heavily on natural resources. Men seldom have responsibility for collecting and using natural resources for household use. Earlier development efforts assumed that women's fuelwood collection and use led to deforestation, but it is now known that the major problems related to biomass collection include women's and children's exposure to indoor air pollution and heavy workloads for women and girls. Environmental degradation increases women's time for labor-intensive household tasks, such

as having to walk longer distances for the collection of fuelwood and water. Decreases in agricultural production and household food security create additional health problems related to their increasing work load. Although both rural women and men play a critical role in natural resources management, women's use, conservation, and knowledge of resources play a key role in shaping local biodiversity. Also degradation of natural resources can alter gender responsibilities and relations in households and communities.

In the Simien Mountains patriarchy dominated culture and tradition prevail that suppress women, and at the same time encourage men to express their supremacy over women. At the household and community level, there are well-established traditional practices and customs that justify women's and girls' inferior social positions to men: Unequal division of labor, unfair division of benefit and rewards and gender discrimination in access to and control over resources are examples of male dominance over women. Despite eventual improvement, exercising verbal, denial of opportunities and services, domestic violence, and different harmful practices committed against women and girls are still common phenomena in the Simien Mountains Region.

Women's right in the society and in their own families have similarities in the area. In their households women feel that they have equal right and responsibilities with their husbands regarding household property such as land, livestock, grain and other assets and participate in decisions concerning the use of assets though the husband is the final decision maker in the case of differing opinions. Divorcee women have the right to demand their share of livestock, stored grain, pre-harvested grain, accumulated money and other assets in the household, Significant differences between the roles and rights of women and men in many societies lead to increased vulnerability of women with the deterioration of natural resources. In some instances deterioration of natural resources results in the renegotiation of gender roles.

Understanding and changing natural resource tenure and governance as well as unequal patterns of access to and control over natural resources lie at the heart of reversing natural resource degradation in the area. Degradation of natural resources disproportionately harms poor rural women and men and sometimes is the principal cause of poverty. In turn, poverty can lead to the overexploitation of natural resources. Rural poor people in the Simien Mountains rely on natural resources and are the most vulnerable to changes in ecosystems. These issues are crucial to addressing the gender dimension of natural resources. Thus, improving natural resource management practices and protecting the environment require reducing poverty and achieving livelihood and food security among rural women and men in the area.

3. EXISTING THREATS AND CHALLENGES

Degradation in some parts of Simien landscape. Photo: African Wildlife Foundation

3.1 Increased Anthropogenic Activities

The Simien Mountains region has been inhabited by human settlers and cultivators for at least 2,000 years (Kirwan, 1972). The Woredas adjacent to the park are chronically food insecure and drought prone due to erratic and shortage of rainfall, depletion of soil fertility and decline in land productivity, and hence, the local people face shortage of food, malnutrition and hunger, and rely on food aid to complement their food needs for about six months each year.

The increase in human population and unsustainable use of natural resources by the local people in the SMNP region continue to be a major cause for ecological degradation and loss of biodiversity. More than 67% of the park has been used by the local communities for grazing, subsistence agriculture and settlements.

Table 2: Population of the 38 Kebeles bordering SMNP Source: AWF (2015).

No	Woredas	Number of Kebeles	Population					
			Households (HH)		Total	Total population		Total
			Male	Female		Male	Female	
1	Debark Town	2	2,453	1,970	4,423	5,907	5,152	11,058
2	Debark Woredas	5	4,858	753	5,611	15,529	16,101	31,630
3	Janamora	9	8,646	1,949	10,595	25,990	24,179	50,169
4	Beyeda	15	14,417	13,487	27,904	37,553	35,346	72,899
5	Adi Arkay	4	2,498	846	3,344	8,505	9,887	18,392
6	Telemit	3	2,354	345	2,699	9,265	7,528	16,793
Total		**38**	35,226	19,350	**54,576**	102,749	98,193	**200,941**

The cohabitation of the SMNP by domestic livestock has caused competition for grazing between domestic animals and the wild herbivores, transmission of disease from domestic to wild animals and vice-versa, and human-wildlife conflicts (HWC). This situation in the park has threatened the key biodiversity conservation areas (KBAs) and intensified ecological degradation and habitat fragmentation. Increased deforestation and forest degradation accompanied with increasing soil erosion exacerbate decrease in land productivity resulting in reduced land carrying capacity (UNESCO/IUCN, 2006).

Settlements, cultivation, livestock grazing and other unsustainable resource uses in National Parks and Wildlife Sanctuaries are illegal under current legislation (Regulation 163/2008). However, most of the residents were settled in SMNP before the park was established. According to the rapid assessment carried out by ANRS Parks Development and Protection Authority in October 2007, 582 households were found living in the park (amounting to 3, 173 people), while 1, 477 households living in its immediate vicinity are cultivating plots inside the park. As a result, the park has been under serious threat from expansion of settlements and cultivation, livestock grazing and associated perturbations.

Photo: African Wildlife Foundation

Grazing lands have been transformed to farm lands outside the park due to shortage of land and fragmentation as a result the local people are encroaching the park for livestock grazing and fuel wood collection. Since grazing is providing the majority of annual feed requirements of livestock in the SMNP, the challenge might be high in reducing the livestock density to mitigate the negative environmental impacts (environmental degradation) while simultaneously improving local livelihoods.

Generally, the aforementioned anthropogenic pressures result in a severe threat to the integrity of the park. As a result of the negative consequences of human induced pressures on park, the Ethiopian Government has

successfully implemented a voluntary resettlement in the past and as explained earlier, they are facilitating a voluntary relocation of the Gich community.

While this study focused on over-grazing in the Park, it is important to consider this land use within the context of the other threats in the landscape as they compound each other.

In summary, the existing challenges and threats to the conservation values of the Simien landscape are:

- Encroachment and overgrazing by domestic livestock;
- Settlements inside the Park;
- Extension of agriculture in the Park and on the edge;
- Ecosystem degradation and habitat loss due to livestock overgrazing and incompatible agricultural farming practices;
- Lack of effective conservation management of the Park;
- Overcrowding in certain areas from poorly planned and regulated tourism development;
- Limitations to diversify tourism practices and lack of competitiveness in the global market;
- Ethiopian wolf exposure to rabies via close interactions with domestic dogs;
- Human-wildlife conflict and lack of effective conflict mitigation mechanisms;
- The presence of a public road in the core area of the Park which fragments the park and exposes it to increased human activities;
- Lack of resources to implement the GMP, Tourism Strategy, and GPRS; and
- Lack of adequate technical skills.

3.2 Over Grazing Pressure

The high density of people in the Simien Mountains results in overgrazing putting intense pressure on the Park. Due to the fragile nature of this high elevation ecosystem, the result is severe degradation which also results in a decline in livelihoods, as they are dependent on natural resources.

Prior to the park re-demarcation process that was undertaken eight years ago, approximately 17 surrounding Kebeles were using the park for grazing though the number of livestock varied from one season to another season. By then, the total livestock resources of these Kebeles were estimated to be about 38, 270 cattle, 59, 639 sheep, 17, 414 goats, 13, 490 equines, and 46, 664 poultry which was estimated to be an average of 2.7 TLU per household (ANRS, 2007). A single TLU is equivalent to 250 kg of live weight.

According to the 2015 assessment conducted by AWF, 12,047.18 ha (29.3% of the park area) within the park is highly affected by livestock grazing. Park grasslands neighboring Woredas of Debark, Janamora and Beyeda are the most affected (Table 5 & Fig. 10 & 11). Similarly, from the total grass land coverage 12,047 ha of the park (62.855%) is highly influenced by livestock. Therefore, 19,166.589 ha (37.145%) is free from livestock grazing.

SMNP Afro-alpine under low (top) and high (bottom) grazing pressure (credit C. Marsden). Photo: Zeleke Tigabe

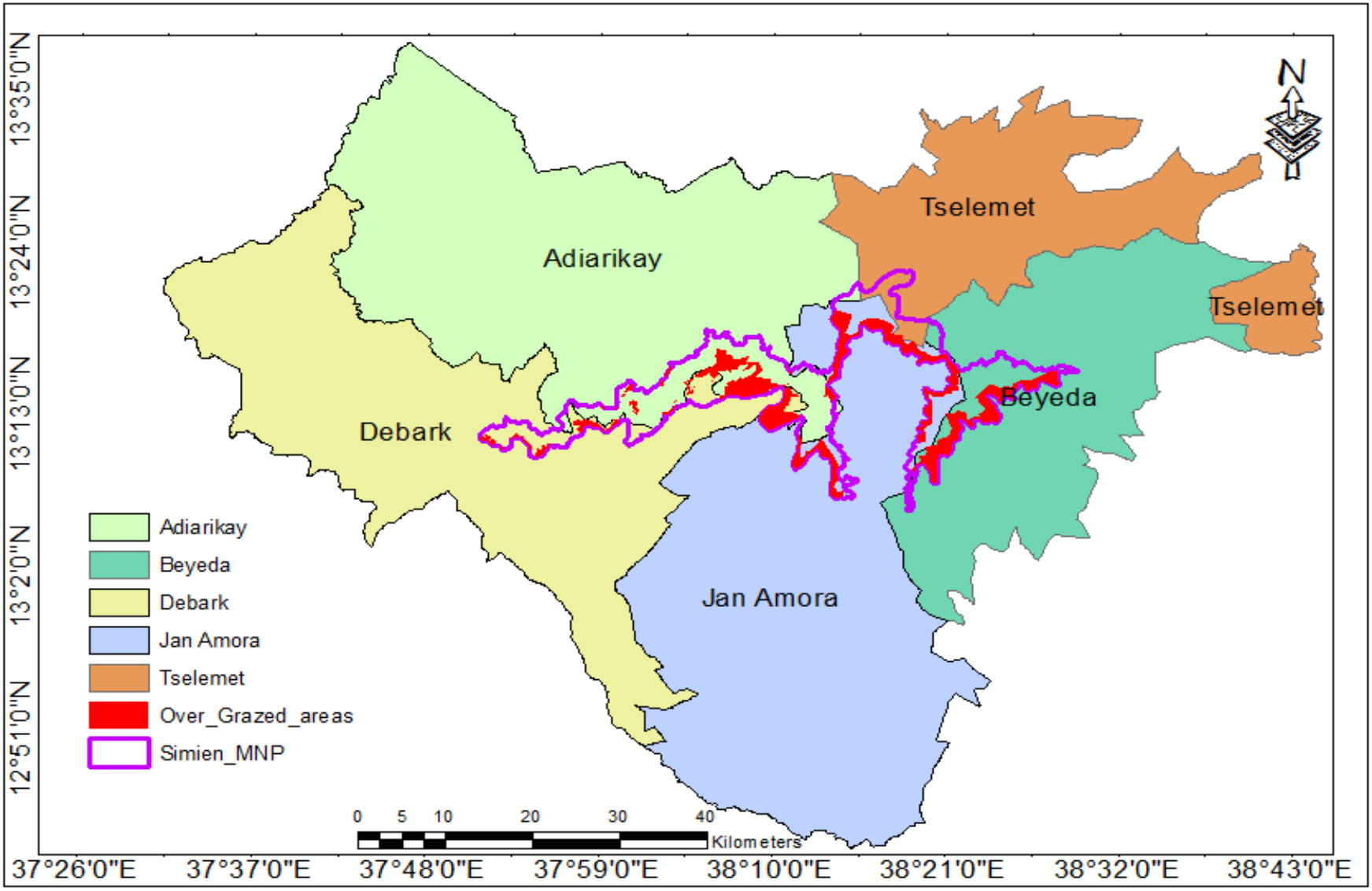

Figure 10: map showing overgrazed areas by Woredas. Source: AWF (2015).

Overgrazing is resulting in a deterioration of the quality of the grazing lands with an increase of unpalatable grasses. This has negative consequences for the vegetation cover and composition, and for soil preservation. Livestock is in direct competition with Walia ibex for grazing areas, confining the ibex to the steeper and less accessible areas, and is also impacting on small mammal populations, which are the major food source for the Ethiopian wolf. Contact between wildlife and livestock are also increasing the risk for transmission of diseases.

Of particular concern is the pressure on the grassland between 3,600 m and 3,800 m a.s.l. (timberline, above the climatic limit for barley cultivation) and about 4.200 m. This grassland is intensely used as grazing area. A survey of the Gich plateau conducted in 1996 concludes that totally eroded and heavily overgrazed areas have doubled between 1973 and 1996. Therefore, if this grassland area should in the future again serve as a habitat for herbivores such as Walia and Klipspringer or carnivores depending on grass rats, such as the Ethiopian Wolf, far-reaching measures that aim at excluding domestic animals from considerable areas of the grassland must be considered.

The results of this study showed that the nine Kebeles in Janamora Woreda possessed 37.5% of the total stocking rates followed by Beyeda Woreda (29%) sharing significant amount of grazing resources inside the park (Table 4). Cattle, by and large, constitute 62.5% of the total TLUs in the five Woredas against 20% for shoats and 17.4% for equines (Table 4).

3.3 Land use/Cover changes

Five broad land use/cover classes were identified at SMNP (Table 3). These are Forest land, Grassland, Bush/shrub land, cultivated land and degraded land.

Table 3: Dominant land use types of SMNP. Source: AWF (2015).

Dominant Land Use Type	**Area (ha)**	**Percentage**
Forest land	8252.249	20.062
Grassland	19166.59	46.596
Bush/shrub land	8994.342	21.866
Cultivated land	3586.898	8.720
Degarded land	1133.886	2.757
Total	**41,200**	**100**

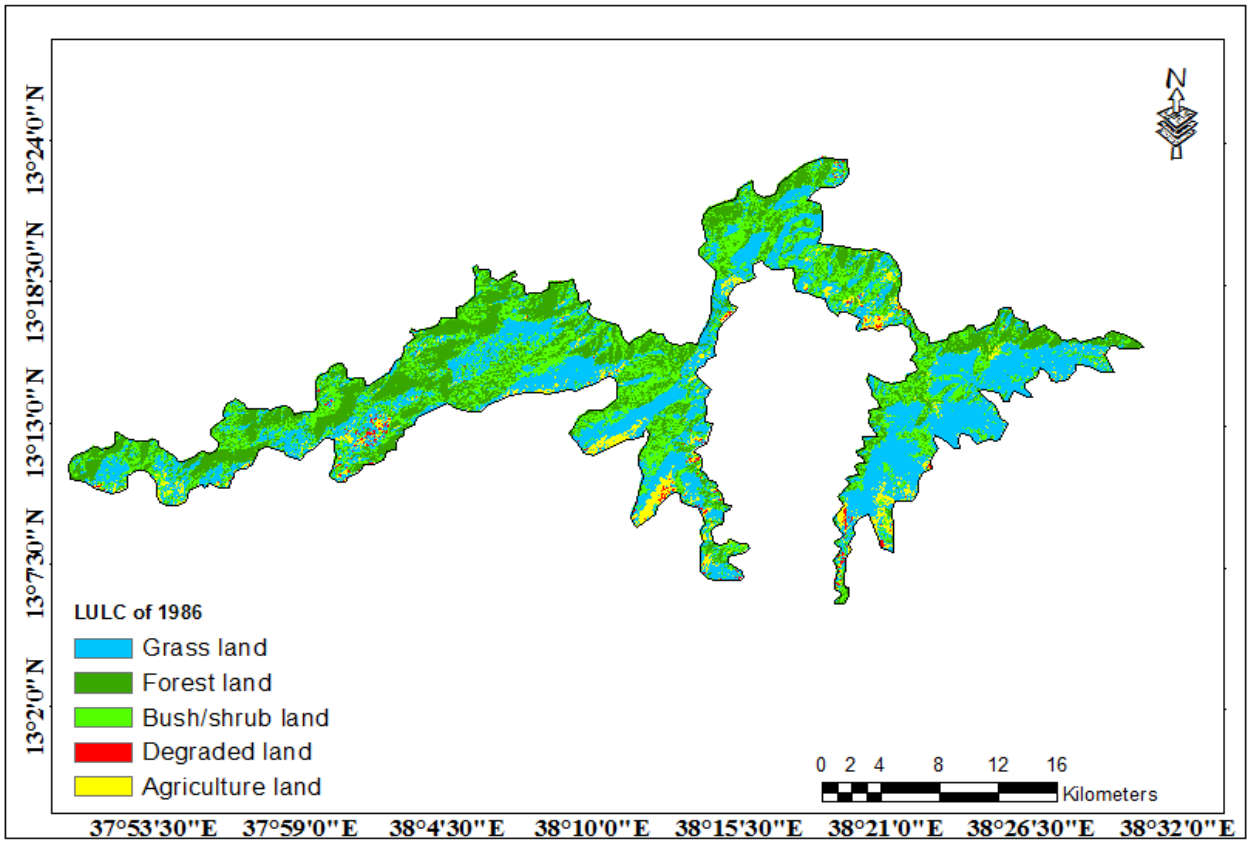

Figure 11: Map showing the 1986 land use/cover map of SMNP. Source: AWF (2015).

Due to the rapid increase in human population and livestock density in and around the SMNP, the proportion of the park overgrazed by livestock has increased (Figure 13 and Table 4). The 2015 land use land cover change assessment conducted in and around SMNP by AWF using remote sensing and GIS indicated that 12,047 ha (62.86%) from the total area of the 19,166.59 ha of grass land coverage was highly over grazed showing 37.145% of grass land more or less free from livestock grazing. Moreover, cultivated land has increased over three-fold from 1986 to 2015 (1,157.062 to 3,586.898 ha) (Table: 4). Thus, overgrazing and cultivation expansion has led to the deterioration of quality in grasslands and a reduction in biodiversity (Figure 13 & 14). Ultimately, soil productivity has declined and erosion intensified when vegetation cover is lost. In the sub afro-alpine areas, overgrazing is preventing regeneration of shrubs and trees.

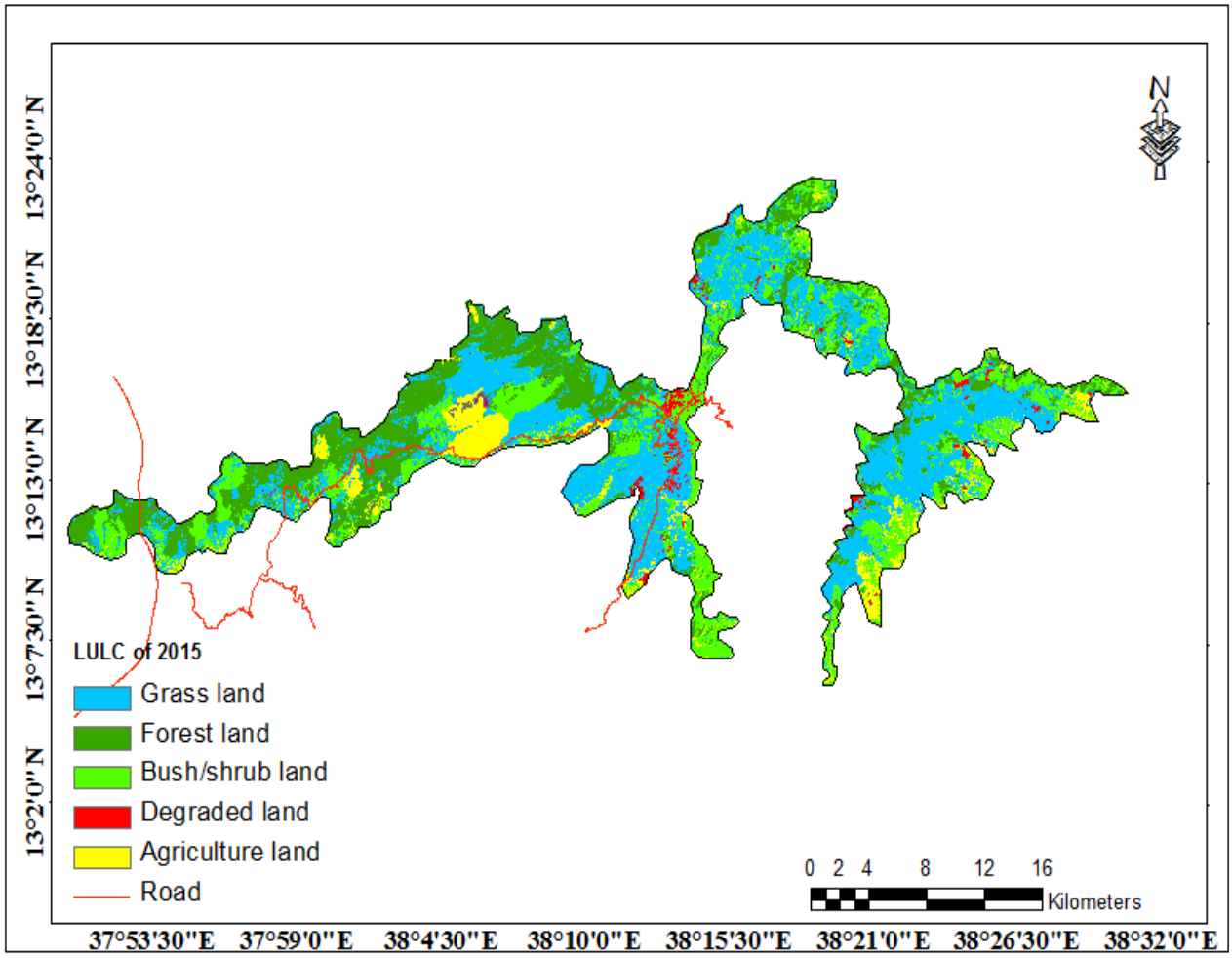

Figure 12: Land use/cover map of Simien Mountains National Park for the year 2015. *Source: AWF (2015).*

Thus, the 1986-2015 land use/cover change analysis showed that forest land suffered the highest rate of loss (1.4%/year) followed by bush land at the expense of grass land, agricultural land and degraded land (Table 4).

Table 4: Rate of LULC change in the study area. *Source: AWF (2015).*

LULC type	Year			
	1986	2015	1986 to 2015	
	Area (ha)	Area (ha)	ha/yr	%/yr
Cultivated land	1157.062	3586.898	83.78745	0.837874
Degraded land	653.519	1133.886	16.56438	0.165644
Bush/shrub land	10928.31	8994.342	-66.6885	-0.66689
Forest land	12398.51	8252.249	-142.975	-1.42975
Grass land	15996.62	19166.59	109.3093	1.093093

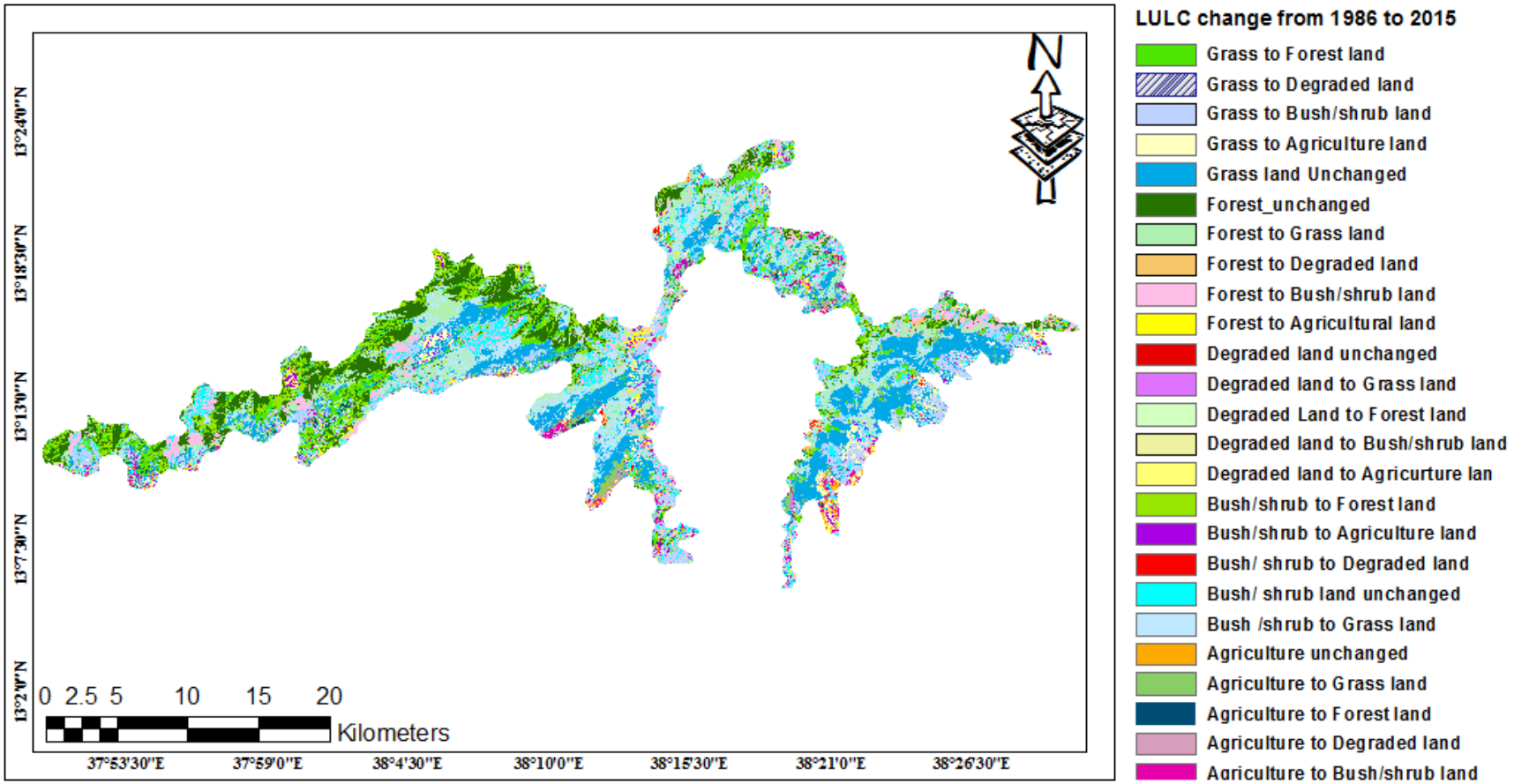

Figure 13: Spatial land use/cover change between the year 1986 and 2015. Source: AWF (2015).

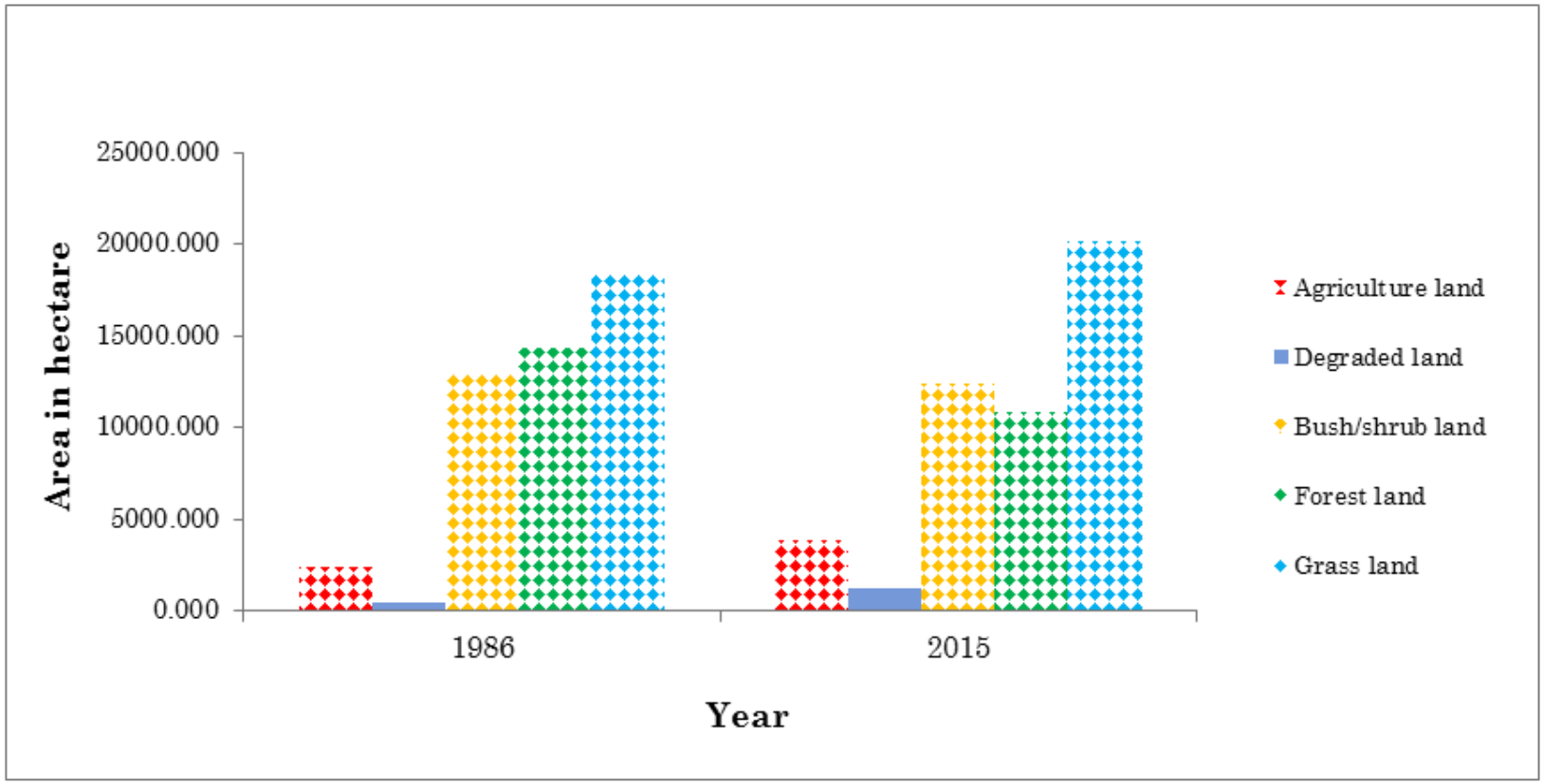

Figure 14: Graph showing relationship between land use/cover change and population growth in the study years. Source: AWF (2015).

3.4 Major Challenges in Livestock Production

Livestock have diverse functions for the livelihood of farmers in the highlands of East Africa. Livestock provide food in the form of meat and milk, nonfood items such as draft power, manure, and transport services as inputs into food crop production, and fuel for cooking. Livestock are also a source of cash income through sale of the above items, animals, hides, and skins. Furthermore, they act as a store of wealth and determine social status within the community. Because of these important functions, livestock play an important role in improving food security and alleviating poverty. Because they are central to nutrient cycling, livestock are important to the efficiency, stability, and sustainability of farming systems in the East African highlands (Ehui *et al.* 1998).

However, performance in livestock production in the aforementioned areas has been poor due to inadequate feed and nutrition, widespread diseases and poor health, poor breeding stock, and inadequate livestock policies with respect to credit, extension, marketing, and infrastructure and the Simien Mountains region is no exception. Grünenfelder (2005) has found that the degradation of the natural resources over time and difficulty of alternatives due to low residue availability and low stand density has forced some livestock owners to graze their livestock in SMNP. This study concluded that: the pressure by livestock on soil and vegetation has increased during the last 10 years due to increasing livestock holdings at village level and persistent poor management practices. For the beginning of the rainy season 2004 it was, for example, calculated that in Debir Kebele only 53-79% of the total fodder requirement (based on livestock numbers) can be covered; in Argin 56-84% and in Kerneja 75-112%. During the dry season fodder resources are even scarce, as the example of Kerneja shows. Only 44-67% of the fodder requirements can be covered in the dry season.

The livestock sector in the park area must make major reforms to achieve sufficient levels of the necessary nutritious feeds which are essential in improving livestock quality and developing livestock based enterprises.[1] Estimates of feed availability against requirements calculated for the area repeatedly indicate that there exists a large gap both quantitatively and qualitatively. On the other hand, research has conclusively confirmed that as much as 10 to 15 percent of the existing live weight gain can appreciably be increased through adequate feeding of present fattening animals. Moreover, the shorter time it takes an animal to reach mature marketable weight, the smaller the number of animals required to meet the cash need of the farmer. There is a need for increasing the amount and type of feeds available to small and medium animal fatteners.

3.5 Existing Stocking Rates versus Carrying Capacity

The stocking density inside the SMNP is very high, resulting in devastating effects on the afro-alpine grassland ecosystem. According to the research carried out in Gich village, there are 55 TLU/km^2 on the grazing land in the rainy season and 33 TLU/km^2 in the dry season. There has been some deterioration with an increase of the unpalatable grasses like Festuca due to overstocking. The animals grazing in the park are not just those of local people but also from relatives far from the park. Grazing in the Erica-belt reduces the density of Erica plants and damages the under-brush as hiding and nesting place.

Due to the increase of livestock at village level, fodder resources per TLU have decreased. Net stocking rates are high in the park and fodder requirements cannot be adequately covered at all or in some months of year (Table 5). Especially for highland villages, where crop production reaches its limits because of altitude and land degradation, relying more on livestock for securing the household income becomes already described as heavily grazed to overgrazed (Nievergelt *et al.*, 1998).

As can clearly be seen from the Table 5, the 38 Kebeles have an estimated 129, 270.2 TLUs, which means an average of 7 TLUs per HH. Ownership pattern however varied between the lower ranges of 2 TLUs per HH observed in Segenet Kebele of Beyeda Woreda and the 2.6 TLUs per HH that was witnessed in Gilbena Kebele of Telemit Woreda. Similarly, considering some Kebeles in Janamora and Adi Arkay Woredas, there are higher amounts of TLUs per HH than those in the other three Woredas. Overall, the 9 Kebeles in Janamora possessed

[1] AWF completed a study on the economic viability of an abattoir in Debark and market linkages, July 2015.

37.5% of the total stocking rates followed by Beyeda Woreda (29%) sharing significant amount of grazing resources inside the park. The figures also show that cattle, by and large, constitute 62.5% of the total TLUs in the five Woredas against 20% for shoats and 17.4% for equines.

Most of the grazing lands in the 38 Kebeles accommodated from 2 to 20.8 TLUs per each ha of grazing land (Table 5), which means that they are meeting less than 27% of the annual feed demands of available animals.

Key: Tropical Livestock Unit[23] (An animal weighing 250 Kgs). For Table 5.	
Animal	TLU Conversion factor
Camel	1,00
Cattle	0,70
Sheep	0,10
Goat	0,10
Equines	0,50

[2] FAO. 1986a. Production Yearbook 1985. No. 39, Rome

[3] MOARD. (Ministry of Agriculture and Rural Development). 2007. Livestock Master Plan Study, Phase I: Data Collection and Analysis. Volume C – Forage and seed production; Volume D – Rangelands. Addis Ababa, Ethiopia.

Table 5: Existing SR of grazing lands for 38 Kebeles bordering the SMNP. *Source: AWF (2015).*

Woreda		Kebeles	No. of cattle	No. of equines	No. of shoats	Total no. animals	Population in HHs	Average no. of animals/HH	Total TLU in Kebele	Grazing Land (ha)	SR TLU/Ha
Debark	1	Debir	2,272	2,114	8,524	12,910	860	15	3,499.8	535	6.5
	2	Zebena	4,309	1,433	2,098	7,840	484	16	3,942.6	864	4.5
	3	Dib Bahir	4,307	560	2,707	7,574	820	9	3,565.6	549	6.5
	4	Adisge Miligebsa	2,695	2,129	8,493	13,317	1,464	9	3,800.3	540	7
	5	Adebabay Tsion	2,103	837	4,782	7,722	1,463	5	2,368.8	627	3.8
	6	Abergina	2,709	3,557	5,231	11,497	729	16	4,097.9	450	9
	7	Argin Jona	2,058	1,268	6,273	9,599	978	10	2,702	378	7
	Sub total		**20,453**	**11,898**	**38,108**	**70,459**	**6,798**	**80**	**23,977**	**3,943**	**44.3**
Janamora	8	Atigeba	1,614	959	3,430	6,003	1,186	5	1,952	94	20.8
	9	Bahir Amba	1,331	877	4,212	6,420	825	8	1,791.4	158	11.3
	10	Maje Ayteter	4,877	3,675	14,486	23,038	1,740	13	6,700	540	12.4
	11	Dible	955	787	5,280	7,022	1,019	7	1,590	120	13.25
	12	Lori	1,820	861	3,985	6,666	900	7	2,103	118	18
	13	Kilil	1,229	747	3,303	5,279	887	6	1,564	219	7
	14	Zaklita	1,021	650	2,048	3,719	620	6	1,244.5	142	8.8
	15	Barna	2,436	1,645	6,231	10,312	1,320	8	3,150.8	183	17
	16	Sakba	4,906	1,645	7,248	13,799	1,240	11	4,981.5	364	13.7
	Sub total		**20,189**	**11,846**	**50,223**	**82,258**	**9,737**	**71**	**25,077**	**1,938**	**122.25**
Adi - Arkay	18	Seragudela	10,279	211	7,835	18,325	945	19	8,084	478	17
	19	Agdamiya	4,735	831	4,800	10,366	489	21	4,210	247	17
	20	Anguakerneja	18,078	1,535	8,820	28,433	1,512	19	14,304	708	20
	Sub total		**33,092**	**2,577**	**21,455**	**57,124**	**2,946**	**59**	**26,598**	**1,433**	**54**

Woreda		Kebeles	No. of cattle	No. of equines	No. of shoats	Total no. animals	Population in HHs	Average no. of animal/HH	Total TLU in Kebele	Grazing Land (ha)	SR TLU/ Ha
Beyeda	21	Bashaye	3,141	1,594	4,531	9,266	1,031	9	3,448.8	340	10
	22	Janbelew	2,726	1,083	8,110	11,919	1,375	9	3,260.7	360	9
	23	Beya	2,514	982	4,292	7,788	646	12	2,680	384	7
	24	Adilemlem	2,440	1,238	9,305	12,983	936	14	3,257.5	542	6
	25	Meleb	955	298	6,098	7,351	668	11	1,427	196	7
	26	Sabra	2,689	2,089	15,581	20,359	1,161	18	4,485	564	8
	27	Ayga Ayteter	2,631	1,099	7,410	11,140	721	15	3,132	386	8
	28	Melba Kara	2,126	1,629	12,737	16,492	1,047	16	3,576.4	692	5
	29	Beyeda Matiba	3,156	1,443	15,969	20,568	1,429	14	4,527.6	868	5
	30	Selewa	2,635	1,007	13,242	16,884	893	19	3,672.2	612	6
	31	Medebay	2,163	1,054	9,885	13,102	676	19	3,029.6	498	6
	32	Tach Ambie	862	354	2,449	3,665	535	7	1,025.3	326	3
	33	Abarie	1,887	1,007	4,219	7,113	639	11	2,246.3	458	5
	34	Segenet	1,693	591	3,971	6,255	1,295	5	1,877.7	864	2
	35	Lewarie	4,009	1,320	15,353	20,682	1,780	12	5001.6	638	8
	Sub total		**35,627**	**16,788**	**133,152**	**185,567**	**14,832**	**191**	**46,647.7**	**7,728**	**95**
Telemit	36	Avera	1,729	820	4,720	7,269	905	8	2,092.3	498	4
	37	Adi Mihret	2,381	607	5,908	8,896	927	10	2,561	618	4
	38	Gilbena	1,976	519	6,745	9,240	981	9	2,317.2	898	2.6
	Sub total		**6,086**	**1,946**	**17,373**	**25,405**	**2,813**	**27**	**6,970.5**	**2,014**	**10.6**
Grand total			**115,447**	**45,055**	**260,311**	**420,823**	**37,126**	**428**	**129,270.2**	**17,056**	**326.15**

As indicated in Table 4, at present the cultivated land for crop production inside the park covers 3,586.90 ha or (8.72%) of the total area of the park. The grasslands with scattered trees covers about 27,708 ha (67.24%) of the total area of the park which is extensively used for livestock grazing. With the total livestock number of the 38 Kebeles estimated at 129, 270.2 TLU, the average stocking rate is more than 7 TLUs per ha (Table 5). For highland areas, a maximum stocking density of only 0.5 TLU is recommended. Therefore, the stocking rate is by far greater than the recommended level. Overstocking is thus a very serious problem of the park.

Nievergelt *et al*., (1998) in their survey of the flora and fauna of the SMNP, provided evidence that shows the grasslands of the park are being overburdened by the nonstop pressure from livestock. For example, their comparison of the vegetation state of grasslands between 1973 and 1996 showed strong evidence of the growing impact of overgrazing. They found the extent of eroded and heavily overgrazed grassland areas doubled in 23 years. At the time of their survey they found nearly a quarter of the area to be heavily overgrazed or totally destroyed. Less than one-third of the remaining area (mainly on the edges) can be considered to be in a nearly natural state. They concluded that human impact has reached a level where the vegetation structure over large areas is either disturbed or destroyed and the original diversity is reduced. The threats have escalated since then.

Moreover, contact between wildlife populations and livestock increases the risk for disease transmissions as some livestock diseases can be transmitted to wild animals and thus pose a threat to the endemic and endangered fauna. Generally, the higher the stocking rate in an area, the greater the risk of infectious diseases breaking out.

Table 6: Grazing related pressures and their conservation measures with respect to ecosystems. *Source: Marco Keiner, with additions, amendments from AFW (2015).*

Ecosystems	**Stress Factors**	**Protection Measures**
Afro-alpine grassland	• Over grazing • Erosion hazards • Ecological degradation and habitat fragmentation due to settlement expansion and road construction	• Improved grazing management • Establish/operationalize grazing zoning frameworks • Biological and physical structures for soil and water conservation • Education, awareness creation and capacity building • Enforce laws and policies on wildlife conservation • Relocate local communities from core zones and important wildlife corridors • Climate investment on alternative on-farm and off-farm economic opportunities • Provide economic alternatives
Erica *Hypericum* forest	• Over grazing and cultivation • Deforestation and forest degradation • Forest fire • Erosion hazards	• Control grazing and cultivation • Enforce laws and regulations for the national park • Ecological monitoring • Raise awareness and build local capacity • Delineation of the core area and buffer zone • Natural regeneration and recovery

4. GRAZING PRESSURE REDUTION STRATEGY

Cattle grazing in Simien Mountains landscape. Photo: African Wildlife Foundation

As explained in section 1 of this strategy, one of the main threats to the ecological integrity of the SMNP is livestock over grazing driven by over-stocking rates and lack of management. Livestock are essential in the existing mixed farming systems of local smallholders, however, if not managed well, the ecosystem services upon which people, livestock and wildlife depend will be eroded.

As aptly put by Ludi (2005), of primordial importance is collaboration among all stakeholders involved including smallholder farmers, government agencies and institutions at the different levels, and international organizations in the identification of viable opportunities for sustainable development. It is widely recognized that neither protection of flora and fauna alone nor the promotion of social and economic development of local residents alone will solve the many problems in this unique area—a holistic program is needed to reconcile conservation with sustainable development, allowing the park and the people to co-exist and benefit from each other.

4.1 Strategy Goal

At the outset, the GPRS process has given due consideration and taken into account the Ethiopian Government wildlife legislative frameworks and associated wildlife laws, the Park's status as a WHS and the IUCN guidelines for National Parks (Keiner, (nd)). The basic foundations for this strategy are the *Exceptional Resource Values* associated with the SMNP, which include the particular resources and values for which the park was originally designated and aims to protect.

The overall goal of the strategy is:

To contribute towards the conservation and sustenance of unique biodiversity of SMNP and improvement of the well-being of local communities residing around the park by undertaking well defined interventions aimed at reducing the current level of grazing pressure exerted on the park's resources.

4.2 Strategic Objectives (SO)

Taking into account the situation analysis and problem identification undertaken for the SMNP and its surroundings as described in the previous chapters, objectives for the strategy were developed as indicated below (Table 7).

Table 7: Objectives for the strategy and key target areas for each.

Objectives	Key Target Areas
1. Zonation scheme developed, recognized and implemented	• Resource use areas of SMNP for no/ restricted grazing, limited/controlled grazing and zero grazing/cut and carry systems zones achieved • Degraded areas in and around the SMNP due livestock grazing rehabilitated • Livestock grazing of the resource use zones and impact on fauna and flora reduced.
2. Grazing rights limited to eligible users, promote and enhance sustainable resource use	• Impact of local community on SMNP resource use reduced; • Sustainable natural resource management practices introduced for plant species affected by livestock grazing; • Controlled and zero grazing zones conserved, through developing sustainable resource use by the local community • Cut and carry system for sustainable resource use zones inside the park and its surrounding areas promoted and enhanced.

Objectives	Key Target Areas
3. SMNP management operations and systems for resource protection and law enforcement strengthened	• Management capacity of SMNP (including human resources, infrastructure, and revenue generation) strengthened; • Effective operations and management systems based on action plan prescriptions put in place; • Donor support obtained for the implementation of proposed activities; and • Impact of local communities on SMNP resources reduced through enhancing patrolling for resource protection and law enforcement, and clarity around grazing management.
4. Community-Park collaboration improved and resource use/land use conflicts in and around SMNP reduced	• Park-community cooperation and collaborative management systems enhanced; • Community understanding of SMNP values and functions improved, through strengthening conservation awareness activities; • Mechanisms enabling local communities to benefit from SMNP developed; and • Mechanisms enabling local government and other stakeholders to cooperate and participate in park management established.
5. The SMNP's unique fauna, flora and their habitats conserved	• Ecological monitoring and research activities supporting the effective management and conservation of SMNP,s flora, fauna and their habitats enhanced; • Conservation measures and, where appropriate, sustainable management practices introduced for grass species that are being targeted and depleted by livestock grazing strengthened; and • Degraded habitats in and around ANP are rehabilitated, and Ecological monitoring plan developed and implemented.

4.3 Detailed Outputs and Activities

Outputs to be expected from the realization of each of the above strategic objectives and associated activities are presented in detail hereunder. The Strategic Objectives will be critical and interlinked in addressing the livestock grazing pressure in the area.

SO 1: Zonation Scheme Designed, Recognized and Implemented

Settlement, cultivation, livestock grazing and other resource uses in the National Parks and Wildlife Sanctuaries are illegal under current legislation (Regulation 163/2008). However, the designated resource use zones are in line with the Wildlife Development, Conservation and Utilization Regulations No. 163/2008) which states that EWCA/SMNP can permit, in writing, seasonal utilization of natural resources based on an agreement made between park management and surrounding communities [Article 5 (2e)]. Under this legislation, seasonal natural resource use, combined with formal natural resource use agreements drawn up and signed between SMNP management and local communities could be allowed and provides a legal basis for temporary seasonal natural resource use in the park.

One of the main drivers of the grazing threat is the absence of any demarcation or zonation within the stratified areas that can guide proper implementation of specific restrictions of resource uses. It should be noted, that in

situations when EWCA has designated no-go areas with involvement of communities in the decision making process, it has succeeded; thus, this strategy aims to take and replicate this approach. Many wildlife researchers (e.g., Ejigu *et. al*., 2015) advocate creation of resource use zones considering wildlife distribution and land uses in the Simien Mountains as a useful tool to balance human and conservation interests.

Moreover, the idea of zoning the park area has been taken up in the SMNP GMP; however, it has not been implemented. The wildlife development and soil rehabilitation management zones currently proposed in the GMP for the park offer a good basis to determine the "no use" zones, the proposed zones include a core area.

The outputs that the strategy will deliver include:

- Resource use zonation schemes of the park in line with the existing rules and regulations and resource use for the different zones officially endorsed by the concerned body and agreed by relevant stakeholders;
- Delineation of the park's resource use zones on the ground with respect to actual implementation of the zonation scheme;
- Mitigation measures that reduces the existing resource use conflict implemented;
- Schemes to improve range and grassland conditions for wildlife launched; and
- Core areas of the park affected by human activities rehabilitated.

Existing Zonation

Many researchers and development workers agree that natural pasture comprises the largest feed resource in the highlands of Ethiopia and this holds true also for the SMNP. Therefore, as shown in Table 6, 38 Kebeles have a total areas of 189, 595 ha of which 41, 200 ha (22%) lies inside the park area. while the remaining 148,445.50 ha (72%) is outside the demarcated area of the park boundary.

Design of the land use zones considered a range of information on wildlife habitat, land use patterns, and the management input as below:

- Habitat range information of key species and distribution of the major wildlife species.
- The extent of livestock pressure on wildlife habitat.
- Wildlife corridors (those connecting the main park area from *Chennek* to *Siliki* through *Arquazeye* and the other one stretching between *Mentaber* and *Tiguna* connecting the northern and southern parts of the *Ras Dejen* wildlife reserve area) were identified and considered for the mentioned zonation.
- The GMP for SMNP and other wildlife studies and researchers recommendations, were factored into the zonation scheme. Note AWF completed a tourism scheme for the park.

From the total area of the park 41,200 ha, 37,843.23 ha (92%) has been proposed as no grazing or protected zone while the remaining 3,350.78 ha (8%) is proposed as introduction of grass cut and carry system or sustainable resource use zone and limited or controlled grazing zone around settlement areas and agricultural lands in the park (Table 6).

The no grazing zone comprises 92% of the area inside the park besides the sustainable resource use and controlled grazing zones (table 6). Activities outlined under the protected zone are designed to protect the natural resources of the park. Given the current level of ecological degradation, this zone should be carefully monitored to document soil and vegetation recovery. Active interventions to rehabilitate severely degraded areas must also be explored.

Table 8: Grazing land used by the 37 Kebeles bordering the SMNP in hectares. *Source: AWF (2015).*

Woreda	**Kebele**	**Area Coverage (ha)**			**Land Use proposed inside SMNP (ha)**	
		Inside SMNP	Outside	Sum	No Grazing/ protected Zone	Cut & Carry System of grass
Adi Arkay	Seragudela	1, 098.09	6, 362.91	7, 461.00	1, 098.09	-
	Agdamaya	2, 811.69	4, 164.31	6, 976.00	2, 758.39	53.30
	Angua Kerneja	4, 902.70	10, 877.30	15, 780.00	4, 695.96	206.75
	Meni Wonberge	323.41	7, 301.59	7, 625.00	323.41	-
Beyeda	Bashaye	601.94	3, 262.06	3, 864.00	469.63	132.31
	Beya	28.61	2, 972.39	3, 001.00	4.91	23.70
	Adi Lemlem	819.37	2, 343.63	3, 163.00	593.47	225.90
	Meleba	330.68	2, 760.32	3, 091.00	330.68	-
	Sabra	1, 092.18	3, 672.82	4, 765.00	1, 092.18	-
	Ayga Atere	509.99	3, 132.01	3, 642.00	336.12	173.87
	Melba Kara	161.67	4, 133.33	4, 295.00	131.32	30.35
	Beyeda Matiba	1, 401.10	5, 855.90	7, 257.00	1, 360.04	41.06
	Selewa	846.01	4, 262.99	5, 109.00	676.72	169.29
	Medebay	316.99	2, 517.01	2, 834.00	263.38	53.61
	Tachambe	81.31	1, 507.69	1, 589.00	81.31	-
	Abare	605.26	1, 751.74	2, 357.00	416.52	188.74
	Segenet	815.54	5, 210.46	6, 026.00	800.96	14.58
	Lewarie	263.38	4, 44.62	5, 208.00	153.54	109.85

Table 8. Continued

Woreda	Kebele	Area Coverage (ha)			Land Use proposed inside SMNP (ha)	
		Inside SMNP	Outside	Sum	No Grazing/ protected Zone	Cut & Carry System of grass
Debark	Adisgie Miligebsa	377.75	4, 128.25	4, 506.00	350.82	26.93
	Abergina	2, 871.72	1, 555.28	4, 427.00	2, 061.46	810.26
	Adebabay-Tsion	439.00	5, 402.00	5, 841.00	439.00	-
	Argin-Jona	2, 838.65	1, 951.35	4, 790.00	2, 465.03	373.62
	Dib-Bahir	1, 395.34	5, 232.66	6, 628.00	1, 389.17	6.17
	Zebena	162.31	1, 850.69	2, 013.00	146.01	16.31
	Debir	817.15	3, 239.85	4, 057.00	800.72	16.43
Janamora	Barna	3, 977.50	3, 782.50	7, 760.00	3, 550.38	427.12
	Atigeba	34.33	3, 624.67	3, 659.00	34.33	-
	Dibil	2, 569.17	2, 062.83	4, 632.00	2, 569.17	-
	Lori	1, 058.15	3, 795.85	4, 854.00	1, 058.15	-
	Majo Ayiteter	2, 648.14	4, 423.86	7, 072.00	2, 648.14	-
	Kilil	861.55	3, 105.45	3, 967.00	857.68	3.87
	Bahir-Amba	378.49	3, 252.51	3, 631.00	378.49	-
	Zakilta	475.20	3, 817.80	4, 293.00	475.20	-
	Sakiba	761.70	3, 627.30	4, 389.00	559.45	202.26
Tselemt	Avera	224.79	5, 974.21	6, 199.00	224.79	-
	Adimihret	834.16	5, 203.84	6, 038.00	834.16	-
	Gilbena	1, 414.48	5, 381.52	6, 796.00	1, 414.48	-
Grand Total	**41,200**	**148,445.50**	**189, 595.00**	**37, 843.23**		**3, 356.78**

A) Core Areas (No grazing/Protected zone)

The No Grazing Zone (NGZ) (Protected Zone) is the main wildlife habitat area inside the SMNP (e.g. cliffs, escarpments), and gives long-term protection to the landscape, ecosystem and species of concern (Figure 5). This zone is not subject to human activity, except research and monitoring. The zone covers 37, 843 ha forming 92 % of SMNP, the area comprises the main potential and actual habitats of Walia ibex, Ethiopian wolf, Gelada monkey, Bushbuck, Klipspringer and other flora and fauna (i.e. areas steeper than 45°, areas where observations of these species have been made, a strip on the upper edges of the cliffs and habitat connecting corridors) as well as the hunting grounds of birds of prey, grass lands, montane forests, almost and afro alpine and sub afro alpine habitats. Here the objective is to preserve the habitat and maintain the natural resources undisturbed, so that it will remain conducive for survival of the wildlife in general and the endangered species in particular. Therefore, the no grazing zone will be closed for any human activities/ interferences such as settlement, cultivation, and cattle grazing. Due to lack of alternatives, traditional extraction of some resources on sustainable basis, at specified locations, may be allowed; with an agreement that these practices will be gradually terminated. The major activities to be carried out in the protected zone include:

- Strengthen protection (patrolling) activities;
- Prohibit infrastructural development and other human activities;
- Install sign boards where necessary;
- Conduct research and monitoring on the sustainability of the fauna and flora.

Some of the present threats to the no grazing area include grass cutting, livestock grazing and other associated perturbations. The target is to give highest protection to the endemic and endangered species of fauna and flora

and other wildlife populations. Prescriptions set for this zone aim to ensure habitats in the same remain undisturbed by human interference.

The following activities are not allowed in the NGZ:

- Cultivation
- Livestock grazing
- Hunting
- Tree and plant cutting
- Dogs
- Digging
- Depositing
- Infrastructure development
- Any other activities that may have a negative impact on natural resources are prohibited.

Strict protection is necessary for this zone by EWCA. Active ecological restoration should be explored, and awareness creation amongst communities and stakeholders is necessary.

Table 9: Proposed no grazing/protected areas in SMNP. Source: Survey focus group discussion of the assessment (2015).

Woredas		**Kebeles**	**Proposed no grazing zones/ protected zones**
1	Janamora	Barna	Includes all the areas beyond 350 m distance from main park boundary
2		Sakiba	Includes all the areas beyond 300 m distance from main park boundary
3		Zakilta	Follows the original park boundary
4		Bahir Amba	Follows the original park boundary
5		Atigeba	Follows the original park boundary
6		Dibil	Follows the original park boundary
7		Lori	Follows the original park boundary
8		Maje Ayteter	Follows the original park boundary
9		Kilil	Follows the original park boundary
10	Debark	Zebena	Includes all the areas beyond 300 m distance from main park boundary
11		Debir	Follows the original park boundary
12		Dib Bahir	Follows the original park boundary
13		Adisge Milligebsa	Follows the original park boundary
14		Adebabay Tsion	Follows the original park boundary
15		Abergina	Follows the original park boundary
16		Argin Jona	Includes all the areas beyond 350 m distance from main park boundary
17	Adi-Arkay	Seragudela	Follows the original park boundary
18		Agdamaya	Follows the original park boundary

Woredas		**Kebeles**	**Proposed no grazing zones/ protected zones**
19	Adi-Arkay	Angua Kerneja	Follows the original park boundary
20		Meni Wonberge	Follows the original park boundary
21	Beyeda	Bashaye	Includes all the areas beyond 300 m distance from main park boundary
22		Jan Belew	Includes all the areas beyond 300 m distance from main park boundary
23		Beya	Includes all the areas beyond 300 m distance from main park boundary
24	Beyeda	Adi Lemlem	Includes all the areas beyond 300 m distance from main park boundary
25		Meleb	Includes all the areas beyond 300 m distance from main park boundary
26		Sabra	Includes all the areas beyond 300 m distance from main park boundary
27		Ayga Atere	Includes all the areas beyond 300 m distance from main park boundary
28		Melba Kara	Includes all the areas beyond 300 m distance from main park boundary
29		Beyeda Matiba	Follows the original park boundary
30		Selewa	Includes all the areas beyond 300 m distance from main park boundary
31		Medebay	Includes all the areas beyond 300 m distance from main park boundary
32		Tach-Ambe	Follows the original park boundary
33		Abare	Follows the original park boundary
34		Segenet	Follows the original park boundary
35		Lewarie	Includes all the areas beyond 300 m distance from main park boundary
36	Tselemit	Avera	Follows the original park boundary
37		Adimihret	Follows the original park boundary
38		Gilbena	Follows the original park boundary

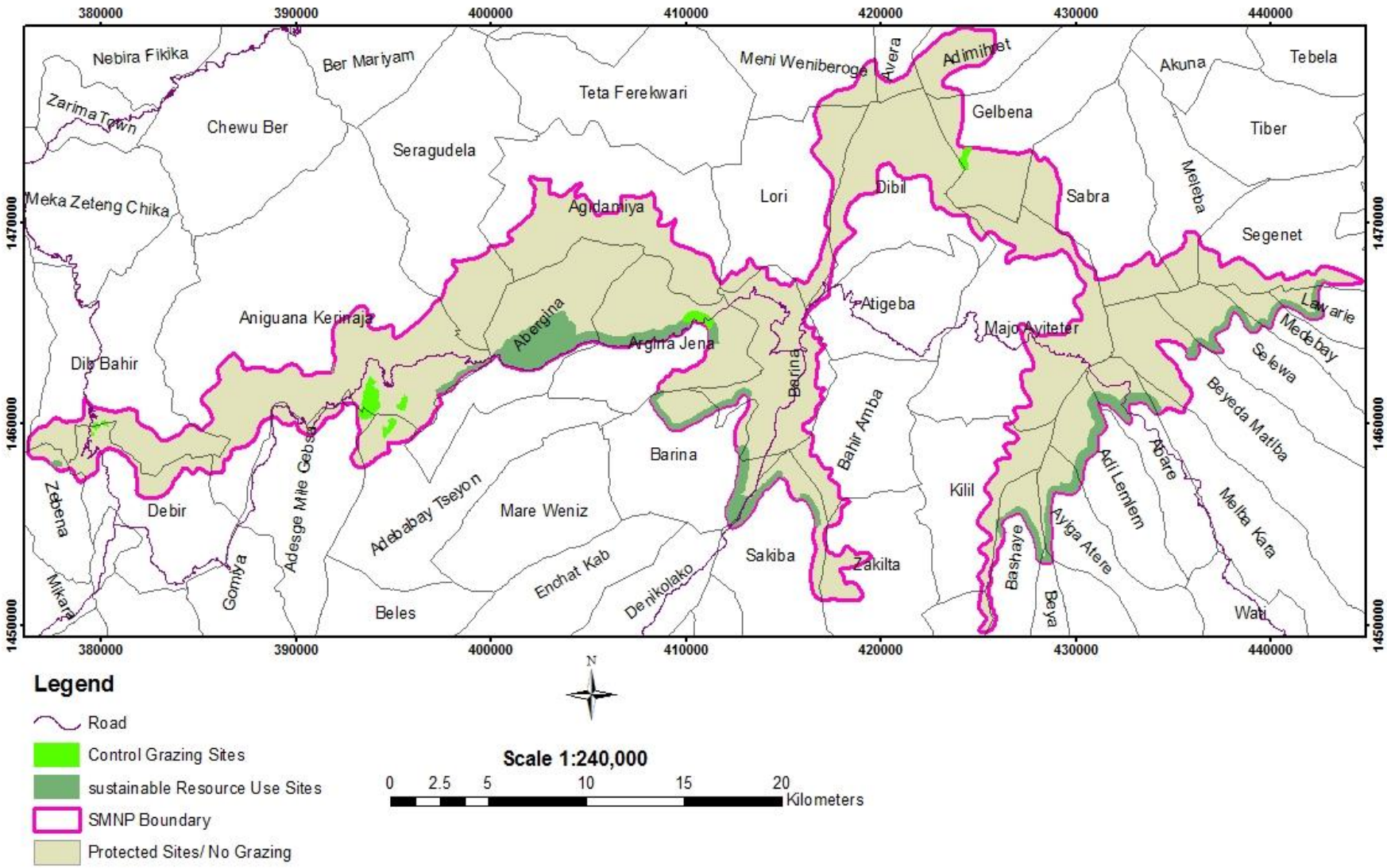

Figure 15: Map of SMNP showing the no grazing zones/protected zone. Source: AWF (2015).

B) Controlled/Limited Grazing Zones (C/LGZ)

This proposed land use is in line with the Wildlife Development, Conservation and Utilization Regulations No. 163/2008) which states that the authority can permit, in writing, seasonal utilization of natural resources based on an agreement made between national park management and surrounding communities [Article 5 (2e)]. Under this legislation, seasonal natural resource use, combined with formal natural resource use agreements drawn up and signed between SMNP management and local communities could be allowed and provides a legal basis for temporary seasonal natural resource use in the park.

The target for this land use is to reduce the grazing pressure, i.e. the number of cattle, sheep and goats residing and grazing inside SMNP. This means that voluntary relocation of park dwellers (Gitch village and other villages) outside the park area should be given due consideration by Federal and local governments. Erosion damage created due to excessive grazing and agriculture should be mitigated and in the long term natural recovery should allow for the regeneration and rehabilitation of Erica forests and wildlife habitats. Dogs should be banned entering from the park and in particular this zone—they often travel with herders.

The key measures to be taken under the proposed land use include: land use agreements signed with EWCA/SMNP, abandonment of agricultural and pasture use as soon as possible, soil conservation with labor-intensive mechanical measures and re-forestation programs to promote rehabilitation and managed grazing as per this strategy and agreement with EWCA/SMNP. Table 8 & 9, Figure 16 & 17 show the proposed controlled grazing zones inside and the buffer areas of the park.

Table 10: The proposed zonation settlement inside the SMNP as controlled/limited grazing zone. Source: Survey and focus group discussion of the study (2015).

Woredas		**Kebeles**	**Proposed settlement areas for controlled or limited grazing**
1	Debark	Debir	Limalimo village
2		Zebena	-
3		Dib Bahir	-
4		Adisge Miligebsa	Michibign and Kebero villages
5		Adebabay Tsion	Megordemiya
6		Abergina	-
7		Argin Jona	Kidane Bado, Getabit and Key Afer villages
8	Adi Arkay	Angua Kerneja	-
9		Sera Gudela	-
10		Agdamiya	Daliya village

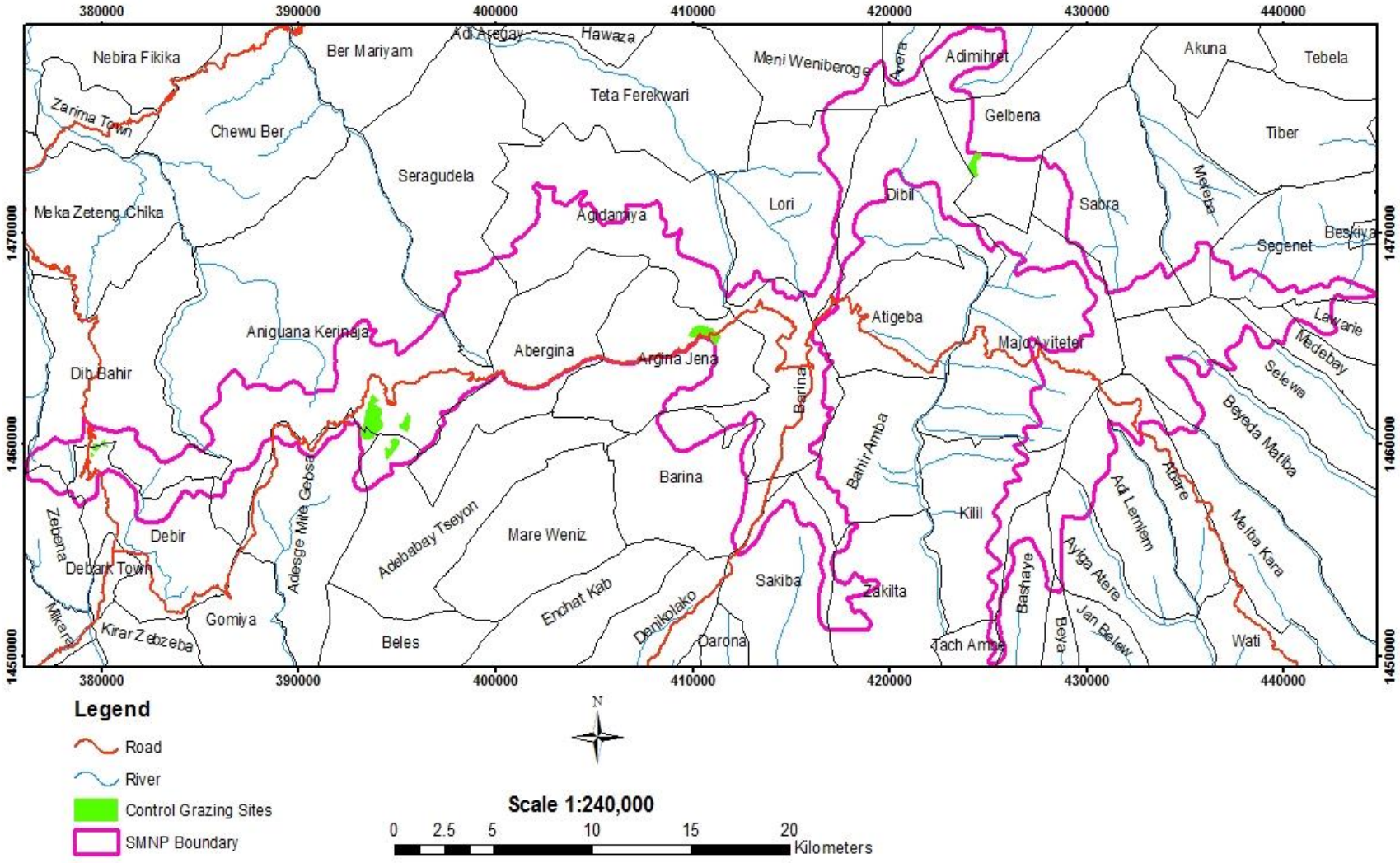

Figure 16: Map of SMNP showing controlled/limited grazing zones. Source: AWF (2015).

Table 11: Resource use zones as controlled/limited grazing zone in the buffer of SMNP. Source: AWF (2015).

Woredas		**Kebele Administrations**	**Delineated areas in ha for controlled grazing on the buffer zone of SMNP**
1	Debark	Abergina	7 ha
2		Arginjona	130.75 ha
3	Janamora	Barna	934.54 ha
4		Sakba	563.18 ha
5		Denkolako	305.54 ha
6	Beyeda	Bashaye	194.29 ha
7		Ayga-Atere	228.99 ha
8		Adilemlem	394.2 ha
9		Beya	41.48 ha
10		Jan-Belew	30.09 ha
11		Melba-Kore	301.25 ha
12		Beyeda-Matiba	450.97.ha
13		Selewa	376.53 ha
14		Liware	271.20 ha
15		Medebay	77.11 ha
16		Abare	205.17 ha
Grand total			**4,512.3 ha**

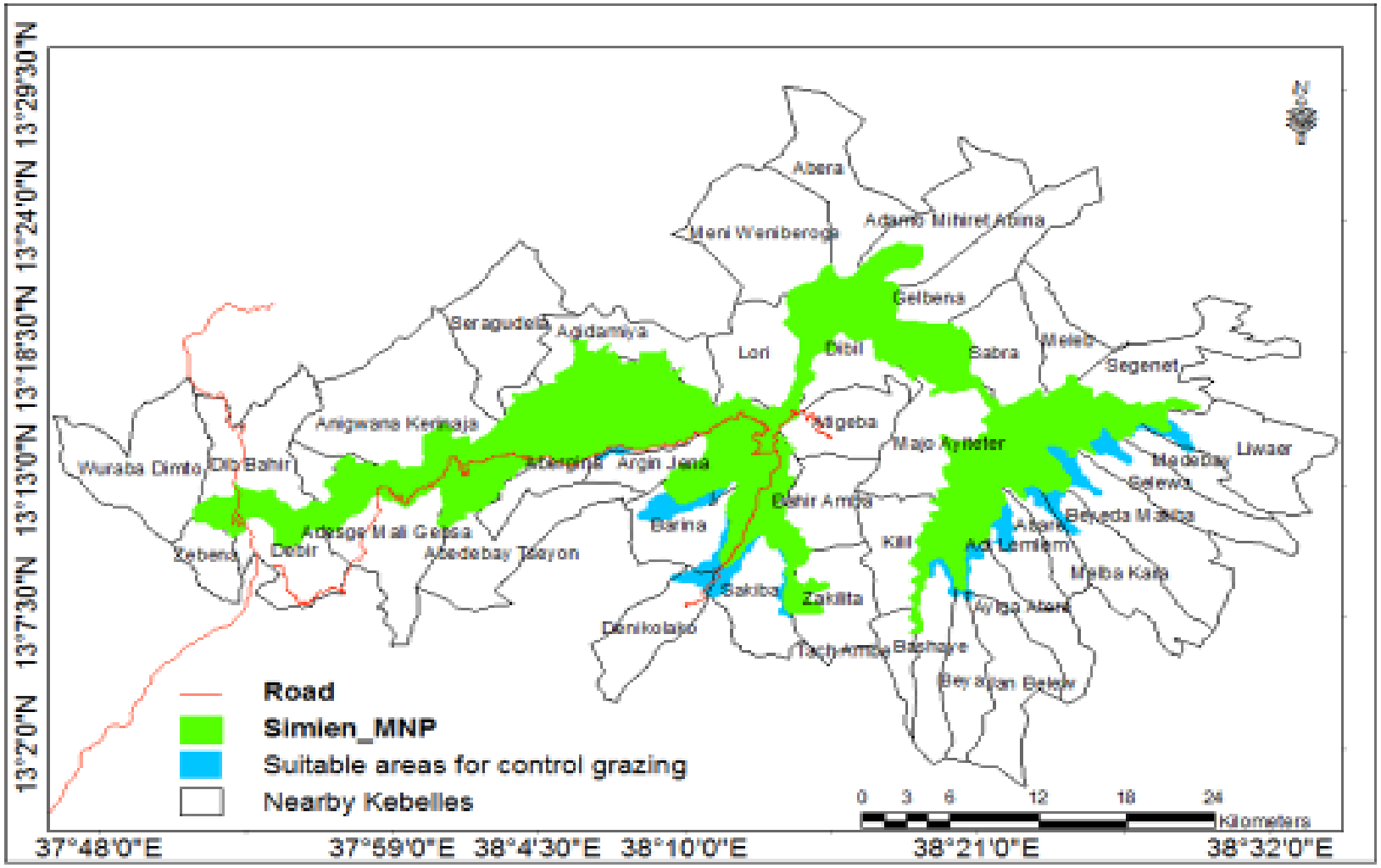

Figure 17: Map showing areas designated for controlled or limited grazing zones on the buffer zone of the park. Source: AWF (2015).

C) Sustainable Resource Use Zones (C/LGZ)

In addition to livestock grazing, there are other traditional natural resource uses in the SMNP such as beekeeping and grass cutting for thatching and pasture (Table 9 and Table 10). Since the establishment of the park, some attempts have been made by the park management to regulate or prohibit these traditional resource uses. However, the use of these natural resources need management attention to abate potential negative impacts on the ecosystem. Thus, formalizing seasonal use and regulating number of users is the recommended option for the adaptive management of these resources where agreed levels of use will be monitored and adjusted by the park management according to impact, with a long-term goal to significantly reduce current levels of legal use, and halt all illegal use in the future (Figure 16 and 19). EWCA would enter into signed agreements with the users as per the zones outlined below.

Table 12: Total Proposed areas of sustainable resource use/ grass cut and carry system. Source: AWF (2015).

Woreda	**Kebele**	**Areas inside the park in ha delineated for cut & carry use**
Adi Arikay	Angua Kerneja	86.73166
Beyeda	Abare	188.7371
Beyeda	Adi Lemlem	225.9016
Beyeda	Ayiga Atere	173.8735
Beyeda	Bashaye	132.3102
Beyeda	Beya	23.70341
Beyeda	Melba Kara	30.35147
Beyeda	Medebay	53.61023
Beyeda	Beyeda Matiba	41.05846
Beyeda	Lawarie	109.8477
Beyeda	Segenet	14.58272
Beyeda	Selewa	169.2862
Debark	Zebena	16.30935
Debark	Abergina	811.3504
Debark	Arginjona	294.5534
Janamora	Barina	427.1165
Janamora	Sakiba	202.255
Janamora	Kilil	3.874767
Total sustainable resource use area		3 005.454
8% of the total park area		7. 303743

Table 13: The proposed zonation of SMNP as sustainable resource use or grass cut and carry system. Source: Survey and focus group discussion of the study (2015).

Woredas	**Kebeles**	**Delineated areas inside the park for cut and carry use zones**
Janamora	Barna	Includes all the neighboring areas within 350 m distance from main park boundary
	Sakiba	Includes all the neighboring areas within 300 m distance from main park boundary
	Zakilta	-
	Bahir Amba	-
	Atigeba	-
	Dibil	-
	Lori	-
	Maje Ayteter	-
	Kilil	-
Debark	Zebena	Includes all the neighboring areas within 300 m distance from main park boundary
	Debir	-
	Dib Bahir	-
	Adisge Milligebsa	-
	Adebabay Tsion	-
	Abergina	-
	Argin Jona	Includes all the neighboring areas within 350 m distance from main park boundary
Adi-Arkay	Seragudela	-
	Agdamaya	-
	Angua Kerneja	-
	Meni Wonberge	-
Beyeda	Bashaye	Includes all the neighboring areas within 300 m distance from main park boundary
	Jan Belew	Includes all the neighboring areas within 300 m distance from main park boundary
	Beya	Includes all the neighboring areas within 300 m distance from main park boundary

Woredas	**Kebeles**	**Delineated areas inside the park for cut and carry use zones**
	Adi Lemlem	Includes all the neighboring areas within 300 m distance from main park boundary
	Meleb	Includes all the neighboring areas within 300 m distance from main park boundary
	Sabra	Includes all the neighboring areas within 300 m distance from main park boundary
	Ayga Atere	Includes all the neighboring areas within 300 m distance from main park boundary
	Melba Kara	Includes all the neighboring areas within 300 m distance from main park boundary
	Beyeda Matiba	Follows the original park boundary
	Selewa	Includes all the neighboring areas within 300 m distance from main park boundary
	Medebay	Includes all the neighboring areas within 300 m distance from main park boundary
	Tach-Ambe	-
	Abare	-
	Segenet	-
	Lewarie	Includes all the neighboring areas within 300 m distance from main park boundary
Tselemit	Avera	-
	Adimihret	-
	Gilbena	-

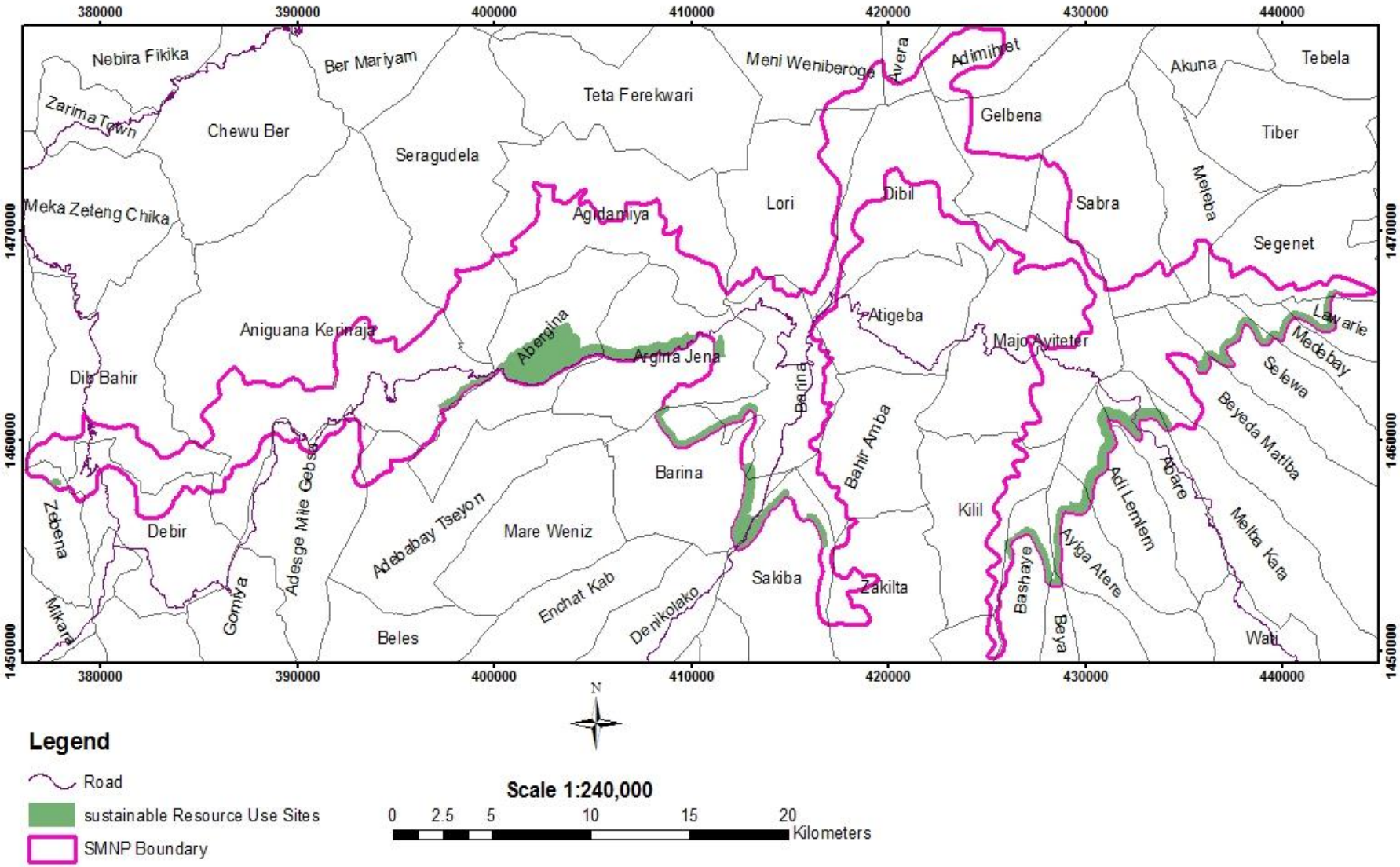

Figure 18: Map showing proposed sustainable resource use or cut and carry system zones**.** Source: AWF (2015).

It should be well understood that the zonation that restricts livestock use in certain areas is the only way to protect the long term ecological viability of the Park. Recognizing that implementation of the zonation plan in the park with such extensive historic use by neighboring communities represents a significant change, it will be difficult to enforce wildlife rules and regulations in a short period of time. Therefore, a step by step approach should be chosen and developed by EWCA / SMNP in collaboration with other stakeholders whereby selected areas of great importance are excluded first from any livestock use followed by other, less important areas. This will be completed as part of this study. Moreover, the different workshops that have been conducted recently among the different stakeholders and partners revealed that the local community neighboring the park agreed with the newly developed GPRS and they agreed to restrict significant amount areas of the park from free grazing as a pilot site.

Output 1: Exclusion of livestock and other animals from the no grazing zones achieved

To implement this plan, extensive meetings with communities will be required to ensure full awareness of the plan and program. In addition, a map should be produced and distributed throughout the region so that the boundaries are clear to all stakeholders, these should be large maps that can be displayed in public offices and community centers. EWCA will need to enter into management agreements for the limited resource uses.

Output 2: Exclusion of pack-animals in the loading and unloading sites in the park

There should be a prohibition of pack-animals' long stay in the loading and unloading sites at Sankaber, Gich and Chenek areas of the park. There is a need to seek other alternatives for the transportation system of these animals. Short term measures should consider construction of fences to house short stay of the pack-animals at these sites. To avoid grazing around loading and unloading sites owners of pack animals should be instructed/required to carry sufficient food for their animals while they are in these sites. Additionally the pack animals to enter these sites should be monitored and certified for health to reduce the chances of disease introduction. Long term measures should focus on construction of alternative sites outside the park area.

SO 2: Grazing Rights Limited to Eligible Users and Sustainable Resources Use Enhanced

Reversing current levels of resource degradation in the park requires immediate implementation of the different strategic objectives and SO 2 in particular, which aims at setting sustainable use levels, inscription of by-laws, and regularly monitoring their enforcement. The main targets of SO 2 are the areas within the Controlled/Limited Grazing (C/LGZ) zone. The outputs selected for realizing this objective follow.

Output 1: Sustainable Stocking Rates Determined for Limited/ Controlled Grazing Zones; and

To properly implement the grazing plan, a strict management regime will need to be put in place for the areas where limited grazing will continue. Setting sustainable stocking rates for these areas will be the first measure. Knowing the productivity of each of the grasslands in the various locations and altitudes of the park is necessary. Based on this, the carrying capacity of each area then will be determined. Following this, determining the optimum stocking rate to be allowed for respective areas can thus be easily achieved. Under this output, it will be necessary to undertake the following activities:

- Collect and analyze relevant information on resource users;
- Clearly identify (Households) HHs of each Kebele eligible to use resources of the park within the zones;
- Inventory the types and numbers of all livestock owned by each of the above HHs;
- Measure area sizes and estimate productivity levels of the grasslands within the Controlled/ Limited Grazing zone through scientifically acceptable methodologies;
- Determine optimum carrying capacity for grazing lands in each of the 38 Kebeles; and
- Set sustainable stocking rates based on the above.

Output 2: The Ethiopian Wildlife and Associated Laws Put in Place.

The rationale behind this output is that livestock grazing rights should be limited to certain local communities under clear arrangements clarifying the types and numbers of livestock that will be authorized to graze. Not only it is necessary to limit the type of users, but also the number and type of animals each HH is allowed to graze within a given area. This aims at limiting user rights so that resources are owned by a defined group of users who can also advocate and participate in their protection. The most effective way of achieving this will be through identifying the villages and HHs in each Kebele that significant affects the park by putting livestock grazing pressure. These groups will be forced to obey with the rules and regulation of wildlife and associated laws. Eligible HHs in each user group are to apply effective collective action for the management of their respective grazing lands, this will require each user group to:

i) With participation of concerned communities prepare and agree on a set of rules that govern access to the resource;
ii) Make arrangements for financial, labor or other contributions required in management of the resource; and
iii) Agree on a system of enforcement of the use restrictions and community contributions.

Sustainable resource management requires that wildlife rules and regulations be effectively endorsed. Efforts should be put into seeking adequate buy in from all community members. This can be achieved through incentives for cooperating group members. Some level of enforcement and encouragement will be required to ensure members adhere to the set wildlife rules and regulations. In instances of continued disregard of the set wildlife laws penalties should be applied according to an established penalty system. Added to this strict enforcement and adherence to the wildlife law will be the central pillar of collective action. Monitoring of application and reporting of violators can be done in either of two ways. If conditions do not permit to security personnel, then all households within each user group will have to rotate the responsibility for guarding and monitoring the grazing areas and behavior. Collective consequences and penalties are recommended. For example, if one user in the community violates the wildlife rules and regulations, this will result in consequences to the community at large.

As part of the solution, programs such as production of on-farm fodder, introduction of improved breeds and zero-grazing practices should be initiated, targeting well performing user groups as incentives.

SO 3: SMNP Management Operations and Systems for Resource Protection and Law Enforcement strengthened

Building strong SMNP operational capacity goes hand-in-hand with achieving the other strategic management objectives described, all of which are dependent on a strong and empowered SMNP management team. Finding ways of developing this management capacity will therefore be a vital component in the effectiveness of achieving, the GPRS. The action plan details some specific outputs that need to be achieved in the short and medium timeframe. Since the capacity of EWCA to finance these initiatives is limited, it is important to seek donor support for funding the implementation of the GPRS.

Building strong Natural Resource Management (NRM) institutions will involve providing capacity building support in defining the roles and functions of these institutions, and establishing mechanisms to sustain them in the absence of external support. It will also involve working with the community, public and non-governmental institutions to enhance the development of alternative livelihoods and new economic activities that serve to reduce pressure on SMNP's natural resources. Helping to build effective public and community institutions will be an important function of the SMNP Community Conservation section, assisted by outside agencies such as the AWF.

Increase SMNP Staff Capacity

Critical to the implementation and monitoring of the grazing reduction strategy is the capacity of EWCA. As managing authority, EWCA/SMNP needs to be capable enough in implementing and monitoring this strategy. While EWCA staff is comprised of a dedicated group of individuals, their capacity is low. Through training and procurement of equipment AWF is working to develop the capacity of the SMNP staff. However, gaps still remain. This is particularly important with reference to the number of rangers and their capacity, as they are at the front-line to resource protection activities and thus must be properly trained, equipped and managed to ensure that they are motivated, effective and professional.

To fill some of these capacity gaps, AWF provided intensive training on rangers' patrol techniques and tactics courses. The training courses were conducted in the field incorporating the use of different monitoring equipment.

Further training plan must be drawn up and implemented as funding allows. SMNP scout training must be undertaken to enhance law enforcement and control illegal activities. To maintain motivation and effectiveness, it is imperative that the scout corps is trained and retrained regularly. Resource protection effectiveness must be monitored to ensure patrolling and coverage is effective, community relations are not compromised and that the scout corps remains motivated. The evaluations of these monitoring outputs should fed into the ongoing training schedule that is planned annually. As funds allow external trainers should be brought in to retrain the trainers and to add variety to the scout training.

Updating General Management Plan and Standard Operating Procedures (SOPs)

It is important that operations are standardized so that all relevant parties affected by SMNP management (scouts and communities) are aware of procedures and expectations and in particular around the grazing strategy—what is allowed, not allowed and where. The GMP is the guiding management document for SMNP and should be updated in 2016 and complement the grazing strategy. Based on this, a series of standard operating procedures should be adopted, including how to manage and monitor the grazing zones.

Annual patrolling plans for the SMNP must be prepared, based on the distribution of outposts, scouts and type of terrain, as well as knowledge of the greatest threats to the principal ecosystem components. The underlying principle of SMNP patrol coverage is that every part of the park should be reached by a patrol on a monthly basis at the very minimum. Annual patrol planning must be inclusive and involve field staff at each outpost, as this will assist acceptance of its design by all resource protection staff, thereby ensuring future accountability. To this end, some initiatives have been undertaken by AWF in collaboration with EWCA towards up-dating the existing documents and standardizing operational procedures.

Enhanced Monitoring

Resource protection monitoring systems must be established to ensure that patrolling is effective–in terms of combating threats, meeting other requirements (e.g. Ranger Based Monitoring needs), coverage and also understanding shortcomings (e.g. low motivation or discipline, staff shortages, equipment needs, etc.). Resource protection monitoring systems should be continually up-graded as this is the best and most consistent information on what is actually happening on the ground. Once GPS units and radios are acquired, the use of these to report patrol positions, ideally two or three times a day at set times, as well as more regularly on report forms should be investigated. In this regard, some field materials such as GPS, binoculars, warm jackets and uniforms for the SMNP staff had been provided to rangers and park staff by AWF.

Enhanced Awareness of Legal Framework
Resource protection systems are underpinned by law enforcement, which requires synergy and understanding at all levels of the legal system. Typically, laws pertaining to PAs in Ethiopia are not well understood amongst local police and the judiciary who are not trained in this area. Local workshops should be held to raise awareness and discuss the implications of laws relevant to wildlife conservation. This must be followed up by regular meetings between SMNP and the local police, judiciary and local leaders. Some progresses have been made in enhancing awareness among the stakeholders especially the local police, judiciary and local officials.

Infrastructure development
To ensure effective management and protection, there are a series of infrastructure needs in the Park ranging from vehicles, computers, GPS units, and road maintenance. An infrastructure assessment is needed and thereafter an implementation plan.

SO 4: Community–Park Collaboration Improved and Resource Use/Land Use Conflicts in and Around SMNP Reduced

SMNP is surrounded by relatively impoverished communities who traditionally view the park area as a resource base. In recent years the park management has involved local and other stakeholders in decision making and management of the park. Progress has been made, with systems designed and operational and now attitudes to SMNP amongst stakeholders are more positive than a decade ago. Local communities acknowledge the existence of the park and are willing to engage with ongoing initiatives. Management of SMNP is undertaken through the participation of several partners and stakeholders, particularly the local communities. This can and should continue to be enhanced.

This strategic objective therefore aims to integrate SMNP management with the activities of local communities, development organizations, and government and non-government actors in the area, and to obtain support nationally and internationally. To achieve this strategic objective the following outputs must be delivered:

- Collaboration among stakeholders for park development and management improved;
- Awareness creation and conservation education in all park-associated communities increased;
- Sustainable and environmentally friendly livelihood options promoted; and
- Cooperation and benefit sharing established and resource use conflict reduced.

Output 1: Collaboration among stakeholders for park development and management enhanced

Establishing effective coordination among the different stakeholders and partners with EWCA in the management of the Park's natural resources will provide improved opportunities for legitimacy, support and investment from national and international donors. The political commitment shown by the federal and regional governments in supporting the parks resources conservation and development is really a commendable experience that can be shared to other national and regional institutions. The Federal Road Authority effort to design an alternative route from Debark – Sawre – Beles - Mekane Berhan is also a positive step.

AWF – Ethiopian program and EWCA will require partner support and coordination to implement the GPRS in particular and the GMP in general from the different actors working in the area including Sustainable Development of Protected Areas System in Ethiopia (SDPASE), Global Environmental Facility- Small Grants Program (GEF-SGP), Austrian Development Cooperation financed program in North Gondar Zone, Ethiopian Wolf Conservation Program (EWCP), Population, Health and Environment Consortium Ethiopia and Japanese International Cooperation Agency (JICA-SIMCOT) project and other private organizations such as Simien Mountains National Park Ecotourism Cooperative, Walia Guide Association, Simien Lodge and Limalimo Lodge. So far, AWF has established such partnerships with Simien Mountains National Park Ecotourism Cooperative, Walia Guide Association, EWCP, Limalimo Lodge and GEF-SGP. Partners need

encouragement to extend their efforts and to identify other organization that are carrying out similar activities to avoid duplication of efforts.

Steering committees and task forces at Regional, Zonal and Woreda levels have been established with their own roles and responsibility. Moreover, park advisory committees have been set up at Kebele level. These structural arrangements in place will enable two-way communication between local stakeholders and EWCA as well as providing a link to the federal and regional authorities. The Woreda Park Advisory Committee (WPAC) appointed by the Regional Park Management Board is responsible for preparing, implementing and evaluating the annual operations plan. The WPAC is comprised of the Head of Administration for the five park-adjacent Woredas (who hold the chairmanship in turns), with representatives from each Woreda Agriculture office. The SMNP warden acts as the secretary. This committee is meant to meet quarterly and can also use the authority and jurisdiction of the local Woredas to enforce and implement decisions or activities that affect the communities around the park.

Thirty-eight Kebele park advisory committees (KPAC) have been established one in each Kebele bordering the park. These KPACs are meant to meet monthly to provide a forum for discussion and awareness-raising, organize experience and benefit sharing opportunities, prepare by-laws with the communities and assist the park by dealing with any by-law, boundary and encroachment issues. Any substantive issues raised at KPAC meetings are referred to the WPAC, otherwise the park office usually deals with any issues or queries that arise. The relevant Kebele chairperson chairs each committee, with other members including the scout head for the nearest outpost, the deputy chairman, a teacher, health and agricultural extension worker, any elected community scouts and honorary park wardens in the communities.

Whilst SMNP, with its WHS status, is better known nationally and internationally than many other protected areas in Ethiopia, it is clear that wider awareness of SMNP will significantly increase support for conservation and management activities by creating a sense of ownership, pride and responsibility among all stakeholders (international, national and local). This is especially important to increase the Ethiopian constituency of support as increased recognition will strengthen political support and fundraising efforts at all levels. Implementation of a number of different actions will enable park manager to meet this output.

Local stakeholders in each Woreda, including administration, communities, police and judiciary are essential partners and supporters of effective park management and should be incorporated into the various stakeholder forums. Better support from the police and judiciary at all levels will be most obtained if they understand the importance and functions of the park as well as all resource protection operations, modes of activity, legal and technical issues. There must also be full agreement and understanding of the prosecution system and procedures by all parties. Up-to-date material must be produced for a new workshop with Kebele police and judiciary officers and then replicated upwards at all levels through Woreda, zonal and the region, as difficult cases are routinely referred to higher bodies.

Other stakeholders from whom SMNP management need support include park-associated Kebele administrators, agricultural and health workers as well as culture and tourism and rural development and agricultural offices. These groups will therefore be the focus for discussion forums. In addition, elders, women and youth discussion forums will be held in park-associated communities, perhaps targeting those in the park extension area initially. Church priests are also strong members of communities and should be fully aware of the importance of the exceptional park resources.

Stakeholders of SMNP

The term *stakeholder* herein refers to an active entity (private, societal or governmental nature) that can (positively or negatively) influence on or be influenced by the achievement of the desired situation of the park. Given the degree of potential influence that can be associated to, we have two categories of stakeholders: primary and secondary.

Primary Stakeholders:

Primary stakeholders are sometimes also referred to as "key stakeholders." These groups are the central unit of the analysis. Since they are the most likely to be directly affected by and/or can affect or impact directly the project or outcome expected. Accordingly, primary stakeholders often wield the most authority or influence over a given endeavor. However, they are often not alone; secondary and even tertiary stakeholders might have rights, authority, and influence, too, since they might also be affected. Accordingly the following stakeholders are considered to be primary.

Federal Level

- House of Peoples Representatives "Culture and Tourism, and Natural Resources Standing Committee"
- Ministry of Culture and tourism
- The Ethiopian Wildlife Conservation Authority
- Environmental protection Authority (in the near future will appear as "Ministry of Forestry and Environment");
- Biodiversity Conservation Institute

Regional Level

- Amhara National Regional State (ANRS) Administration
- ANRS Council
- ANRS Bureau of Culture, Tourism and Parks Development
- ANRS Bureau of Environment and Land Administration
- ANRS Bureau of Disaster Prevention and Food Security;

Zonal level

- NGZ (North Gondar Zone (NGZ) Administration
- NGZ Council
- NGZ Bureau of Culture, Tourism and Parks Development
- NGZ Bureau of Environment Protection and Land Administration
- NGZ Bureau of Disaster Prevention and Food Security

Woreda Level

Debark, Janamora, Adi-Arkay,Telemit, and Beyeda Woredas

- Administration Offices
- Councils
- Municipality (for Debark only)
- Environment Protection Offices
- Tourism Offices

Kebele Level

The following are taken in to consideration: 38 kebeles of the five woredas adjoining the park; in these kebeles: The Kebele Association Committee, Elders, Youth Associations and religious Leaders are considered.

Secondary Stakeholders

While primary stakeholders are those most directly affected by a project or outcome, secondary stakeholders are also involved in the process or project. Secondary stakeholders are intermediaries who have an interest in the project or outcome, although it is less significant and directly related than that of the primary stakeholders. We can say that these secondary stakeholders are "indirectly affected" by outcomes. Accordingly the following are analyzed to be secondary :

Federal

- Ministry of Agriculture
- Ethiopian Electric Power Corporation
- Ethiopian Road Construction Authority
- Ministry of Mines and Energy
- Federal Police Commission
- Ministry of Justice

Regional level

- ANRS Bureau of Education
- ANRS Bureau of Health
- ANRS Bureau of Security Affairs
- ANRS Rural Road Authority
- ANRS Bureau of Investment

Zonal

- NGZ Bureau of Micro and Small Enterprises
- NGZ Bureau of Education
- NGZ Bureau of Health
- NGZ Rural Road Authority
- NGZ Bureau of Investment

Woreda /in the five Woredas/

- Education Offices
- Health Offices
- Women, youth and Child Affairs Offices
- Police Offices
- Capacity building Offices
- Micro and Small Enterprises
- Credit and Saving institutions
- Eco-lodges
- Eco-tourism Associations
- Schools
- Tour-Guide Associations

Output 2: Awareness creation and conservation education in all park-associated communities increased

One essential requirement for and basis of local people's involvement in park planning and management is conservation education to widen and deepen their perspectives. The significance of education for the understanding and implementation of conservation and sustainable development is stressed in the national conservation strategies of many countries. Enough is not stated, however, about the roles of parks and PAs in promoting awareness and creating the required knowledge and skills. While local people might be aware of the environmental degradation they are causing, their immediate concern for maximizing profit makes them dismiss or suppress their awareness (Sanjay and Weber, 1990). Environmental education has been considered as an effective tool in achieving conservation goals, provided their long-term benefits are highlighted. NGOs have high potential in creating public awareness (Meyers and Meyers, 1983). Any grassroots level environment education program tackling real problems and finding solutions will have, in all likelihood, an immediate impact on its participants. The acute shortage of concrete problem solving approaches might imply that the education process is largely closed off from its surrounding conditions, thus remaining of limited

The environmental education program would aim to improve understanding and share information in order, ultimately, to change behaviors and produce responsible action.

SMNP is an important environmental education resource that can be used to explain the principles and need for conservation in the context of competing and unsustainable resource uses and as well as to restore cultural links with the environment and traditional ecological knowledge. Environmental education will also encourage people to understand the rationale for the existence of the SMNP and to take more active and responsible roles in how they interact with SMNP, its management and its resources.

Currently, environmental education activities are carried out both formally and informally but are relatively limited. Whole village conferences have been held where the importance of the SMNP has been discussed with associated environmental issues. Finally, some limited informal consultations occasionally take place between scouts or the park office and mosque or church personnel. Implementation of a number of different actions will enable park manager to meet this output.

The AWF's Conservation Schools program (ACS) is being mobilized in Simien Mountains landscape to incentivize conservation outcomes by working with communities and government organizations to improve education facilities and teacher capacities. Under the ACS program, AWF develops primary schools using building materials and techniques appropriate for the ecosystem; providing access to teacher training to ensure all instructors meet standard of qualification; update the technological infrastructure to give students the best opportunities for educational enrichment; provide programs that support student welfare; and link the curriculum to conservation issues to raise awareness in a new generation.

Through the development of schools, AWF is working with the concerned governmental organisations to improve access to quality education for community children, link the success of SMNP with community engagement, and ultimately incentivize communities to limit or halt livestock incursion into the Park. AWF is developing the first Conservation School in Adisge Village, bordering the SMNP as a pilot site.

Output 3: Sustainable and environmentally friendly livelihood options promoted

The local communities in and around SMNP earn their livelihood from traditional mixed-farming that consists of crop production and livestock rearing. Empowering the local communities and improving their livelihood is critical to reducing the pressure on the landscape and reconciling the existing resource use competition between inhabitants. This is elaborated on below.

The outreach program will provide a good opportunity for the park staff and other concerned governmental and non-governmental bodies to partner with local people in facilitating park conservation activities.

Provision of Alternative Livelihood Options for the Local Community

Programs based on revenue generated by or through national parks have positive impacts on the local people, which not only offer employment opportunities but also develop in them positive feelings towards national parks (Ishwaran and Erdelen, 1990). A number of analyses of alternative livelihood assessments have been completed. The most recent one is the study conducted by AWF with EWCA, in 2014. The following activities are proposed based on these assessments:

- Income generation through wildlife based tourism
- Agriculture Development, Diversification and Intensification
- Other Business Opportunities
- Human-Wildlife Conflict Mitigation Measures

i. Income generation through wildlife based tourism

The number of SMNP visitors and participation of local community in tourism activities has been growing significantly. Approximately 17, 000 tourists visit SMNP per year. The SMNP has great potential as an ecotourism destination. Benefit-sharing with local communities is now running more than 30 million Ethiopian Birr per year and with another 4 million Ethiopian Birr income to central treasury. The direct benefits from tourism to local communities has increased local support for the park. If tourism is developed well and in a way that wholly integrates communities, the lives of the communities around the park can improve. This will require appropriate planning for tourism infrastructure development, well established and structured private and public organizations in areas of tourism, capacity building and tourism infrastructure development investment inside and in the surrounding areas of the park.

Providing revenue streams and livelihood diversification for local communities is a key purpose of the development and marketing of tourism in the SMNP. Communities' interests must be at the core of any partnerships between SMNP and private investors. Communities require increased capacity to engage in tourism opportunities and require coordinated institutional development to fully take advantage of these opportunities. Different community based organizations (SMNP Ecotourism association, Walia guide association, cook association, equipment rental association and vehicle rental association) have been established and continuous capacity building should be provided in the form of training and business planning.

Benefits can come to communities in the following ways:

a. Employment (lodges - as guides, cooks, mule handlers; park – as scouts).

b. Community-owned tourism facilities (equity and percentage share of revenues).

Community-based tourism can be an excellent way for communities to generate revenues from conservation and diversify their livelihoods away from activities that have a negative impact. AWF, through its investment subsidiary AWC, has entered in to a loan agreement with Village Ways, a private sector company, to provide capital for development of a network of five community trekking facilities in the Simien Mountains Landscape. They will be developed in: Timbeila, Kalid, Taga Mariam, Zamilla and Sakba. The expectation is that the village tourism circuit around the Simien Mountains will provide a revenue stream to the five villages, through the exclusive tourism agreements with Village Ways, employment, build the capacity of the newly established Community Based Organizations (CBOs), and additional revenues through tourist expenditures (souvenirs, cultural experiences, food, drinks, etc.). This increased economic activity will promote the awareness of the SMNP and surrounding ecosystem, and provide the local community with incentives to increase protection and conservation of the Simien Mountains Region

c. Spin off businesses, such as cultural products

d. Supply of goods and services to lodges and other tourism facilities

There is an opportunity for local communities to be trained to supply certain products to lodges, such as eggs, vegetables, and fruit (longer term).

ii. Agriculture Development

As noted, communities in this landscape are dependent upon crop production and livestock. Communities should be supported to increase crop production within existing farm areas, diversify crops and adopt agro-forestry practices. This will help maintain the ecosystem services of the landscape, and increase nutrition as well as crop yields. Efforts have been carried out by the government in collaboration with some other partners to increase crop productivity of farmers within the existing farm area but more remains to be done.

Increase in yields, quantity and diversity of agricultural products brings demand for market access for farmers. This is another aspect that will need attention in the Simien Mountains to ensure farmers can sell their produce timely and at good prices. Thus, linkages to markets will be explored, including issues of transportation of and the final buyers for agricultural produce.

Focusing on livestock production, AWF has completed an assessment on livestock value addition chain, looking at the feasibility of developing an abattoir in the region. By increasing the value of livestock and access to nearby facilities for livestock marketing, community members can be incentivized to improve on quality of animals and decrease herd sizes. An opportunity exists to organize and support community livestock groups through which livestock quality enhancement programs can be implemented and at the same time provide a linkage to the market for the same groups in exchange for good rangeland management.

iii. Other Business Opportunities

As noted, a number of studies have been done to assess business opportunities in the region. Proper due diligence is required to ensure their economic viability for both off-farm and on-farm activities.

iv. Devise Mitigation Measures to Reduce Human-Wildlife Conflict

One of the costs to communities living in and around the park comes from HWC including livestock predation by leopards and crop raiding by geladas. This not only increases negative attitudes towards the park, but also threatens wildlife populations when communities retaliate with wildlife persecution and killings. Recent reports from SMNP office suggest that HWC involving leopard, jackal, serval cat and spotted hyena has increased.

Central to tackling HWC in the area is the collection of good data on HWC hotspot areas, type and scale, and its economic costs. Under this action, key areas for HWC will be identified and its severity determined. Trends in predator numbers will also be investigated. This will be achieved by establishing and supporting local taskforces that represent all stakeholders. These taskforces will be responsible for data collection protocols and developing response and data feedback mechanisms.

Sites where HWC mitigation strategies should be implemented will be identified as a priority. Appropriate mitigation solutions will then be piloted, agreement for their implementation negotiated with the affected communities and jointly monitored for their effectiveness.

SO 5: The SMNP's Unique Fauna, Flora and Their Habitats Conserved

Strategic Objective 5 addresses the conservation of SMNP's biodiversity exceptional resource values.

The first section of this strategy outlines the ecological significance of SMNP. A combination of unique environment, diverse altitudinal variation, unique climate and isolation have given rise to a number of rare and endemic species in the Simien Mountains. The Park is of global significance for biodiversity conservation.

To protect the park's biological diversity under this strategic objective, the following outputs must be delivered:

- Ecological monitoring and research activities supporting the effective management and conservation of SMNP's fauna and their habitats enhanced;
- Conservation measures and, where appropriate, sustainable management practices introduced for grass species that are being targeted and depleted by livestock grazing strengthened;
- Human impacts from settlement and livestock grazing and unsustainable natural resource reduced or eliminated; and
- Degraded habitats in and around SMNP are rehabilitated.

Ensuring viable plant and animal populations is a critical part of maintaining ecosystem health. Throughout the world, active management is often necessary to maintain viable wildlife populations, when reduced by human-induced pressures (*e.g.* disease, disturbance, habitat fragmentation, etc.) and prevent them entering extinction. Given the extent of human pressures currently impacting on the SMNP ecosystem, some habitats are severely degraded and will require restoration to achieve the desired state.

Habitat degradation and erosion caused by livestock overstocking and other factors pose a particular risk to the SMNP. Grazing increases soil compaction, habitat degradation, and accelerates erosion. This impedes the proper functioning of the hydrological system of the Simien Mountains and potentially leads to increased flooding in the wet season and decreased dry season river flow. This will have disastrous consequences SMNP, local communities, and downstream users. Some areas of the park have undergone vast habitat alteration and degradation due to overstocking, settlement and cultivation. Habitat restoration needs to be undertaken in areas where the forest is unlikely to regenerate, even after removal of threats.

Ecological monitoring, rehabilitation and management and mitigation of threats is one of the focus area of the GPRS. Thus, ecological monitoring and evaluation is a key component of GPRS implementation as it determines whether the strategy implementation meet its objective or not. Currently, the state of knowledge of the SMNP ecological processes, species and threats is low and most management decisions have to be made with preliminary rather than detailed evidence or expert knowledge. For example, knowledge of the relationship between livestock grazing, vegetation recovery, rodents, Ethiopian wolves and other predators is crucial in decision making but this information is not currently available in the park. Similarly, the impact of livestock grazing and browsing on vegetation regeneration and restoration is unknown. More information is required on the presence, location and population size of populations and the potential and barriers for movement is required. Therefore, furthermore, work is important to assess the impact of livestock grazing and browsing on vegetation regeneration and restoration whether these components do achieve the desired aim of monitoring and maintaining an intact and functioning ecosystem where all components are in their desired state.

Annual prioritization process, particularly as management actions needed to reduce ecosystem threat levels, is required for the annual implementation of ecological monitoring in SMNP. Therefore, annual monitoring activities should be conducted to fill data gaps on the incidence of threats to wildlife. In determining the problems and issues relating to the SMNP ecosystem management, it is important to have accurate information

on wildlife, vegetation integrity and threats. This is especially important during the implementation phase of the grazing pressure reduction strategy which will require baseline information on the status of human induced impacts on the SMNP OUVs and other ERVs, through active management of these resources. It will also be important to conduct ecological monitoring and research activities that support the conservation of vegetation species for the smooth implementation of the grazing pressure reduction strategy. It is recommended that these research and ecological monitoring activities should be accomplished in collaboration with domestic universities and research institutions. This process is critical for making informed management decisions to meet the objective of the GPRS. Partnerships between SMNP and universities, research institutes, governmental and non-governmental organizations will be used to fill gaps in technical expertise and build the capacity of park management for ecosystem monitoring and management outlined in this section.

A number of endangered species occur in SMNP. Walia ibex, Ethiopian wolves and Gelada baboons have been identified as Principal Ecosystem Components (PECs) of the park because they are particularly vulnerable to diseases transmitted from domestic animals. Domestic dogs are the primary reservoir for canid diseases, such as rabies and canine distemper. Direct predation and attacks by domestic dogs pose a threat to a number of wildlife populations, including rodents, Ethiopian wolf, Walia ibex, Menelik's bushbuck, Gelada baboon and other antelope species. The entrance of domestic dogs is not allowed in protected areas. Thus, current policy of zero tolerance of domestic dogs in SMNP must be enforced including vaccinating dogs.

It is critical that conservation measures are undertaken to reduce the impacts of human settlement and natural resource use on the biodiversity and ecological processes of the SMNP. The central concern is relocation of Gich village on voluntary basis. Once the Gich village community moved down to Debark on voluntary basis as per their agreement with the government, the abandoned cultivated and grazed areas within the park that are severely degraded will need to be rehabilitated through management interventions to achieve conservation objectives of the park. Given that current levels of cultivation and grazing within the SMNP are still incompatible with the conservation objectives of the park and unsustainable over the long-term, alternative livelihood options should be devised in line with the GPRS to gradually free further areas within the park from human settlement, cultivation and grazing. Ultimately the land under cultivation in the park must be returned to a natural state, but this will not occur unless resettlement of remaining park residents occurs. To maintain maximum population size, genetic diversity and resistance to mortality, connections between isolated species of key wildlife for movement and dispersal must be maintained in and around SMNP

Consensus has been reached with the different stakeholders and the local community during consecutive workshops conducted as part of the development of this strategy to designate 92% of the park as "no grazing." Undertaking wildlife assessments and ecological monitoring of the NGZ on vegetation density, vegetation cover, grass species affected by livestock grazing and plant biomass should be carried out to know the vegetation regeneration capacity and determine their extent, distribution and structure.

5. CONCLUSION

The SMNP possesses endangered and rare fauna and flora that are endemic to park and the country. It is a World Heritage Site recognized for its Outstanding Universal Values. Beyond the ecosystem goods and services and hydrological importance the park also has the potential to generate economic and social benefit from the tourism industry such as livelihood diversification and job creation that will help contribute to the government plan for poverty reduction. The biodiversity and ecological processes of SMNP are being severely impacted by human induced activities and associated perturbations in the Simien Mountains. To secure the long-term future of SMNP, it is critical that a balance is struck between human needs, natural resource use, and the conservation of the exceptional resource values of SMNP.

The results of the grazing pressure reduction strategy study found that a significant portion of SMNP is heavily impacted by grazing. The stocking density of livestock is far greater than the recommended level. While there have been efforts in the past to curb the grazing impact in the park, they have not succeeded. This plan was developed in a participatory approach. The process enabled local communities and a diversity of stakeholders to contribute to its development and thereby take ownership of this strategy. This grazing strategy seeks to reduce the impact of livestock in the park, while recognizing the need to help develop alternative livelihoods for the communities that are dependent upon the Park. The proposed designated and agreed resource use zones are in line with the Wildlife Development, Conservation and Utilization Regulations No. 163/2008). Taking cognizance of the severity of the negative ecological impacts of anthropogenic pressures on SMNP, this strategy aims to reduce grazing pressure on the park and its surroundings through measures that harmonize grazing and conservation needs. Its implementation will also help Ethiopian Wildlife Conservation Authority (EWCA) achieve the benchmarks set by the World Heritage Committee for sustainable conservation of the park's outstanding values.

ANNEX 1: STRATEGY IMPLEMENTATION ACTION PLAN

The existing the socio-economic and ecological factors of SMNP have been identified and examined and the major human induced challenges of and threats to park resources have been scrutinized and the outcome has been used to produce the document that will serve as a guideline to significantly reduce livestock grazing pressure in the park thereby establish effective management of SMNP. Following this, development of physical plan which includes outputs listed under each strategic objective that base on short- and medium-term visions. With this in mind, the details of the plan are presented as follows.

SO 1: Zonation Scheme Designed, Recognized and Implemented

Key Targets

- **Multiple-use zonation scheme in line with rules and regulations designed**
- **Delimitation of the park area into no use and use zones completed.**
- **Relocation of all dwellers within the core area of the park on voluntary basis successfully conducted**

Outputs	Activities	Lead Institutions	Supporting partners	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Multiple-use zonation scheme of the park in line with the existing rules and regulations and resource use for the different zones officially endorsed by the concerned body and agreed by relevant stakeholders	• Collecting relevant information and collating all existing and future data on resource use	EWCA/SMNP, WoA/ WoEPLUA, AWF	ADC & EWCP																
	• Preparation of final copy of the zonation scheme with respect to grazing pressure reduction	EWCA/SMNP, WoA/ WoEPLUA & AWF	ADC																
	• Translating the summary of the strategy into local language and shared with stakeholders production of agreed resource use maps etc.	AWF and EWCA/SMNP	WoA and WoEPLUA																
	• Conduct extensive consultations with key federal, regional and local stakeholders to reach agreement on the zonation scheme, designed to accommodate both the local community livelihood needs and the conservation of the exceptional biodiversity resource values	EWCA/SMNP, WoA/ WoEPLUA & AWF	ADC																

Outputs	Activities	Lead Institutions	Supporting partners	Year 1				Year 2				Year 3				Implementation status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Multiple-use zonation scheme of the park in line with the existing rules and regulations and resource use for the different zones officially endorsed by the concerned body and agreed by relevant stakeholders	• Reach consensus on the proposed options of natural resource utilization schemes	EWCA/SMNP, WoA/ WoEPLUA & AWF	ADC																
	• Develop resource use agreements with selected communities/community groups for controlled and sustainable use of resource use zones	EWCA/SMNP, WoA/ WoEPLUA, ADC and AWF	Stakeholders at all levels																
Actual delimitation of the park's resource use zones on the ground with respect to actual implementation of the scheme.	• Undertaking actual demarcation of the proposed zones on the ground with the help of GPS	EWCA/SMNP, WoA/ WoEPLUA & AWF	ADC																
Programs that incentivize conservation	• Assess feasible opportunities for the local community to benefit from the presence of the park, such as employment opportunities (short and long-term), involvement in tourism, access to SMNP facilities and infrastructure, etc.	EWCA/SMNP, and AWF	ADC and GEF-SGP																

Outputs	• **Activities**	**Lead Institutions**	**Supporting partners**	**Year 1**				**Year 2**				**Year 3**				**Implementation Status (%)**			
				1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**25**	**50**	**75**	**100**
Programs that incentivize conservation	• Launching extensive programs of awareness creation and sensitization	EWCA/SMNP, WoA/ WoEPLUA & AWF	ADC, GEF-SGP and EWCP																
	• Creation of alternative livelihoods	EWCA/SMNP, AWF, GEF-SGP, ADC & JICA-SIMCOT	stakeholders at all levels																
	• Devising eco-friendly resource use mechanisms within the park (e.g. Cut & Carry system, bee having, collection of medicinal plants)	EWCA/SMNP, AWF, GEF-SGP WoA & WoEPLUA	ADC, EWCP and PHE-CE																
	• Establishing income generating mechanisms such as development of abattoirs, community lodges, souvenir and artifact shops, etc...	EWCA/SMNP, WoA/BCTO, AWF & GEF-SGP	SIMCOT-JICA and ADC																

Outputs	Activities	Lead Institutions	Supporting partners	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Schemes to improve grassland conditions for wildlife launched	• Improving the range and grassland conditions for wildlife within the park	EWCA/SMNP, AWF and EWCP	GEF-SGP, ADC and PHE-CE																
Core areas of the park affected by human activities rehabilitated	• Develop and setup mechanisms for monitoring and formulate monitoring team	EWCA/SMNP, EWCP and AWF	ADC, PHE-CE & GEF-SGP																
	• Establish database	EWCA/SMNPand AWF	ADC, PHE-CE & GEF-SGP																
	• Devise habitat management and restoration mechanisms	EWCA/SMNP AWF & EWCP	ADC, PHE-CE & GEF-SGP																

SO2: Grazing Rights Limited to Eligible Users and Sustainable Resources Use Enhanced

Key Targets

- **Sustainable resource use/grazing schemes set**
- **Bye-laws for resource use/community grazing lands inscribed**
- **Regular monitoring of their application put in place**

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Sustainable Stocking Rates Determined	• Collect and analyze relevant information on resource users	EWCA/SMNP, AWF & EWCP	ADC, PHE-CE & GEF-SGP																
	• Clearly identify HHs of each kebele eligible to use resources of the park within the zones.	EWCA/SMNP, AWF & EWCP	ADC, PHE-CE & GEF-SGP																
	• Inventory the types and numbers of all livestock owned by each of the above HHs	EWCA/SMNP, AWF & EWCP	ADC, PHE-CE & GEF-SGP																
	• Measure area sizes and estimate productivity levels of the grasslands within the no GZ through scientifically acceptable methodologies	EWCA/SMNP, AWF, EWCP and Addis Ababa University (AAU)	ADC, PHE-CE & GEF-SGP																
	• Determine optimum carrying capacity for grazing lands in each of the 38 kebeles	EWCA/SMNP, WoA & WoEPLUA & AWF	ADC, PHE-CE & GEF-SGP																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Sustainable Stocking Rates Determined	• Set sustainable stocking rates based on the above	EWCA/SMNP, EWCP & AWF	ADC, PHE-CE & GEF-SGP																
Use Rules and regulations Enforced	• Build capacity and efficiency of selected government institutions to oversee and enforce sustainable utilization of SMNP resources	EWCA/SMNP, AWF, & GEF-SGP	ADC, PHE-CE, JICA-SIMCOT & EWCP																
	• Facilitate natural resource management institutions to establish links between Park authorities, local government and the wider community	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Organize and support local Conservation forums and developing working manual for the forums	EWCA/SMNP, WoA & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Organize eligible community members into user groups	EWCA/SMNP, AWF, WoA & WoEPLUA	ADC, EWCP PHE-CE & GEF-SGP																
	• Assist each user group prepare and agree on a set of rules of restrained access to the resource	EWCA/SMNP, AWF, WoA & WoEPLUA	ADC, EWCP PHE-CE & GEF-SGP																
	• Development of by-laws that have provisions for punishing members who break the rules & strictly enforcing them	EWCA/SMNP, AWF, WoA & WoEPLUA	ADC, EWCP PHE-CE & GEF-SGP																
	• Monitoring of application and reporting of violators	EWCA/SMNP, WoA, AWF & WoEPLUA	ADC, EWCP PHE-CE & GEF-SGP																

SO 3: SMNP management operations and Systems for Resource Protection and Law Enforcement strengthened

Key Targets

- **Management capacity of SMNP (including human resources, infrastructure, and revenue generation) strengthened;**
- **Effective operations and management systems based on action plan prescriptions put in place;**
- **Donor support to fund the implementation of proposed activities obtained;**
- **Impact of local communities on SMNP resources reduced through enhancing patrolling for resource protection and law enforcement.**

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Effective operations and management systems based on action plan prescriptions put in place	• Operational and capacity building needs identified in accordance with the action plan.	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Prioritize management actions and prepare an annual operations plan including detailed activities, time schedules and responsibilities	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
Donor support to fund the implementation of proposed park activities obtained	• Develop new donor funding proposals for specific activities identified in this Action Plan. Develop and seek support for long-term financing proposals for infrastructure development/ rehabilitation and equipment	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
Effective patrolling and law enforcement strengthened	• Maintaining an effective and systemic patrolling system and law enforcement for resource protection	EWCA/SMNP Woreda offices of police, Woreda offices Judiciary, WoA & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Establishing collaboration network with administration, communities, judiciary and police to ensure effective resource protection	EWCA/SMNP AWF & stakeholders at all levels	ADC, EWCP PHE-CE & GEF-SGP																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Main wildlife corridors and habitat secured and population of key wildlife species significantly increased	• Maintaining wildlife corridors secured and maintain habitat connectivity	EWCA/SMNP, AWF & stakeholders at all levels	ADC, EWCP PHE-CE & GEF-SGP																
Capacity of park staff including scouts strengthened	• Identify training needs	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Providing short term and long term training for park staff	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Strengthening management capacity of park staff	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Equip the staff with sufficient and efficient field equipment.	EWCA/SMNP & AWF	ADC																
	• Developing good communication network	EWCA/SMNP & AWF	ADC																
	• Develop an efficient park transport system	EWCA/SMNP & AWF	ADC																

SO 4: Community–Park Collaboration Improved and resource use/land use conflicts in and around SMNP reduced

Key Targets

- **Park-community cooperation and collaborative management systems enhanced;**
- **Community understanding of SMNP values and functions improved, through strengthening conservation awareness activities;**
- **Mechanisms enabling local communities to benefit from the presence of SMNP developed, and**
- **Mechanisms enabling local government and other stakeholders to cooperate and participate in park management established**

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Collaboration among Participation of stakeholders on park development and management strengthened and positive relationships established	• Strengthening the existing Park advisory committees, establishing new ones and developing working manuals for the committees	EWCA/SMNP ,AWF & WoA/Concerned offices	ADC, EWCP & PHE-CE																
	• establishing and strengthening steering committees at all levels (federal-Woreda level) and developing working manuals for the committees	EWCA/SMNP ,AWF & Regional /zonal/ Woreda/ Concerned offices	ADC, EWCP & PHE-CE																
	• Conducting different village consultative meetings	EWCA/SMNP & AWF and WoA/Concerned offices	PHE-CE																
	• Organizing consultative meetings of regional, zonal and Woreda steering committee	EWCA/SMNP & AWF and WoA/Concerned offices	PHE-CE																
Environmental education and awareness on the importance of SMNP increased	• Arrange visits to SMNP & other sites for regional, zonal and Woreda stakeholders	EWCA/SMNP & AWF, Regional, Zonal & Woreda Concerned offices	ADC, & JICA-SIMCOT																
	• Replicate best practices on integrated approaches and awareness creation from other areas	EWCA/SMNP & AWF	EWCP PHE-CE & GEF-SGP																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Environmental education and awareness on the importance of SMNP increased	• Disseminate awareness creation materials and relevant information to stakeholders and partners	EWCA/SMNP & AWF	ADC, EWCP PHE-CE & GEF-SGP																
	• Strengthening the existing environmental clubs	EWCA/SMNP, WoE & AWF	EWCP & PHE-CE																
	• Organizing visits to the park from school environmental clubs and community leaders	EWCA/SMNP & AWF	EWCP & PHE-CE																
	• Encouraging increased coverage of environmental education through different mass media programs	EWCA/SMNP, Communication offices at all levels & AWF	EWCP & PHE-CE																
Improved partnership and support to sound conservation of SMNP promoted	• Implement the GMP and grazing pressure reduction strategy and associated activities in particular	EWCA/SMNP, stakeholders at all levels & AWF	ADC, EWCP PHE-CE & GEF-SGP																
Sustainable and environmentally friendly livelihood and income generating activities promoted and strengthened	• Development of relocation/resettlement strategy	EWCA/SMNP and Local government	Local stakeholders at all levels																
	• Support the voluntary relocation financially & technically	EWCA/SMNP & local government	MoFED & Local stakeholders at all levels																
	• Finding possible ways of donor support for the implementation of GPRS and associated strategies	EWCA/SMNP & AWF	ADC, EWCP PHE-CE, GEF-SGP & stakeholders at all levels																
	• Introduction of on farm, off farm and non-farm activities to the bordering community	EWCA/SMNP, local government & AWF	ADC, EWCP PHE-CE, GEF-SGP & stakeholders at all levels																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Sustainable and environmentally friendly livelihood and income generating activities promoted and strengthened	• Training provision for the community on off farm and non-farm activities	EWCA/SMNP, local government & AWF	ADC, EWCP PHE-CE, GEF-SGP & stakeholders at all levels																
	• Strengthening entrepreneurial ability of the local community	EWCA/SMNP, local government & AWF	ADC, PHE-CE, GEF-SGP & stakeholders at all levels																
	• Financing and establishing enterprises (Livestock Value Addition, Income Generation for Communities from Tourism, Enhancement of Agricultural Production, Tourism service training, Guide training, etc.)	AWF & EWCA/SMNP	stakeholders at all levels																
Mechanisms for park community cooperation, conflict resolution and benefit sharing established	• Assisting the local community in setting up and running community based organizations with appropriate tourism management, governance and benefit-sharing structures	EWCA/SMNP, local government & AWF	ADC, PHE-CE, GEF-SGP & stakeholders at all levels																
	• Strengthen the local community in setting up and running community based organizations with appropriate management, governance and benefit-sharing structures	EWCA/SMNP, local government & AWF	ADC, PHE-CE, GEF-SGP & stakeholders at all levels																
	• Conduct different meeting with the regional, zonal and steering committees on the issue of park management	EWCA/SMNP, local government & AWF	ADC, PHE-CE & EWCP																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Mechanisms for park community cooperation, conflict resolution and benefit sharing established	• Devise fair and equitable benefit sharing of revenues from tourism among the 5 Woredas neighboring the park	EWCA/SMNP, local government & AWF	JICA-SIMCOT & stakeholders at all levels																
	• Developing community owned tourism lodges around SMNP to diversify the income of the local community	EWCA/SMNP, local government & AWF	JICA-SIMCOT & stakeholders at all levels																
	• Conducting experience sharing visits and awareness creation at different levels	EWCA/SMNP, local government & AWF	ADC, EWCP PHE-CE, GEF-SGP & stakeholders at all levels																
	• Update GMP	EWCA/SMNP & AWF	Concerned local GOs																
	• Devise human wildlife conflict mitigation measures	EWCA/SMNP, local government & AWF	ADC, EWCP PHE-CE, GEF-SGP & stakeholders at all levels																

SO 5: The SMNP's unique fauna, flora and their habitats conserved

Key Targets

- **Ecological monitoring and research activities supporting the effective management and conservation of SMNP's flora, fauna and their habitats enhanced;**
- **Conservation measures and, where appropriate, sustainable management practices introduced for grass species that are being targeted and depleted by livestock grazing;**
- **Degraded habitats in and around ANP are rehabilitated, and**
- **Ecological monitoring plan developed and implemented.**

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Participatory wildlife and habitat monitoring systems developed and introduced	• Design ecosystem health and habitat status indicators	EWCA/SMNP & AWF	ADC, EWCP & stakeholders at all levels																
	• Undertake wildlife assessments and ecological monitoring on vegetation density, vegetation cover, grass species affected by livestock grazing and plant biomass	EWCA/SMNP AWF & Addis Ababa University (AAU)	EWCP & PHE-CE																
	• Conduct regular population monitoring and surveys of key wildlife species	EWCA/SMNP, AWF & EWCP	PHE-CE & local universities																
	• Involve and train community members in participating in wildlife and habitat monitoring system	EWCA/SMNP, AWF & EWCP	ADC, EWCP PHE-CE, & stakeholders at all levels																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Livestock grazing of SMNP reduced from the wider no grazing and zero grazing zones of the SMNP	• Collaborate with community members and local government to regularly share information on the conservation status of SMNP and to report the illegal encroachment into Biodiversity Protection Zones	EWCA/SMNP, local government concerned offices & AWF	EWCP PHE-CE, GEF-SGP & stakeholders at all levels																
	• Enforce the wildlife laws to deter encroachment into the protected zones	EWCA/SMNP, police, Judiciary and local government	AWF, EWCP & stakeholders at all levels																
Mechanisms for sustainable use of natural resources established in close consultation with existing traditional resource users	• Undertake a study on the biology and production capacity of the vegetation species affected by livestock grazing and assess their regeneration capacity	EWCA/SMNP AWF & Addis Ababa University (AAU)	EWCP & PHE-CE																
	• Conduct training for community leaders on sustainable use of natural resources	EWCA/SMNP, local government & AWF	EWCP PHE-CE, GEF-SGP & stakeholders at all levels																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	25	50	75	100
Mechanisms for sustainable use of natural resources established in close consultation with existing traditional resource users	• Provide training and technical support to the organized women's group on sustainable use of natural resources Establish and implement a system to regulate the utilization of natural resources	EWCA/SMNP, local government & AWF	EWCP PHE-CE, GEF-SGP & stakeholders at all levels																
Degraded habitat due to livestock grazing rehabilitated to	• Devise and implement habitat management and restoration mechanisms	EWCA/SMNP, AWF & EWCP	PHE-CE & GEF-SGP																
	• Devise and implement reforestation program with indigenous trees	EWCA/SMNP, AWF & EWCP	PHE-CE, ADC & stakeholders at all levels																
Research and monitoring activities continued and strengthened	• Maintain and establish new linkages between research institutions and the national park in order to improve understanding of park resources and to better inform park management decisions	EWCA/SMNP & AWF	EWCP PHE-CE, & domestic Universities																
	• Develop and implement ecological threat monitoring plan	EWCA/SMNP, AWF & EWCP	PHE-CE, & domestic Universities																
	• Develop ranger based monitoring	EWCA, AWF & EWCP	PHE-CE & ADC																
	• Develop and maintain data base for previous and ongoing research and monitoring data	EWCA, AWF & EWCP	PHE-CE, & domestic Universities																

Outputs	Activities	Lead Role	Support Role	Year 1				Year 2				Year 3				Implementation Status (%)			
				1	2	3	4	1	2	3	4	1	2	3	4	20	50	75	100
Local communities mobilized to and actively participated in catchment conservation	• Mobilization of local community to conserve the catchment	EWCA/SMNP AWF, local government concerned offices	ADC, GEF-SGP, EWCP, PHE-CE and stakeholders at levels																
	• Devising and implementing various soil and water conservation mechanisms and implement	EWCA/SMNP AWF, local government concerned offices	ADC, GEF-SGP, EWCP, PHE-CE and stakeholders at levels																

ANNEX 2: LIST OF STAKEHOLDERS, PARTNERS AND PRIVATE ORGANIZATIONS WHO PARTICIPATED ON THE GPRS DEVELOPMENT PROCESS AND WORKSHOPS

1. Ethiopian Wildlife Conservation Authority
2. Simien Mountains National Park
3. Amhara National Regional State (ANRS) President Office
4. ANRS Bureau of Agriculture
5. ANRS Livestock Agency
6. ANRS Bureau of Environmental Protection, Land Use and Administration
7. ANRS Bureau of Culture and Tourism
8. Bahir-Dar University
9. Gondar University
10. North Gondar Zone (NGZ) Administration
11. NGZ Department of Culture and Tourism
12. NGZ Department of Agriculture
13. NGZ Department of Justice
14. NGZ Department of Police
15. NGZ Department of Livestock
16. NGZ Department of Environmental Protection, Land Use and Administration office
17. NGZ Department of Education
18. The five Woredas Administration offices
19. The five Woredas Environmental Protection, Land Use and Administration offices
20. The Five Woredas offices of Justice
21. The five Woredas offices of Court
22. The five Woredas offices of Police
23. The five Woredas offices of Education
24. The five Woredas Micro and Small Enterprises Offices
25. The five Woredas Women, Youth and Children Offices
26. Debark Woreda Municipality
27. The 38 kebele cabinet members representatives
28. The 38 Kebeles religious leaders
29. The 38 Kebeles community representatives
30. The 38 Kebels women's association representatives
31. The 38 Kebeles youth association representatives
32. The 38 Kebels elders
33. The 38 Kebels key informants
34. Walia guide association office representatives
35. Simien Mountains National Park Ecotourism Cooperative representatives
36. Local public relation offices representatives
37. A representative from Simien Lodge
38. A Representative from Limalimo Lodge

REFERENCES

African Wildlife Foundation (2014). Tourism Strategy for Simien Mountains National Park, Ethiopia. Nairobi, Kenya.

Aklilu, D. (2001). Natural Resource Degradation and famine in Ethiopia: Assessment of Students' awareness and view. Flensdurg German.

Aklilu Woldu and Eshete Dejen (2009). The Supply, Marketing and Trade of Live Animals in The Amhara Region, Ethiopia Sanitary & Phytosanitary Standards And Livestock & Meat Marketing Program (Sps-Lmm) Amhara Bureau of Agriculture and Rural Development and Amahara Agricultural Research Institute, Bahir Dar, Ethiopia.

ANRS-Parks Development and Protection Authority (PaDPA) (2007). Development of alternative livelihoods for the population of the Simien Mountains national Park, Addis Ababa, Ethiopia.

Burnand, J., 1998. Vegetation changes in forest graveyards in the northern parts of the SMNP in Nievergelt et al: A survey of the flora and fauna of the Simien Mountains National Park, Ethiopia. Zurich 1998, pp 40-43.

Cernea, M.M. (1997) African involuntary population resettlement in a global context. The World Bank Environment Department Papers Social Assessment Series 45. World Bank, Washington, D.C.

Clayton, Anthony M and Nicholas J Radcliff (1997). Sustainability A System Approach. P.158. London. Earthscan Publication ltd.

CSA (2003). Ethiopian Agricultural Sample Enumeration, 2001/02 /1994 E.C. Part II, Vol. IV LIVESTOCK, Addis Ababa, Ethiopia.

CSA (2005). Federal Democratic Republic of Ethiopia Agricultural sample survey. Livestock and livestock characteristics bulletin, Volume II. Addis Ababa, Ethiopia.

CSA (Central Statistical Authority). 2007. Statistical Abstract. Addis Ababa, Ethiopia.

CSA (2007). National Livestock Sample Survey, 2005/06; 1999 E.C. / Feb. 2007, Addis Ababa, Ethiopia.

Ejigu, D., et al. "Habitat preference of the endangered Ethiopian walia ibex (Capra walie) in the Simien Mountains National Park, Ethiopia." *Animal Biodiversity and Conservation* 38.1 (2015): 1-10.

EWCA. SMNP General Management Plan. 2009-2019.

Geberemedhin, B. & Grubb, P. 2008. *Capra walie*. The IUCN Red List of Threatened Species. Version 2014.3. <www.iucnredlist.org>.

Grünenfelder, Julia. 2005. Livestock in the Simien Mountains, Ethiopia: Its role for the livelihoods and land use of local smallholders. M.Sc. Thesis. University of Berne, Switzerland.

Hurni, H 1986 Management Plan Simien Mountains National Park and Surrounding Rural Area. Ministry of Agriculture, Natural Resources Conservation and Development Main Department, Wildlife Conservation Organization, UNESCO. Ethiopia.

Hurni, H. and E. Ludi, 2000: Reconciling Conservation with Sustainable Development. A participatory study inside and around the Simien Mountains National Park, Ethiopia. Produced with the assistance of an interdisciplinary group of contributors. Centre for Development and Environment, Berne, pp. 476.

Hurni H, Solomon Abate, Amare Bantider, Berhanu Debele, Ludi E, Portner B, Birru Yitaferu, Gete Zeleke (2010). Land degradation and sustainable land management in the Highlands of Ethiopia. In: Hurni H,

Wiesmann U, editors; with an international group of coeditors. Global Change and Sustainable Development: A Synthesis of Regional Experiences from Research Partnerships. Perspectives of the Swiss National Centre of Competence in Research (NCCR) NorthSouth, University of Bern, Vol. 5. Bern, Switzerland: Geographica Bernensia.

Hussen, K., A. Tegegne, M.Y. Kurtu, and B. Gebremedhin. 2008. *Traditional cow and camel milk production and marketing in agro-pastoral and mixed crop–livestock systems: The case of Mieso District, Oromiya Regional State, Ethiopia.* IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 13. Nairobi, Kenya: International Livestock Research Institute (ILRI).

Ishwaran, N. and W. Erdelen (1990). Conserving Sinharaja - an experiment in sustainable development in Sri Lanka. Ambio 12(5), pp. 237-244.

Keiner, Marco. (nd). Towards a New Management Plan for the Simien Mountains National Park.

Ludi, E. 2005. Simien Mountains Study 2004. Intermediate Report on the 2004 Field Expedition to the Simien Mountains in Northern Ethiopia. Dialogue Series. Berne, NCCR North-South.

Marino, J. & Sillero-Zubiri, C. 2013. *Canis simensis*. The IUCN Red List of Threatened Species. Version 2014.3. <www.iucnredlist.org>.

MOARD. (Ministry of Agriculture and Rural Development). 2007. Livestock Master Plan Study, Phase I: Data Collection and Analysis. Volume C – Forage and seed production; Volume D – Rangelands. Addis Ababa, Ethiopia.

MOCT (2009).Tourism Development Policy. Ethiopia Government.

Nievergelt, B., 1998. Long-term Changes in the Landscape and Ecosystems of the Simien Mountains National Park. In Walia 1998. Journal of the EWNHS pp 8-23.

PaDPA, 2007. Development of Alternative Livelihoods for the Population of the Simien Mountains National Park, Ethiopia. ANRS PaDPA, April 2007 Bahir Dar.

Ramos, M.A (1988) The Conservation of biodiversity in Latin America: A perspective. In Biodiversity. E.O. Wilson and F.M. Peter (eds). pp. 428-436. Washington, D.C: National Academy Press.

Solomon, A., A. Workalemahu, M. Jabbar, M.M. Ahmed, and B. Hurissa. 2003. *Livestock marketing in Ethiopia: A review of structure, performance and development initiatives*. Socio-economic and Policy Research Working Paper 52. Nairobi, Kenya: International Livestock Research Institute ILRI).

UNESCO/IUCN (2006). Joint World Heritage Centre – IUCN Monitoring Mission to Simien Mountains National Park World Heritage Property: Mission Report on *Reactive Monitoring Mission to Simien Mountains National Park Ethiopia (10 – 17 May 2006).*

Yihune, Mesele, Afework Bekele, and Zelealem Tefera. "Human-wildlife conflict in and around the Simien Mountains National Park, Ethiopia." *SINET: Ethiopian Journal of Science* 32.1 (2009): 57-64.