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CONSULTANCY SERVICES FOR CARRYING OUT STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT OF REDD+ OPTIONS AND DEVELOPMENT OF ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF) FOR UGANDA'S REDD+ STRATEGY OPTIONS - MWE/CONS/14-15/00439

Strategic Environmental and Social Assessment (SESA)

Final Report

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Oy Arbonaut Ltd., Finland

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Abbreviations

BAU	Business As Usual
BSA	Benefit Sharing Arrangement
CC	Climate Change
CBD	Convention on Biological Diversity
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
CFM	Collaborative Forest Management
CFR	Central Forest Reserve
DD	Deforestation and Forest Degradation
DFS	District Forest Services

DLG	District Local Government
DRC	Democratic Republic of Congo
EIA	Environmental Impact Assessment
ENR	Environment and Natural Resources
ESA	Environmental and Social Assessment
FAO	Food and Agriculture Organisation of the United Nations
FCPF	Forest Carbon Partnership Facility
FGRM	Feedback and Grievance Redress Mechanisms
FIP	Forest Investment Program
FSSD	Forest Sector Support Department
GBV	Gender Based Violence
GHG	Green House Gases
GoU	Government of Uganda
HAP	household air pollution
HDI	Human Development Index
HTF	High Tropical Forest
ICT	Information Communication Technology
IFM	Integrated Fire Management
IUCN	International Union for Conservation of Nature
LFR	Local Forest Reserve
LG	Local Government
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MDA	Ministry, Department and/or Agency
MFPED	Ministry of Finance, Planning and Economic Development
MGLSD	Ministry of Gender Labour, and Social Development
MLHUD	Ministry of Land, Housing and Urban Development
MRV	Measurement, Reporting and Verification
MTI	Ministry of Trade and Industry
MWE	Ministry of Water and Environment
NAMA	Nationally Appropriate Mitigation Action
NARO	National Agricultural Research Organization
NaFORRI	National Forestry Resources Research Institute
NEMA	National Environmental Management Authority
NEMPU	National Environment Management Policy of Uganda
NFA	National Forestry Authority
NFTPA	National Forest and Tree Planting Act
NPA	National Planning Authority
NPV	Net Present Value
NTFP	Non-Timber Forest Products
OC	Opportunity Cost
OPM	Office of the Prime Minister
PES	Payment for Environmental Services
PFM	Participatory Forest Management
PPP	Public Private Partnership
REDD+	Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
RS	Revenue sharing
SACCO	Savings and Credit Cooperatives

SESA	Strategic Environment and Social Assessment
SIS	Safeguards Information System
SLM	Sustainable Land Management
SO	Strategic Option
SPGS	Sawlog Production Grant Scheme
SWOT	Strengths, Weaknesses, Opportunities and Threats
TCU	Technical Coordination Unit
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UPDF	Uganda People's Defence Force
UWA	The Uganda wildlife Authority
WMZ	Water Management Zone
WTA	Willingness to Accept

Executive Summary

The Government of Uganda has developed a Draft Final National REDD+ Strategy and implementation programme as a long-term measure for tackling deforestation and forest degradation, whilst meeting the demands for wood, energy, and other forest products. The Draft Final National REDD+ Strategy (September 2017) includes policy measures and actions that address the drivers of deforestation and forest degradation and have the potential to deliver significant social and environmental benefits. However, many of the proposed solutions may pose risks notably for indigenous peoples and local communities, including for marginalized and/or vulnerable social groups within these communities.

The Strategic Environmental and Social Assessment (SESA) has assessed the likely positive and negative environmental and social impacts of the REDD+ Strategic Options; generated recommendations to the REDD+ Strategy work to address legal, institutional, regulatory and capacity gaps to manage environmental and social priorities associated with the drivers of deforestation and forest degradation; and provided inputs to the REDD+ implementation planning process so that environmental and social factors are addressed appropriately in future REDD+ plans. Finally, it has checked that the recommendations have been integrated into the Draft Final National REDD+ Strategy.

The assessment has been an iterative process with the REDD+ Strategy development. The SESA looked into the content and details of proposed REDD+ Options and Strategies (September 2017 and earlier versions), made assessments from environmental, social and institutional viewpoints and provided recommendations on amendments to the Strategies.

This SESA Final Report of September 2017 is presented in the context of the Draft Final National REDD+ Strategy, September 2017.

The assessment combines policy, institutional and impact-centred approaches to strategic assessments[1]. Accordingly, this SESA Final Report has the following content:

1. A description of environmental and social hotspots and their main characteristics;
2. Results from the meta-study of relevant scientific publications, project reports, evaluation reports, and newspapers and magazines over the past five;
3. Results from consultations and interviews with key informants;
4. Analysis of key forest areas' land use trade-offs; of the opportunity cost of conserving forests versus developing these areas into alternative land uses such as forest and energy plantations or agriculture, among others;
5. Identification of environmental and social impacts of the Draft Final National REDD+ Strategy ;
6. Analysis of critical institutional, legal, regulatory, policy and capacity gaps underlying the key environmental and social issues identified;
7. Assessment of possibly triggered World Bank safeguards;
8. Assessment of Strategy effects with regard to gender, minorities and vulnerable people;

[1] This type of strategic assessment that combines assessments of environmental/social impacts and strategic policy/institutional aspects is sometimes called a hybrid SEA or SESA.

9. Assessment of prioritized REDD+ Strategic Options and sub-options; and
10. Identification of key issues recommended to be addressed either in the Strategies or, if still outstanding, in the ESMF.

The Strategic Options (SOs) for the Draft Final National REDD+ Strategy were developed both for their positive contribution towards the reduction of emissions from deforestation and forest degradation and their positive environmental and social effects. The SESA found that the formulated SOs to a high degree already address important environmental, social and institutional factors that can guide preparatory work or be components of future REDD+ implementation plans. This Strategic Environmental and Social Assessment of the options conclude that professional and well-managed implementation of the options will result in significant reductions of emissions and provide many positive impacts on both the environmental and social sides, but also potentially negative ones. However, the SESA did not identify any impacts that are of such *strategic* character that they would endanger possibilities for future generations, provided that the options are implemented as stated in the national strategy document.

The identified *environmental* negative impacts (see Tables 2 and 3 of this document) should be able to be handled through professional and scientifically-based planning and implementation, and application of known best practices, with stakeholder participation.

The identified negative impacts and risks on the *social* side (Tables 2 and 3) will require deliberate action to resolve the issues, such as (but not limited to) land tenure, land use planning, inequalities regarding land tenure and land ownership between men and women, political interference, the need to avoid eviction of people and the situation of indigenous marginalized and forest dependent people.

To ensure that implementation of the Uganda's REDD Strategy and Action plan does not trigger any negative environmental or social impacts or consequences, the SESA has recommended the following measures for integrating SESA issues in the design and implementation of the REDD+ Strategy action:

a) Publicize the confirmed environmental and social impacts and risks (tables 2 and 3 of this document) to all actors at all levels and across all sectors;
b) Subject national or subnational level REDD+ projects to an Environmental Impact Assessment (EIA) using the content of tables 2 and 3 for screening and checking, and using the same format for the presentations;
c) Apply the format in tables 2 and 3 during the appraisal of project design and during monitoring of the implementation of the projects.

These recommendations have been forwarded to and integrated into the Draft Final National REDD+ Strategy (Sep, 2017). They are also a part of the Environmental and Social Management Framework (ESMF).

The following key issues were identified in the SESA process, and received and acted upon in the REDD+ Strategy development process. Reference is made to different Strategic Options (SOs) in which the respective issue is addressed:

- *Enforce existing laws*: the SESA finds that the relevant laws of Uganda are good for the intended purposes, but they are not fully enforced or implemented, as needed. (Strategy 8)

- *Land tenure:* the problems of land ownership and shared utilisation rights should be solved to avoid conflicts and so that the user(s) of a piece of land can be certain that the returns from an investment in the land (e.g. land productivity or a forest plantation) comes back to the user. (Strategies 4 and 7)
- *Governance:* all plans for implementation of the REDD+ Strategies need to have action plans for transparency, accountability and anti-corruption. An anti-corruption plan should be a compulsory component of all REDD+ plans. (Strategy 8)
- *Integrate with poverty reduction*: poverty reduction should be included in REDD+ objectives, apart from other objectives such as productivity and carbon capture. (Strategies 1, 2, 3, 4, 5, 6 and 7)
- *CFM agreements not fully operationalized* and slow long bureaucratic process of registering CFMs. Administrative measures within NFA and stronger instructions to the field organisation are recommended to improve performance. (Strategy 4)
- *Boundaries of protected areas* should be clearly and permanently marked in the terrain, early on in the implementation programme. (Strategy 4)
- *Private owners of natural forests* need incentives for maintaining their forests. (Strategies 2 and 3)
- *Politicians' unduly interference*: there are many examples of politicians' disrespect of Ugandan laws, in particular land and forestry laws and in time of elections. This risk of interference needs to be eliminated or mitigated. (Strategy 8)
- *Benefit sharing arrangements* must be very clear and well understood in advance by all affected by REDD+ programme implementation. (Strategy 8 and section Implementation Arrangements and Financing)
- *Gender aspects and human rights issues* should be addressed in plans for Strategy implementation. (Across all Strategies)
- *Clear roles and responsibilities* should be defined and well understood for all implementing units. (Section in implementation arrangements plus across all Strategies)
- *Capacities* should be built on all levels and for all stakeholder categories, including capacity development and training in environmental and social issues, integrating gender, culture and other social inclusion issues, and capacities to manage a robust MRV system and a safeguards information system. (Section on Implementation arrangements, financing and respective strategies)
- *Resettlements and compensation:* There is
- *Budget allocation* to lower levels of the Government must be significantly (actually several times) increased, not least to the forestry sector. (Section on financing and institutional arrangements)
- Ensure that forestry activities also *contribute to food security and nutrition*. (Strategies 1, 2, 4, 6 and 7)

As seen from the references given to the different Strategic Options, all of these issues have been accommodated in the updated version of the Strategy document, at least to some degree.

The REDD+ Environmental and Social Management Framework (ESFM) should address outstanding issues not addressed in the final Strategy. Although included in the discussion and guidelines included in the September 2017 Strategy document, the following issues are regarded outstanding since the Strategy document does not include full action to solve the issues, and they are likely to directly or indirectly affect REDD+ implementation. Accordingly, these are the outstanding SESA issues addressed in the ESMF:

- Land tenure; and
- Resettlements.

The importance of clear *land tenure arrangements* is stressed in several of the Strategic Options. However, this factor is not included in the REDD+ programme, but regarded a separate programme that need be implemented in parallel with REDD+ planning and implementation.

From a SESA perspective there is a need for a policy for the forestry sector for *people's voluntary and involuntary resettlements.* There is already a national policy for resettlements following the provisions of the Land Act, being applied in road and other infrastructure development and in oil sector, etc. However, the SESA sees a need to develop a policy clearly applicable for the forestry sector cases, based on existing law and the national policy. A draft framework is included in the ESMF.

There is also a need to settle the issue of *compensation to forest-dependent people earlier evicted* from protected areas: This point refers to forest reserves and other protected areas such as wildlife reserves and national parks. The issue that falls outside of REDD+ implementation and is not included in the ESMF. However, a solution is needed not only to solve an historic injustice but also to get still forest-dependent earlier evicted people interested in joining the REDD+ programme, in particular its SOs 1, 2, 4 and 6. It is from the SESA recommended that the Government takes action to solve the issue following both national law and international safeguards.

1. Introduction

1.1 Background

The Government of Uganda has developed a REDD+ National Strategy and implementation programme as a long-term measure for tackling deforestation and forest degradation, whilst meeting the demands for wood, energy, and other forest products. Whereas the Draft Final National REDD+ Strategy (September 2017) includes policy measures and actions that address the drivers of deforestation and forest degradation and have the potential to deliver significant social and environmental benefits; some of the proposed solutions may pose risks notably to indigenous peoples and local communities, including for marginalized and/or vulnerable social groups within these communities.

A purpose of the *Strategic Environmental and Social Assessment (SESA)* is to assess the likely positive and negative environmental and social impacts of suggested REDD+ National Strategy Options. Further, the SESA is intended to provide inputs to the REDD+ implementation planning process so that environmental and social factors are addressed appropriately in future REDD+ plans.

The SESA generated recommendations to the work on REDD+ Strategic Options to address legal, institutional, regulatory and capacity gaps to manage environmental and social priorities associated with the drivers of deforestation and forest degradation.

In the SESA work, the focus was on three tasks:

1. Identifying key issues and assessment of key stakeholders.
2. Collecting, analysing and disseminating primary and secondary data, including mapping of social, economic and environmental issues pertaining to the drivers of deforestation in the country, as a way to inform the development of SESA.
3. Assessing the environmental and social sustainability aspects of proposed Draft Final National REDD+ Strategy, providing feedback to the SESA/Safeguards Taskforce, and the technical team leading the preparation of REDD+ National Strategy.

To meet these requirements, this SESA report provides the following:

a. Identification of positive and negative environmental and social impacts from implementation of the seven operational REDD+ National Strategy Options.
b. Environmental and social hotspots and discussion of their main characteristics.
c. Discussion of key forest areas land use trade-offs; of the opportunity cost of conserving natural forests versus developing these areas into alternative land uses such as forest or energy plantations, agriculture and pasture, among others.
d. Priority setting: what environmental and social factors are most important and prioritised for solutions?
e. Preliminary analysis of critical institutional, legal, regulatory, policy and capacity gaps underlying the key environmental and social issues identified.
f. Conclusions and recommendations to the REDD+ National Strategy work and the SESA/Safeguards Taskforce.

The conduct of a participatory SESA of Draft Final National REDD+ Strategy options and the integration of environmental and social (ESA) considerations into Uganda's REDD+ National Strategy forms a part of the work on safeguards, following FCPF/WB Objectives.

1.2 SESA strategy, approach and methods

The approach, methods, strategy and process of work is presented in Annex 1 to this report.

The logical structure of the current report follows the sequencing of the illustrated process: first, general or basic information is presented, followed by presentation of findings from each of the sources of information (presented in blue boxes in Figure 1). Then come results from analyses of special data, opportunity costs and trade-offs, and institutional aspects (green boxes), ending with assessments and recommendations (yellow-brown boxes.

The work process of the SESA is illustrated in Figure 1 below.

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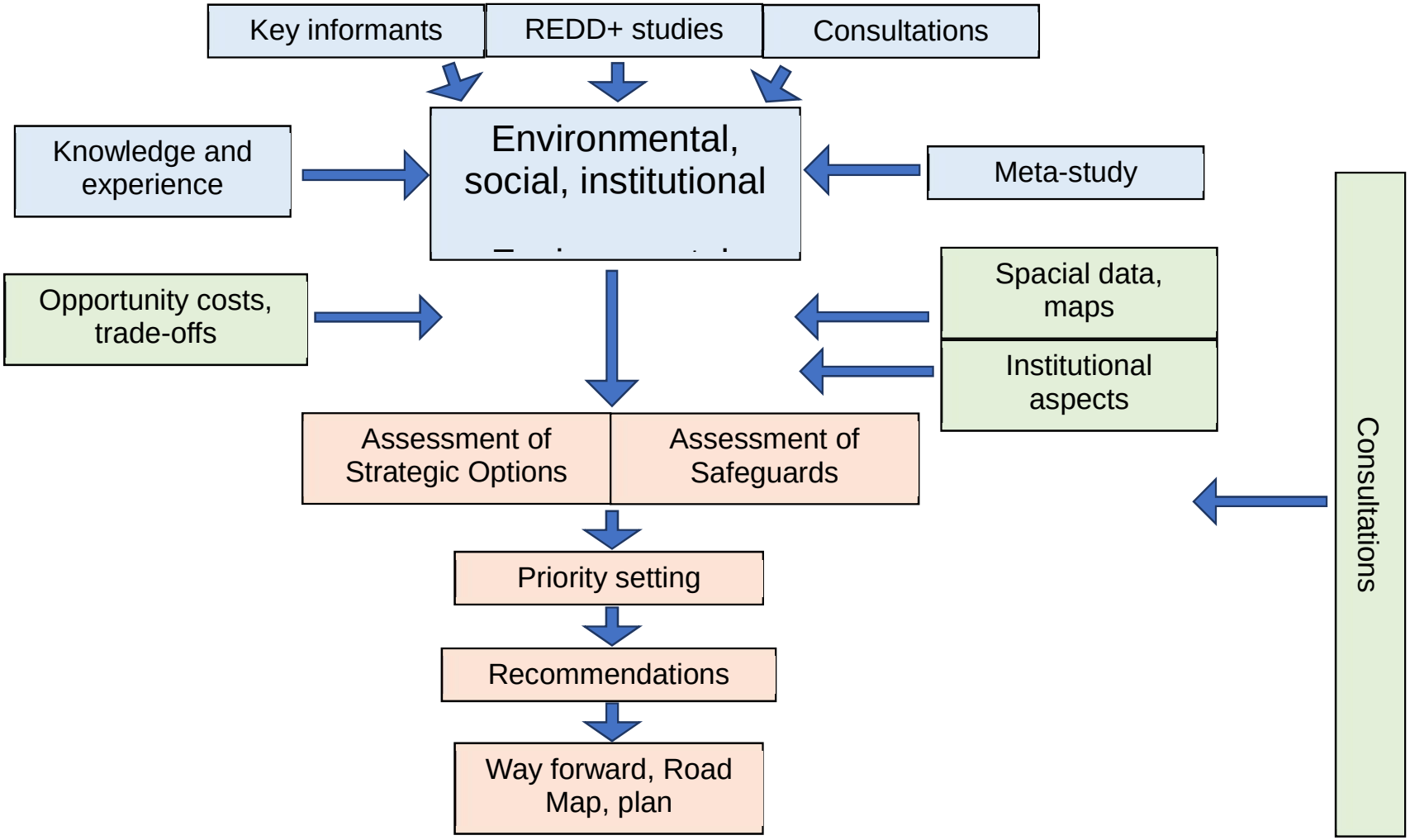

Figure 1.The SESA work process

2. Regional environmental and social issues

The SESA has a national outlook, but also a more in-depth focus on districts comprising the Albertine Rift, Karamoja Region, Mt Elgon Region, Mid – west and Central regions. Accordingly, a regional review was made. The emphasis on these regions, regarded as being environmental and/or social hotspots, was based on a number of factors including coverage of forests, hosting to forest dependent communities, being rich in biodiversity, having high human population, vulnerability to natural events, having dynamic changes in land use and land tenure, and having intense human activities that may cause deforestation and forest degradation. In the SESA process, these were important areas to watch out for significant social and environmental implications of Draft Final National REDD+ Strategy implementation. Findings from the regional reviews are presented in Annex 2.

Conclusions are in the following presented for each of the reviewed regions:

2.1 Mount Elgon

From the studies of the literature, the SESA took note of the following major environmental or social issues, specific to the Mt Elgon region and of relevance to REDD+ implementation:

- Given the observed unsustainable nature of relocations, the problem of landslides and flooding can be addressed through improvements in farming methods of the kind suggested in SO1. Improved and intensified agricultural production will reduce the need for extensive clearing of land.
- There is a need to settle the land issues of the forest-dependent people earlier evicted from the protected areas in the region. Ethnic ties, sacred sites, customary rights and fairness need be highlighted in this respect. There is a big risk that a "no-action" scenario would lead to affected people not joining or even counteracting SO 4, rehabilitation of natural forests. There is a need for a policy for people's voluntary and involuntary resettlements outside protected areas.
- Boundaries of protected areas need be clearly and permanently marked in the terrain, an activity needed to be included in the implementation.
- Politicians' unduly interference in the land issues in the region need to be minimized.

2.2 Karamoja Region

The SESA team took note of the following major environmental or social issues:

- Given the growing importance of crop production, SLM should be prioritized to protect and promote the productivity of land.
- Ensure that forestry activities contribute to food security and nutrition. Natural forests can be a safety net for rural communities and a pathway to poverty reduction by providing seasonal incomes from sustainable forest management

(SFM). REDD+ programmes could be developed as a safety net in response to household needs, including shocks.

2.3 Northern Region

From the studies of the literature, the SESA took note of the following major environmental or social issues, specific to the Northern region:

- There is a need for clear guidelines for foreigners seeking to access large tracts of land for agriculture, with clear checks to ensure that local livelihoods are improved and not impoverished by the arrival of these investments.
- Wildfire management is critical and to the extent possible should be done in collaboration with communities so that in the process, local livelihoods also benefit.
- Ensure that forestry activities contribute to food security and nutrition. Natural forests can be a safety net for rural communities and a pathway to poverty reduction by providing seasonal incomes from sustainable forest management (SFM).

2.4 Mid-West

The following major environmental or social issues were noted:

- Private owners of natural forests need to be incentivized to maintain these forests.
- Boundaries of protected areas need to be clearly and permanently marked in the terrain.
- There is a need to settle the issue of compensation to forest-dependent people earlier evicted from protected areas. Ethnic ties, sacred sites, customary rights and fairness need to be highlighted in this respect.

2.7 Central Region

Regarding this region the SESA concluded that:

- The problems of land ownership and shared utilization rights need to be solved, so that the tenants can be certain that the returns from an investment in the land (e.g. land productivity or a forest plantation) come back to the user.
- There is a need for gender aspects and human rights issues to be addressed in Strategy implementation so as not to disadvantage particularly women. Deliberate interventions are needed to mitigate the inherent cultural injustices meted against women.

3. Experience from recent development work

This section reports key findings from a meta-study conducted on development work in the last five (5) years in Uganda. The study complements the studies and assessments

made under the REDD+ Strategic Options work, having a focus on environmental, social and connected institutional aspects.

Experience and recommendations from the literature are categorised as social-economic, environmental, and institutional aspects of forestry-related rural development work. Sources of information are scientific publications, project reports, evaluation reports, and newspapers and magazines. All reviewed documents are summarised in Annex 5 of the SESA Identification, Prioritization and Process Report (Sep, 2017), each given conclusions of relevance to REDD+. A full reference list is provided in the same report in its Annex 6.

3.1 Socio-economic aspects

Box 1: Socio-economic Factors Identified in Recent Development Work

Livelihood and Poverty Levels

- Food security
- Land security
- Human health
- Employment
- Poverty levels

Social Inclusion/Exclusion

- Inclusion/ Exclusion of the less powerful
- Cultural practices and spiritual values
- Social risks

Inequity

- Inequity in benefit-sharing
- Increased costs (time, labour)
- Land grabbing

Gender Empowerment

- Gender balance
- Workload and drudgery for women and children

Social Conflict

- Human-wildlife conflict
- Violence against the less powerful

3.1.1 Livelihood and Poverty Levels

Concern for the livelihoods of the rural people is an explicitly stated objective in many interventions by Government and Non-Government actors. Important facets here include food security, human health, employment opportunities, and extent of poverty.

Food security: Large scale investments in forestry require large blocks of continuous land. The GoU has identified about 500,000 ha from the gazetted forest reserve land for the establishment of large-scale tree plantations (Ofoegbu and Babalola, 2015). However, outside this and as the gazetted land gets planted, land has to be acquired from private individuals. This is a constraint in two ways. On one hand, it becomes difficult to acquire large blocks of land required for this kind of investment. As Kaboggoza (2011) notes, private land owners have since turned most of their once forested landscapes into agricultural land which is a hindrance to acquisition of large chunks of land necessary for establishment of commercial forest plantations. Given the average land holding of 2.2 ha per household (Obaikol, 2016), acquisition of such large chunks of land may require the intending investor to buy from several households living adjacent to each other. On the other hand, purchasing formerly arable land and changing its land use to forestry adversely effects food security of the local people. Moreover, this has been observed to potentially, in the most extreme of cases, contribute to encroachment of agricultural activities to natural forest reserves (Banana *et al.*, 2013). It thus appears that large scale operations negatively affect the local food security principally because it takes away land

from the small-holders. On the other hand, farm forestry by local farmers themselves has demonstrated value for improved food security (Kiyingi *et al.*, 2016).

Land security: Security of land tenure is identified as essential to reducing poverty, because it underpins economic development and social inclusion (Adoko and Akin, 2011; Veit, 2011; Mabikke, 2016). This is as important to farmers who have to make decisions for example whether or not to plant trees, invest in sustainable land management practices, and is also important for pastoralists who are suffering from the effects of increasing fencing of land. Where they overlap, there is increasing contention and conflict over land rights between crop farmers and pastoralists (Stark, 2011).

Tremendous efforts have been made, but land tenure insecurity persists in the country. Uganda like many other countries has embarked on massive reforms to improve land tenure security. The development of a computerized land information system, decentralization of land governance and development of national land policy are among the many efforts (Mabikke, 2016).

Human health: Connected to the encroachment on arable land and outright evictions to pave way for forest activities (Oxfam International, 2011; Zeemeijer, 2012) are nutritional problems with adverse impacts on human health. However, there can also be some positive implications for human health. Practices such as agroforestry especially with fruit trees will have nutritional benefits (Kabunga and Griffiths, 2015) as does improved supply of charcoal and firewood which make it possible for people to cook the appropriate number of meals and of desired foods (Egeru, Kateregga, and Majaliwa 2014). The health benefits of improved cooking stoves are obvious.

Employment: Forestry is a labour-intensive sector and the different operations typically provide employment. A concern here is the usually low return on labour whether sold or invested on own farm (UFA, 2013) and whether or not recruitments are made from the local areas.

Poverty levels: Environmental income is an important component of rural households' total income. This includes resources collected from the natural as well as planted areas (Kiyingi *et al.*, 2016). Collection from natural areas has been demonstrated to be relatively more important for poorer households and to as such contribute by helping them not to fall deeper into poverty and to reduce income inequality (e.g. see Jagger 2012; Tumusiime, Vedeld, and Gombya-Ssembajjwe 2011). Some activities are particularly important for households with low agricultural capacity and limited stocks of human and physical capital (Khundi *et al.*, 2011). On the other hand, plantation forestry activities have varied impacts on poverty levels. Large scale commercial activities have a net positive impact at the national level and mixed results at local levels where positive contributions are tampered with by the attendant increased competition for resources (including land, labour) and the usual leakage of economic benefits from the local area. On the other hand, farm forestry (e.g. in the form of woodlots) has been demonstrated as a viable pathway out of poverty reducing both the incidence and severity of poverty among participating small-holders (Kiyingi *et al.*, 2016). Long duration woodlots of Eucalyptus have greater poverty alleviation potential than short duration ones yet the latter are the most attractive to poorer households in need of more continuous cash flows.

From a review of literature, mixed livelihood outcomes are reported. Basically, three categories of narratives can be identified. On one hand are narratives by investors that

tend to present a positive outcome and on the other are those by NGOs that present negative outcomes. Possibly the two contrasting sets of presentations are a result of the strategic interests of the two sets of actors. Critical scholarship on the other hand demonstrates that gains in rural livelihood and poverty reduction can be attained if specific ingredients are in place.

3.1.2 Social Inclusion or Exclusion

Inclusion/ Exclusion of the less powerful: Section 2(3) of the 1994 National Environment Management Policy of Uganda (NEMPU) requires social equity in allocation of resource use. From literature, it appears that only Collaborative Forest Management (CFM) arrangements go far enough. CFM Guidelines require that out of the 7-25 people constituting the CFM, at least 30% should be women, and that other minorities should also be represented. According to (Nsita, 2013), CFM processes religiously adhere to this at field level. However, in cases where participation requires a given access to resources, the poor, youth, women, and indigenous people including the forest dependent communities may get excluded. For example the Sawlog Production Grant Scheme (SPGS) is only accessible to those with reasonable access to land (e.g. see Banana et al. 2013; MWE 2015; Turyomurugyendo 2016).

While Uganda is home to a number of persons that can be identified as indigenous and tribal peoples (such as the Karamajongs, Batwa and Benet), these communities have been marginalized from mainstream society in economic, social and political terms (Mbazzira, 2009).

Cultural practices and spiritual values: Cultural practices and spiritual values form a major part of the social functions and usually non-marketed value of Uganda's forests. Piloted integration of the cultural values of the local people into the planning for and actual management of Rwenzori and Lake Mburo National Parks lessened conflict and secured local support for conservation initiatives (Mugisha and Infield, 2012).

Social risks: Forestry activities face a variety of social risks ranging from accidental ones such as fires to deliberate ones such as vandalism. The latter is particularly prominent in situations where land tenure is not clear and there are contestations over the land and land use (Ofoegbu and Babalola, 2015). This has frequently resulted in conflicts between the local people and the investment, exposing the latter to social risks in the form of retaliation by the former. As large-scale investments are considered under REDD+, it is vital that considerations are made to minimise these social risks.

3.1.3 Gender Empowerment

Gender balance: Uganda has adequate legal frameworks, policies and even some specific strategies for gender balance, but noticeable gender inequalities persist in the use and management of forest resources (AUPWAE, 2011). Many of the inequalities are rooted in the historical and cultural gender disparities that disadvantage particular groups (Nabanoga, 2005). Women own only 7% of the land which limits their ability to benefit from both government and non-government tree planting initiatives as these require land (Mukasa *et al.*, 2012). In the case of communal lands, the 1998 Land Act, section 16 (4) (b) provides that members wishing to incorporate to register a communal piece of land elect a committee of 3-9 members, of whom not less than one-third shall be women. This is a good provision meant to secure the rights of women, but there are generally no mechanisms to enforce the rights of women in customary systems (Veit, 2011). As an

example, written spousal consent is required in the event of (customary) land transaction but there is no clear institution responsible for verifying this, and in practice transactions are rarely documented (Tumusiime, 2016). These biases disadvantage women. Other sources of gender inequalities with respect to tree planting (on-farm and commercial) are limited access to inputs and credit, heavier domestic workloads, and in some cases provision of species of tree seedlings not preferred by the women (Banana et al. 2012 b).

Workload and drudgery for women and children: Collection of wood fuel is an activity undertaken by women and children. Scarcity implies extra demand on their labour and time. Most parts of Uganda already have biting fuel wood scarcity. In a recent study in Eastern Uganda, it is estimated that the annual opportunity cost of time spent collecting firewood averages 1,080,000 UGX (or USD 580) among households that collect firewood on a daily basis. Households have no recognisable coping mechanism to this scarcity. Only 1% have deliberately planted trees on their own land for firewood and use ICS. Other mechanisms are negative and include recourse to poorer quality trees or bushes (71.2%), cooking once a day and avoidance of cooking particular food types (70%), and use of crop residues (60%) (Egeru, Kateregga and Majaliwa, 2014). Interventions that increase availability of fuel wood will reduce workload and drudgery for women and children.

3.1.4 Inequity

Inequity in benefit sharing: There are well defined procedures for the distribution of conservation benefits. For example, with respect to tourism revenues a tourism revenue sharing policy is in place to ensure this. There also are local institutions purposefully created for this. However, almost at each benefit sharing site there are claims that most community members have not effectively benefitted from the shared revenues which were captured by the elites among them (see e.g. Tumusiime and Vedeld 2012). There are also cases where inequity in benefit sharing arose from a lack of adequate capacity on the side of the communities to negotiate with government agencies which also on their part did not endeavour to follow agreements and legal provisions therein (IUCN, 2012).

Land grabbing: Forestry activities have fuelled land grabbing for direct forestry investment (e.g. see Oxfam International 2011; Zeemeijer 2012), and in other cases by aiding land speculation (NAPE, 2012). Particularly vulnerable is customary land. Whereas there is sufficient protection of customary land rights in the national constitution and in the land laws, practice continues to violate these to the detriment of local communities (NAPE, 2012). Customary tenure is dominant in the Eastern, Northern and West Nile sub regions (Adoko and Akin, 2011).

3.1.5 Social Conflict

Human-wildlife conflict: Conservation efforts that protect wildlife may inadvertently amplify human-wildlife conflict. For example, increased wildlife damage has been reported at a number of sites where conservation efforts have resulted in increase of wildlife (Mackenzie 2012; Mackenzie and Ahabyona 2012; Tweheyo et al. 2011). The damage precipitates conflict especially given that Uganda has no policy on compensation in such an event (Tumusiime and Svarstad, 2011).

Violence against the less powerful: Large scale forestry operations require large tracts of land, many of which are settled by communities with varied claims to legality of occupation. From the recent history, a certain degree of violence against communities tends to happen before plantation establishments in what has recently been referred to

as “carbon violence” and the “darker side of green” (Lyons, Richards and Westoby, 2014), terminologies meant to depict the evil side of climate change interventions.

3.2 Environmental issues

3.2.1 Biodiversity

Biodiversity concerns always feature prominently whenever interventions into nature are considered. Generally there has been a decline in biodiversity in all parts of the country, from different causes including: expansion of agriculture, infrastructure, and settlements which have encroached on natural ecosystems in the districts surrounding Kampala (i.e. Mukono, Mpigi, Wakiso); farming into former forests of Eastern Uganda coupled with frequent burning of grasslands and overgrazing; a prolonged period of breakdown in management during the years of insecurity in the North; and rampant deforestation in the Albertine Rift (Bugoma, Budongo, Matiri and Kagombé forests) and poaching in the national parks of Western Uganda.

REDD+ however, offers several possibilities for the conservation and enhancement of biodiversity through its options including those that seek to rehabilitate natural landscapes (particularly SO 4.1, and SO 4.2). The country has a history with good lessons to draw for example from the well documented case of restoration at Kibale National Park, but also when farmers choose to deliberately manage natural regeneration on own or communal lands as demonstrated by the World Vision’s Farmer Managed Natural Regeneration Project in Kotido District (World Vision Uganda, 2014).

REDD+ Strategy implementation can draw on experience from biodiversity work in forest plantations. It is in the literature suggested that the conservation effectiveness of forest plantations be enhanced by other complementary interventions that modify characteristics (e.g. education level of users) that reduce forest use (Ainembabazi and Angelsen, 2014). It is also suggested that when establishing timber plantations, it is important that as required by Ugandan law the investor undertakes an Environment Impact Assessment (EIA) so as to identify biodiversity spots such as patches of tropical high forest, watersheds, wetlands, and in some cases cultural sites within the large expanse of land to be planted so that these critical areas can be protected (Kaboggoza 2011).

3.2.2 Water

National water resources have been on the decline (in quality and quantity) since the 1990s. Reasons for the decline include degradation of the resources emanating from deforestation, increased agricultural activities in the water catchments using poor soil and land and management practices, increased frequency of prolonged spells of droughts and a declining trend of catchment rainfall (Directorate of Water Resources Management, 2011). Water supply will likely be improved in the short term through reduced deforestation (SO2, SO3, and SO4) and improved Sustainable Land Management (SLM) (SO1.1). Protection of catchment areas will need to be prioritised particularly in water-stressed areas of the country where many boreholes, wells and dams constructed by the GoU to complement the natural water sources (MWE, 2013) have dried up following

degeneration of the respective catchment forests. For example, large scale conversion into croplands of catchment forests in Kyankwanzi-Kiboga hills has caused boreholes, wells and dams in Kiboga and Kyankwanzi districts to dry up (Ekesa *et al.*, 2015). Experience like this supports e.g. REDD+ SO4.

Degradation of catchments to water bodies has also resulted in soil erosion which silts water bodies including rivers and lakes. Siltation is a problem when it alters the quality of water as in the case of river Manafwa that has clean water as it emerges from Mt. Elgon area in Bududa district but picks soil from the extensively farmed Butaleja District and is brown and turbid by the time it gets to Manafwa District (NEMA, 2010). These are candidate sites for SO1.1. Further, running water also brings with it nutrients from the agricultural lands resulting in eutrophication of water bodies which negatively impacts aquatic life. The problems of siltation and eutrophication are particularly big where wetlands adjacent to the water bodies have been reclaimed for agriculture and where catchment forests have been degraded or deforested. These include areas of Nyamwamba, Manafa, Kafu, Lake Victoria and River Nile. Thus, allocation of sites for SO1.3 need to take precautions if desired in such areas given the large volumes of fertilisers likely to be used.

3.2.3 Land

Land Degradation: Fertile soils and productive lands are the most valuable resource for an agricultural country such as Uganda. However, a lot of Ugandan land has been degraded with negative outcomes on people's livelihoods because of reduced productivity. A recent assessment of changes in land cover in the cattle corridor over three decades has revealed large-scale reduction in areas of grass and woodland as a result of both charcoal making and expansion of agricultural land (Byenkya *et al.*, 2014). Similar observations have been made in the Karamoja area where analysis of land cover and land use change over the last 30 years (1986 - 2013) revealed that croplands had increased ten times in the last 13 years coinciding with a heightened encroachment on bushland within the same 13 years. The increment was attributed to interventions by the Ugandan Government and its development partners to promote crop cultivation in the area for food security. Loss of tree cover in the Karamoja region has aggravated levels of soil erosion and adversely affected availability of the much needed pasture (Egeru *et al.* 2014 b).

The GoU (Ministry of Agriculture Animal Industry and Fisheries), with the support of GEF and UNDP has been implementing a Sustainable Land Management programme to address the problem of land degradation. This programme provides an important entry point for REDD+.

Soil Fertility and Productivity: The fertility and productivity of Ugandan soils has been falling for decades as smallholder farmers lack financial capacity to secure inorganic fertilizers to correct the inherently low soil fertility levels, but also replace the nutrients mined when produce is harvested. Application of organic inputs is also at too low levels to supply nutrients in amounts required by the different crops in the system (Woniala and Nyombi, 2014).

One primary factor responsible for loss in soil fertility is soil erosion mainly because of high rates of water run-off following the high deforestation rates, but also the hilly terrain for some areas such as Sironko and South-Western Uganda. From a recent study, six districts in Uganda were found to have mean annual soil loss rates greater than 10 tonnes per ha per year. These are Bududa (46.3 tonnes/ha/yr), Kasese (37.5 tonnes/ha/yr),

Bundibugyo (28.9 tonnes/ha/yr), Bulambuli (20.9 tonnes/ha/yr), Sironko (14.6 tonnes/ha/yr), and Kotido (12.5 tonnes/ha/yr) (Karamage *et al.*, 2017).

Studies have explored methods for enhancing soil fertility including the use of green manure from legumes (*Mucunapruriens*, *Crotalaria spp* and *Canavaliaensiformis*) which increased yield of maize to 3.4 ton/ha, in the cattle corridor (Tumuhairwe *et al.*, 2007). Agroforestry has also been used as a broader approach for enhancing soil fertility by both Vi Agroforestry and the World Agroforestry Center-ICRAF. The two are operational in large parts of the country and can be important partners especially with respect to SO1.1, SO2.1 and SO2.3.

3.3 Institutional issues

3.3.1 Priority in Funding the Forest Sector

Report after report (e.g. White 2010; Christensen and Jensen 2011; Kaboggoza 2011; MWE 2015; Tumusiime 2014;) identify the need for improved prioritisation in terms of budgetary allocations) of the forest sector at both the national and local government levels. At the national level, the Government prioritises other sectors as evidenced by re-allocations of conditional grants from the sector when there are donor cuts. Even then, the Environment and Natural Resources (ENR) Sector typically receives between 0.3 – 0.6% of total national budget and the allocation is worse at local government (district) levels (Tumusiime 2014). This constrains the ability of the NFA and DFS respectively to fulfil their own mandates.

The National Forestry and Tree Planting Act (NFTPA) 2003 provides for a Tree Fund. While the Cabinet and Parliament have since long approved its implementation mechanisms as proposed by the MWE, the fund has not been operationalized. Several analyses have identified this as a major constraint to the forestry sector (e.g. see MWE 2015; Turyomurugyendo 2016). However, the Government of Uganda through the Ministry of Water and Environment (MWE) is currently undertaking a feasibility study for operationalisation of this fund. The study is facilitated by FAO through its Forest and Landscape Restoration Mechanism (FLRM) project (Kazoora, 2017). When operationalized, the fund should be an important instrument supporting REDD+ as well as other forestry activities.

3.3.2 Position of the DFS

Prior to the 2003 reformation of the forestry sector, the then Forestry Department remitted 60% of all forest revenues and retained 40% for itself. The reformation that created the NFA and District Forestry Services (DFS) gave all royalties and licences from CFRs to the NFA and only left the DFS with the very low revenues from Local Forest Reserves (LFRs). This resulted in a significant drop in forest income for the DFS and a much reduced incentive on their part to monitor and control illegal forest activities (e.g. see Kaboggoza 2011). It is thus desirable that institutional reconfigurations are made to ensure the DFS is incentivised to monitor and control illegal activities since they are close to the sites of incidence of these activities.

3.3.3 Improved Coordination of the Efforts of Actors in the Forest Sector

The Forest sector has a number of actors including state actors (Ministries (MFPED, MAAIF, MWE, Ministry of Lands, and Ministry of Local Government), Departments (NFA, FSSD, UWA, Department of Environmental Affairs, Directorate of Water Resources) and non-state actors (including NGOs, CBOs). In the literature, coordination of efforts by these different actors is pointed out as important (Banana et al. 2013; MWE 2015; Turyomurugyendo 2016; White 2010).

3.3.4 Effectiveness of Participatory Approaches to Natural Resource Management

Uganda has a fairly robust policy and legal framework to guide and facilitate implementation of Participatory Approaches to Natural Resource Management (Byaruhanga, 2011; Turyahabwe *et al.*, 2012; Tumusiime, 2016). Several criticisms have been levelled on the extent of prioritisation of Participatory Approaches to Natural Resource Management by both the NFA and UWA. Most of these are based on the evidence of the limited human and financial resources invested by the agencies in the respective units of Collaborative Forest Management and Community Conservation particularly at the headquarters (e.g. Turyomurugyendo 2016). However, given that particularly the financial resources will continue to be limiting, it is important to note and leverage upon the contribution of various partners including the IUCN (Mt. Elgon area), *Nature* Uganda (Echuya, Kasyoha-Kitomi), WCS, and Ecotrust in promoting participatory approaches to Natural Resource Management. Further, to facilitate communities to enjoy the rights allocated to them in PFM, the duration of the rights needs to be substantial to reduce on the transaction costs, and upon expiration, these should be revised promptly (Tumusiime 2016). Also, the process of devolving forest management to local communities is usually very lengthy and bureaucratic to the extent that it frequently kills the enthusiasm of the local participants. It is suggested that this process should be simplified and shortened considerably (Turyomurugyendo, 2016).

3.3.5 Information Management System

There is no one centre from which data on Environment and Natural Resources (ENR) can be accessed. Further, acquisition of the data from the agencies owning it is a very bureaucratic and tedious process. Anyhow, a lot of useful ENR data has been collected over the years. Examples include the sector's socio-economic context, biodiversity and biomass assessments, and the recent forest cover mapping under the REDD process. There are also some notable data gaps e.g. on the demand and supply of forest products since forest rangers and their supervisors often do not transmit information to the NFA central office on what is sold and in what quantities.

Creation and maintenance of an Information Management System for the forestry sector will improve ease of access and usefulness of these data.

3.3.6 Mechanisms for Public Participation

Meaningful participation of local people in the planning for and management of natural forests contributes to their better management and increases probability of yielding social benefits (Kissinger, Herold and De Sy, 2012; Jiren, 2013; Chirwa, Larwanou and Syampungani, 2015). Uganda's natural resource policies require responsible agencies to involve the public in the planning for and management of these resources. However, the State has no mechanisms for the responsible agencies to evaluate and report on public participation in these processes (Tumusiime 2016). There also is a certain level of

disappointment on the part of the local people emanating from previous experiences of involvement as subordinate beneficiaries receiving only limited shares of benefits (Turyahabwe *et al.*, 2012).

3.3.7 The EIA Process

Implementation of the REDD+ Strategies have potential for environmental and social impacts which calls for Environmental Impact Assessments (EIAs) to be made. However, the literature reveals some concerns over the EIA process in Uganda including the following:

Adequacy of tools: The legislative framework is adequate for conducting comprehensive EIA (or ESIA as it is sometimes called). However, Environmental Practitioners who carry out the assessments often do not adequately analyse project impacts. They mainly use checklists to do the EIA and there is a certain concern over the extent of limited analytical vigour provided when analysing the possible direct impacts of activities, but also and perhaps more importantly the limited nature of inquiry into the residual impacts of activities.

Specialised committees: The Executive Director of the National Environment Management Authority (NEMA) has powers to constitute specialised committees to assess EIA reports, but to date this has largely targeted large projects mainly because of the cost implications given the absence of a clear mechanism to remunerate members who operate on a voluntary basis.

Approval of reports: There is a particular concern amongst practitioners that NEMA takes too long to make decision on ESIA reports, which informs project design and implementation.

Compliance to proposed mitigation measures: The GoU requires impact studies of activities with potential to impact on the environment and these are normally done, but as the case of the establishment of oil palm plantations in Kalangala demonstrates (Kalangala District NGO Forum, 2009 cited in NAPE 2012) some activities and projects go ahead with little if any consideration for dealing with identified threats.

It is from the *SESA concluded* that measures should be taken when designing EIA processes for REDD+ projects to avoid problems such as the ones reported above.

4. Drivers of deforestation

Uganda has experienced a decline in biodiversity in all parts, from encroachment on natural ecosystems through expansion of agriculture, infrastructure, and settlements together with frequent burning of grasslands but also overgrazing and different forms of governance failure. In 1990, forest cover had been estimated at 24% of total land area. However, natural forests have experienced a strong decline in area in the past decades. In 2000, forests are estimated to have covered 3.12 million hectares, and declined to 2.42 million hectares in 2015, about 11.8% of the total land area. Deforestation is a main environmental issue threatening Uganda's forests and woodlands. The highest annual rate of deforestation is occurring on private and communal lands and the lowest is in

National Parks and Wildlife Reserves with the rate of deforestation in Central Forest Reserves in between.

A comprehensive analysis of drivers of deforestation in Uganda is presented in the Draft Final National REDD+ Strategy . A summary is presented below:

The underlying causes for deforestation and degradation are many and the national setting is complex. The figure below (Figure 2) presents the relationships between deforestation and degradation taking place on forests and non-forest lands in Uganda and their underlying causes. Twenty-three concrete underlying causes are many identified in the figure, with many inter-relationships between them.

The analysis of underlying causes concluded that the tremendous human population growth is the overarching and the most important underlying cause of deforestation, even though there is a certain "Chicken and Egg" constellation between the "population growth" and both "poverty" and "culture" factors. These linked factors were placed as secondary underlying causes together with "urbanization". Urbanization is clearly a secondary underlying cause as it stems out of population growth.

As one moves from left towards right in Figure 2 one can next find a long list of underlying causes of various types, which can be best described as being linked to institutional building, social and human resources, natural resources, energy, land and farming as well as legal regulations type of factors. The actual reasons behind wood and biomass use are based on human needs, which have to be fulfilled.

In the last column to the right are the actual observed drivers of deforestation and forest degradation. These drivers are the same as those identified at earlier stages of the Ugandan REDD+ readiness process, but this time their size and impact has been assessed in terms of carbon and carbon dioxides emissions and thereby their existence has been validated among drivers of deforestation (DD).

To ease the understanding, the colour codes of Figure 2 are presented in the box below.

→	Causes related to institution building and administration
→	Causes related to policies and regulations
→	Causes related to wood and NFTPs demands
→	Causes related to energy demands
→	Causes related to social and human resources issues
→	Causes related to agriculture and livestock rearing

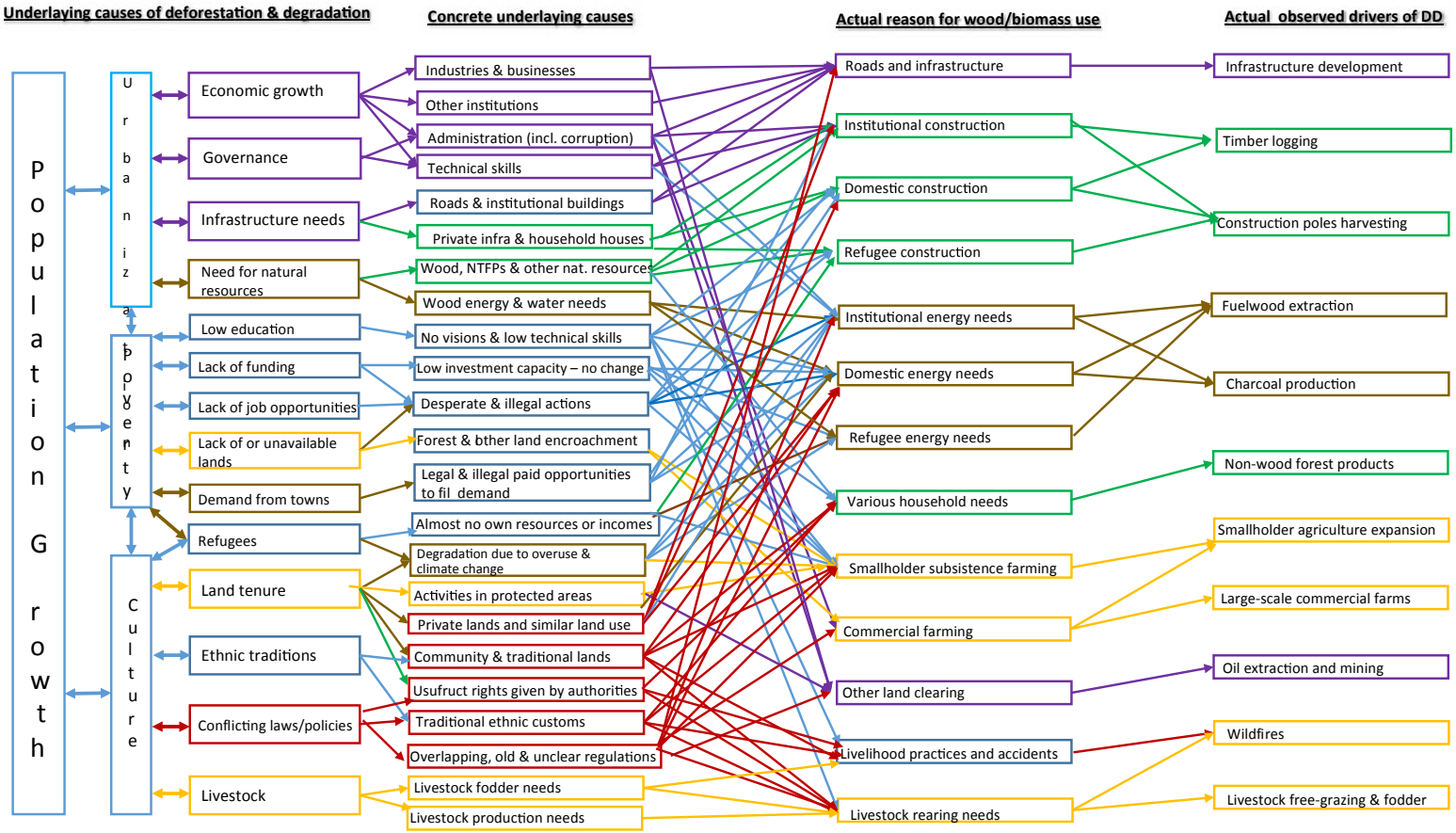

Figure 2. Overview of how underlying causes leads into actual observed drivers of DD in Uganda

Source: Arbonaut (2017)

Analysis of Ugandan green house gas (GHG) emissions are presented in the Strategy documents. An interesting observation is the huge amount of carbon emissions caused by wildfires in Uganda. It turns out that when livestock free-grazing is excluded from the calculations, wildfires constitute around 72% of the annual carbon emissions for 2015. Another interesting fact is that the wood and energy extraction from natural forests are the third and fourth largest individual drivers of deforestation, higher than farm-land expansion.

5. REDD+ Strategic Options

The following major challenges for Uganda are discussed in the Draft Final National REDD+ Strategy, September 2017[2], describing a situation within which the strategies are to be implemented:

- In the next few years there will be a large increase in new households and demands for land, jobs, houses and use of resources.
- The global and local climate is changing, which will increasingly affect Uganda.
- Large numbers of refugees are settling in Uganda from several neighbouring countries and this will probably continue for many years to come.
- The slow development of the Ugandan industrial sector, which needs to support young adults with new job opportunities.

Given these challenges new, more efficient alternative ways of doing farming, cut natural forests or exploit wood for energy must be developed and taken into use. The Draft Final National REDD+ Strategy should contribute significantly to help in this situation.

As presented in the previous Chapter, the key drivers of deforestation and forest degradation in Uganda have been identified in the National REDD+ Strategy as expansion of commercial and subsistence agriculture into forest lands and bush lands, unsustainable harvesting of tree products, mainly for charcoal, firewood and timber; expanding urban and rural human settlements and the impact of refugees; free-grazing livestock; wild fires; artisanal mining operations; and oil exploration activities. These drivers are symptoms of underlying socio-economic factors including; high rates of population growth, high dependence on subsistence agriculture, natural resources and biomass energy as well as competing economic returns from land that do not favour long-term investments such as forestry. Other underlying causes include weak forest governance manifested in weak forest management, planning and regulation; weak policy implementation; climate change effects, and others.

[2] Reference is also made to: Arbonaut, 2017. Consultancy Services for Preparation of REDD+ National Strategy for Uganda's National REDD+ Programme-MWE/Cons/14-15/00439. Final REDD+ National Strategy, August 2017.

To address the above issues, the Strategy describes seven Strategic Options and one enabling option (Table 1):

Table 1. Strategic options and sub-options proposed for implementation.

Strategic option 1: Climate smart agriculture
o SLM and agroforestry practices; o Rainwater harvesting with collection tank and drip irrigation; o Greenhouse cultivation of vegetables;
Strategic option 2: Sustainable fuelwood and (commercial) charcoal use
o Small-holder and community bioenergy woodlots; o Small-holder and community poles and timber plantations; o Improved charcoal kilns linked to bioenergy woodlots;
Strategic option 3: Large-scale commercial timber plantations
o Commercial eucalypt transmission pole and timber plantation; o Commercial pine pole and sawlog plantation; o Improved charcoal kilns linked to plantation sites;
Strategic option 4: Rehabilitation of natural forests in the landscape
o Area closures of deforested areas for natural forest regeneration; o Protected natural forest management (i.e. national parks and forest reserves); o Devolution of forest management through PFM and similar set-ups; o Traditional and customary forest management practices;
Strategic option 5: Energy efficient cooking stoves
o For fuelwood; o For charcoal
Strategic option 6: Integrated wildfire management
o In timber plantations; o On woodlands; o On bushlands; o On grasslands
Strategic option 7: Livestock rearing in Cattle Corridor
o Change to exotic cattle varieties and cross-breeding; o Agroforestry fodder production; o Establishment of drinking water dams
Strategic option 8: Strengthen Policy Enforcement for REDD+ Implementation

Each SO is in the following presented and discussed, followed by a summary of environmental and social aspects of the seven main SOs plus the enabling 8th option as presented in the Draft Final National REDD+ Strategy. At the end of each presentation an initial SESA comment and conclusion statement is made. The sources of information are REDD+ process and Strategy documents, National policies and legislation, lessons and experience from literature, information from key informants at national level and community consultations within hotspot areas.

5.1 Strategic option 1: Climate smart agriculture

This Option, with its three sub-options Sustainable Land management (SLM) and agroforestry practices; Rainwater harvesting with collection tank and drip irrigation; and Greenhouse cultivation of vegetables aims at reducing agricultural expansion to forest

through sustainable intensification on already cultivated land and thereby produce a major mitigation effect.

5.1.1 Presentation and discussion

Uganda is losing lots of forest cover due to agriculture expansion. This is happening as a result of increasing population, land use change, loss of soil fertility that causes farmers to seek virgin lands and encroaching on protection areas which is all leading to forest degradation. National efforts are geared towards encouraging sustainable land management (SLM) and climate smart agriculture (CSA). The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) has developed the Uganda Climate Smart Agriculture programme 2015-2025, implementing projects on SLM with agroforestry interventions. MAAIF is also finalizing the irrigation policy, aimed at supporting irrigation, strengthening on-farm harvesting and water efficiency. The ministry of Energy and Minerals Development (MEMD) was supported by the GEF together with MAAIF to implement a project on Sustainable Land Management, where MEMD supported production of improved charcoal (green charcoal), promotion of agroforestry species, soil and water conservation, ox-ploughs, and promoting water harvesting as part of conservation. All these interventions have a purpose to create alternative livelihoods to reduce pressure on biomass. Some of the NGOs and cultural institutions like Buganda Kingdom are promoting SLM initiatives in different communities of the country, and also supporting climate resilient crop varieties to address effects of long droughts and extreme rain seasons. These too have the purpose of building resilience of agricultural farming systems for enhanced food and nutrition security, with a vision of achieving Climate resilient and low carbon agricultural and food systems contributing to increased food security, wealth creation and sustainable economic growth in line with the National Vision 2040. This option therefore is in line with other agricultural policies and priorities.

In terms of environmental benefits, Climate smart agriculture will improve tree cover from agro-forestry, improve soil fertility and productivity, improve water holding capacity, and from the increased tree cover, increased net carbon stocks will be realized and GHG emissions reduced. Overall, CSA will help communities move away from traditional ways of doing farming and introduce them to more sustainable farming methods that promote water and soil conservation, thus improving the environment and ecosystems. Agro forestry practices are positive for carbon sequestration and will provide fuelwood, reducing degradation of forests for energy demands. The initiative will not therefore support forest exploitation but it will reduce pressure on forests and promote sustainable management of resources. Adaptation to climate risks, including drought, rainfall variability and flush floods will be reduced due to improved practices like mulching, conservation agriculture, intercropping, terracing and agro-forestry etc., which will increase on-farm carbon sinks thus contributing to adaptation and mitigation. The ecosystem's resilience to climate risks will also be enhanced.

Whereas CSA has several environmental benefits, mitigation measures need to be taken to avoid negative impacts that could arise in terms of health and safety if farmers use inorganic fertilizers and pesticides in an improper way. Although the country's use of agro-chemicals is still considered below average in the Sub-Saharan Africa, their effects on human lives, and biodiversity, including pollinators, cannot be ignored. This should be mitigated by ensuring that farmers use climate smart options to control pest populations through Integrated Pest Management approaches such as biological control, cultural practices and indigenous knowledge in farming practices. Support should also focus on

research and development of crop varieties that are resistant or tolerant to pests and a changing climate.

The CSA is considerably intensifying agricultural operations, which substantially reduces the need of rural households to expand their farming operations through forest encroachments. This issue is the single most important factor in carbon emission reduction from CSA.

On the social and economic side, CSA will increase agricultural production and productivity, thus contributing to considerably improved food security and household incomes (a doubling or even net fivefold increase), which can support improved livelihoods and improve nutrition for poor household. The CSA practices will also reduce risks and impacts of hazards and disasters associated with climate change, promote adaptation thus saving communities from social and economic costs, risks and shocks related to anticipated and future climate variability and climate change. However, for better social economic benefits, CSA programmes will need to be well planned ensuring that community members participate in deciding the type of investments to engage in, the technologies to be used, but they will also need support in terms of better technologies, seeds, and markets given the remoteness of some of the targeted areas. Gender considerations will also have to be considered given that agriculture is a highly gendered sector, so that the cost of implementation does not cause vulnerability to the women compared to the benefits.

Care should be taken to work with the indigenous communities on technologies that are affordable to them. For example, green houses and water tanks are not applicable for the very poor who at the moment cannot invest in such. Appropriate technologies based on local knowledge should also be sought to ensure that all the poor benefit from the interventions. There is also a danger of the landless being excluded from the projects if proper assessment is not done at the time of implementation and targeting. Some of the targeted indigenous communities are characterised by issues of previous eviction and landlessness, most have small pieces of land. The Ik, and the Batwa in Bundibugyo and south-western Uganda do not have land, which means that CSA interventions may not be relevant. There is a need to re-assess the vulnerability of the different groups and devise suitable interventions including forest based enterprises. Innovations to promote non-land based enterprises should also be sought where production can be done on small tracts of land or in forests where activities enhance ecosystem health. The marginalized indigenous communities can be supported in activities that suit their capacities and affordability, for example, the Batwa are good at pottery. Interventions like energy efficient stoves can target their skills in pottery to start producing stoves.

Sustainability issues need to be considered given the need for extension of services to support the different components of CSA. If this is not well thought out, the interventions will die off.

There is a need for a landscape approach in these agricultural interventions, with multi-sectoral interventions to enable integrated approaches for effective implementation. Since the suggested interventions are not completely new to the communities, there is need to identify the gaps, build the capacity of the communities for collective effort in production and access to resources.

5.1.2 Environmental and social aspects

Positive environmental effects include: High emission abatement potential due to increased biomass in the landscape; higher biodiversity; reduced soil erosion; improved water holding capacity and microclimate; increased soil organic carbon and soil fertility that promotes increased crop yields (nitrogen fixing trees); and appropriate feed that improves ruminant health and reduces methane per unit yield (fodder trees). Reduced pressures and degradation of forests for energy demands thus, promoting sustainable management of resources. Reduced risks from climate change due to improved practices like mulching, conservation agriculture, intercropping, terracing and agro-forestry.

Social aspects: Avoided deforestation conserves safety foods that local populations collect during the drought periods. Benefits related to population well-being include improved livelihoods, health and nutrition among rural population. The option also represents an opportunity to promote gender equality in implementation of agroforestry and other climate-smart agricultural practices; and better education opportunities and wealth among farmer households. CSA practices will reduce risks and impacts of hazards and disasters associated with climate change, promote adaptation thus saving communities from social and economic costs, risks and shocks related to climate variability and climate change. Other supporting factors: Existing traditional and local knowledge; Low-tech and low-cost practices needed for implementation; increased stakeholder participation; reduced reliance on commercial fertilizers; drip irrigation saves water, reduces labour demand and increases the productivity compared to traditional over-flow or bucket irrigation.

Negative factors threatening the implementation of the option: Unsecure land tenure; Tree competition with subsistence crops (mainly if wrong tree species are grown); Limited environmental safeguards (watersheds, emission regulation); Inadequate extension services; Unorganized stakeholders; Limited access to credit; Weak policy implementation; Unsustainable production can shift to elsewhere (carbon leakage); Subsidies do not target the poor.

The positive and negative aspects of this Option are summarised as an analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT), as follows. The Weaknesses may alternatively be regarded as challenges.

Strategic option 1: Climate-smart agriculture	
STRENGTHS	**WEAKNESSES/CHALLENGES**
High emission abatement potential due to increased biomass in the landscape Existing Climate-smart agriculture programme forms a good basis for scaling-up Existing traditional and local knowledge Low-tech and low-cost practices needed for implementation Increased stakeholder participation Reduced reliance on synthetic fertilizers	Unsecure land tenure Limited extension services Low knowledge on the relationship between water and land resources Limited access to markets Grass-thatched roofs are not suitable for rainwater harvesting High cost of greenhouses Lack of a law regulating trade in carbon credits

Drip irrigation save water, reduce labour demand and increases the productivity compared to traditional bucket irrigation Anchored in the current overall policy framework	Lack of a specific irrigation policy
OPPORTUNITIES Increased household income and food security Promote gender equality in implementation of agroforestry and other climate-smart agricultural practices Increase of biodiversity and landscape tourism Revenue from carbon credit Reduction of soil erosion Drip irrigated vegetable, fruit and fodder markets provide alternative opportunities to agro-pastoralists in more remote places	**THREATS** Climate change cause pressure to clear PAs for coffee production Increased shading may reduce crop yields in agroforestry systems Water supplies are not maintained (destruction, sedimentation, siltation, and pollution of water sources) Weak policy implementation may impede scaling up of the option

5.1.3 SESA initial conclusion

This Strategy is anchored in the current overall policy framework.

From the presentation in the Strategy document many positive and only a few negative environmental and social effects can be expected from this Option. Overall, CSA is a viable option, but it is important to realise that also vulnerable communities are not homogenous. Issues of health, safety, benefits, gender equity and landless need to be considered to ensure that also the very poor and indigenous people benefit from the interventions.

Main issues brought forward in the SESA process were:

- Unsecure land tenure; and
- Participation of indigenous people and easily marginalised groups.

5.2 Strategic option 2: Sustainable fuelwood and (commercial) charcoal use

SO2 with its three sub-options: Small-holder and community bioenergy woodlots; Small-holder and community poles and timber plantations; and Improved charcoal kilns linked to bioenergy woodlots addresses the energy poverty in the context of climate change by promoting sustainable fuelwood and charcoal production. The option provides one of the greatest opportunities to reduce emissions with expected significant sustainable development benefits.

5.2.1 Presentation and discussion

The energy policy for Uganda 2002 acknowledges that the energy sector has bigger environmental impacts than most other economic sectors. Thus, energy investments need to be subject to greater environmental scrutiny today than ever before. The sustainable energy policy focuses on integrating economic, social and environmental objectives in a way that improves the well-being of the current generation whilst safeguarding the welfare of future generations.

The policy further acknowledges that biomass plays a very significant role in Uganda's energy supply. It constitutes over 90% of total energy consumption in the country. It provides almost all the energy used to meet basic needs of cooking and water heating in rural and most urban households, institutions and commercial buildings. Trading in biomass energy, especially charcoal, contributes to the economy in terms of rural incomes, tax revenue and employment, but fuelwood requirements have contributed to the degradation of forests. Charcoal consumption increases at a rate close to that of urban population increase.

Targeting the wood biomass energy is important for emerging financial mechanisms, including REDD+ and the Forest Investment Program (FIP) and will determine their success. Community woodlots will reduce pressure on natural forests degradation but also provide a source of fuel for the communities themselves who largely depend on biomass. With increasing population growth, these interventions will reduce pressure on the ecosystems. Improved cook stoves, based on performance standards are also important for reducing GHG emissions from wood-based biomass use. They promote efficiency of fuel use, additional reduction of GHG emission by an enhanced combustion process, and give a reduction in air pollutants affecting the health of mainly women and children thus improving their health and safety. The community woodlots are important in reducing pressure on natural forests. Field assessments indicate that community members would be willing to participate in the discussions of developing ordinances for mandatory tree planting at household level and are willing to abide by set rules

Community pole and timber plantations are a positive focus (e.g. increased tree cover and therefore carbon stocks), but land ownership determines the possibility. In communities where land is communally owned, local institutions can allocate land for such interventions. However, on individual land, the size determines the kind of interventions that are prioritized. The indigenous communities that are land less might not be able to engage in such an intervention. Care should be taken to mitigate the risk of people turning their agricultural land into tree growing for monetary benefits, and shifting to clear natural forests in other places for agricultural production.

For the poor communities, tree growing is a big challenge, as tree growing is a long-term venture, and basic needs have to be met. Incentives to motivate the communities to keep their trees for a long time on their land would help a lot. On the other hand, the landless could also seek opportunities for community based forest management practices that could be sought where resource access can be negotiated with protected area agencies if it is not already happening. Combined with the sustainable use of resources like fuel efficient stoves, etc., the pressure on protected areas will reduce in due course, contributing to the mitigation co-benefits. It is also important to be conscious about the possibility of communities adopting tree growing for domestic fuelwood use. From experience, this is not a very common practice.

On the other hand, the conversion of wood into charcoal has potential for Increasing GHG emission if no investment is made in better methods and technologies. To date, charcoal is still produced with very traditional processes. The Indigenous peoples appreciate tree planting linked to agriculture and fodder, but commonly not for domestic energy needs. Most indigenous communities however collect fuel wood for domestic use but do not use charcoal. The charcoal business is dominated by outsiders who destroy the environment and leave local communities vulnerable to negative impacts of climate uncertainty. This is exploitative and does not benefit indigenous people. Mitigation measures need to be put in place to assess benefits for different groups.

Whereas energy wood based charcoal burning might be favourable in some areas, unrestricted traditional exploiting of natural forests will further degrade forest resources both on individual and government land. Indigenous people who do not have land to plant trees for charcoal burning will be employed by the better-off farmers. Charcoal making must become fully legal and organized, which it only becomes if the energy wood is plantation based. Coupled with weak enforcement of policies in Uganda, this needs to be analysed further.

On the social impacts, fuel efficient stoves can off-set the negative income effect resulting from expenses of wood fuel price increases and burdens of collection firewood especially on women and children. Alternative fuels as well as the adoption of fuel-efficient charcoal stoves should thus have positive advantages. Among the indigenous communities, improved cook stoves are not being used, which is indicative of low levels of knowledge on alternative and efficient energy sources and lack of money.

Timber can enhance the productivity of forest resources and increase the supply of commercial timber for income. In terms of community timber projects, share-holding arrangement between households and responsible entities will have to be worked out to ensure that community interests are represented and that there are collective incentives to benefit farmers more directly even when working with the private sector.

Commercial charcoal burning has the potential to provide employment and income to local communities. A study conducted in Uganda found that if households are involved in charcoal production, it reduces their likelihood of falling below a poverty line by approximately 14% (Khundi et al., 2010). Modernizing wood-based biomass energy production has the potential of significantly increasing the revenue base of local communities along the charcoal value chain

It is also critical that gender aspects be considered when efficient stoves are being promoted. Women are often not included in decisions about technology types and skills yet they perform the cooking in practice. Male members of the household might not see cleaner-cooking stoves as a top priority for a poor family, so, addressing and informing women's consumption choices should not be neglected.

5.2.2 Environmental and social aspects

Access to energy is an important indicator when analysing poverty as it has a critical and immediate impact on the health and nutrition of households. As an example, scarcity of fuelwood drives people to opt to less nutritious fast cooking foods, instead of e.g. beans and peas.

Positive *Environmental* factors: Tree planting contributes to landscape restoration in degraded areas; The option has fairly high emission abatement; Reduced pressure on natural forests; Local climate moderation; Sustainable wood production is carbon neutral; Improved agricultural biodiversity.

Social aspects: The option is expected to improve household energy supply, which has a large health and nutritional impact. It will also provide livelihood and income benefits in form of food, fibre and energy. Higher charcoal volumes with an improved pricing structure will allow better financial returns to the producers of green charcoal. Diversification of sources of livelihood improves the resilience of households.

On *negative side* issues threatening the implementation of the option: Unsecure land tenure; Tree competition with subsistence crops; Limited environmental safeguards (watersheds, emission regulation); Inadequate extension services; Efficient charcoal kilns and retorts have a high investment and maintenance cost; Unorganized stakeholders in many cases (but there are also well-organized systems of charcoal producers and dealers); Limited access to credit; Lack of charcoal data along the charcoal value chain; Inadequate standards for products; Weak policy implementation; Charcoal production is perceived negatively or even treated as an illegal activity; The sustainability of tree plantations can be threatened by pest and diseases causing damage to plantations, as can fires, droughts and livestock. Unsustainable production can shift elsewhere (carbon leakage); Subsidies do not target the poor; Unclear or no boundary marking of protected areas.

The SWOT analysis reads:

Strategic option 2: Sustainable fuelwood and (commercial) charcoal use	
STRENGTHS	**WEAKNESSES/CHALLENGES**
Fairly high emission abatement Wood has a high energy density Wood harvesting can be optimized depending on market situation (opposite to agricultural crops) Suitable soils and climate for tree growing Sustainable production is carbon neutral Large knowledge base an applicable technology Anchored in the overall policy framework	Unsecure land tenure Limited environmental safeguards (watersheds, emission regulation) Inadequate extension services Efficient charcoal kilns and retorts have a high investment and maintenance cost Unorganized stakeholders in many cases Limited access to credit Lack of charcoal data along the charcoal value chain Inadequate standards for products Weak policy implementation Unclear or no boundary marking of protected areas.
OPPORTUNITIES	**THREATS**
Reduced extreme energy poverty Increased revenue to producers Increased household income Increased tax revenue for the district Improved agricultural biodiversity	Charcoal production is perceived negatively or even treated as an illegal activity Unsustainable production shifts elsewhere (carbon leakage) Subsidies do not target the poor

Job creation Increased household income Expanding market for green charcoal	Fire and drought (unpredictable weather) Tree competition with subsistence crops Efficient charcoal kilns and retorts have a high investment and maintenance cost

5.2.3 SESA initial conclusion:

From the presentation in the Strategy document many positive and only a few negative environmental and social effects can be expected from this Option. Main issues for further analysis in the SESA process were:

- Unsecure land tenure;
- Compensation to earlier evicted forest-dependent people in order to get them onboard this option;
- CFM agreements not fully operationalized and slow bureaucratic process of registering CFMs.

Whereas this option has potential, practice requires considerable positive incentives to convince people and support full and effective implementation of existing and proposed low emission approaches.

The Option does not specifically analyse gender equality but that is covered as a cross-cutting issue under other headings in the Strategy documents. Discussions on participation of indigenous people and easily marginalised groups is included in the final Strategy document.

5.3 Strategic option 3: Large-scale commercial timber plantations

This Strategic Option with three sub-options is on the plus-side of REDD+, aiming at building up forest plantations for poles and timber capturing carbon, and promoting improved charcoal kilns linked to the plantations.

5.3.1 Presentation and discussion

This Option should contribute to an Inclusive Green Economy (IGE) through promoting responsible investments in large-scale commercial transmission pole and timber plantations. The option is for commercial pole and timber growers and can be combined with agroforestry practices.

Large scale timber plantations and saw-log production have the potential to increase rural incomes through commercial tree planting by local communities and private sector actors. At the same time plantations contribute to climate change mitigation through afforestation, which is also positive for REDD initiatives. Large forest plantations have the ability to reduce pressure on natural forest which are getting depleted at a high rate. But they also contribute to improving the micro climate for the particular areas where the forests are located and act as carbon sinks thus contributing to mitigation of GHGs. There is also potential for plantations to be registered under CDM and provide income for the country and private sector investors, thus providing future financing options for further investment.

However, the timber value chain needs to be analysed in relation to benefits and rights for different groups of people right from the loggers, buyers, millers etc. Efforts should be made to protect land owners where the land does not belong to Government and if it belongs to Government the poor people should be considered in terms of benefits. The large forest plantations have a tendency to attract large companies and the rich people, leaving out the poor, who are the majority and more dependent on forests for their living. For profit maximization, the investors in tree plantations will tend to grow exotic tree species at the expense of indigenous ones. Monocultures have both advantages, primarily high growth rates, and disadvantages such as diseases, and overuse of chemicals which will need to be considered at implementation stage. In some parts of the country, species like *Eucalyptus* are very prone to termites, which might discourage farmers to invest. Land use planning and site species matching will be an important factor to consider as tree plantations are being established, to protect fragile ecosystems like wetlands being planted with high water demanding species like Eucalyptus, which might affect the water quality from use of chemicals and water quantity, as they might affect the water table.

The large-scale timber plantations have a potential to attract use of heavy machinery that make tracks that may be very destructive on forest roads, causing soil erosion and siltation of water bodies, and use of chemicals like pesticides that might affecting biodiversity like pollinators and thus affect food production in the areas.

The country experiences lots of illegal timber trade, which might not benefit the local people and the country at large unless stringent measures are put in place. Enforcement of the Forestry Policy has been lagging behind, and is hampered with inconsistencies in implementation.

For creating incentives and benefit for the local communities, development and integration of other products and initiatives can enhance livelihoods and improve incomes, while also sustaining the maintenance and growing of trees with limited encroachment and destruction. Initiatives like farming, fruit growing, apiary, etc can be linked to the plantations to ensure that the adaptation needs of the community are also met. If user and access rights are well-negotiated for local adjacent communities, they can use them to access various kinds of non-timber forest products, with the most important being pestles, canes, palm, spices, medicinal plants and chewing sticks. This can reduce encroachment on protected areas and the conflicts arising from that. Other social facilities like health centres and water facilities usually established by the investors in local communities could be of high benefit to the area populations.

5.3.2 Environmental and social aspects

Positive *Environmental* factors: Option will reduce erosion on large areas, support biodiversity rehabilitation and reduce pressure on natural forest.

Social aspects: Option contributes to improvement of rural livelihoods by creating employment (fuelwood, charcoal, pole and sawn timber business). The option will provide high profits at maturity stage, provide new value-added products and give indirect benefits for small-scale out-growers. Taungya system (growing food crops between the tree seedlings) provides early income to farmers during 3-4 first years.

Negative side issues threatening the implementation of the option: Weak governance (corruption, illegal timber harvest, illegal timber trade, insecurity of land tenure) can hamper efforts; Negative publicity; Taungya system is not working unless the farmers

own the trees; Use of persistent chemicals (e.g. herbicides for weed control, pesticides, preservative, fertilizers) with possible health problems; Lack of forest fire management plan and implementation; Low technology for processing; High capital requirement; Weak policy implementation and possible political interference can cause instability; Some local communities do not support large-scale investments; Fear of privatisation and enclosure of common lands; Fear that forced relocation of agriculture, grazing and other livelihood activities course conflicts; Eviction and dispossession of local people; Fear that biodiversity hotspots are replaced with monoculture; Fear that employees sourced from other areas(not locals) operate in plantations.

The SWOT for Option 3 is in the Strategy presented as follows:

Strategic option 4: Large-scale commercial transmission pole and timber plantations	
STRENGTHS	**WEAKNESSES/CHALLENGES**
Supportive policy and legislation Uganda National Green Growth Strategy SPGS model Uganda Tree Growers' Association Suitable soils and climate for tree growing Sustainable production is carbon neutral Added value to raw material Increasing private sector involvement	Governance (corruption, illegal timber harvest, illegal timber trade, insecurity of land tenure) Negative publicity Taungya system (growing food crops between the tree seedlings) is not working unless the farmers own the trees Loss of biodiversity Chemical use (e.g. herbicides on weed control, pesticides, preservative, fertilizers) Low technology for processing High cost of capital requirements Weak policy implementation
OPPORTUNITIES	**THREATS**
Expanding demand High profits at maturity stage New value-added products Higher recovery rates in harvesting and processing improves profitability and saves raw material Rural employment for skilled and unskilled workers, including youth Indirect benefits for small-scale out-growers Improved quality of products Carbon financing	Political interference, instability Local communities do not support large-scale investments Privatisation and enclosure of common land Forced relocation of agriculture, grazing and other livelihood activities course conflicts Eviction and dispossession of local and indigenous people Biodiversity hotspots are replaced with monoculture Employees sourced from other areas Poor protection from fires, livestock damage, pest and diseases, unpredictable weather

5.3.3 SESA initial conclusion:

This option is not viable for the indigenous and landless communities, but they can benefit from the adaptation interventions which can be developed as incentives for conservation, alongside the plantations.

From the presentation in the Strategy document there are both positive and negative environmental and social effects expected from this Option. Main issues connected to this option are:

- Eviction and dispossession of local people;
- Political interference;
- Borders of forest reserves not clearly marked.

5.4 Strategic option 4: Rehabilitation of natural forests in the landscape

The aim of this strategic option with its four sub-options is to restore or rehabilitate natural forests within the context of climate-smart landscape. The means are:

- Area closures of deforested areas for natural forest regeneration;
- Protected natural forest management (i.e. national parks and forest reserves and forests on privately owned land);
- Devolution of forest management through PFM and similar set-ups;
- Traditional and customary forest management practices;

5.4.1 Presentation and discussion

Natural forests provide carbon stocks and ecosystem services, protect biodiversity, and play a role for effective & long-term carbon storage. The proposed interventions therefore can contribute to REDD+ initiatives and synergies as well as address climate change mitigation and adaptation co-benefits and resolve the biodiversity loss going on with unsustainable practices. Natural regeneration has been recommended as more effective than tree planting. It involves growing of indigenous trees which help to regenerate, protect and maintain natural forests which keep big carbon stores intact for big early gains, protecting biodiversity, enhancing stability and maintaining soil fertility, water conservation and prevent flooding. Other organisations like World Vision Uganda are promoting FMNR in the districts of Nakasongola, Kibale and Kiboga with very good results for both adaptation and mitigation.

Whereas natural forests have positive environmental impacts issues of land ownership need to be taken care of. Area closures can only work on government land since such laws cannot be imposed on private land owners. Area enclosures will mean eviction of people who have been using the forest, including those who had settled there illegally. The consultations with different stakeholders in the country indicated high rates of illegal titling in the forest reserves, with a lot of economic activity establishment in these areas. Evictions and area enclosures will lead to conflicts with the communities and rejection of the conservation activities. This is also aggravated by the fact that most of the forest reserve boundaries are not well-established. In addition, irrespective of their illegal occupancy or access to the forest reserve, eviction of these people might be against their

rights according to the World Bank safeguards. Given the high deforestation levels especially on the privately-owned land, there is a resource imbalance between the private land and the forest reserves. Area closures might therefore leave communities with very limited options for highly dependable resources to the communities. Rather, it is important to take on a voluntary natural forest regeneration programme where community members can be participants in the project after understanding the costs and the benefits. The Ik during consultations recommended sensitization on aggressive tree planting, and adherence to laws on encroachment. Community members revealed that the Ik are a small community easy to mobilize and easy to sensitize to reduce the harmful practices that destroy the environment. This will work well with the Participatory Forestry Management practices including strengthening governance issues. This however needs to take into consideration past PFM practices that have been implemented in the country and take lessons and best practices, including viable benefit sharing provisions favourable to the local communities.

Landless or Indigenous communities also need to be considered. The initial community consultations in Northern Uganda indicated that through Collaborative Forest Management (CFM) some of the indigenous community members know the value and importance of forests and are willing to plant more private woodlots if both land and seedlings are provided. Indigenous communities benefit from forest resources which include herbs, fuel-wood, mushrooms, honey, timber, charcoal (strictly for selling to the outside communities), meat (poaching) and some raw materials for making baskets and mats. In some of the areas, access to resources if illegal is punishable. With natural regeneration of forests, access will be easy for the community, and in field discussions they presented willingness to pass laws, rules, or ordinances to protect the forests. The regenerated forests can be combined with fruit trees and other forest based enterprise which work as incentives for the communities to leave the trees to grow as they engage in adaptation activities which enhance livelihoods of local people, mitigate effects of climate change, increase food security, and safeguard soil and water resources.

The landless Ik and the Batwa indicated that they can only contribute to natural resource conservation and adhere to regulations if their resettlement demands are met. Otherwise they depend on the forests for their survival.

This option needs to consider local people and determine how they benefit along the value chain or create incentives for them.

5.4.2 Environmental and social aspects

Positive *Environmental* factors: Large-scale and cost-effective climate change (CC) mitigation impact. Landscapes yield multiple benefits, they support biodiversity, mitigate natural disasters, reduce soil erosion, sequester carbon, and provide other environmental services such as NTFPs and clean water as well as opportunities for responsible commercial activity. Improved water catchment management. The Option has high emission abatement potential.

Social aspects: Provides multiple benefits e.g. large part of rural household's income and forest-based services (regulatory, provisional and cultural), ecotourism and medical plants. The supporting facts are: Existing traditional and local knowledge; Low-tech and low-cost practices needed in natural regeneration; Increased stakeholder participation; Large livelihood impact.

On *negative side* issues threatening the implementation of the option: Poor governance including corruption; Poor cross-sectoral coordination; Failure to approve the forestry regulations and management plans; Limited extension services targeting natural forests; Gender inequality; Inadequate short-term incentives to support rehabilitation of forests; Weak tree tenure; Limited research in rehabilitation of natural forests; Illegal encroachment on forests; Reduced grazing opportunities; Lack of extractable benefits from conserved sites; and Displacement of indigenous people.

The SWOT presented for this option (SO4) is:

Strategic option 4: Rehabilitation of natural forests in the landscape	
STRENGTHS	**WEAKNESSES/CHALLENGES**
High emission abatement potential due to increased biomass in degraded landscape Supportive policy and legislation Existing traditional and local knowledge Low-tech and low-cost practices needed in natural regeneration Existing forest rehabilitation projects form a good basis for scaling-up Increased stakeholder participation Large livelihood impact	Poor governance including corruption Poor cross-sectoral coordination Failure to approve the forestry regulations and management plans No legal mechanisms to regulate trans-boundary forest management Limited extension services Gender inequality Inadequate short-term incentives to support rehabilitation of forests Weak tree tenure Limited research in rehabilitation of natural forests
OPPORTUNITIES	**THREATS**
Increase of biodiversity and landscape tourism Revenue from carbon credit Reduction of soil erosion Improved water catchment management	Strategic Option is not reflected in the Government Development Strategy and Investment Plan Political interference in forest management and pressure to de-gazette PAs Illegal encroachment to forest Reduced grazing opportunities face resistance Lack of extractable benefits from conserved sites Displacement of indigenous people

5.4.3 SESA initial conclusion

Ecosystem restoration through this Option will contribute to climate change mitigation and adaptation and to combating desertification and also contribute to the 2030 Agenda for Sustainable development adopted by the United Nations General Assembly in September 2015, with the 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, sustainably manage natural ecosystems, and reduce risks of climate change. The Option also contributes to the Bonn Challenge of restoring 150 million hectares of degraded and deforested land.

Protection of natural forests is a national priority. Natural forests contribute to national economy and rural livelihoods, support the tourism sector through protection of habitat for wildlife (the mountain gorilla is forest dependent!); they support hydro-power generation and have high carbon stocks. The Option will require strong positive incentives and additional policy approaches with emphasis on conservation of forest carbon stocks.

The Option does not necessarily aim to return forest landscapes to their original state but rather to optimize their carbon sequestration capacity and the delivery of other forest-related goods and services at the landscape level. The approach is community driven (bottom-up) with appropriate technologies and land management practices. The communities will be encouraged to share their knowledge about practices that can improve livelihoods and income generation whilst conserving and protecting natural resources.

This option has a high potential for important positive environmental impacts. There are however a range of possible negative social effects that need to be addressed in planning, or mitigated through separate actions. It will be needed to consider local people and determine how they benefit along the value chain or create incentives for them. The SESA regards the following issues to be most significant and subject to analysis later in the SESA process or in the ESMF:

- Possible cases of displacement of people (which can be mitigated by avoiding such cases);
- Slow implementation of CFM;
- Poor boundary marking of forest lands;
- Poor cross-sectoral coordination;
- Political interference.

5.5 Strategic option 5: Energy efficient cooking stoves

This Strategic Option promotes clean cooking solutions through improved fuelwood and charcoal stoves, addressing problems associated with traditional cooking methods and the need to reduce the amount of wood needed for energy. It is expected that prioritization of clean cooking is an effective intervention that should deliver cross-cutting gains and boosts progress on the Sustainable Development Goals (SDGs) and combats climate change.

This strategic option promotes Clean Cooking Solutions through improved fuelwood and charcoal stoves.

5.5.1 Presentation and discussion

Energy efficient stoves save or reduces the risk associated with exposure to high concentrations of smoke and particulate matter released during combustion which leads to high risks of respiratory illnesses especially among the children and women who spend a long time in the cooking area. Men and youths will also be saved from the risks of poisonous gases like carbon monoxide, sulfuric dioxide and others produced during the process of charcoal burning.

Despite the fact that they are energy efficient, some of these stoves still use charcoal, and given the fact that charcoal demand is high from the urban centres, the supply from energy efficient kilns to be promoted may take long to meet the market demand. Thus, some long-time continuity of traditional charcoal production from natural forests is foreseen, with its associated health and environment problems. The rural producers will still remain exposed to dangers of working in close proximity to high temperature kilns with their poisonous off-gas with highly toxic compounds.

Till this time, energy efficient cook stoves have been promoted, but the adoption rate in the rural communities is still very low. Even in homes where cook stoves have been demonstrated, the traditional three-stone cooking still exists, and is frequently used. This could mainly be due to limited flexibility in the sizes of cooking pots used in homes, the speed of cooking, and other factors.

Secondly, the use of animal waste for energy production have negative implications on agricultural productivity, where animal waste could have been used for manure. In such cases, food production and food availability will be negatively affected.

Considering all these factors, the participation of some indigenous people like forest dependent communities will not be very easy given their poverty level and social establishment. Their housing structures are so "minute" that fixing a firewood energy efficient stove would take a very big space, or even cause health risks of children getting burnt. For example, most of the Karimojong sleep in small huts, share small kitchens or cook outside. The energy efficient stoves might be impractical for them. The Batwa also sleep in tiny grass huts, which means that any of these technologies might be impractical for them unless they change behaviour.

5.5.2 Environmental and social aspects

Positive *Environmental* factors: Large-scale climate change (CC) mitigation impact. Soils and climate suitable for biomass production. Huge savings in wood consumption and biodiversity.

Social aspects: A wider access to clean, safe and efficient household energy secure additional benefits to society, which are related to health, gender and livelihood. Health benefits are huge since household air pollution (HAP) from traditional cooking is a major problem contributing to premature deaths. Improved firewood and charcoal stoves save time now used in fuelwood gathering, and thereby allow more time for productive activities and schooling. Reduced risk for injury and violence during fuel collection, especially among women and children.

On *negative* side, there is inadequate financial support for investing in renewable energy projects and weak policy implementation. Further, people often use improved stoves inappropriately and neglect their maintenance. Low energy intensity projects are not attractive for carbon credit buyers.

The SWOT for this option is:

Strategic option 5: Energy efficient cooking stoves	
STRENGTHS	**WEAKNESSES/CHALLENGES**

Uganda's SE4ALL Action Agenda 2015 Uganda Biomass Strategy 2013 Large social, economic and health impacts Large-scale CC mitigation impact Soils and climate suitable for biomass production Scaling up of on-going projects	Low awareness on Clean Cooking High upfront costs of stoves Inadequate financial support for investing in renewable energy projects Incomplete data on biomass energy usage Inadequate standards and quality assurance for cook-stoves Weak policy implementation
OPPORTUNITIES Heath benefits due to reduced indoor pollution Reduced risk of injury (e.g. from children falling into fires) and violence during fuelwood gathering (women and children) Societal benefits such as time saved for productive activities and education Carbon credits subsidize fuel-efficient cook-stoves Large employment generation through micro enterprises and marketing Employment for both male and female youth Women's empowerment	**THREATS** Biomass is considered a backward form of energy Improved stoves are not affordable for all Irregular or inappropriate use and maintenance of improved stoves Low energy intensity projects do not attractive carbon credit buyers Difficulties in carbon credit auditing due to unknown stove usage Need for behavioural change related to cooking.

5.5.3 SESA initial conclusion

The justification for this Option is very high. It has been estimated that household air pollution (HAP) from cooking contributes to 13,000 premature deaths in Uganda. Women and young children receive the highest exposure. More than 30 million people in Uganda still rely on traditional biomass fuels and stoves for cooking. Besides, there is a high emission reduction potential.

From a SESA viewpoint, there are mainly positive environmental and social effects of this option. No main issues were associated with this option.

5.6 Strategic option 6: Integrated wildfire management

This strategic option aims to address and control wildfires through integrated community-based fire management. Wildfire is a general term for any unplanned and uncontrolled fire in vegetation, which may require suppression response, or other action. Integrated fire management (IFM) includes the integration of science and fire management approaches with socio-economic elements at multiple level (FAO 2016). As such, it implies a holistic approach to addressing fire issues that consider biological, environmental, cultural, social, economic and political interactions.

5.6.1 Presentation and discussion

Fire affects more than half of the country land area. Fire (irrespective of the intention of the origin) contributes to forest degradation and may create conditions for deforestation. Integrating fire management is common practice in wildlife and plantation management but it requires additional positive incentives to be scaled up to all rangeland management. Bushfires have the biggest immediate impact on the biosphere. They are capable of burning hundreds of hectares of forest, scrub, property and any other vegetation to ashes. In the process, many animals and insects are destroyed. Controlling bush fires therefore will save the ecosystems from degradation.

This Option is relevant and useful especially in areas vulnerable to bush fires. Community consultations revealed that in 2016 Uganda Wildlife Authority entered into an agreement with Benet Youth to control fires, supervise hot spots in the area where fires could easily be started, stop hunting and also whistle blow for illegal logging. It was alleged that the excise was so flawless that what the people called "crooked UWA staff who are involved in malpractices" were resentful and never honoured their part of the agreement. The Benet the group is now defunct. Instituting fire teams in the area would save the forests, they said. There were also calls for fencing off the forests completely to protect them from such fires. So, enforcement and adherence will be important in ensuring that measures are successful.

Addressing the underlying causes of forest fires will be key in terms of controlling the practice. Consultations with indigenous people revealed that communities set the forests on fire to harvest honey, especially by thieves, smoking while collecting firewood and sometimes the reasons are not clear and perpetrators are not caught. In Northern Uganda, fires arise due to hunting expeditions to catch wild game, charcoal burning and farming.

Wild fires will be hard to control in areas where there are absentee landlords with big chunks of land which are neighbouring landless and poor people. If access rights are not negotiated, communities start fires either to punish the rich, or as a way of accessing resources from the forests.

Use of existing local structures like the Local Environment Committees whose mandate can be increased to include fighting forest fires. The Ik revealed that causes of fires include hunters who roast meat in the forests, but also from Turkanas when returning home during a dry spell when they set forests on fire intentionally. Community policing will be key in addressing the challenge.

5.6.2 Environmental and social aspects

Positive *Environmental* factors: Multiple environmental benefits e.g. biodiversity protection, large mitigation impact and reduced environmental degradation including soil erosion. Huge climate mitigation impact similar to agroforestry and sustainable land management practices.

Social aspects: Integrated wildfire management contributes to social benefits such as pastoral livelihood resilience, human life saving, public respiratory health and security, and employment. Economic benefits are related to protection of assets, including properties, natural forests and tree plantations. Benefits include also strong engagement of communities and improved governance and policy coherence.

On *negative side* issues threatening the implementation of the option: Inadequate financial and human resources at Local Government level; Weak technical capacity; Inadequate fire-fighting equipment and surveillance and detection of fires; Need for long-term engagement and continuous monitoring; Costs involved; Weak policy implementation; Increased vulnerability of indigenous communities and other traditional-living rural populations due to prohibition of traditional uses of fire; and Local conflicting interest.

The SWOT is presented in the Final Strategy as follows:

Strategic option 6: Integrated wildfire management	
STRENGTHS	**WEAKNESSES/CHALLENGES**
International support Supportive policy and legislation Large mitigation impact Large economic impact Large environmental impact Protecting lives and assets Traditional and local knowledge	Poverty Inadequate financial and human resources at Local Government level Week technical capacity Inadequate firefighting equipment, surveillance and detection of fires Need for long-term engagement and continuous monitoring Costs involved Weak policy implementation
OPPORTUNITIES	**THREATS**
Responsible use of fire Enhanced fire management capacity and fire-fighting capability Reduced environmental degradation, including soil erosion Engagement of communities Global, regional partnerships Improved pastoral livelihood resilience Sustainable livelihoods, job creation Improved governance and policy coherence Human health and security	Regional conflicts Local conflicting interest Climate change (e.g. increasing temperature, unpredictable precipitation patterns) Fire incidences originating from oil spills Bush encroachment Reduced access to pasture resources Increased vulnerability of indigenous communities and other traditional-living rural populations due to prohibition of traditional uses of fire

5.6.3 SESA initial conclusion

This option has a huge climate change mitigation potential.

The option is supported by the Ugandan policy and legislation, including the Second National Development Plan (NDPII) and the National Biodiversity Strategy and Action Plan (NBSAP) 2015-2025.

The main issue pinpointed for SO6 was:

- Weak implementation of existing relevant policies.

5.7 Strategic Option 7: Livestock rearing in the Cattle Corridor

Overall, five of the main strategic options tackle issues related to livestock management in one way or another. In Option 7 there are three major issues specifically dealing with livestock rearing in the Cattle Corridor of Uganda: Sub-option 7.1. Change to exotic cattle varieties and crossbreeding; Sub-option 7.2. Establishment of drinking water dams for livestock; and Sub-option 7.3. Establishment of fodder agroforestry plantations. The ambition is to halt today's trend of increased cattle population and more land taken up under pasture or cleared of tall vegetation or trees to create space for pasture, addressed through improvements in breeds and productivity per unit areas.

5.7.1 Presentation and discussion

Livestock production is one of Uganda's major economic activities. Livestock being one of the main users of natural resources it is an important economic resource for some 80% of rural Ugandans, providing power for cultivation, nutrients for farmland, investment opportunities and animal protein. Livestock farmers, especially those in the Cattle Corridor are traditionally quite knowledgeable in animal husbandry. For Uganda to meet its animal protein requirement and increase the income of its livestock owners, it is essential to increase the production and, in particular, productivity of its crops and livestock resources.

In the 1960s, well-funded and co-coordinated Government schemes led to a viable and profitable livestock industry covering milk, beef and non-ruminants. Before 1978, there were over 560 ranches, 3,000 privately owned commercial dairy farms and a thriving small-scale livestock subsector. The supporting infrastructure included 475 dams, 428 valley tanks, 7,500 boreholes, 2,100 dip tanks, 43 quarantine stations, and over 170 well-equipped livestock markets. There were established cattle routes and holding grounds. However, by the end of the 70s political instability led to the collapse of the livestock industry and a decline in livestock numbers by about 30% of the pre-1970 numbers.

In the livestock sub-sector, very few women are ranch owners or commercial farmers, but they own and/or manage cattle, goats, poultry, pigs and rabbits, usually in small numbers. These small stocks constitute a vital source of income for them and are also used for household consumption. In most areas, women culturally look after the family animals, whether they belong to them or to the husband and family. The major constraints experienced by women livestock farmers are limited access to land, credit facilities for restocking and infrastructural development, as well as poor watering facilities for livestock and limited extension support.

Livestock have multiple roles and functions for resource poor farmers, including food source, farm input supplier (manure, traction), insurance and an entry point towards a more market-oriented production. Globally, livestock contribute the highest GHG emissions in the agriculture sector (Dinesh 2016b). With efforts to increase livestock production in the future, there is also an opportunity to introduce improved methods to shift the emissions intensity of production. Current average emission intensities are 2.8 kg CO2e per kg of fat and protein (corrected for milk) and 46.2 kg CO2e per kg of carcass weight for beef. It has been estimated that the sector's emissions could be reduced about 30% if all producers shifted their practices to those used by the 10% of producers with the lowest emission intensity. Major opportunities for adaptation and mitigation exist in the shift from extensive low-return grazing systems susceptible to climate variability and

extreme events to more stable, higher profit intensive systems. The higher returns also enable farmers to be more resilient. Current emissions intensity gaps are mostly caused by poor digestibility of feed, poor animal husbandry, and lower slaughter weights and higher age at slaughter (longer life leading to more emissions).

Zero-grazing and stall-feeding is an appropriate management system especially in Uganda where farmers own very small plots of land. Stall-feeding is especially suitable for dairy cattle. Milk may be used at home or dairy products sold. Zero-grazing farms are reported to feed dairy cattle on elephant grass, forage legumes, fodder trees and agro-industrial by-products. Potential fodder tree species include several indigenous acacia species, *Faidherbia albida* and introduced species such as *Calliandra calothyrsus*, *Gliricidia sepium, Leuceana leucocephala* and *Sesbania sesban*. Many of the fodder species are multipurpose trees like *Borassus aethiopum* which is reported also to increase the grain yield of finger millet (Egeru *et al.* 2015).

Local and improved exotic dairy breeds have been crossbred for over 50 years in Uganda. Despite the fact that the crossbreeds have proved to be much more productive compared to local breeds, the uptake of crossbreeding strategy has been slow. It is indicative that in Western Region, which has 73% of total exotic heard (and 30% of the total cattle herd), has a low poverty incidence (MAAIF 2010, p. 7). In Uganda, the local breed milk yield is about 500-1,500 kg per lactation year which is far below the 8,000 kg of milk yield per cow in developed countries (Tijjani and Yetişemiyen 2015). The annual milk consumption remains as low as 60 litres per person compared to Kenya, which stands at 100 litres per person. This means that milk consumption in Uganda is still far below the recommended annual consumption rate of 200 litres per person.

Central and South-Western milk sheds together contribute 50% of the total national production (DDA 2016). The other milk sheds or regions, particularly Eastern and Northern, experience a deficit in marketable milk almost throughout the year while South-Western and Central regions continue to experience a surplus of marketable milk particularly in the wet season. Milk surplus and deficit milk sheds present differences in market opportunities for poor dairy farmers as well as service delivery to dairy farmers.

Reduction of extensive free-grazing of traditional livestock is needed in semi-humid and semi-arid areas. This area is commonly referred to as Cattle Corridor, which stretches across the country from the southwest (Ankole sub-region) to the northeast (Karamoja sub-region) encompassing 8.4 million ha (Stark 2011, p. 8). The characteristics of the Cattle Corridor include i) high rainfall variability; ii) periodic late onset rains or droughts; and iii) historical reliance on mobile pastoralism as an important strategy to cope with resource variability. The reduced availability of leguminous forage plants in the rangelands is limiting livestock growth, meat and milk yield from cattle.

In Karamoja region, the ongoing conversion of rangelands to croplands has contributed to shortage of forage (Egeru et al. 2014) which has caused a declining pastoral production in addition to a complex range of other problems. These include historical injustices and marginalization, three and half decades of civil unrest, poor infrastructure, and a high climate variability with frequent drought periods (Egeru et al. 2015). Karamoja sub-region is estimated to have up to 2.7 million cattle representing a fifth of the national cattle herd.

5.7.2 Environmental and social aspects

Positive *environmental* factors: The livestock intensification improves grazing, feed and manure management. Increasing the number of trees on farms and in the landscape, provides important ecosystem services and greater resilience to climate shocks. Fodder trees not only increase soil carbon, but also improve the soil fertility and contribute to a higher biodiversity. In drylands, the increased tree canopy protects crops from harsh sunshine and winds.

Social aspects: Improving efficiency through direct breeding for better performance is a co-benefit opportunity. Increasing the number of trees on farms and in the landscape, leads to a direct increase in income through diversification of products. Zero-grazing and stall-feeding decreases crop damage of livestock, and lowers the potential for conflicts. Compared to extensive free grazing, stall-feeding allows more youth to engage in schooling; Ethnic tensions may be reduced. Socially, the SO7 would be a blessing for thousands of households.

On *negative side,* there will be high initial investment needs that many pastoralists cannot afford; disrupted social contexts in relation to cultural values, attachments and traditional systems; tenure of land and pasture and access to land and water need to be solved; development need for quality products that suit the market; problems with animal health coupled with the high cost to manage livestock diseases; lack of breeding expertise; tree competition with subsistence crops. Increasing cattle population may cause exceeding of the carrying capacity for livestock rearing; and reduction of herd sizes may be opposed.

The SWOT for this Option is presented in the Strategy document as follows:

Strategic option 7: Livestock management	
STRENGTHS	**WEAKNESSES/CHALLENGES**
High emission abatement potential due to avoided deforestation High poverty alleviation potential Prioritized strategy by the government Large livelihood impact Improved regional security Expanding domestic and regional market Trees provide valuable ecosystem services for local population Anchored in the overall policy framework (agriculture sector development strategy and investment plan& agriculture policy)	Limited extension services Little knowledge on good milk production High cost to manage livestock diseases High initial investment needs Lack of a law to regulate carbon trade The existing law (Cattle Grazing Act, 1945 Cap 42) is out-dated Current land law does not promote the productive use of land
OPPORTUNITIES	**THREATS**
Value-chain activity development creating employment Solution to human-livestock conflicts Benefits to public health Increased household income Reduction of herd sizes	Fast growing population Uncoordinated development interventions Ethnic tensions Lack of feed and water Low quality produces do not suit the market Problems with animal health

Involvement of youth Make the case for adopting the draft rangeland management and pastoralism policy	Lack of breeding expertise Risk of losing local breeds and related cultural values Tree competition with subsistence crops Weak policy implementation

5.7.3 SESA initial conclusion

Improving the genetic potential, providing proper nutrition and ensuring animal health are recommended approaches to improve animal productivity and reducing GHG emission intensity. Positive aspects include higher lifetime production of crossbreds, increased household income, creation of employment, improvement of nutritional situation, reduction of herd sizes due to increased performance of individual animals and integration of traditional producers into agro-industrial systems (Roschinsky 2013).

Overall, livestock management options are viable and have substantial environmental and social benefits. It's important to acknowledge that the local communities are not homogenous and benefits, gender equity and landless need to be considered to ensure that also the very poor and indigenous people benefit from the interventions. The following main issues were identified:

- Increasing human population and a thereby increasing cattle population may cause environmental risks that the SO7 activities may not be able to mitigate;
- Unclear and unsecure land tenure, land use planning and related conflict resolution;
- Disrupted cultural values and attachments and traditional systems.

5.8 Strategic Option 8: Strengthen Policy Enforcement for REDD+ Implementation

SO8 is an enabling option that outlines a number of strategies through which REDD+ policy implementation can be improved, so that the implementation functions better. In order to promote policy enforcement in all the sectors that are relevant to REDD+ implementation it is regarded necessary for the Government to adopt the following key measures:

- The Policy Implementation Monitoring Unit under the Office of the Prime Minister (OPM) shall identify REDD+ implementation as one of the focus areas, and ensure that REDD+ related policies and laws are implemented by the responsible Ministries, Departments and Agencies (MDAs) including the local governments;
- The Policy Implementation Monitoring Unit under the Office of the Prime Minister (OPM) shall ensure that all Ministries, Departments and Agencies (MDAs) and local governments draft implementation plans of the various REDD+ policies and laws;
- Government through the Ministry of Finance, Planning & Economic Development shall provide financing for REDD+ policy implementation;
- Government shall ensure that institutions responsible for REDD+ implementation including local governments are adequately staffed.

- To strengthen the implementation of relevant policies it is further recommended that each and every civil servant in the government authorities involved in REDD+ implementation will attend some training courses. Recommended topics for training will at least be the following ones:

    - Good governance and efficient anti-corruption practices;
    - Administration skills needed in enhancing competences of civil servants;
    - Monitoring and evaluation of government operated projects and programmes;
    - Social skills in dealing with rural communities and various other external stakeholders.

- Government shall further strengthen and support civil society organizations and engage private sector to promote responsible forest management, develop new forest investment opportunities.

Despite the fact that part of this SO8 is best coordinated by the OPM it is still recommended that the leader organization for this strategic option is the FSSD as this strategic option concerns the strengthening of all strategic options through capacity building and best practices to be used throughout the REDD+ programme.

To ensure best possible outcome in SO8 it is proposed that outside consultants (international or national) would be contracted for training of core ministerial staff personnel and some local or intra-ministerial trainers on some core topics (i.e. anti-corruption measures and enforcement, good governance and policy enforcement). This could be incorporated in the provided budget.

The SESA did not make an initial assessment of environmental or social factors of Strategic Option 8.

5.9 Summary of initial conclusions

From the review of the Draft Final National REDD+ Strategy the SESA found that:

- The Strategy document already includes discussions on and identification of a number of both positive and negative environmental and social factors.
- The majority of identified factors are of technical nature and not on a strategic level of importance.
- Generally speaking, the positive factors can be strengthened through high quality professional implementation, following good best practices in the respective development sectors.
- The negative factors are often potential, indicating risks and things that may happen unless mitigated in planning or properly handled in implementation.
- A few really important main issues have been identified, presented as SESA conclusions at the end of each sub-section above. These are sometimes of social but in most cases of institutional nature.

There is a cross-cutting concern on poverty and how it affects people's (women, men, youth and children) dependence on forests. The Strategic Options already have a poverty

reduction orientation with regard to people who depend on forests to meet their personal needs. Through provision of viable income generating activities, ranging from those that are forest-based, to other types of activities and enterprises, dependence on forests will be reduced, but subsidies or grants and technical assistance will be needed in many cases.

The SESA found it important that the Options are developed together as the REDD+ National Strategy must cover solutions broadly over several livelihood sectors and in parallel with each other to straighten out major bottle-necks, which would result from a too narrow base for the REDD+ National Strategy.

The SESA also identified a need for an effective monitoring and evaluation framework for implementation by stakeholders and third parties, such as independent experts, local communities or nongovernmental organizations (NGOs), to complement or verify project monitoring information.

All Strategic Options and sub-options are strategic, that's why they were selected for inclusion in the REDD+ programme. The SESA finds that an absolute majority of sub-options are categorized having a high impact with many of them providing an opportunity for quick-win with effects within 5 years.

6. Review of REDD+ documents

The objective of reviewing central documents produced in the REDD+ readiness process was, firstly, to find out if important likely social and environmental impacts of implementation of REDD+ Strategic Options already are identified and addressed in the respective documents. Secondly, to contribute to the identification of SESA issues that are suitable to be integrated in the final description of the REDD Strategic Options and those issues that qualify to be addressed either through the Environmental and Social Management Framework (ESMF), that in the future will be implemented alongside the REDD Strategy Options, or through other plans where this is applicable.

The following documents were reviewed:

- MWE, 2017. Benefit Sharing arrangements for Uganda
- MWE, 2017. FGRM for Uganda's REDD Strategy and Action Plan
- IUCN, 2017. Strengthening Participatory Structures and Conducting Capacity Building Trainings to Enhance Stakeholder Engagement at National and Subnational Levels for Uganda's National REDD+ Programme. Final Consolidated Report.

6.1 Benefit Sharing Arrangements (BSA)

The SESA review of the final and earlier documents in the BSA development process was carried out with a certain bias towards stakeholder and local conditions. The review ends

with a SESA assessment on likely social and environmental impacts of implementing the BSA for Uganda.

The Uganda REDD+ BSA reports (i.e. final and process reports of the MWE 2017) show a substantial development effort to determine both the optimal institutional set-up and the most favourable alternative for benefit sharing arrangements and partly also for actual financing of the forthcoming national REDD+ scheme of Uganda. The reader interested in the Uganda BSA model is referred to these reports found on the REDD+ Secretariat website.

The BSA arrangements agreed for Uganda are based on an assumption that REDD+ implementation can be accommodated in different local contexts were the following four elements are important in the design of decentralized benefit sharing processes:

a) *To recognize the differences and linkages between project-level and national-level approaches.* Many parts of the REDD+ programme for Uganda will not be operated as full-covered carbon trading operations. Rather it is likely that there will be several smaller carbon trading projects within the overall national REDD+ programme umbrella. Particularly, complex small-holder farmer household contexts are unlikely to be involved in carbon trading to a large extent while confined timber plantations are more easily included in carbon trading. These smaller carbon trading activities will form project-type of operations within the overall line ministerial type of non-carbon trading operations. Valuable lessons can be learned from project level experiences to inform national policies on REDD+ benefit sharing. Project-level approaches cannot always be applied directly at the national level. It is important to know which approaches are applicable at which levels, including the range of lessons learned that can be leveraged;
b) *By guiding with national frameworks, the details of REDD+ benefit sharing structures can be shaped at sub-national levels through participatory processes*. It is important to scale the BSA arrangements, so that they are of the same size as the actual carbon trading operations. This means that the BSA structures should mainly be confined to governmental structures and collaborating institutions that are factually involved or directly supporting carbon trading operations. The REDD+ BSA reports provide good guidance on what kinds of benefit sharing mechanisms there could be in such situations and these structures needs to be tailor-made for each type of carbon trading projects within the overall REDD+ programme;
c) *To ensure transparency and free access to information.* National frameworks and subnational action plans for benefit sharing should be available publicly, and feedback and grievance mechanisms should be put in place to encourage inputs from local stakeholders. Civil-society actors can help in monitoring the implementation of programmes and in revising action plans over time in response to new information and changing circumstances;

d) *Monetary and non-monetary benefits that fit a range of stakeholders:* Although REDD+ incentives often are perceived to be foremost of financial cash compensation type, REDD+ incentives may actually more likely be distributed to actors in a variety of forms. The term 'benefit sharing' rather than 'revenue sharing' is used to represent the wider potential stream of incentives in the so-called Warsaw Framework for REDD+ decided in COP 19 of UNFCCC. The BSA reports

provide more detailed information on the types of cash and non-cash benefits there could be for different stakeholders.

From a SESA viewpoint the following comments are given:

The REDD+ Strategic Option activities developed for Uganda are *per se* based in the fact that each of them should be foremost invested in by individual households, communities or private business entities by themselves with some technical and policy support and some incentives or subsidies provided by the Government. The aim is that each investor who invest in the REDD+ strategic option activities will after the initial investment reap a manifold (i.e. approximately two to sixfold) return on investment for his/her own actions. As the households, communities or private business entities are often rather poor at the outset it is not very wise to expect cash benefits for other stakeholders that provides the enabling environment – rather the benefit for others will be on other terms which is usually in-kind. Such benefits to others may be a reduction of encroachment in natural forests and national parks, increasing forest densities and biodiversity and increasing ground water tables and similar issues. Benefits may also be in the form of an expansion of plantation or woodlot poles and timber wood for sale, an expanded milk and meat production or a stable and expanded agricultural production or even a substantial increase in rural and urban labour opportunities due to the intensified and expanded agricultural, livestock and wood production.

The national REDD+ programme will also ensure to civil servants many expanded work opportunities due to the intensified and expanded agricultural, livestock and wood production. In fact, the REDD+ will become the mainstream workload of the civil servants. As earlier natural forests are disappearing due to deforestation and degradation there are many forester positions endangered of being in excess. With the REDD+ programme there will be a new call for these forester positions to build up agroforestry and plantation type of operations outside the forest reserves and protected areas. The same goes for agronomists and livestock specialists in local governance structures. The whole Ugandan economy is about to grow substantially due to the REDD+ programme operations, which should also be seen increasing salary and income generation at all levels in the Ugandan society.

The BSA arrangements will directly merely provide some fairly small cash and some somewhat larger non-cash benefits after the carbon trading transaction costs have been reduced from the carbon trading gross income. This net carbon trading cash income and all non-cash benefits should foremost be viewed as an extra benefit on top of the main benefit accumulation that stems from the direct financial benefits of implementing the REDD+ strategic option activities as such. The achieved REDD+ strategic option activities' positive environmental and social impacts will from a SESA environmental and social impact viewpoint almost completely outcompete the negative ones.

6.2 Feedback and Grievance Redress Mechanism (FGRM)

The objectives of this work were to undertake an assessment of existing national institutional capacity for feedback and grievance redress, including to identify existing and potential conflict and grievances that could arise during REDD+ readiness, and implementation of REDD+ National Strategy activities; to identify mechanisms that can

detect, prevent and minimize the escalation of, and resolve conflicts and grievances; to strengthen policy, legal and institutional framework for managing grievances and; to strengthen institutional capacity and presence of an active mechanism to receive feedback and handle conflict in a timely manner and at all levels; and to build the capacity on REDD+ Readiness and FCPF for key stakeholders and personnel on the presence of a clear FGRM.

The assessment found that the major causes of the existing conflicts and grievances in studied field areas included unclear boundaries of the forest protected areas; disputed forest borders and expansion of forests; exclusion of local governments from the management of central forest reserves; exclusion of forest adjacent communities from the management of forests; conflicting information by political leaders and district technical staff regarding the boundaries; failure by institutions to fulfil their mandate and landlessness resulting from unplanned population growth. A conclusion was made that these issues affect the forest tenure in totality where most grievances will arise due to lack of clarity on forest tenure and other related rights.

Other found causes include conflict over land access and use; the communities view that forests are the only source of livelihood; denial of access to the forest area for various purposes; interference by politicians in the management of the forestry sector; interests of the local politicians who exploit the plight of the local people; perceived unfairness on the part of government; perceived unethical conduct and abuse of Office by Forestry officials; and disrespect and disregard of state institutions by encroachers.

The assessment further found that the conflicts are driven by a number of factors, including: unethical conduct and abuse of office by UWA and NFA officials; disrespect for government institutions and laws; boundary disputes; inadequate supervision and monitoring by NFA, local governments, UWA and other stakeholders; poor sensitization of the forest dependent communities; exclusion of the local governments from the management of central forest reserves; and land use and access limitations as well as unchecked population increase.

On the basis of the identified conflicts, a 'hybrid' Feedback and Grievance Redress Mechanism (FGRM) was introduced. The mechanism includes the establishment of Collaborative Forest Management (CFM) arrangements in all areas with forests reserves countrywide, regardless of their type of ownership and location. The FGRM also includes the use of Local Councils (LCs) at village, parish and sub-county level, as well as the district local councils. Finally, the Environmental Tribunal (under the proposed National Environment Bill, 2014) forms the apex of this mechanism.

The study ended with 32 key recommendations, with the following having a direct bearing on the SESA:

1. There is a need for government to urgently address the boundary issues in all types of forests because this is one of the main drivers of conflicts;
2. There is a need for the government jointly involve the forest adjacent and forest dependent communities in the demarcation of forest boundaries in their communities to forestall conflicts and grievances related to boundaries;
3. Government needs to proactively deal with the widely perception and view by the community members that government officials and personnel managing forest resources are engaged in unethical and unprofessional conduct;

4. Government needs to hire adequate personnel and provide them with adequate equipment and logistical support to enable them to effectively supervise and manage the forestry sector;
5. There is a need for provision of opportunities to forest adjacent and forest dependent communities to balance their livelihood interests and conservation through more elaborate collaboration with responsible government agencies and reasonable access to forest resources;

SESA conclusion: The SESA team regards the FGRM study being well-informed and comprehensive, and supports the implementation of the recommended grievance and redress mechanism. Efforts should be made in planning and implementation of REDD+ activities to avoid the identified causes of the existing conflicts and grievances.

In the SESA process, the main issues threatening REDD+ implementation deducted from the FGRM study were:

- Unclear and unmarked boundaries of forest reserves and disputed forest borders;
- Need to consult and include forest adjacent communities in the management of forests.

6.3 Participatory Structures

The process of developing participatory structures for the REDD+ was spearheaded by the IUCN, which coordinated the other Non-Government organisations (WCS, Environment Alert and Tree Talk Plus). Constituting and strengthening the participatory structures involved establishment of a task force, organizing consultative meetings and conducting capacity building trainings of selected representatives, engaging in communication initiatives at national and sub-national level, facilitating consultations, and reporting on all these processes.

A total of ten (10) participatory structures were constituted at both national and sub-national levels, including government institutions, CSO, Private sector, academia and research institutions, media, vulnerable groups, bilateral agencies and special interest groups. The process was highly participatory and the modalities of engagement was well elaborated, and ensured effective engagement through inclusiveness and gender participation, caring for Indigenous Peoples' and forest dependent communities' representation, and considered safeguards like prior information and capacity building.

SESA conclusion: It was clear from the discussions with different stakeholders that the linkage between participatory structures and the REDD+ national programme is well-articulated and provides a common understanding across the stakeholders to harmonise and manage expectations. This was seen to be critical to minimize or avoid any future conflicts that might emerge as a result of varied expectations of the stakeholders from within the structure. Managing the stakes of the various stakeholders on the same platform from the onset has strengthened and will strengthen stakeholders' cooperation in the REDD+ readiness phase.

Continued use of developed stakeholder structures for consultations and participation in REDD+ planning and implementation is strongly recommended. As a result, both negative environmental and social risks may be reduced or eliminated. Once the national REDD+

programme is established most government institutions will be involved in capacity building and training events and thereafter directly involved in developing the district and lower level REDD+ structures in practice. In this establishment phase there should also be transparent communication with other stakeholders to ensure that these are on board and ready/available for involvement in the REDD+ strategic option activities already from the start.

7. Stakeholder views

The SESA team carried out a stakeholder consultation process, which aimed at consulting potential key players in implementation of the REDD+ options, their perceptions on the associated social, environmental and institutional issues; and the capacities of those institutions to address the identified issues in their respective mandates. The process involved one-on one semi-structured interviews with selected key informants using a pre-designed interview guide, and at a later stage engaging in a focus group discussion with selected key stakeholders. A list of interviewed informants is presented in the SESA Identification, Priorities and Process Report, Annex 3 and findings in its Annex 4.

The interviewed stakeholder organisations were:

- Government mandated institutions, including ministries and agencies (14 ministries and agencies)
- The Local Government (2 district forest officers)
- CSOs/NGOs at local, national and international levels (7 CSOs/NGOs, plus a number of additional CSOs/NGOs participating in the SESA national consultation)
- Forestry related private sector (3 companies, plus a number of charcoal entrepreneurs during the community and other stakeholder consultations.
- Research institutions (2 university departments)
- Communities and forest dependent indigenous peoples. (Representatives of six indigenous communities).
- Peoples representatives, including parliamentarians. Several parliamentarians actively participated in the SESA national consultation 19 May, 2017.
- Cultural institutions (Buganda Kingdom).

The derived information is summarized below, with more elaborated summaries by stakeholder category and strategic option presented in the SESA Process Report.

Environmental, social and institutional factors (positive and negative) of the different strategic options pointed out by the interviewed key informants were in essence the same as discussed in the Final Strategy report as summarised in Chapter 5 above.

Among all points raised by consulted stakeholder representatives, the key issues of strategic importance were:

- Land tenure issues;
- Poor sectoral linkages and definition of roles for relevant stakeholders;

- Poor benefit sharing for communities;
- Inequalities in gender and marginalised peoples' participation;
- Conflicts between different land use systems e.g. agriculture and tree growing;
- Management of forests on non-government land;
- Poor boundary marking of forest reserves;
- Poor government support for REDD+ interventions on ground;
- Poor governance (political interference, corruption).

Capacity gaps identified across all the stakeholder include: limited knowledge and awareness on REDD+ and associated issues; limited financial and logistical capacity; inadequate human resources in terms of numbers and technical expertise; limited skills in relevant technical aspects; and inappropriate technology and equipment (ICT, GPS, etc.).

The following were pointed out by the different mandated institutions (ministries and government agencies) as capacity and capacity gaps:

- Limited financial budgets and allocations: Much as all the mentioned stakeholders are operating, most of them indicated limited funding compared to their mandate in addressing the issues (e.g. operational budgets, purchase on technologies and other inputs, repairs and maintenance, awareness and capacity building, etc.).
- Limited human resources: The technical staff in most of these institutions are few, with limited capacity building opportunities to enrich their abilities to address the issues identified. Many suggested refresher training courses to gain skills in e.g. gender mainstreaming, research, and updated technological knowledge.
- Limited logistical support: This was in regard to appropriate transport facilities, and equipment such as computers and computer programs, GPSs, and others to assist during implementation of the identified needs like extension, boundary mapping, environmental monitoring etc.

Several interviewees pointed out that Environmental Impact Analysis (EIA) will be necessary for all major (national level) REDD+ implementation plans as well as for all detailed plans (district level and down).

8. Environmental and social impacts and risks

The tables in this Chapter on environmental and social impacts (Table 2) and possible risks (Table 3) are intended as long-lists, developed based on information gathered from the review of regional environmental and social issues (Chapter 2 of this report); the meta study of recent development experience (Chapter 3); the Draft Final National REDD+ Strategy (Chapter 5); stakeholder views (Chapter 7) and feed-back from the National REDD+ Technical Committee on earlier versions of this document.

8.1 Expected environmental and social impacts

As concluded above, implementation of the Draft Final National REDD+ Strategy is expected to lead to a range of impacts, the majority of which being assessed as positive and anticipated according to the objectives and descriptions of the seven operational Strategic Options. Others however, will result in unintended negative impacts (Table 2).

Table 2.Identified environmental and social impacts.

Strategic Option and sub-option	Environmental impacts		Social impacts	
	Positive	**Negative**	**Positive**	**Negative**
Strategic option 1: Climate smart agriculture				
- *SLM and agroforestry practices;* - *Rainwater harvesting with collection tank and drip irrigation;* - *Greenhouse cultivation of vegetables;*	Reduced GHG emissions Reduced clearance of forestland for agriculture Reduced encroachment on wetlands and other protected areas Increased crop yield and food production on smaller parcels of land Widespread/increased adoption of multipurpose production of crops, fodder, wood, medicinal plants, etc., on the same piece of land Increased tree cover from agroforestry Improved CC resilience of agriculture Improved microclimate Reduction of water-stress of crops or even reduced wilting or death of crops Improved ecosystem stability Reduced soil erosion and landslides Improved soil structure Increased water holding capacity of soil Increased water availability from rainwater harvesting Enhanced biodiversity in agroforestry systems	Increased nutrient load from fertilizers leading to eutrophication of water bodies Cultivation of some vegetables that are more pest prone, such as tomatoes	Improved incomes and livelihoods, also for poor households Reduced workload with improved technologies Increased water availability Improved food security Improved employment opportunities Business-oriented and commercial operations made possible through the value chain Increased adaptation to climate change, thereby reduced risks. Marginalized households can participate and benefit (if grants provided) Improved water security and conservation Increased revenues for tax collection Improved service delivery Reduced domestic violence and child-trafficking (children are now sometimes moved when families can't feed them) Reduced land-related conflicts Enhanced social capital Increased knowledge and skills Increased tax-paying capacity	Loss of traditional agricultural practices Inequitable participation and benefiting from the technologies of CSA.

Strategic Option and sub-option	Environmental impacts		Social impacts	
	Positive	**Negative**	**Positive**	**Negative**
Strategic option 2: Sustainable fuelwood and (commercial) charcoal use				
- *Small-holder and community bioenergy woodlots;* - *Small-holder and community poles and timber plantations;* - *Improved charcoal kilns linked to bioenergy woodlots*	Reduced GHG emissions Reduced pressure on natural forests Increased tree cover and carbon stocks Sustainable supply of wood for fuel and charcoal Increased efficiency in charcoal production Reduced soil erosion and landslides Improved soil structure (in relation to fuel woodlots) Positive nutrient fertilizer effects from integrated multi-storey agroforestry production Increased moisture in field micro-climate Sustainable and nutritious fodder production that enables stall-feeding and cow milk production	Reduced groundwater quantity by some tree species	4-6 times higher household income generation Business-oriented and commercial operations made possible Organised and increased charcoal production which attracts funding Employment opportunities Reduced conflicts over access to fuel wood and charcoal Improved energy security Improved tenure security Improved food security Reduced time and burdens of collecting firewood especially on women and children. Women can use charcoal residues for making briquettes Enhanced skills in making, installing, maintaining and selling of energy stoves Increased sustainable supply of wood for energy Increased tax-paying capacity	Displacement of food production Reduced traditional ecological knowledge
Strategic option 3: Large-scale commercial timber plantations				
- *Commercial eucalyptus transmission pole and timber plantation;* - *Commercial pine pole and sawlog plantation*	Reduced GHG emissions Reduced pressure on natural forests for timber, enabling natural forests to regenerate hence biodiversity will be restored and conserved	Loss of natural ecosystems Increased nutrient load from fertilizers leading to eutrophication of water bodies Pollution from chemicals with effects on biodiversity, e.g. loss of pollinators	Increased income for plantation owners Employment opportunities for local workers Social services (CSR) from plantations owners	Competition for land with food production Human-wildlife conflicts

Strategic Option and sub-option	Environmental impacts		Social impacts	
	Positive	**Negative**	**Positive**	**Negative**
- *Improved charcoal kilns linked to plantation sites*	Enhanced ecological functions e.g. microclimatic regulations, nutrient cycling, erosion control High recovery rates of harvested trees from plantations (charcoal production)	Reduced groundwater quantity by some tree species (disturbance/reduction of flow to water springs)	Increased profitability of plantation forestry from diversified products Tax income for authorities Knowledge and skills from plantation development, management, MRV, etc Technology transfer towards commercialization of plantation, and industrialization Improved tenure security Improved social cohesion amongst plantation workers Access to wood leading to energy security Income and revenue from commercial exports	
Strategic option 4: Rehabilitation of natural forests in the landscape				
- Area closures of deforested *areas for natural forest regeneration;* - *Protected natural forest management (i.e. national parks and forest reserves);* - *Devolution of forest management through PFM and similar set-ups;* - *Traditional/customary forest management practices*	Reduced GHG emissions Improved condition of the rehabilitated natural forests Increased forest biodiversity conservation, including improved habitat for wildlife and increased wildlife population Halted forest degradation through enrichment planting and reforestation with indigenous species Improved ecosystem services, including water resources	No serious environmental problem identified	Organized and increased forest-based income generation for forest-adjacent communities, including from value added activities e.g. handicraft; honey; nurseries; boundary patrols, etc. Improved contribution of forest to other sectors of the economy Continuation of forest-based cultural services Organized forest management for both selective timber and NTFP collection as agreed in CFM/PFM. Improved institutional collaboration between communities.	Continued or increased human-wildlife conflicts Distortion of social norms and systems

Strategic Option and sub-option	Environmental impacts		Social impacts	
	Positive	**Negative**	**Positive**	**Negative**
			Continued cultural and educational practices, including Conservation of high cultural and heritage values Increased tourism potential and revenue for both community and national- level players Tenure security for private and communal areas Reduced conflict arising from clearly demarcated boundaries	
Strategic option 5: Energy efficient cooking stoves				
- *For fuelwood;* - *For charcoal*	Substantially reduced fuel wood and charcoal consumption Substantial reduction in carbon emissions Substantially reduced pressure on natural forest for fuel and charcoal	No serious environmental problem identified	Improved health through reduction of respiratory problems associated with exposure to air pollutants from burning wood Reduced burn injuries, especially among children Time freed to attend other activities, especially for women and girls Income savings due to reduced expenditure on charcoal and firewood Employment in stove production Increased small-scale business knowledge Reduced violence against girls and women collecting wood far away. Increased awareness among both urban and rural households	Loss of social constructs associated with traditional cooking methods and cuisines

Strategic Option and sub-option	Environmental impacts		Social impacts	
	Positive	**Negative**	**Positive**	**Negative**
Strategic option 6: Integrated wildfire management				
- *In timber plantations;* - *On woodlands;* - *On bushlands;* - *On grasslands*	Reduction of GHG emissions Enhanced nutrient retention, nutrient recycling and organic matter in soils leading to higher crop yields in the long run Improved management of grassland and woodlands (for grazers and browsers) Enhanced habitat heterogeneity Increased forage for domestic and wildlife from tree leaves and bushes (but not grasses) Reduced air temperatures and dryness Reduced air pollution Increased natural regeneration of some species Increased protection of biodiversity (including nesting sites, plants and slow moving above ground and under the ground fauna)	Loss or displacement of biodiversity Increases in susceptibility to invasiveness Reduced regeneration of species that need fire/heat to germinate	Reduced loss of property and life (humans, livestock and crops) due to fire Weed and pest control Increased land productivity (reduced weeds, reduced costs for land preparation, reduced pests, forage improvement, etc.) Increased probabilities for hunting success Reduced respiratory problems in wildfire season	Disrupts/interferes with the cultural values and practices associated with wildfires
Strategic option 7: Livestock rearing in Cattle Corridor				
- *Livestock breeding improvements* - *Fodder agroforestry plantations* - *Water dams and tanks as livestock drinking water*	Reduced GHG emission intensity Reduced pressure on rangeland ecosystems /improved rangeland conditions Enhanced rangeland environmental services Increased rangelands resilience to climate change Increased land-use efficiency Reduced farmland expansion	Displacement or loss of biodiversity (vegetation manipulation, acaricides disposals, vermin/problem animal management) Trampling of vegetation around water dams and tanks	Increased community resilience to livelihood shocks Increased access to water Increased household income Improved employment situation Improvement of human nutritional needs Increased social esteem when livestock rearing is possible	Land use conflicts between livestock, crops and wildlife Disrupted cultural values/attachments and traditional systems

Strategic Option and sub-option	Environmental impacts		Social impacts	
	Positive	**Negative**	**Positive**	**Negative**
	Improved milk & meat production per hectare Reduced pressure on natural habitats Improved microclimate Improved soil fertility and productivity Reduction of water stress of livestock and people Increased tree cover from agroforestry			
Strategic option 8: Strengthening of policy enforcement in REDD+ implementation				
	Strengthened capacity of the REDD+ strategic options to reach their target levels through updated, revised and enforced policies, with both carbon emission reduction and environmental benefits Stringent enforcement and new and better anti-corruption policies and guidelines, necessary to reach REDD+ goals		Great benefits to majority of Ugandan households from enforced and updated policies Social and climate change goals of Uganda reached through enforcement of policies and laws, with improved national income generation and tax-paying ability	

8.2 Environmental and Social Risks

Below is a discussion on what happens if the Strategies are not implemented as expected or planned, presented in the form of environmental and social risks, with comments (Table 3). Many of the comments can be translated into recommendations on how best the options can be implemented with Minimal Social and Environmental Risks.

Table 3. Risks associated with implementation of the Strategic Options, with comments

Environmental Risks	Social Risks	Comments
Strategic option 1: Climate smart agriculture		
Pollution from improper disposal of plastic coverings of greenhouses. Aquatic and ecotoxicology and human toxicology from pesticides.	Land tenure issues not addressed and solved enough. Low adoption of technologies by poor communities due to high initial costs. Forest dependent communities like the Batwa excluded since they are not agriculturalists and don't own land.	Eutrophication of water bodies possible with bad management of agro-inputs (fertilizers, pesticides, etc.) Introduced species might interfere with the food web. Need of careful screening of agroforestry tree species to prioritise e.g. fruit and nitrogen fixing trees. Clear tenure situation is a prerequisite for people's willingness to invest in improved land productivity. Special interventions will be necessary for forest dependent communities. Extension services needed Some labour-intensive CSA activities could lead to child labour and increased costs. Risk of increased inequalities: the rich will be able to increase their production and the poor remain lagging behind. The technologies are unaffordable for landless, those with very small pieces of land and indigenous marginalised groups. Women should have right to take part in family land use decisions. Poor infrastructure such as grass roofed houses means that one cannot harvest water. Being exposed to climate change, there might be increased food insecurity for communities who cannot afford irrigation or greenhouses. Greenhouse must be moved to a new soil area after every 3 years in order not to increase harmful soil microbes too much The same vegetables or closely related ones should not be cultivated in the same greenhouse for more than 3 years in a row before rotating crop

Environmental Risks	Social Risks	Comments
Strategic option 2: Sustainable fuel wood and (commercial) charcoal use		
Imbalance between native species and exotics resulting into dominance of monocultures with their effects. Cutting down of private natural forests to plant high value plantation wood species. Improper site-species matching. Reduced natural and indigenous tree and herbaceous species if degraded forests converted to woodlots.	Land tenure issues not addressed and solved enough. Food insecurity at household level because of trees grown on agricultural land. Loss of biodiversity and ecological resilience (if bioenergy woodlots displace/substitute natural ecosystems). Improper or inadequate market survey for the charcoal value chain, leading to local communities not benefitting from the charcoal business. Increased woodlot boundary conflicts.	Important to ensure that woodlot establishment is on degraded or bare land where it is unlikely that natural forests will ever return. Existing land laws need be enforced. Clear tenure situation is a prerequisite for people's willingness to invest in private woodlots. Competing land uses amidst the limited land holdings might lead to fragile ecosystems like wetlands and natural forests being converted. Commercial charcoal making based on natural forests must be stopped to reduce illegal competition. Extension services needed. Banking sector should develop lending and services to small-scale operations (woodlots, kilns). Increased income gaps between men and women, as the later hardly engage in commercial tree growing on family land. Incentives needed for rural poor to participate in profitable charcoal business. Long-term land and tree tenure security need be solved for indigenous people for them to participate. Flexibility in stove design needed in relation to cooking pots, size of kitchens and households.
Strategic option 3: Large-scale commercial timber plantations		
Imbalance between native species and exotics resulting into dominance of monocultures with their effects. Damage to soil from mechanized operations of large scale commercial forestry. Loss of natural forest if natural forests are cut down to plant timber value species. Improper site-species matching with risk of diseases and low yields.	Land tenure issues not addressed to good enough solution, with risks of land grabbing, leaving communities more impoverished, thus increasing their dependence on natural resources Lack of or limited knowledge among local communities on incentives and BSA arrangements leading to people not getting the benefits and/or being exploited by the private sector. Food insecurity if turning productive agricultural land to wood production.	Important to ensure that forest plantation establishment is on degraded or bare land where it is unlikely that natural forests will ever return. Most timber from natural forest need be proclaimed illegal, with the exception of sustainably managed wood from PFM/CFM. With bad or no land-use planning plantations may fragment pervious contiguous natural systems, displacing natural forests and woodlands**.**

Environmental Risks	Social Risks	Comments
Siltation of water bodies unless mitigation measures against erosion are put in place. Encroachment for food production on fragile ecosystems like wetlands and natural forests when land is taken for plantations Plantation damage by wildfires and pests (such as termites) with reduced positive effects. Habitat fragmentation.	Increased tenure insecurity. Eviction of illegal settlers in forest reserves. Vermin from the plantations causing conflicts between plantation owners and communities. Historically established customary access to land denied local communities.	In-migrated plantation workers may cause trouble. There might be fuel wood scarcity for the rural poor as most wood residues used for charcoal. Increased income inequality, the rich will benefit more from large scale tree growing than the poor communities. Large plantations may serve as hide-outs for criminals. Charcoal making/trading often dominated by outsiders, making the option less beneficial to the local communities. Local livelihoods should be integrated into forest plantation management plans.
Strategic option 4: Rehabilitation of natural forests in the landscape		
Forest closure and restricted access might lead to depletion of natural forests on private land, and growing food in the wetlands [assuming the current wetlands strategy remains unimplemented]. Failed PFM and similar set-ups may result into open access scenarios resulting into continued forest loss and degradation Lack of enforcement of CFM agreements resulting in continued forest degradation.	Land tenure issues not addressed and solved enough. Forest boundaries not well established which means that evictions of illegal settlers, cancelling of illegal titles, and closure to ensure regeneration will not be effective and there will be recurrent encroachment activities and high costs of enforcement. Issues of the indigenous forest dependent communities who have a history of eviction not being solved, plus increased population, may lead to increased use of forests. Benefits from CFM too small to refrain communities from forest degradation. Elite capture and continued poor forest management if governance issues not taken care of e.g. accountability and transparency, institutional coordination and capacity building for relevant institutions, including LG, and clear implementation arrangements. Political will too low to ensure tangible investment, avoid interference in forest management, poor strategy implementation and forestry land grabbing.	Close collaboration between NFA/UWA/DFS and local communities, plus SFM plans, needed to make devolution of forest management a success, avoiding e.g. over-harvesting of NTFPs. A large number of CFM/PFM must be prepared and agreed early on to get good mandate for communities to protect their nearby forests against intruders of various kind. New legislation needed for management of private natural forests. Closures or restricted entry to protected areas may lead to communities depleting forests on private land for agricultural and forest dependency needs. Vermin from the forests may destroy food crops. Risk for CFM agreements leaving out women and children. Better CFM arrangements needed. Some people hold land titles in target areas. Risk for increased scarcity of forest resources needed by communities when in crisis. Clear mandate needed for adjacent communities to keep out people from outside.
Strategic option 5: Energy efficient cooking stoves		

Environmental Risks	Social Risks	Comments
Introduction of and increased environmental waste at the end of stoves' lifespan.	Lack of diverse, context-fit cook-stoves to suite different communities, leading to low adoption of the technologies. Poor gender considerations in technology development leading to low adoption rate. Inadequate Extension Services to ensure wider adoption of technologies. Inhibitive prices of technologies making it difficult for very poor indigenous, marginalised and forest dependent communities.	Some types of stoves are faster than traditional stoves and people need to get used to this. The stoves need to be renewed every three years. Traditional methods still used unless issues related to size of cooking pots, cooking time, and initial costs are addressed. Risk of insect problems since less smoke to penetrate thatched roofs.
Strategic option 6: Integrated wildfire management		
Uncontrollable fires: wild fires will be hard to control in areas where there are absentee landlords with big tracts of land neighbouring landless and poor people.	Traditional free-grazing cattle herders opposing fighting wildfires No or limited wish by local communities to change practices and behaviour to manage fire appropriately. Little interest in fire management among stakeholders (public, semi-public, associative and private). Accidents using fire to manage woodlands, grasslands and seasonal wetlands.	No or little funding when Government not having resources and donors not interested funding the activities. Some decision-makers at national, regional and local level may be reluctant to a project that could change their habits. Using fire to manage woodlands, grasslands and seasonal wetlands affect biodiversity forms (both plants and animals) with low resilience to fires. Some invasive plant and grass species tend to be more resilient to fires and use of fire would/could favour their flourishing thereby taking over /displacing the non-resilient plants/grasses. Land tenure issues and clear ownership rights must be settled to reduce wildfires. National level trans-boundary burning practices e.g. by the Turkana in Karamoja region will be hard to control.
Strategic option 7: Livestock rearing in Cattle Corridor		
Increasing human population and a thereby increasing cattle population cause environmental risks not possible to mitigate. Poor animal health support. Conversion of rangelands to croplands leading to shortage of forage (referring to Karamoja).	Land tenure issues not addressed and solved enough, including land conflicts with neighbours over grazing. Credit facilities not available, needed for restocking and infrastructural development. Slow development of water ponds leading to poor watering facilities for livestock.	Some households may expand their herd and thus increase environmental pressure. Need to sort out unclear and unsecure land tenure. Need for land use planning and related conflict resolution. Planning need to take account of the multiple roles and functions of livestock for resource poor farmers: food source,

Environmental Risks	Social Risks	Comments
Prolonged drought spells Invasive grass species (not palatable ones) that take over pasture lands in some places	Limited extension support, needed for genetic potential, providing proper nutrition and ensuring animal health. Slow uptake of crossbreeds. Animal thefts.	farm input supplier (manure, traction), insurance and an entry point towards a more market-oriented production. Many drugs provided by veterinary services may be useless in curing the livestock.
Strategic option 8: Strengthening of policy enforcement in REDD+ implementation		
Skills and capacities for environmental policy making and enforcement not strengthened enough. Remaining corruption destroys large parts of any environmental and climate change mitigation efforts Much achievements lost or distorted unless good fiscal rules and regulations are followed properly.	Skills and capacities for social policy making and enforcement not strengthened enough. Remaining corruption may still create obstacles to social policy enforcement. Opposition to more stringent policy enforcement from some policy makers who themselves have been involved in corruption. Much achievements lost or distorted unless good fiscal rules and regulations are followed properly.	Nothing negative found in this as whole Ugandan society and economy will benefit from good policy enforcement. This Strategic Option is a priority option before any other option as otherwise already achieved goals will be wasted. Good capacity building and training programmes needed. Anti-corruption measures must be compulsory at all stages of national REDD+ programme.

8.3 Conclusion

The strategic options for the Uganda REDD+ National Strategy were selected primarily for the positive contribution towards the reduction of deforestation and forest degradation, but also for their positive environmental and, social effects. This Strategic Environmental and Social Assessment of the options concludes that there are many positive impacts on both the environmental and social sides. Further, the SESA finds that no expected *environmental* impact is of such strategic magnitude that it would endanger possibilities for future generations if the options are implemented as suggested in the national strategy document. The identified *environmental* negative impacts can be handled through professional management and application of known best practices.

The negative impacts identified on the *social* side will require deliberate action to resolve the issues, such as (but not limited to) land tenure, land use planning, inequalities regarding land tenure and land ownership between men and women, political interference, the need to avoid eviction of people and the situation of indigenous marginalized and forest dependent people.

The most important factor identified by the SESA is that existing laws and regulations really are enforced, as pointed out in the analysis and risk assessment for Strategic Option 8.

The identified social issues, together with the issue of law enforcement, will come back below in this document as main issues and recommendations (Chapter 13).

9. Opportunity costs and trade-offs between land uses

9.1 Calculation of opportunity costs for land use types

Relevant regional forest-based opportunity costs (OC) for Uganda were analysed and calculated and results presented in the Draft Final National REDD+ Strategy. The analysis was based on data and information retrieved from a number of specific secondary research articles and international reports. The retrieved data and information was synthesized and compiled as shown in Table 4.

The key research article that provided current forest-based income generation data and overall household income generation data from 14 villages around the Mabira Central Forest Reserve in Central Region had reported higher household incomes for Mabirathan that of households in other regions of Uganda. To determine how large an annual forest-based income Willingness to Accept (WTA) opportunity cost would be in other regions of Uganda, the Mabira outcome (i.e. Central Region) was scaled with known mean per capita consumption expenditure in percent (UBOS 2016), which has been performed in Table 4 below.

The share of total annual forest-based income was found to be very high in Tugume et al. (2015), which means that the households are heavily dependent of the Mabira central forest reserve. It means further that households put the Mabira central forest reserve under heavy pressure from NTFP and wood extraction. It is furthermore known that there

have been plans to de-gazette parts of the Mabira forest for sugar cane production (NatureUganda2011) and plans are far ahead of locating an electric power line through the forest (Muramira 2011). The Tugume et al. study may therefore have targeted the most forest-dependent communities in the area. In a global perspective, rural households normally generate some 18-22% of their livelihoods from forest-based resources and in heavily forested areas and very poor conditions the forest dependence can raise to 35-50% of the total household income (Jagger 2012, Shepherd et al. 2013 and Agrawal et al. 2013). However, there is no extreme poverty in Mabira central forest reserve area. Therefore, an additional calculation was made on what would be an annual forest-based income WTA opportunity cost when the forest-based income generation is at the normal share of 20% of total household income generation. For this calculation, information from Tugume et al. was used for the overall average income generation figure, but with reduced forest-based income share of 20% instead of the previously used 40%, added at the end of Table 4.

Table 4. Annual forest-based income Willingness to Accept (WTA) opportunity cost per region in Uganda (in USD).

Economic Issue	Central Region	Eastern Region	Northern Region	Western Region	Uganda average
Comparison of mean regional consumption expenditure in % *)	133%	75%	63%	111%	100%
Tugume et al. 2015 annual total forest-based income as per different regions (in USD) **)	850.7	479.4	402.7	709.5	639.2
Option 1: Forest-based WTA opportunity cost in USD (based on Mabira situation of 40% forest income)	2807	1582	1329	2341	2109
Option 2: Forest-based WTA opportunity cost in USD (when forest income share is 20% - normal case)	424.27 USD*3.3 =1400	239.25 USD*3.3 =790	200.97 USD*3.3 =663	354.09 USD*3.3 =1168	319.0 USD*3.3 =1053

Note: *) This comparative information on regional consumption expenditure is from UBOS Statistical Abstract 2015. **) These figures are calculated by combining the Mabira forest income generation with regional comparative consumption expenditure percentages.

Two optional ways of calculating regional annual forest-based income WTA opportunity costs are presented below in Table 5. Option 1 is based directly on the results from Tugume et al. (2015) in Mabira central forest reserve area where the Central Region is represented by the Mabira result and the other regions shown are comparative results based on the index taken from the first row in the table. The first option results may be too high to generalize as stand-alone for all over Uganda as representative regional annual forest-based WTA opportunity cost values.

The option 2 shown on the last row in the above Table 5 is an adjusted annual forest-based WTA opportunity cost based on an assumption that the average forest-based

income share is 20%. Hence, the actual annual forest-based WTA opportunity cost value may be somewhere between the option 1 and 2, see also FAO(2013).

In 2013 FAO commissioned a study (Kazora, 2017) to establish the contribution of forestry to rural economy. The total value of forests to rural people in Uganda (across the great majority of the country) comes to more than USD 4 billion per year, almost USD146 for each man, woman and child, or about USD 730 a year for each household (FAO 2013). Of this value, 72percent is used domestically and 29 percent is cash derived from sales. For an average household the value of forest products breaks down into USD 290 from fuel, USD 180 from building materials, USD 135 from forest foods, USD 60 from fibre, USD 35 from herbal medicines and USD 30 from timber. No doubt the value from forest products would be even higher if value addition of forest products could be improved. Additionally, there would be hidden forest-based environmental services, which have not been calculated by Kazora (2017). However, the forest-based environmental goods coincide well with the Tugume et al. (2015) results.

There is a very close relationship between livelihoods and forest-resources. An estimated 24 million people are stated to be ´forest-dependent´ in Uganda, relying on forests to support their basic needs and livelihoods (The World Bank 2012). The forestry sector provides resources that support the national economy and sustain the livelihoods of the majority of rural Ugandans in the form of energy resources (charcoal, fuel-wood), timber, employment in forestry industries, forest based tourism and forest-product value chains, wild foods and medicines.

Rural landless households find forest encroachment as a social security and livelihood platform as there are not that many other options for such desperate people, which means that these people most likely will not consider the full extent of the forest-based WTA opportunity cost value when they settle for clearing new farmland on forestland. They are probably focusing on survival until end of crop harvesting season like any other poor rural farmers in developing countries. It is only when the farming household has secured its basic degree of security when all environmental services of a forest become important for the household (Agrawal et al. 2013).

Regarding other rural trade-offs and opportunity costs in Uganda there seems to be a situation of lack of vision, which means that rural households in most cases choose among the simplest and cheapest options at first. This means traditional agriculture, traditional forest-income generation and livestock free-grazing type of options. Opportunity costs for these kinds of livelihoods are first calculated, after which further analyses are made up the wealth ladder to assess other more visionary opportunity costs.

Table 5 presents a calculation of twenty different annual opportunity cost values for various currently existing and some new proposed REDD+ activities. The figures have been derived from the financial analysis conducted for the Draft Final National REDD+ Strategy presented in this report and from calculations above in this sub-chapter (i.e. forest-based opportunity costs). Additionally, there are some commercial sugar cane opportunity costs, which have been compiled from collected field information in Masindi District and from Nature Uganda (2011).

Table 5. 20 different annual opportunity cost (OC) values for various currently existing and some new proposed REDD+ Strategic option activities.

Type of opportunity cost	Annual gross OC in USD/ha/HH	Annual net OC in USD/Ha/HH	Comment
Normal forest encroaching income	200 - 424	About zero	Basic forest encroachment income generation with own labour costs
Heavy forest encroaching income	403 - 850	100 to 500	Heavy forest encroachment income generation with own labour costs
Traditional crop cultivation	700	0 to 300	Own labour& cultivation costs eat profit
Livestock rearing in Mabira area	200 - 425	100 to 300	Own labour cost eat profit
Agroforestry cultivation system after a few years	1050	425 - 700	Own labour& cultivation costs eat profit
Normal forest-based PES WTA opportunity cost	663 to 1400	260 to 1000	This normal comprehensive OC cover all goods and services from forest at 20% of total household livelihood income level
A heavy forest-based PES WTA OC	1329 to 2807	930 to 2407	This heavy comprehensive OC cover all goods and services from forest at 40% of total household livelihood income level
Commercial sugar cane outgrower OC before nutrient decline in field	1107	609	Own labour cost 55%
Commercial sugar cane outgrower OC after nutrient decline in field	980	490	Own labour cost 55%
Commercial sugar estates	1200	720	Production costs 40%
Rainwater harvesting with drip irrigation on 1 ha	1180	675 to 730	Own labour and equipment maintenance costs eat profit
Greenhouse cultivation of tomatoes with shade net cover	2000	1262	Own labour cost eat profit and renewing of greenhouse structures
Greenhouse cultivation of tomatoes with shade net cover	2500	1762	Own labour cost eat profit and renewing of greenhouse structures
Small-holder energy wood plantation with maize crop under	3400	2093	Own labour and production costs of trees and crops eat profit
Small-holder timber plantation with coffee agroforestry	2706	1590	Own labour and production costs of trees and crops eat profit
Commercial eucalypt pole/timber plantation	1140 at 5% annual inflation	435 at 10% annual inflation	Plantation establishment, management and harvesting costs
Commercial pine sawlog plantation	1030 at 5% annual inflation	528 at 10% annual inflation	Plantation establishment, management and harvesting costs
Rehabilitation of degraded high forests from rural community perspective	549	249	Own labour cost eat profit
Assisted natural regeneration in tropical high forest from rural community perspective	1179	728	Own labour cost eat profit
Assisted natural regeneration in woodlands from rural community perspective	220	100	Own labour cost eat profit

The above (Table 5) presents various opportunity costs that are approximates as there are with these opportunity costs yearly variations due, for instance, to reinvestment needs, while for other opportunity costs each year may be rather like the previous years. In some crop cultivation may crop yield decrease over the years if nutrients in the fields are depleted.

SESA conclusions regarding opportunity costs for various strategic option activities: Table 8 above indicate that in all cases are the so-called "traditional farming livelihoods" inferior to "improved rural livelihoods". "Traditional farming livelihoods" are both wasteful of resources such as land area, water, soil fertility, job opportunities and do in the future not provide much opportunities for the fast-growing human and livestock populations. In fact, the traditional livelihoods are already a serious constraint to the Ugandan economy, the combating of climate change and gives no chance for a recovering of natural forests in Uganda. The sooner and the more rural households switch into improved rural or urban livelihoods the better and the more sustainable the national economy and the society in Uganda will become. The switch from one livelihood into another does not need to occur directly from the traditional ones into the best possible option – the switch of livelihood can happen in steps suitable for each household. The important issue here is the vision of improved livelihoods and the actual movement away from the traditional livelihoods, which are now the symptom of poverty, lack of vision and lack of capacity that seriously constrain the Ugandan economy and society in its coping with the future.

9.2 Comparison of trade-offs between rural land use types

The actual methodology for analysis and calculation of trade-offs between a number of land use types may vary between both researchers and practitioners based on available data and information from land uses in an area under study (USAID 2014, Klapwijk et al. 2014, and Renwick and Schellhorn 2015). Several farming types of land use have been assessed, analysed and compared based on the conducted REDD+ strategic option financial analysis combined with the opportunity cost calculations conducted in the REDD+ Selected Strategic Option Report, which are presented in Table 9 on previous page.

In Table 6 assessed, synthesized and compiled trade-offs are shown for and between eight different farming type of livelihood land uses and a sub-livelihood situation, where the households use energy efficient stove (EES) or improved charcoal stove (ICS) to reduce their use of fuel and increase their wood energy efficiency. The trade-off comparison has been performed based on household annual income generation and annual opportunity costs for each type of farming livelihood option. Table 6 indicates that there are clear trade-off differences between these farming livelihood options. The livelihoods range from the traditional farming household income generation of 100% to a highly intensified combined energy wood plantation and agroforestry system with agricultural crop and fodder production enabling also livestock stall-feeding and milk production with over 700% income generation increase. Between these two options there six other farming livelihood land use options available.

The traditional (the basic option) and simple commercial farming (out-grower commercial sugar cane) land use option provide the lowest income generation to the farming household, while these options have rather low initial investment needs. These three farming options will not stop an annual horizontal farmland expansion fed by the

high human population growth rate. Rather these farming land use types will need constant additional farmlands to enable new farming households an income generation possibility.

The cheapest and most simple climate smart agriculture livelihood option with agroforestry and sustainable land management and the simple commercial large-scale land use option actually are intermediates between traditional farming practices and more visionary new type of farming land use options. The agroforestry and SLM option has already got incorporated trees on farmland and is therefore not anymore that much degrading and prone to deforest nearby natural forests. This option could still be improved by including apiculture and milk selling from stall-fed cows. The commercial sugar cane estate farming option is a traditional type of monoculture crop option with no agroforestry practices and constant need for added fertilizers. It is a non-sustainable land use management option, which does not allow much intensification once the commercial low level of efficiency has been achieved.

The remaining four types of farming livelihood options are all visionary and two kinds of these exist in Uganda only among a few thousand farming households at the moment. Household owned greenhouses for continuous production of vegetables and other suitable greenhouse crops and the combined sustainable energy wood plantations and agroforestry crops are not much tried in practice yet in Uganda. These four farming options require a quite substantial pre-investment, but two of the options provide almost immediate high profits, while the two others will require 2-6 years before the income generation will become high. These four-farming land use options use land very efficiently and farming households using these livelihood options should consider themselves more as agricultural businesses than traditional farming households.

Table 6. Trade-offs between farming land use types

Basic smallholder farming livelihood	**Incorporating agro-foresty and SLM**	**Adding RWH and drip irrigation**	**Adding greenhouse cultivation of tomato**	**Sustainable energy wood & agroforestry crop**	**Small-holder timber plantation & coffee**	**Small-holder outgrower commercial sugarcane**	**Commercial sugar cane estate**	**EES fuelwood stove & ICS charcoal stove**
Agriculture is 59% of total livelihood. Only subsistence income and not much profit.	Agroforestry fertilize land and increase crop yield. Also fruits from fruit trees & apiculture possible.	Absolute crop income generation doubles from basic scenario. Crop farming may be possible during the whole year.	With a 20x8 m green-house added on farm can the crop income generation increase 5 times from BAU. Effi-cientuse of farmland.	The nitrogen-fixing energy tree plantation fertilize annually agricultural crop so that 3 times higher crop yields may be possible	Taungua agro-forestry possible 1-3 years. Then shade coffee grown under muzizi trees provide main annual income 3 times BAU agriculture	The sugarcane income generation is ca 150% increase from BAU for some years. Thereafter is crop rotation a must and fertilization	The sugarcane income generation is ca 200% increase from BAU for some years. Requires constant fertilization of fields.	Agroforestry trees will be sufficient as the wood need is reduced. No impact on crop production from BAU or other scenario.
Livestock rearing based mostly on free-grazing and a little stall-feeding. Comprise 9% of total livelihood	Agroforestry trees provide leaf fodder jointly with increasing crop residues as feed for stall-fed cattle. Manure available as fertlizer	Agroforestry trees provide leaf fodder jointly with increasing crop residues as feed for stall-fed cattle. Manure available as fertlizer	Agroforestry trees provide leaf fodder jointly with increasing crop residues as feed for stall-fed cattle. Manure available as fertilizer	Each year 2 to 4 tonnes of leaf fodder is produced in the energy wood plantation if good fodder tree is chosen in plantation	Some agro-forestry boundary fodder trees can provide fodder for 1 stall-fed cow. Income also allow purchase of fodder from neighbour	Some agro-forestry boundary fodder trees can provide fodder for 1 stall-fed cow. Income also allow purchase of fodder from neighbour	Normally are livestock not wanted in or near sugar cane estates as these may distribute invasive tree or plant species via their droppings.	Increases fodder tree potential as less fuelwood needs to be grown on farm land
Employment & petty trade comprise some 3% of total livelihood	Increased income give also opportunity to sell some fruits, fodder, milk & poles	Own household income generation & employment opportunity increases	Several labourers needed to operate all open and greenhouse crops.	The intensified use of land enable 2 more labourers to work on the same land than in BAU	The intensified use of land enable 1-2 more labourers to work on the same land than in BAU	The intensified use of land enable 1 more labourers to work on the same land than in BAU	Commercial sugar cane estates have field workers	Increases the work opportunities for masons and EES & ICS traders/ trainers
Currently very few small-holder farmers have any **businesses**	Increased income generation give op-portunity for savings or investments	Increased income generation give op-portunity for savings or investments	Greenhouse and open cultivation should be operated like a commercial business enterprise.	Commercial energy wood business (charcoal or fuelwood). Fodder enable 2 cows & milk sales	Commercial coffee bean production to local cooperative. Poles and timber sold in harvesting years.	The produced sugar cane will be commercially sold to a sugar industry	Sugar production is big business	EES and ICS stove manufacturing and commercial selling business opportunity
The **forest-based income generation** constitute 25% of total livelihood. Exploiting wood & NTFPs from natural forests	Agroforestry provide most needed forest-based products from own farmland. Not need much to exploit forests anymore.	Agroforestry provide most needed forest-based products from own farmland. Not need much to exploit forests anymore.	Agroforestry provide most needed forest-based products from own farmland. Not need to exploit forests.	Sufficient other agroforestry trees in boundary could provide poles, fruits and other NTFPs for household.	Sufficient other agroforestry trees in boundary could provide poles, fruits and other NTFPs for household.	Sufficient other agroforestry trees in boundary could provide poles, fruits and other NTFPs for household.	Wild trees are not wanted near sugar cane monoculture field	Can reduce fuelwood consumption by 84% and charcoal by 68%. Thus, total wood demand reduces ca 75%

Basic smallholder farming livelihood	**Incorporating agro-foresty and SLM**	**Adding RWH and drip irrigation**	**Adding greenhouse cultivation of tomato**	**Sustainable energy wood & agroforestry crop**	**Small-holder timber plantation & coffee**	**Small-holder out-grower commercial sugarcane**	**Commercial sugar cane estate**	**EES fuelwood stove & ICS charcoal stove**
Woodlots and small timber plantations are established on both forest and farm lands	The woodlots and plantations support households or communities withwood products.	These woodlots and plantations support households or communities with wood products.	These woodlots and plantations support households or communities with wood products.	The energy wood can be sold annually from 2nd yr some 15-25 ton/ha/.	High quality poles and timber sold at premium price 2-3 times in tree rotation. The shade tree role important	Any sawn timber will have to be purchased from neighbour	Some woodlots and plantations may be established for wood energy purposes and amenity	A substantial part of energy wood can be produced as secondary product from pole & timber plantations
Degraded natural forests from where people exploit all kinds of forest commodities	Wood supply does not anymore need to exploit natural forests. Degraded forests can often grow back into pristine natural forests again.	Wood supply does not anymore need to exploit natural forests. Degraded forests can often grow back into pristine natural forests again.	Wood supply does not anymore need to exploit natural forests. Degraded forests can often grow back into pristine natural forests again.	The rural households may collect NTFPs from forests, but all wood from woodlots and plantations. Forest becomes denser.	The rural households may collect NTFPs from forests, but all wood from woodlots and plantations. Forest becomes denser.	The rural households may collect NTFPs from forests, but buy timber. Thus, no need to cut natural forest trees	Most sugar cane estates have been established by clearcutting natural forests as other idle land is scarce or expensive. Often corruption	As energy wood production stems from plantations will huge areas of particularly private forest lands rehabilitate back to woodlands
Protected and dense natural forests that still have high biodiversity	Protected and dense natural forests rehabilitate forest areas.	Protected and dense natural forests rehabilitate forest areas.	Protected and dense natural forests rehabilitate forest areas.	Protected and dense natural forests rehabilitate forest areas.	Protected and dense natural forests rehabilitate forest areas.	Protected and dense natural forests rehabilitate forest areas.	Even protected forests can sometimes be cut due to corruption	Protected and dense natural forests rehabilitate forest areas.
Trade-off comparison of various farming type land uses								
The **basic smallholder BAU**scenario is **100%** income generation. **New annual forest encroachments. Gross opportunity cost** is **USD 700/ha/yr** and **net OC** is **USD 300/ha/yr**	Income generation increases by **150% of BAU** and **less forests are exploited**.**Gross opportunity cost** is **USD 1050/ha/yr** and **net OC** is **USD 425-700/ha/yr**	Income generation increases by **200% of BAUand less forests are exploitted**.**Gross opportunity cost** is **USD 1180/ha/yr** and **net OC** is **USD 675-730/ha/yr**	Income generation increases annually by **600% on top of BAUand less forests are exploited**.**Gross opportunity cost** is **USD 2500/ha/yr** and **net OC** is **USD 1760/ha/yr**	Income generation increases annually by **700% from BAU** and **less forests are exploited**.**Gross opportunity cost** is **USD 3400/ha/yr** and **net OC** is **USD 2093/ha/yr**	Income generation increases annually by **600% from BAU** and **less forests are exploited**.**Gross opportunity cost** is **USD 2706/ha/yr** and **net OC** is **USD 1590/ha/yr**	Income generation increases annually by **150% from BAU** and **less forests are exploited**.**Gross opportunity cost** is **USD 980/ha/yr** and **net OC** is **USD 490/ha/yr**	Income generation increases annually by **200-250% from BAU** and **less forests are exploited**.**Gross opportunity cost** is **USD 1107/ha/yr** and **net OC** is **USD 609/ha/yr**	**Income savings annually from reduced wood energy purchases**and**less forests are exploited**.**Net opportunity cost** is **USD 120/HH/yr (fuelwood**) &**USD 100/HH/yr (charcoal)**
Trade-off comparison from lowest to highest income generation (1= lowest and 7= highest)								
1	**2**	**3**	**6**	**7**	**5**	**2**	**4**	**To be combined with livelihoods**

The four best farming land use types incorporate trees on farm in agroforestry systems and enable almost all income related commodities to be produced on farm with low or no need to exploit adjacent forest lands. These livelihood options also generate substantially more employment opportunities on-farm, which also reduces substantially the need for horizontal farmland expansion. The manner of income generation becomes more business-like or actually business type operations, which means that in the future the threshold to adopt yet additional business type of activities becomes easier to start up. These visionary farming options are also highly sustainable and efficient in their land use and their large-scale adoption means that the high population growth can much better be controlled and mitigated – buying time for the Ugandan economy to develop also otherwise with new types of urban kinds of livelihoods. A continuation with mere traditional farming income generation will soon not be possible any more with the current population growth rate.

The last column in Table 6 provides information on how the use of energy efficient fuelwood stoves or improved charcoal stoves will impact on livelihoods. It is not by land use by itself, but rather as a way of increasing wood use efficiency that means less wood is required annually for energy purposes in each household and simultaneously the EES and ICS stoves drastically reduce wood energy consumption to some 30% of current wood energy use. This is a rather large reduction of energy wood consumption.

All the five newer type of farming land uses will reduce the need to clear additional forest lands from trees to expand agriculture. A fast adoption of these farming land uses is soon a must when all forests are cleared if the switch in land use is not happening fast enough.

Table 7 presents trade-offs between some forest adjacent land use options. The first column in Table 7 shows the basic small-holder farming household income generation, which was also included in Table 4 above. It is included in this table for comparison reasons and for highlighting the forest-based income generation and full-scale forest opportunity cost.

The two following columns show forest-adjacent ethnic minority household income generation now (option 2) and in the future when those households are included properly in the REDD+ scheme operations. These forest-adjacent ethnic minority households are very vulnerable and have in many locations been evicted from protected areas such as national parks and game reserves when these have been established some decades ago. Now many of these households lack land and perform some small basic subsistence farming, while they often still are highly dependent on their forest-based income generation. However, due to their situation all their income sources are small and poor. In order for these households to be fully incorporated in REDD+ strategic option activities they need grant investment and technical service support.

The fourth column in Table 7 shows rural majority farming household income generation with CFM/PFM type of forest use agreement. The CFM/PFM agreements enable the households to legally collect non-timber forest products from adjacent forests, but almost all wood collected should come from woodlots and timber plantations outside forests. This kind of forest management arrangement make those households more sustainable in the use of natural resources, although it is not fully as good a livelihood option as more visionary farming livelihood land use types.

Table 7. Trade-offs of forest-adjacent land-uses.

Basic smallholder farming livelihood	**Forest-adjacent ethnic minority household income generation**	**Forest-adjacent ethnic minority household REDD+ income generation**	**Rural majority farming households with CFM/PFM agreements**	**Integrated wildfire mgt. impact on rural HHs and forest plantations**	**Commercial private timber plantations & improved charcoal kilns**
Agriculture is 59% of total livelihood. Only subsistence income and not much profit.	Often poor slash and burn agriculture. Low crop income of ca gross USD 300 or lower	Participation will require substantial grant investments in CSA type activities	The HHs will have to switch to agroforestry type of farming system to get CFM /PFM agreement	Unnecessary wildfires ceased. Local temperature will reduce and soils less dry, nutrients intact	Not relevant
Livestock rearing based mostly on free-grazing and a little stall-feeding. Comprise 9% of total livelihood	Livestock is free-grazing with very low milk and meat production	With agroforestry type of CSA it is possible to produce fodder for stall-feeding	Stall-feeding is possible due to NTFP fodder for cows	Less grass fodder for free-grazing, but planted fodder trees increase livestock fodder in area	Not relevant
Employment & petty trade comprise some 3% of total livelihood	Almost no other employment or petty trade	Poorer HHs can be employed by more wealthier HHs.	NTFP colletion and trade is possible	Some persons can act as payed fire guards and fire fighters	Forest establishment, maintenance, harvesting & fire labour needs
Currently very few small-holder farmers have any **businesses**	No businesses	Grant investments for CSA greenhouses and energy wood plantations etc.	Ecotourism business potential	Huge savings to HHs' property and crop or timber plantations	Commercial timber, poles and fuelwood or charcoal selling
The **forest-based income generation** constitute 25% of total livelihood. Exploiting wood & NTFPs from natural forests	Heavily dependent on forest-based income generation	With CFM/PFM agreement to reduce wood extraction to minimum, but allow NTFP collection	NTFP and minor wood income generation is ca 55% of heavy forest dependent income generation	Less forest fires. Some reduction in honey collection, which can be substituted by apiculture in agroforestry	Neighbouring HHs could be allowed to use wood from fire break clearings, employment and fire fighting
Woodlots and small timber plantations are established on both forest and farm lands	No woodlots or timber plantations	Woodlots and/or tree plantations will be a prerequisite for CFM/PFM agreement	Woodlots and/or tree plantations will be a prerequisite for CFM/PFM agreement	Reduced fire risk is crucial in timber plantations and secure profit expectations	Farmers could learn timber plantation management from large plantation managers
Degraded natural forests from where people exploit all kinds of forest commodities	Households heavily extract NTFPs and some wood from degrading forests	Households still extract NFTPs, but this can be regulated. Low wood extraction from forest allowed	Households still extract NFTPs, but this can be regulated. Low wood extraction from forest	Reduce fire hazards also on degraded forest lands and thus better rehabilitation of forests	Reduce illegal timber extraction from natural forests
Protected and dense natural forests that still have high biodiversity	Reducing biodiversity in protected areas due to exploitation	Protected and dense natural forestswith high biodiversity that increases in area	Protected and dense natural forestswith high biodiversity that increases in area	Protected and dense natural forestswith high biodiversity that increases in area	Protected and dense natural forestswith high biodiversity that increases in area
Trade-off comparison of various forest type land uses					
The **basic smallholder BAU**scenario is **100%** income generation. **New annual forest encroachments.**	Forest-adjacent ethnic minority HHs earn perhaps **40% of majority farming HHs** or **gross USD 300/HH/yr** and **net USD 100 HH/yr.** Basic **Forest OC**	Forest-adjacent ethnic minority HHs earn perhaps **75% of majority farming HHs** or **gross USD 525/HH/yr** and **net USD 225 HH/yr.Basic** f**orest**	Income generation increases by **150% from BAU** and **less forests are exploited.Gross opportunity cost** is **USD 1050/ha/yr** and **net OC** is**USD**	Reduces daily temperature and improve micro-climate. **Similar impacts on livelihood as agroforestry**	**Long term annual opportunity cost** at **USD 1035/ha/yr** at **5% inflation rate**&**USD**

Gross opportunity cost is **USD 700/ha/yr** and **net OC** is **USD 300/ha/yr. Full-scale forest OC is** **USD 2000**	ca**USD 120/HH/yr. Full-scale forest OC is USD 530.**	**OC** ca**USD 225/HH/yr. Full-scale forest OC USD 1000.**	**600/ha/yr. Basic Forest OC** ca **USD 350/HH/ yr. Full-scale For.** **OC USD 2000**	**systems and SLM practices.**	**500/ha/yr** at **10% inflation rate**.

The second last column presents how integrated wildfire management may impact on farming households near natural forests and timber plantations. The effect is similar to somewhat reversing climate change and it also acts similarly as the introduction of agro-forestry and sustainable land management. The integrated wildfire management has positive impact on all kinds of rural land uses and should be implemented on full scale as soon as possible.

The last column in Table 7 shows an average timber plantation income generation land use option. It is more of an investment option and not an annual household income generation option. This option has divided into two alternative long-term annual opportunity options calculated based on an average inflation rate of 5% or 10% over plantation rotation. On average, this land use option compares with a medium visionary climate smart agriculture income generation, although it takes several years before any real profits are realized in this option with higher fire and pest hazards than any of the farming land use options have.

Overall, all kinds of new visionary livelihood income generation land uses are better than traditional ones and the only major stumbling stock relates to their substantial initial investment needs. Therefore, it is often better to move stepwise from traditional to medium land use options to high income and sustainable options over a period of a few years. Financial and technical support will also be needed at the grassroots level in order to make the needed switches fairly fast and permanent.

The urban economy must also be simultaneously developed, so that it is able to employ more and more rural young adults, who want to become urbanized and leave farm-life behind them. However, this is another story which is not related to REDD+ strategic option activities in any other way except that these measures will enable such a jump from a poor farmer to a wealthier urban life style.

Lastly, it can be mentioned that the SESA was informed during field visits by some DFOs regarding land opportunity costs for the purchase of industrial lands from rural districts. In several cases had such sites been reserved and sold behind closed doors by some politicians. Even some central forestry reserves had been sold and distributed out as industrial property without the consent of the local forest authorities.

The *SESA conclusions* on trade-offs between land use types are the same as those regarding opportunity costs from various rural livelihoods. So-called “traditional land use types” are inferior to more modern rural land use types. The reason is that the more modern and improved land use types are based on efficient land use and use of resources, which simultaneously enable the manifold production output per hectare and thus more income generation while enables a mitigation of and probably even to a large degree can overcome climate change impacts. The improved land use types will also enable better control of both human and livestock growth trends and therefore lead towards the

reaching of a sustainable development in Uganda. This in turn is the prerequisite for a balanced development of both the economy and the society of Uganda.

10. Assessment of possibly triggered safeguards

The Integrated Safeguards Development Sheet (ISDS) of the UG-FCPF REDD Readiness project, of which this SESA study is a part, prescribes the following safeguards or criteria to be used when assessing the REDD+ National Strategy: (see full text from the ISDS in Annex 2). The following Safeguards could apply:

- Environmental Assessment (OP/BP 4.01)
- Natural habitats (OP/BP 4.04)
- Forests (OP/BP 4.36)
- Pest Management (OP/BP 4.09) to be determined
- Physical Cultural Resources (OP/BP 4.11) to be determined
- Indigenous Peoples (OP/BP 4.10) to be determined
- Involuntary Resettlement (OP/BP 4.12) to be determined

The SESA conducted a scoring of the seven main Strategic Options (SOs) with regard to these safeguards and criteria. Safeguard/criterion fulfilment of each SO was scored in three levels: high, medium or low. A summary of this assessment is presented in Table 8 and more elaborated in Annex 4. Six out of the seven main strategic options score on average high and one scores medium (i.e. SO3 Large-scale timber plantations.

It must be noted that many of the impacts from implementation of the Draft Final National REDD+ Strategy will depend on how the enabling SO8 and the programs, projects and campaigns are carried out in reality. In this assessment, it is assumed that the Strategies are executed as intended and described in the Strategy Options documents.

Table 8. Summary of scoring of Strategy safeguard fulfilment

Safeguard	1: agriculture	2: fuelwood	3: timber	4: natural forests	5: cooking stoves	6: wildfires	7: livestock
Environmental considerations							
Environmental	High	High	High	High	High	High	High
Natural habitats	High	High	High	High	High	High	Medium
Forests	High	High	High	High	High	High	Medium
Pest management	Medium	Medium	Low	High	Na	Medium	Medium
Cultural resources	High	High	High	High	Na	High	Na
Indigenous people	High	Medium	Low	High	Low	High	Medium
Resettlement	High	High	Low	High	Na.	High	High
Social considerations							
Social assessment	High	High	Medium	High	High	High	High
Natural habitats	High	High	Low	High	High	High	High
Forests	High	High	Medium	High	High	High	High
Pest management	Medium	High	Medium	Na	Na	Low	Medium
Cultural resources	High	High	Medium	High	Na	High	Na
Indigenous people	High	Low	Low	High	Low	High	High
Resettlement	High	High	Low	High	Na	High	High
Overall ranking	High	High	Medium	High	High	High	High

High = high level of safeguard fulfilment; Medium = level of safeguard fulfilment; Low = low level of safeguard fulfilment; Na = not applicable

Strategic Option 1 on CSA scored second best (12 out of 14 criteria were high and 2 were medium). This SO1 is a very good option both from an environmental perspective and socially for all rural households. It is only with the environmental and social criteria for pest management that it does not get full scores. The reason behind the medium score for pest management is the intensification of agricultural production and particular greenhouse cultivation where the households have to be careful with pest management, including safe handling and disposal of pesticides. There will be a need for changing the location of the exact spot of the greenhouse on the farm land every three years and the use of some pesticides to secure good production. However, greenhouses will not be an option for the poorest households but for the wealthier ones and thus these households should be able to carry out cultivation by the instructions.

Strategic Option 2 on sustainable fuelwood and charcoal use is actually broader than its short name indicates as it comprises energy wood woodlots and plantations with agricultural crops (sub-option 2.1), timber plantation combined with shade crops like coffee (sub-option 2.2) and improved charcoal kilns linked to plantations (sub-option 2.3). As these operations will also take place on farmlands this option is another

agricultural strategic option. SO2 scored also on average high in accordance with the WB criteria. It is again on pest management where it does not score full points due to the intensified cultivation circumstances. The cultivation is still happening in an agroforestry system, which means that it is better than a monoculture situation. This option is not specifically targeting indigenous people nor other marginalized people as it requires certain pre-investments, which those households cannot afford. Instead, poor people can work for others in these kinds of land use operations.

Strategic Option 3 scores high in most respects when it comes to environmental criteria, except for pest management, indigenous people and involuntary resettlements as there sometimes are problems in these areas. At the same time SO3 scores mostly medium or low on most social criteria as large-scale timber plantations are not targeting rural poor households but rather wealthier households, businessmen, investors, private companies and public forest sector organizations. Therefore, SO3 scores an average medium for all WB safeguards criteria. At the same time, this strategic option is the easiest to plan and operate with carbon trading with regular MRV auditing. The reason for the medium score is just the fact that not all poor households are involved in this strategic option, which means more organized circumstances for the option activities.

Strategic Option 4 on rehabilitation of natural forests in the landscape is the opposite of SO3 – it targets in particular the poorest rural households who live adjacent to major forests in Uganda. This strategic option scores high on all environmental and social criteria. It is the strategic option which is the most important to indigenous and marginalized people, although these will need both grant funding support, extension services and some land provided for them where community woodlots can be planted outside the forest to produce all the wood they need, outside the forest. All NTFPs can then be collected from the forest, while their traditional cultural practices also may continue. There are also precedents of allowing community planting within forest reserves under CFM arrangements (e.g. Minziro CFR) and this should be encouraged.

Strategic Option 5 on energy efficient fuelwood stoves and improved charcoal stoves is an option which scores high on all criteria, but the full set of criteria are not applicable for this strategic option. It is further the only strategic option that comprises all households of Uganda – both rural and urban ones. Besides the high scores for environmental and social criteria it is an option which is able to hugely impact on carbon emissions from Uganda. The fact that it is involving all urban households makes this strategic option especially important as these would otherwise not be affected by REDD+ operations.

Strategic Option 6 on integrated wildfire management is from most angles the most important strategic option as it scores high on both environmental and social criteria, while it is the single most important carbon emission reduction option developed for Uganda. Despite this fact, its score for pest management is not so high as rural people use fire to reduce ticks and snakes in high grass, which would not anymore be the case if wildfires are reduced considerably. However, if cattle are stall-fed with fodder from strategic option 1 and 2 activities the animals will not bring in that much ticks anymore as free-grazing has ceased.

Strategic Option 7 on Livestock rearing in Cattle Corridor scores between high and medium, but closer to high. Livestock management in REDD+ is covered by five of the strategic options and in SO7 are such livestock activities, which support thousands of households to live along the Cattle Corridor. However, the increasing human population

and a thereby increasing cattle population are still causing many environmental risks as the SO7 activities may not be able to mitigate these hazards as much as the increasing cattle population causes exceeding of the carrying capacity for livestock rearing. Socially the SO7 is a blessing for thousands of households.

Overall, all the selected seven main strategic options are important as they support each other very well and thereby take out most possible bottlenecks that would be created if one or two of these strategic options would be left out from the REDD+ National Strategy.

Strategic Option 8 is mainly to be seen as a cross-cutting issue that enables the other seven strategic options to function better.

From this assessment, it is concluded that safeguard fulfilment of "indigenous people" and "resettlement" would score low from both an environmental and social viewpoint without special grant or other support to these population groups. Obviously, special attention should be paid to solve the related issues.

11. Gender, minorities and vulnerable people

The REDD+ Strategies apply to women, youth, elderly and vulnerable people, among others. The analysis in this Chapter is made with the view to identify strategic actions to respond to the unique issues of vulnerable people and to help the REDD+ from triggering conflicts or grievances.

The Chapter begins with an overview of possible positive and negative environmental and social effects of the seven strategic options, followed by more detailed discussions on aspects related to gender, indigenous minority people and forest-dependent communities.

11.1 Effect on vulnerable people

Chapter Four of the Constitution of Uganda provides for Protection and promotion of fundamental and other human rights and freedoms. Article 32 (1) states: *"Notwithstanding anything in this Constitution, the State shall take affirmative action in favour of groups marginalized on the basis of gender, age, disability or any other reason created by history, tradition or custom, for the purpose of redressing imbalances which exist against them"*. Much as the constitution is not elaborate on vulnerable and marginalized groups and there is no specific piece of legislation that is explicit, it does mention (i) Women, (ii) Children, (iii) People with disabilities, and (iv) Minorities as the social categories explicitly mentioned in the section on protection and promotion of fundamental and other human rights and freedoms.

The national household surveys that are regularly carried out have often included the following groups as vulnerable to poverty and poor health:

- Children and orphans

- Elderly
- Women and widows
- Youth
- People with disabilities
- Landless and small land holders
- Internally displaced people and refugees
- Indigenous marginalized populations such as Batwa, Ik, Benet and Banyabindi.

The SESA has made a special analysis on possible positive and negative effects on these social categories from implementation of the Strategic Options. Results from this analysis are presented in Annex 3 for each of the seven Strategic Options. As an example the case of SO1 Climate Smart Agriculture is presented below (Table 9). A blank cell means that the case is not applicable or that there are no specific considerations.

Table 9. Possible positive and negative effects on different vulnerable groups.

Strategic Option 1: Climate smart agriculture.

Social Category	**Potentially positive effects**	**Potentially Negative effects; Problems; Comments**
Children and orphans	-Improved food & nutritional security -Reduced workload on firewood, water & fodder. -Improved health	
Elderly	-Improved food & nutritional security -Improved access to water -Increased productivity from improved inputs & management practices	-Might not afford the promoted technology (high capital involved) -Interventions under CSA are labour intensive/ energy demanding for the elderly to manage
Women and widows	-Will get skills & inputs for better agricultural production -Increased productivity & better livelihoods -Improved food & nutritional security -Reduced workload with improved technologies -Increased wood needs supply from agroforestry -Enhanced green jobs for women (from nature interventions) -Reduced vulnerability & risks to Climate Change hazards	-Women have limited access and ownership to land, thus poor participation. -Ltd access to information, -Ltd access to technology -If technology does not target women's roles, their workload might not reduce. -Agric. Intensification might increase women's workload e.g. weeding, mulching, fodder collection, etc. -Poor women might not afford the promoted technologies
Youth	-Enhanced skills & inputs for better agricultural production -Increased productivity & better livelihoods -Improved food & nutritional security	-Youth have limited access & ownership to land, thus ltd decision on land-use. The youth are highly active, dynamic & energetic. The technology promoted need to tap on their abilities & capacities for increased productivity.

	-Reduced workload with improved technologies -Increased wood needs supply from agroforestry -Enhanced green jobs for youths (from nature interventions) -Reduced vulnerability & risks to CC hazards	-Poor youths might not afford the promoted technologies
People with disabilities	-Intensive agriculture would increase food & nutritional security - Increased productivity from improved inputs & management practices	-Technologies need to take care of key disabilities
Landless/small land holders	-Will get skills & inputs for better agricultural production -Increased productivity & better livelihoods (from intensive agriculture) -Improved food & nutritional security -Increased wood needs supply from agroforestry -Enhanced green jobs (from nature interventions) -Reduced vulnerability & risks to CC hazards	-The landless cannot participate, apart from labour service
Internally displaced people and refugees	-Increased land productivity will help prevent internal migration -Food & nutritional security for the displaced	-CC & poor land productivity can lead to internal migration -Land tenure insecurity might hinder the refugees' participation
Indigenous marginalized populations	Possibilities for improved livelihood, if given grants and technical assistance	-Most of them are landless, or have small plots of land (Batwa, Benet, Iks) + others -Others e.g. Batwa, are not agriculturalists, and have no land to till -They tend to periodically move from one place to another in the forest ecosystem (their home), targeting them has to be strategic. -Their technical capacity is very limited to enable them adopt the CSA technologies

SESA conclusions:

It is foreseen that there will be many positive effects from Draft Final National REDD+ Strategy implementation, also for vulnerable groups. However, as seen from the tables above, some of the elements of the proposed REDD+ National Strategy may pose risks to vulnerable social groups such as indigenous marginalised peoples, women, youth and elderly.

The following SESA recommendations are given:

- Planners and implementers need be aware that there are special requirements and needs of different categories of vulnerable people.

- Have the full information from the analysis in this section in mind when planning for the different REDD+ Options, so that positive effects are strengthened and possible risks or negative effects are avoided or eliminated. (see Annex 3)

- Planning of REDD+ activities should be made so that benefits reach vulnerable groups as well.

11.2 Gender aspects

Women are primary users of forest resources and main producers of food from agriculture. Although they perform crucial roles in conservation and management of forests, their contribution is often not recognized in customary tenure and land rights arrangements, nor do they take equal part in decision making processes.

Inequality in gender participation was regarded a crosscutting issue in the SESA work. Under option 1, there was concern whether women will afford the technologies being promoted like rain water harvesting, green houses, agroforestry since women don't own land. Under strategic opinion 2; the unfavourable land tenure may not allow women to participate effectively in woodlots establishment, and the male counterparts might even convert the land for food production into profitable tree growing. Under option 3, women will not be able to benefit from the jobs in the tree plantations, since most employers favour men rather than women. Use of chemicals in the tree plantations might kill pollinators and lead to reduced crop yields, which affects women and children more than their male counterparts. In Strategic option 4 on landscape management for natural forest regeneration, there is a risk that restriction on access will affect women by increasing their burden of looking for the different desired resources from much further distances than before given the high rate of forest loss on private forests. Option 5 on energy efficient saving stoves, is very favourable for women given their role in cooking and looking for firewood, but needs to engage women to know their views and interests in the efficient stoves to be promoted. Option 6 on wild fire management, although it favours women and children who would be very vulnerable in the case of fire outbreak, but capacity building is needed to impart them with skills on fire-fighting, communication, etc. In Option 7, on livestock, the expected increased household income may be beneficial to women.

There is an urgent need to build women' capacity to negotiate and participate in decision making processes through representation on decision making organs. This could focus on the structures at local community levels where REDD+ implementation will be based, to higher levels where decisions including financing will be based. The initiative to build their capacity should include aspects like ability to negotiate and access information from different sources, very important for their empowerment and involvement. Women should positively be segregated (targeted) for capacity building, to ensure that they are reached. On the other hand, men too need to be targeted for awareness raising on the need for equal participation, access, and inclusion in REDD+ implementation.

Forest extension workers' programs should have a special focus on gender needs and mainstreaming, into their work, to ensure women are targeted and involved.

The CFM program under the REDD+ process should specifically focus on benefits for women. The benefit sharing agreements have always targeted men as land owners, and household heads, the women and children who have direct interaction with the natural resources are left out. The agreements could target having both the husband and the wife agreeing and signing agreements together, and receiving e.g. carbon funds in presence of the two parties.

Where possible, the land tenure issues that have always excluded women in ownership and decision making for land use should be looked into. This could consider bringing aboard the different entities at community level, to be sensitized on the roles of women in forestry management, and agreeing on their rights and entitlements on land to ensure their effective participation in the programme.

Regarding farm tree planting, input provisions should target the interests of women to ensure their participation. For example, technology transfers and other inputs like seeds and machinery could be subsidized for women, and linkage provided to financial benefit mechanisms to encourage their participation in implementation.

During the REDD+ preparedness process, it was realized that women might not benefit under REDD+ because they lack or have restricted land tenure rights, do not participate fully and effectively in consultations or decision-making processes; have limited access and/or control of information, technology and tools; lack access or control of income-generating forest activities; and receive unequal benefits due to gender-blind benefit sharing schemes. Due to these governance issues, it becomes urgent to bring on board women, empower them and build their capacities; to ensure that women are involved in all REDD+ related activities; and to contribute to the formulation of gender-sensitive REDD+ national strategies and pilot projects. In efforts to address this, the REDD+ preparedness process engaged different stakeholders to develop a gender and REDD+ roadmap for Uganda[3], aiming at mainstreaming gender considerations in the forestry sector and climate change initiatives, paying special attention to the REDD+ process, as a means for both men and women's to be recognized as important forest stakeholders. Thus, improving women and men's access to information and capacity building; participation; use, control and management of forest resources; rights to land tenure; and equitable sharing of benefits for sustainable forest management leading to the improvements of people's livelihoods.

Looking at the above components of the gender strategy, and the issues pointed out by the SESA, successful implementation of the roadmap and achieving the intended outcome will depend on the national initiatives to undertake mapping and strengthening of women's networks; strengthened institutional collaboration; undertaking capacity development to mainstream gender into REDD+; and finally; securing tenure rights for women. These are not short-term interventions but rather have to be built into the entire REDD+ process. The aspects of affordability of the technologies and interventions, the cultural belief in different communities, and overall women's roles and responsibilities in everyday life will be important issues to consider.

SESA concludes that:

[3]IUCN 2015. Gender and REDD+ Workshop, Workshop Proceedings Report; and Anon, 2015. Gender and REDD+ Action Plan for Uganda, 2015 and 2016

- Gender aspects should be built into the entire REDD+ process.
- All REDD+ implementation pilot projects and plans should be formulated as being gender-sensitive, for which this SESA report section could be used as a guideline.

11.3 Indigenous minority people and forest-dependent communities

What follows is an analysis and conclusions with regard to the long-standing issues related to eviction of people from protected areas, based upon findings from different consultations, in particular from consulted communities and academia.

One of the priority areas of the cultural policy of Uganda, 2006 is the protection of the cultures of Indigenous Minorities. The policy defines them as indigenous ethnic groups, marginalised to a status unequal to that of the dominant groups. Their rights including access to justice, equality, dignity and identity are belittled or ignored compared to those of other groups. The legal framework in Uganda does not explicitly define indigenous minority people[4], but the Indigenous Minority Peoples Plan (IMPP) for Batwa provides a generally accepted contextual characterization. Indigenous minority people are generally vulnerable and poor by their nature of life; they are highly susceptible to extinction, have indigenous language, often different from the official language of the country or region thus making their participation in governance difficult, and have a collective attachment to geographically distinct habitats or ancestral territories. The cultural policy suggests that one of the ways through which indigenous minorities can be protected is through establishing a mechanism to recognise and support them.

The 2014 National Population Census of Uganda indicated 17 indigenous minority groups in Uganda, with less than 25,000 people living in different parts of the country. Out of these groups, the ones expected to have a close relationship to with natural forests include the Batwa in S.W. Uganda, Abayanda in Western Uganda, the Iks, and Tepeth in Karamoja, and the Benet around Mt. Elgon. Three of the commonly known indigenous minority people in Uganda (Batwa, Benet and Ik) were consulted in Feb, 2017[5]. They are predominantly forest-dependent and therefore most likely to be affected by REDD+ interventions. Studies elsewhere show that REDD+ can potentially infringe upon the rights to access forests and negatively affect the livelihoods of indigenous peoples and forest-dependent communities (Reed, 2011). Forests are critical for their survival, and form part of their livelihoods, governance, social relations and identity (Bayrak et al. 2013). Some authors contend that REDD+ initiatives can disrupt local peoples' livelihood and strategies, socio-cultural systems through a surge of powerful elites, fraudulent land acquisition and introduction of monocultures (Bayrak and Marafa, 2016). Some authors (e.g. Lyons and Westoby, 2014; Byakagaba and Muhiirwe) have reported loss of customary land and tree and forest rights in central forest reserves in Uganda that are licensed by the National Forestry Authority to private companies that establish monocultures with an objective of harnessing carbon credits. To mitigate this,

[4] The term 'indigenous' is used to describe the different ethnic groups that historically have always resided within Uganda's borders by the time Uganda was declared a British protectorate and its boundaries demarcated. The Third Schedule of the Constitution (amended), which names the 65 ethnic groups of Uganda, is titled 'Uganda's Indigenous Communities as of 1st February 1926'. That interpretation does not cover the international understanding of indigenous peoples.

[5] Arbonaut, 2017. Report of the National Consultative Workshop on Strategic Environmental and Social Assessment (SESA) of the National REDD+ Strategy for Uganda

REDD+ interventions should be cognizant of the potential negative impacts on indigenous minority people and any other forest-dependent communities. The underlying principle for REDD+ should be to at least "do no harm" to local forest-dependent communities (Bayrak and Marafa, 2016).

The SESA analysed the strategic options to find out the likely positive and negative environmental and social impacts as follows:

Under Strategic Option 1 on Climate Smart Agriculture, it is likely that minority groups such as the Batwa and the Iks may be engaged to a very limited extent since unless provided subsidies and technical assistance they are most possibly unable to afford the technologies to be promoted e.g. green houses and irrigation; Under SOs 2 and 3, the minority groups cannot participate in tree planting, at least in the beginning of the process, since they don't own sizable land, and in their social cultural set ups, might not be able to benefit from charcoal trade or charcoal use; or labour provision in forest plantations; SO4, restricted access is likely to affect the minority groups who, although residing outside in surrounding areas to the natural forests, usually still are linked back to the forests. Therefore, restricted access will be depriving them of their dependable resource. Systematic implementation of schemes for sustainable use of NTFPs, such as CFMs with special provisions for these groups, may be a solution. Under SO5 a special strategy should be developed for capacity building to for example training Batwas, (who originally were good at pottery) to make energy saving stoves. Unless such action is taken, minority groups will not benefit from the efficient energy saving stoves.

The SESA forwarded the following points to be addressed in the REDD+ Strategy:

1 The responsible Government bodies should recognize, secure and strengthen forests, trees and carbon rights tenure in the agreements signed where indigenous minority groups have legal and legitimate rights over land.

2 The responsible bodies should ensure that REDD+ project designs have options that create livelihood benefits.

3 The Ministry of Gender, Labour and Social Development and non-state actors should prioritize in their work plans and budgets building and strengthening the institutional and organisational capacity of indigenous minorities and forest-dependent people to enable them effectively participate in REDD+ processes and implementation

4 Regular and systematic forest governance assessment by non-state actors need to be conducted to improve transparency in decision making that may affect indigenous minorities and forest-dependent people.

5 Responsible bodies should ensure that REDD+ initiatives implement the principles of free prior and informed consent in all REDD+ project sites where there are indigenous minorities and forest-dependent people to secure their rights to effectively determine the outcome of the decision-making process that affect them and their land.

6 A resettlement framework as suggested in the draft Land Acquisition, Resettlement and Rehabilitation Policy (MLHUD, 2017) for sectors or programmes that may lead to involuntary displacement for purposes of conservation, preservation and restoration of the natural environment needs to be prepared to provide consistent guidance for REDD+ projects.

SESA conclusion:

All suggestions but for the last one have been addressed in the Strategy. Among other things of relevance to the points above, it is stated that both indigenous marginalized groups and refugees will be supported with grant financing in order to allow these people to participate fully in the national REDD+ programme.

With regard to the 6th suggestion on resettlement framework and based on historical evidence, the SESA comes to the conclusion that large-scale commercial timber plantations (SO3) and rehabilitation of natural forests (SO4) may result in displacement of forest-dependent communities. The resettlement issue is by the SESA regarded an outstanding issue that should be included in the ESMF.

12. Critical institutional, legal, regulatory, policy and capacity gaps

12.1. Overview of gaps

In this Chapter, a critical assessment is made of the existing governmental administrative structures, its regulatory systems, current legal and policy situation and the existing governmental and external organization capacities. This is followed by a description on how to bridge these existing gaps. An assessment is also made of the efficiency and effectiveness of the Ugandan forestry, energy, agriculture, wildlife, local governance, gender/labour/social development, disaster and refugee management, and environmental organisations as change and support agents. Among others, donors will have a strong interest in ensuring that REDD+ targets are being met. REDD+ needs therefore to be measurable and transparent. It is thus important to ensure the following:

- A robust REDD+ National Forest Monitoring system (this is already in advanced stages of being developed);
- A buy-in and build broad support throughout Uganda for the Draft Final National REDD+ Strategy and any benefit-sharing arrangement models chosen;
- Capacity of key implementing organizations to handle at least priority environmental and social issues.

In the following an assessment of the above-mentioned issues is presented in order. The assessment focused on analysing how well the organizations on different levels (sub-county, district, national) are positioned to achieve intended REDD+ objectives from environmental and social viewpoints. This is followed by a description over institutional requirements for SESA operations and ESMF implementation.

12.2 Perceived institutional arrangements for SESA implementation

12.2.1 Governmental institutional set-up

The SESA and its ESMF implementation will be operated within the governmental structures as a control tool of the national REDD+ programme, but partly also as a national project. The actual ESMF is going to be implemented in the REDD+ programme part with are several ministries involved, whereas the project type of SESA annual reviews will be performed by only one organization coordinating it – the Forest Sector Support

Department (FSSD). The ESMF is not meant to be a control entity by itself but a screening tool to be operated directly by the REDD+ programme implementers. The whole REDD+ programme implementation with all its support projects will be coordinated from within the FSSD and therefore it is the natural location also for the SESA ESMF coordination. Please see the enclosed organogram for the whole SESA involvement in Figure 3.

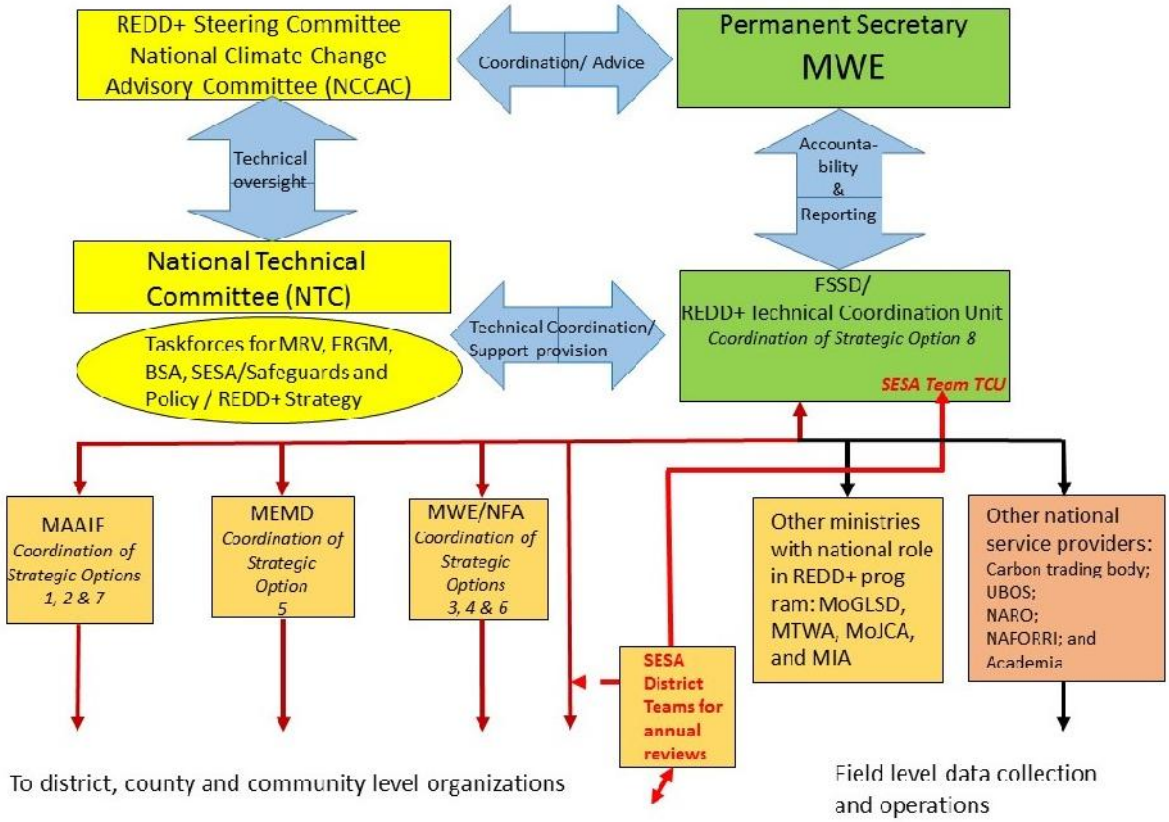

Figure 3. An overall SESA organogram for national level (dark red arrows indicate involvement in the ESMF screening process; red arrows indicate involvement in SESA annual reviews; and black arrows indicate no direct involvement in the SESA operations, but perhaps useful indirectly).

All REDD+ Strategic option activities will deal with funding of multiple, small-scale household, community or business entity subprojects which may pose some challenges to ensure environmental and social sustainability of the operations. This is because the location and design of the eventual subprojects are not known at the overall Uganda REDD+ programme appraisal, though the types of potential subprojects may be fairly well-defined. As a result, traditional safeguards instruments (e.g. an environmental assessment or resettlement action plan) cannot be prepared before appraisal, and safeguards measures to support environmental and social sustainability will only be established during project implementation.

An Environmental and Social Management Framework (ESMF) is then an appropriate tool for the REDD+ technical experts that oversee the various strategic option activities, which are to be included in the programme at the grassroot level. An ESMF establishes a unified

process for addressing all environmental and social safeguards issues on subprojects from preparation, through review and approval, to implementation. Effective implementation of an ESMF will ensure that the substantive concerns identified in the SESA process as environmental and social risks and constraints (based on local, World Bank and UN-REDD etc. safeguards policies) will be satisfactorily addressed.

Following the ESMF, the REDD+ strategic option activities will be screened based on the environmental, social and risk tables prepared by this SESA (Tables 2 and 3 of this report). All public and private institutions involved in REDD+ implementation should be provided with these screening criteria and then the REDD+ TCU need to check that these institutions have adopted and used these tables as check-lists in their respective REDD+ implementation. The check-lists should be combined with relevant national sector policies (i.e. for forestry, energy, agriculture, wildlife, local governance, gender/labour/social development, disaster and refugee management, and environmental protection) making the resulting REDD+ activities fully acceptable from all possible viewing angles.

As outlined in the REDD+ Strategy the REDD+ the Technical Coordination Unit will be hosted at FSSD and the overall implementation responsibility for all eight main strategic options will be held there. The actual Strategic Option Leaders will be MAAIF (options 1, 2 and 7), NFA (options 3, 4, and 6), MEMD (options 5) and MWE/FSSD (option 8). Additionally, the MoGLSD will supervise gender issues and the involvement of ethnic minority and marginalized groups in all strategic option activities.

This ESMF will use the various environmental and social tables identified in the SESA process as these are based on the local Ugandan context. However, the World Bank has also developed an ESMF Toolkit Manual with many kinds of standard templates[6]. That ESMF Toolkit document can be used as general guidelines, but provides also more detailed information and format designs for several specific situations such as in the following:

- General ESMF Checklist;
- Environmental and Social Field Appraisal Form;
- Annual Report Form;
- Typical Subproject Impacts and Mitigation Measures;
- Community Participation Methods ' Guidelines for: Extension Teams;
- Annual Reviews;
- Environmental Management Plan;
- Pest Management Plan;
- Resettlement Action Plan;
- Indigenous Peoples Development Plan;
- Dam Safety Assessment.

The ESMF screening process will function in the following manner: The ESMF screening and monitoring process is presented in Figure 4. Some relevant activity will be proposed by a grassroot level household, community or private business entity, which will then be

[6] World Bank, Africa Region. 2008. Environmental and Social Management Framework for World Bank Projects with Multiple Small-Scale Subprojects. A Toolkit. Feb. 2008

registered by the local authorities in standardized form. The local authorities (at sub-county and county level) also assess the activities' relevance and scope for REDD+ programme and its environmental/social risks attached. Before the activity can be accepted as a REDD+ activity it will first be submitted by the local authorities to the review authorities (i.e. district authorities – relevant technical experts). In some situation with potential environmental or social public concern cases the application will then be further forwarded to a special approving authority (i.e. a district council) for final approval or discarding of the application. In these few cases there should be close cooperation with the Forest Resolution Grievance Mechanism (FRGM) linked to the REDD+ programme. Such proposals (the large majority of proposals) that does not require submission to the District Council for approval can be approved by the district authorities under MOLG directly.

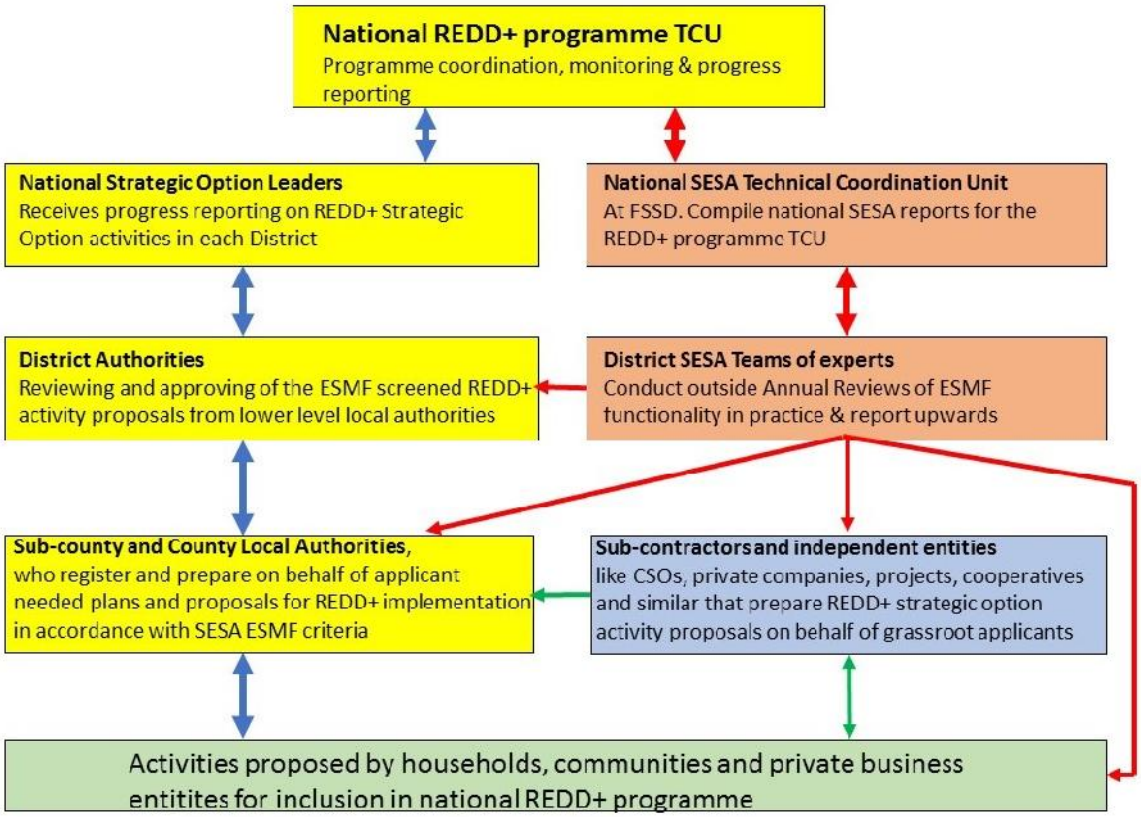

Figure 4. Set-up for SESA ESMF screening process in Uganda

The local authorities, together with some sub-contractors (i.e. NAADS, CSOs, private companies, cooperatives, churches, CBOs, international/national projects and similar bodies), should get sufficient training in order to be able to produce the required application forms needed for the successful application. The focus in capacity building and training should focus on such applications where training is actually needed (foremost for preparation of forest management and wildfire management plans, pest management plans, water dam/water tank plans, greenhouse management plans and environmental/social assessments and screening) and require certain standard outputs to ensure that everything needed has been considered in the process and in the forthcoming implementation. In determining needed training needs the involved

authorities should be allowed using common-sense and agreed practices as well as regulations set by higher authorities.

The design of the ESMF is anchored in the use of environmental and social screening/checklists developed by the SESA (Tables 2 and 3) to support communities and extension teams in both asking the appropriate planning and design questions, and accessing information on how to avoid or minimize adverse environmental and social impacts. A completed checklist should be attached to each REDD+ strategic option activity application (or cluster of applications in case of many similar applications from a community) for use by review authorities in determining the adequacy of REDD+ strategic option activity planning.

What constitutes communities, local authorities and extension teams will vary from activity to activity and from country to country, depending on the REDD+ strategic option activity context and objectives, While the ESMF relies on this model for REDD+ project/activity design and implementation, the intent is that its prescriptions are flexible enough to accommodate the needs of different projects and institutional arrangements without compromising the ESMF objective of satisfactorily addressing environmental and social safeguards concerns in REDD+ implementation of an area.

Monitoring and evaluation are significant challenges in the REDD+ activity designs, where there may be tens to hundreds of similar activity applications. To respond to this challenge, the ESMF approach therefore also comprise a project-funded, FSSD coordinated SESA district team carrying out an annual review for assessing compliance, learning lessons, and improving future performance in each district. These SESA district team reviews also serve the additional purpose of assessing the potential for cumulative impacts due to project-funded and other development activities. The annual reviews will be a principal source of information to the national REDD+ programme Technical Coordination Unit (TCU) and international financing agencies involved in the REDD+ programme funding and implementation.

The ESMF screening approach will rely on the existing institutional arrangements and organizations that will implement also the REDD+ Strategy activities who will thereby further developing, approving and implement the actual REDD+ activity proposals. The intention of the ESMF is to supplement these arrangements with training, information and technical resources to meet required environmental and social safeguards objectives and thereby enable the REDD+ programme to be implemented. Furthermore, the ESMF training events should build up institutional capacity within institutions involved in REDD+ activity funding and implementation. For the same reason, the World Bank's ESMF templates are designed, as much as possible, to be directly transferable into operations/ implementation manuals that can guide day-to-day project/activity implementation.

From district level towards national level there will only be progress reporting and communication between the SESA Coordination Unit, the national REDD+ programme and its other supporting bodies (i.e. BSA, FGRM, FREL, and various governmental committees). Actual SESA and the ESMF screening progress will be reported as outside annual reviews conducted by the District SESA team to the national SESA Coordination Unit at FSSD.

12.2.2 External Ugandan institutions role in filling gaps

There is a lot of capacity in Uganda for service delivery in *Civil Society Organizations* and also increasingly at Government organizations working with CSOs. Civil Society, faith-based organizations and cultural institutions will therefore have an important role to play to facilitate effective vertical communication and be a partner to Local Government institutions and community organizations providing necessary services and capacity to implement and to monitor progress. The CSOs will, besides their own international and national financing, be offered opportunities to apply for REDD+ strategic option sub-contracting funding in most districts of Uganda.

Private forest business companies and forest-based industries have a lot of potential for involvement in the REDD+ process. These companies are the buyers of the timber for value addition processing or of energy wood for use in their processes for drying, heating, cooking or smoking. There are also important companies that use non-wood forest products. Many of the companies may have an interest in being involved in setting standards and in forest management systems that support attainment of those standards. The outcome is a win-win situation for both the forest-based companies and industries on the one hand and for households and communities on the other hand. Achieving of standardized products will increase sales prices of finalized commodities. The type of services provided could be extension services on plantation establishment, management and harvesting, tree species selection, quality tree seeds and seedlings provision and log logistics. For NTFP collection there could be standard containers circulated between the households and the companies/industries, extension on quality harvesting techniques, expansion of knowledge on wild plant collection needs and agreed collection points and storage facilities to name a few issues. Some few companies already have collaboration with projects, associations and cooperatives.

District and county farmer associations and farmer cooperatives are all voluntary farmer-based organizations, which may even lack official recognition. Where these organizations exist, they are filling the gap between the county and district authorities, communities and farming households. The role of these organizations is to provide needed services for farmers, which the latter do not get from elsewhere. Such services relate to information, knowledge and extension in farming practices, joint actions on a number of issues, joint processing of some agricultural or livestock commodities. Due to the lack of formal authority recognition they are often weak on all kinds of resources such as skilled personnel, processing equipment, transportation and financial resources. Such resources are often provided by NGOs and international projects that often work in close collaboration with these kinds of organizations as it is normally an efficient channel of communication and a good way of reaching out to rural farming households.

Collaborative Forestry Associations and other local forest organizations already exist and many more are under establishment. The Uganda Network for Collaborative Forestry Associations (UNETCOFA) has recently prepared a strategic plan for 2016-2020. The plan is well prepared and expresses justified concerns of collaborative forest associations despite the fact that the organisation has been idle for some years due to lack of funding and perhaps recognition. The REDD+ National Strategy implementation will need this kind of organization, so if it had not existed it would have had to be established anyway. Therefore, governmental authorities should quickly start actively using UNETCOFA's services and financially support it. In the Draft Final National REDD+ Strategy costed action plan and in the implementation budget substantial amounts of funding are

allocated for NFA collaboration with CFM/PFM communities and this UNETCOFA should be involved, gap-filling in between.

Community-based organizations represent the rural household target group of the REDD+ Strategic Option activities. They should heavily be involved in all field level REDD+ activities. Most support to communities should be channeled via the CBOs to empower these to support their own people. A part of the support is also training of various kind to enable the communities to adopt the strategic option activities. Another role is to find sources of financial support. Provision of training in financial matters like book-keeping, knowledge about the importance of savings and small-scale business and cooperative skills are other important activities.

12.2.3 International and national financed projects' role in filling gaps

There are and will be a large number of development -partner assisted projects linked to the following kinds of topics, which will be important to synchronize with the REDD+ implementation operations:

- Forestry and protected areas;
- Wildlife management and biodiversity;
- Sustainable wood energy production;
- Improved charcoal production;
- Timber and pole plantation projects;
- Agroforestry projects;
- Climate smart agriculture;
- Agricultural technology and business development;
- Sustainable land management;
- Livestock improvement and management;
- Renewable energy;
- Energy efficient stoves;
- Land tenure registration;
- Integrated wildfire management;
- Indigenous people support;
- Refugee support;
- Climate change mitigation;
- Carbon emission reduction;
- etc.

These projects or programmes (particularly all new ones or new phases of on-going ones) should be requested to implement REDD+ strategic option activities as normal operations within their work plans. Potentially these projects should provide a substantial part of the national REDD+ programme funding in this manner, and technically coordinated. These operations will of course be mandated to the projects by the respective line ministries, but it is simpler and more efficient that the line ministries have, so to say, outsourced the REDD+ strategy implementation to these international projects/ programmes directly.

The SESA and its ESMF screening process should therefore call on these international projects/ programmes directly in order to screen the REDD+ activities established under them.

International projects/programmes can further provide a substantial amount of technical capacity building and training opportunities to the REDD+ implementation.

12.2.4. District and local level institutional gaps

Overview*:* Despite the fact that the national REDD+ programme is national in scale, all concrete REDD+ operations and concrete planning exercises are going to happen at district or lower governmental levels and so will also the SESA/ESMF screening and checking process. Below are outlined some characteristics for each strategic option and how the SESA/ESMF process should be handled in the respective strategic option case.

The descriptions on prior and regional experience of each Strategic Option describe the assessed status of the strategic option type of activities prior the REDD+ programme about to be implemented. Those descriptions are important for the reader to understand in what kind of settings the new strategic options will be established in and thus for what the ESMF screening will be used.

Strategic Option 1: Climate smart agriculture

Prior experience and regional issues: Overall, the rural farming population in Uganda does not know the climate smart agriculture concept very well. Several households may anyhow practice it, but do not know that it is actually CSA technology.

There are already substantial agroforestry experiences in particular in Eastern and Western Uganda, but still the knowledge is scattered and fragmented and not really organized on a large scale. In many parts of the country there are agroforestry practices that are not even locally, regionally or perhaps nationally recognized as being agroforestry practices as they are just traditional farming practices or fluke chances of still having trees on the farmland. Sustainable soil and water management practices have been introduced by some agricultural national and NGO projects and programmes in the last decade. Hence, people have some kind of understanding of sustainable soil management in many places.

In all parts of Uganda there are rainwater harvesting systems from house roofs, but in many cases these are too small for use in agriculture. The current systems are mainly designed for domestic consumption only. In Western Uganda, there is some irrigation experience with water canals, and in Mukuku and Muhokya areas in particular, but otherwise this practice did not arise in regional stakeholder workshops or observed in the field. In the whole country, there are not many greenhouses used for food production, but there are a number of greenhouses for international flower production.

Institutional arrangements: The institutional set-up for Strategic Option 1 will be handled under MAAIF with district and lower level support from mainly NAADS and MOLG local government departments. Based on stakeholder consultations during the preparation of the SESA and the national REDD+ Strategy there seems to be a certain gap between district and local government structures and the rural farming communities. This will need a closing of the gap directly by the local governmental bodies as well as by NAADS and to an extent also outside service providers. It should be noted that among

communities visited during the stakeholder consultation process almost all were of the opinion that they trust NGOs better than governmental authority persons. During the regional stakeholder consultations, the workshop participants expressed as their opinion that relevant institutions exists, but are not fully prepared for their tasks or have not yet organized their work properly for handling, for instance, the introduction of CSA technologies due to some conflict of interests, lack of compliance, lack of policy enforcement, and lack of human and equipment resources.

Service providers and Partnerships with private sector: In all rural districts of Uganda there is a need to first see what NAADS and MOLG local government departments can carry out by themselves and only thereafter to contract outside service providers and form partnerships to strengthen and support the proper adoption of climate smart agricultural practices. For both NAADS and the MOLG more funding has been allocated in the proposed budget for REDD+ implementation to be used in own service provision. Additional service providers and partnerships can be formed with Ugandan or branches of international NGOs and in some cases with Ugandan private sector companies e.g. district farmers' associations, all kinds of crop and livestock commodity cooperatives, faith-based organizations (including their international connections and financing), local state and private tree nurseries and local agricultural industrial companies. In case outside service providers are contracted local governance bodies should mainly focus on planning, supervising and managing the contracting of service providers and provide an enabling environment for the strategic option activity implementation, including for meeting environmental and social requirements. In some occasions, also NARO could be a service provider.

REDD+ ESMF screening support: The ESMF screening of strategic option 1 could use the following institutions, that may run, support and coordinate CSA REDD+ activities in the districts and lower administrative levels: NAADS, district LGs (i.e. Dept. of Production and Dept. of Natural Resources Management/ DoF)., district OPM projects (if exists), district MoGLSD projects (if exists), international/national projects.

Strategic Option 2: Sustainable fuelwood and charcoal utilization

Prior experience and regional issues: None of the stakeholders participating in the five regional consultations workshops considered that there would be sufficient knowledge of commercially and sustainably produced fuelwood or charcoal in their region. People stated that both legal and technical aspects of commercial forestry products are not well-known in their region. Regarding indigenous timber tree plantations (with or without coffee or other shade crops underneath) there are already several thousand farmers in the country, who have got this kind of experience. Most of these are involved in the EcoTrust funded "Trees for Global Benefit" Project and they are mainly located in Western Uganda.

The experience from using improved charcoal kilns is somewhat scarce. The main problem stems from the uncontrolled exploitation of natural forest wood for charcoal making and the fact that the people who burn charcoal in the traditional manner are poor people, which makes commercial banks and other financing institutions shy away from this activity. The Strategy is to ban the exploitation of natural forest wood for charcoal making and instead using energy wood plantations as raw material. This will also turn around the whole commercial fuelwood and charcoal market to other individuals, who probably can get better investment support for both the energy wood plantations and for

establishment of improved charcoal kilns. The current experienced charcoal producers will most likely start working for the energy wood plantation owners as employed staff.

Institutional arrangements: According to the regional stakeholder consultations the involved government institutions are well structured, but have limited capacity. Only a few persons have got experience from sustainable energy wood plantations except some industrial companies (such as tea and tobacco companies). There is also a need of a new kind of energy wood plantation associations and a new kind of charcoal producers' associations who uses only improved charcoal kilns.

Regarding the cultivation of indigenous timber trees with coffee and other shade crops there is some support from NGOs - particularly EcoTrust and Vi Agroforestry. Until now the governmental authorities are not involved in these operations.

Service providers and Partnerships: Similarly, as with SO1 (i.e. Climate smart agriculture) there will be a need to first let NAADS and MOLG's local government departments build up sufficient extension capacity and if this is not sufficient to contract outside service providers and form partnerships to strengthen and support the proper adoption of sustainable wood energy practices on farms. The type of non-governmental service providers and partnerships used should be with foremost Ugandan or branches of international NGOs and with Ugandan private sector companies. Linked to these should be district farmers' associations, some crop and livestock commodity cooperatives (e.g. coffee, cocoa, papaya, species and dairy if cows are fed with leaf fodder), local state and private tree nurseries and wood industries as well as agricultural industrial companies. In case of non-governmental service provision, it would be better that local governance bodies would focus on planning, registering, supervising and managing the contracting of service providers and provide an enabling environment for the strategic option activity implementation, including for meeting environmental and social requirements. Research organizations like NAFORRI, NARO and universities could support the activities with sector analyses.

REDD+ ESMF screening support: The ESMF screening of strategic option 2 should use the following institutions, that may run, support and coordinate Sustainable Fuelwood and Charcoal related REDD+ activities in the districts and lower administrative levels: NAADS, district LGs (i.e. Dept. of Production and Dept. of Natural Resources Management/ DoF)., district OPM projects (if exists), district MoGLSD projects (if exists), international/national projects.

Strategic Option 3: Large-scale timber plantations

Prior experience and regional issues: Both NFA and private large-scale tree planting is on the rise in Uganda with some 300,000 ha already planted with fast-growing introduced tree species for transmission pole and sawlog timber purposes. Many private forest plantation owners have poor plantation management skills. There is a supposedly high demand for commercial poles and sawn timber, but still there are cases where private plantation owners have faced challenges in selling their wood commodities. The reason may often be unfair illegal competition from natural forest exploitation. Also, there is a need for a fundamental policy shift and to ban natural forest wood and thereby only allowing exotic fast-growing trees (and some few indigenous fast-growing tree species) on the commercial market.

Institutional arrangements: For SO3 most institutions are in place, but still in many cases private plantation owners lack forest management knowledge and many plantations lack fire management plans with no fire protection on the ground. For this strategic option the national REDD+ scheme will employ a carbon trading expert to UTGA or the national REDD+ Technical Coordination Unit to provide carbon trading expertise for private forest plantation owners.

Service providers and Partnerships: DFS and NFA foresters will provide relevant services for the private plantation owners. Also, NAFORRI and academic foresters could be involved in these activities. There will further be both internationally and nationally funded donor and NGO projects, which can and should be involved in plantation forestry. Even the sawmilling and other wood industry will be motivated to be involved as they can then influence on how transmission pole and sawntimber trees are grown and thus on timber and pole standards and wood quality.

REDD+ ESMF screening support: The screening of SO3 should use the following institutions, that may run, support and coordinate Large-scale pole and timber plantations related REDD+ activities in the districts and lower administrative levels: NFA, district LGs (i.e. Dept. of Natural Resources Management/ DoF)., district OPM projects (if exist), district MoGLSD projects (if exist), international/national projects and UTGA or other carbon trading supporting bodies.

Strategic Option 4: Rehabilitation of natural forests in the landscape

Prior experience and regional issues: In all regions, there are already a few CFM or PFM established between communities and the NFA and many more are in the process of being established. Some of the latter ones have been in the process for about ten years by now. The reasons for such delays are not clearly identified, but the involved communities are usually tired of waiting for the process to continue, while there are often illegal logging operations on-going in the very forests that would constitute the CFM/PFM forest. One reason for the delay can therefore be corruption among local politicians or among local foresters.

There is often local experience from enrichment planting in both completely cleared and degraded forests, distribution of tree seeds and seedlings, boundary openings and implementation of CFM/PFM forest management and patrolling. In some places farmers have managed to do natural regeneration (FMNR) and payments for ecosystem services (PES) are in use. On the other hand, many people have also experienced eviction from protected areas.

Institutional arrangements: In all the regions, structured institutions are available (mainly NFA, UWA and DFS), but these are not well facilitated (lack of funds and staff resources), which may be a reason for some corruption (i.e. illegal logging may provide some otherwise missing income). In many districts and counties there are also some state or private tree nurseries. In most districts forest extension is insufficient.

Service providers and Partnerships: Rural community persons in all parts of the country stated during the stakeholder consultations that they trust the NGOs more than any governmental authority person. In several places, the rural community persons feel insecure with their land tenure rights and particularly tree planting on their land makes them suspicious of losing their farmlands. When dealing with NGOs, this fear is not there

and the rural communities also think the NGOs are more trust-worthy in their promises of coming back with support to the communities.

The natural choice of service providers should still be first NFA, UWA and DFS, but in some cases with conflicts services could also be provided by international and national NGOs, district farmers' associations, and international and national projects with relevant kinds of natural forest management activities on their agenda. In and around national parks and protected areas UWA would be the natural choice of partner in CFM/PFM agreements in which only NTFPs could be harvested from the NPs and PAs, while all harvested wood has to come from household or community woodlots and plantations.

REDD+ ESMF screening support: The screening of SO4 should use the following institutions, that may run, support and coordinate Rehabilitation of natural forests in the landscape related REDD+ activities in the districts and lower administrative levels: NFA, district LGs (i.e. Dept. of Natural Resources Management/ DoF)., district OPM projects (if exist), district MoGLSD projects (if exist), international/national projects and UTGA or other carbon trading supporting bodies.

Strategic Option 5: Energy efficient stoves

Prior experience and regional issues: The general adoption of EES and ICS stoves is together with integrated wildfire management the priority action to carry out in order to reduce carbon emissions in Uganda. There is already considerable experience with energy efficient fuelwood stoves (EES) from all parts of rural and urban Uganda. For improved charcoal stoves, the situation is the same, but confined mainly to urban areas where the main charcoal consumption takes place. At institutions the EES and ICS stoves are even more adopted as it often does not make sense to pay substantial amounts of money for fuelwood and charcoal, when the use of improved stove almost always saves money on an annual basis.

In many of the regional stakeholder consultation workshops and during stakeholder consultations in the field it was told that many households also shy away from the improved stoves. The reason was stated as people's fear of new technology and thus real adoption has been slow in many areas.

Institutional arrangements: The MEMD does not have a proper presence at district level and below and therefore this Ministry's own efforts to promote EES and ICS stoves have been conducted mainly as radio and TV awareness raising campaigns. At district and at county level improved stoves have been promoted by various NGOs, private business companies and some internationally funded projects.

An energy expert is budgeted for the national REDD+ Technical Coordination Unit as well as one for each district of Uganda for the first five years. This administrative set-up together with a support budget of around 1 million USD could provide the MEMD some better opportunities than currently to operate with project funding at district and county levels.

Service providers and Partnerships: At district and county levels the main outside service providers and partners could continue to be NGOs, private business companies and some projects, but now with some better support from MEMD and MOLG in each district.

REDD+ ESMF screening support: The screening of SO5 should use the following institutions, that may run, support and coordinate Energy efficient cooking stoves related REDD+ activities in the districts and lower administrative levels: NFA, district LGs (i.e. Dept. of Natural Resources Management/ DoF)., district OPM projects (if exist), district MoGLSD projects (if exist), international/national projects and UTGA or other carbon trading supporting bodies.

Strategic Option 6: Integrated wildfire management

Prior experience and regional issues: Annual wildfires are common in all regions of Uganda and there is severe lack of enforcement of already existing laws regarding wildfires. In all regions where people participated in stakeholder consultations both in workshops and in forest-adjacent communities they requested more stringent control of wildfires from the governmental authorities. The reduction of wildfires is also the best way in reducing carbon emissions in Uganda and it is also a fairly cheap option to implement. One problem with the implementation of SO6 is that the area of wildfires in Uganda fluctuate considerably over the years and thus the achievements can be difficult to quantify. The region of Uganda most affected by wildfires is Northern region, which, together with Karamoja region, is the driest region of Uganda. The largest recent wildfire known in Northern Uganda stretched over at least two sub-counties.

Institutional arrangements: According to the regional stakeholder consultations the lead agencies for wildfire management on forest lands are the NFA and the UWA and the Ugandan police forces. A few private forest owners and forest farming associations may have their own private fire management in some farmland and bushland areas. In the latter case could also MOLG's DFS be involved. The Ugandan fire brigade was not stated to be involved in wildfire fighting by any stakeholder consultation group. In many areas, the actual firefighting is non-existent.

REDD+ ESMF screening support: The screening of SO6 should use the following institutions that may run, support and coordinate Integrated wildfire management related REDD+ activities in the districts and lower administrative levels: NFA, UWA, district LGs (i.e. Dept. of Natural Resources Management/ DoF), district OPM projects (if exist), district MoGLSD projects (if exist), and international/national projects.

Strategic Option 7: Livestock rearing in Cattle Corridor

Prior experience and regional issues: Eastern, Northern and Central Region representatives in stakeholder consultation workshops reported that there exist some cross-breeding and artificial insemination in their region, while stakeholders from Western Uganda reported only about indigenous cattle types. However, in all regions the main types of cattle are the indigenous ones under uncontrolled breeding. The free-grazing occur mainly in the Cattle Corridor, while in other places the main option is zero-grazing (i.e. stall-feeding), communal grazing, or fenced-in grazing. In particular in the Eastern, Northern and Fort Portal regions there are drought challenges for livestock rearing.

Institutional arrangements: The REDD+ regional stakeholders at the workshops considered that there are almost no active authority institutions supporting livestock management issues in the regions. Only Fort Portal region identified existing public and private veterinary services, while south Western Region (around Mbarara) identified water provision services and regular tick control spraying. In the other regions

stakeholders identified only cattle dips, milk coolers, electricity, slaughter slabs, dairy services, and markets for livestock.

The seeming lack of presence of state authority organizations is a rather serious issue in terms of organizing SO7 on Livestock rearing in Cattle Corridor in practice. Substantial efforts have to be devoted to building up sufficient authority presence in the districts.

Service providers and Partnerships: The main services should be provided by the MAAIF and its Directorate of Animal Resources (DAR) and the district local governments. Another important institution for livestock breeding is the National Genetic Breeding Centre and its various local partners. Regarding fodder tree seedlings and grass seeds will the NFA, DFS and the Uganda Seeds Ltd. be important to involve. In regard to water dam excavation and rehabilitation local Community Water Users Associations and the District Water Departments will be important.

REDD+ ESMF screening support: The screening of SO6 should use the following institutions that may run and coordinate Livestock rearing in Cattle Corridor related REDD+ activities in the districts and lower administrative levels: NFA, DWD, district LGs (i.e. Dept. of Animal Resources, Dept. of production, Dept. of Natural Resources Management)., district OPM projects (if exist), district MoGLSD projects (if exist), UWA, and international/national projects.

12.3 Existing government regulatory set-ups and some additional gaps

The ESMF screening process is mainly focused on seeing that all implemented REDD+ Strategic Option activities follow the set ESMF screening criteria for environmental and social issues combined with a monitoring of bad management practices (i.e. corruption and other misuse of financing or governance power position). The main policy adherence should be carried out already within the line institutions for REDD+ strategic option activities. To an extent it would be good also to have the SESA team of experts to follow that no major policy violations or lack of policy enforcements occur in REDD+ implementation.

As the ESMF screening process is to be conducted by the respective line ministry authorities at district and lower level it is important that the involved ministry authorities have got sufficient mandate to exercise the ESMF screening process. FSSD as the overall coordinator of the SESA action will have good use of close collaboration with the Forest Grievance Response Mechanism (FGRM), the Benefit Sharing Arrangement (BSA) and the FREL coordinating bodies that all are situated within the FSSD. Each of these bodies should provide useful information that the others can use in their respective execution of their mandates. For more details on these issues reference is made to the respective final reports published by MWE.

12.4 Perceived governmental capacity gaps in collaboration with other Ugandan stakeholders

The FSSD operates by itself at the national level in Uganda, but the ESMF screening process should be hosted by MOLG local governance authorities from district down to

sub-county level. For the SESA district teams that conduct outside annual reviews it is foreseen that 2-3 expert teams are needed in each district. These teams should be employed continuously on permanent basis and they could be located inside either MOLG district premises or in NFA district offices.

Within MOLG/Department of Forest Services and NFA there is a satisfactorily communication link to FSSD in Kampala. Also within UWA there is a functioning communication between national and local level. In other line ministries this link is not as good for REDD+ related communication. In several cases communication between national or local government and local communities is clearly lacking. Moreover, attempts to communicate is usually in English which is not easily read and understood by a sizeable number of the population, some of whom are key in REDD+ implementation. Good communication and information sharing is an important issue. CSOs, private sector, and traditional institutions need to get involved in governmental REDD+ activity proposal preparation chains and the funding for their involvement may need to be channelled through governmental authority structures. However, the actual REDD+ strategic option implementation needs are no real issues for the SESA project that only needs to see that its own institutional structure functions in terms of communication (progress and administrative), transfer of SESA funding, and knowledge and skills.

It is worth noting that the implementation of the provisions of National Forestry & Tree Planting Act (2003), specifically Section 63 & 64 of the Act is an issue. It provides for establishment of 'Forestry Committee' but this has not been implemented yet and such a committee will play a key role in social accountability and therefore it is recommended to be established before the REDD+ programme is started up in practice.

13. Conclusions and Recommendations

13.1 Conclusions

The SESA concludes that the Draft Final National REDD+ Strategy to a high degree already has included preparatory work or components of a future plan that address important environmental, social and institutional factors, and that the REDD+ Strategic Options address drivers of deforestation and the previously defined environmental, social and institutional priorities.

The SESA further concludes that many positive environmental and social impacts can be expected from well-managed implementation of the Strategies, following best practices. On the negative side, a number of environmental factors have been identified, but these are of technical nature and should be able to be addressed through professional and scientifically-based planning with stakeholder consultations, and capacitated and proper implementation. With regards to social factors, there will be many negative impacts if many of the current practices are continued, unless mitigated.

13.2 Recommendations

As a preventive means and to ensure that implementation of the Uganda's REDD+ Strategy and Action plan does not trigger any negative environmental or social impacts or consequences, the SESA has recommended the following measures for integrating SESA issues in the design and implementation of the REDD+ Strategy action:

a) Publicize the confirmed environmental and social impacts and risks (Tables 5 and 6 of this document) to all actors at all levels and across all sectors;
b) Subject national or subnational level REDD+ projects to an Environmental and Social Impact Assessment (ESIA) using the content of Tables 5 and 6 as checklists and the same format for the presentations;
c) Apply the format in Tables 5 and 6 during the appraisal of project design and during monitoring the implementation of the projects.

The recommendations above (a to c) have been forwarded to and included in the Draft Final National REDD+ Strategy (Sep, 2017). They are also a part of the Environmental and Social Management Framework (ESMF).

In addition, the following key issues of *strategic importance* have been forwarded to the Strategy development process, with a recommendation that they are addressed or included for action in the preparation and planning for a REDD+ programme or to be included as components of the programme itself:

- *Enforce existing laws*: the SESA team finds that the laws of Uganda are good for the intended purposes, but they are not enforced or implemented as needed.

  Implementation of the provisions of National Forestry & Tree Planting Act (2003), specifically Section 63 & 64 of the Act is an issue. It provides for establishment of 'Forestry Committee' but this has not been implemented yet and such a committee could play a key role in social accountability. Nor has the National Forestry and Tree Planting Regulations of 2016 been fully embraced by responsible agencies, and there is a need for deliberate efforts to popularize these regulations among all stakeholders.
- *Land tenure:* the problems of land ownership and shared utilisation rights need to be solved to avoid conflicts and so that the user(s) of a piece of land can be certain that the returns from an investment in the land (e.g. land productivity or a forest plantation) come back to the user.

  Most important is that land tenure rights are sorted out and registered for all private and community land. But there is also an issue of Uganda Land Commission issuing titles in forest reserves. Obviously, there is a need for coherence and harmonization of existing Laws relating to ENR e.g. Land Act manifesting ownership of all public land in Uganda Land Commission and all Central Forest Reserves titled to National Forestry Authority.
- *Governance:* all plans for implementation of the REDD+ Strategies need to have action plans for transparency, accountability and anti-corruption.

  An anti-corruption plan should be a compulsory element of all REDD+ plans. An assessment of forest governance may be an opportunity to hold duty bearers accountable. There is also an issue of who is to monitor the law enforcers.

- *Integrate with poverty reduction*: poverty reduction should be included in REDD+ objectives, apart from other objectives such as productivity and carbon capture.

  The livelihood aspect of trees, forests and forestry in general is very important. It is possible for trees, forests and forestry to help lift people out of poverty if there is a deliberate effort to provide incentives that will increase investment in value addition of non-timber forest products and investing in tree planting. In some cases, the net present value (NPV) of NTFPs is higher than clear felling of forest. However, NTFPs are always undervalued.

- There is a need to settle the issue of compensation *to forest-dependent people* earlier evicted from protected areas.

  In many cases will a non-settling of compensation in the long run cause greater environmental and economic damage than it costs to settle these disputes. Ethnic ties, sacred sites, customary rights and fairness should be highlighted in this respect. There is a high risk that a "no-action" scenario would lead to affected people not joining or even counteracting SO4, rehabilitation of natural forests.

- There is a need for a policy applicable to the forestry sector for people's *voluntary and involuntary resettlements* outside protected areas.

  This could go hand-in-hand with the compensation issue, possibly covering not only protected areas but also private forests.

- *CFM agreements not fully operationalized* and slow long bureaucratic process to register CFM.

  The uptake of CFM is slower than anticipated. Throughout Uganda there are less than 20 CFRs implementing the CFM model, and yet there are over 500 CFRs in the country. Full, rapid and wholehearted implementation of CFM may be seen as a prerequisite to successful implementation of SO4 in particular, but also some of the other strategies. The problem may be connected to foresters' seeming unwillingness to hand over control and management of forests, and to trust local people. Administrative measures within NFA and stronger instructions to the field organisation are recommended to improve performance. Other reasons may be linked to mis-management of forest resources in consequence of and as compensation for too low state budget contribution to the district authorities or to bad local land politics that interfere with good forest governance.

- *Boundaries of protected areas* need be clearly and permanently marked in the terrain, an activity needed to be included in the implementation.

  There is an ongoing undertaking on boundary marking but this activity need be speeded up. The request for boundary marking was given by, in practice, all stakeholder categories interviewed in the SESA process.

- *Private owners of natural forests* need incentives for maintaining their natural forests.

- *Politicians unduly interference*: there are many examples of politicians' disrespect for Ugandan laws, in particular land and forestry laws and in time of elections.

  This risk of interference needs to be eliminated or mitigated. Awareness raising of existing laws, rights and obligations and the concepts of transparency and accountability could be a means of targeting local communities, duty bearers, political candidates, politicians, the media (radio, television, the web and newspapers), churches, cultural institutions and elderly groups. There could also

be interaction and exchange of lessons from real cases between REDD+ planners and Parliament committees on this issue, in order to find means of mitigating negative effects.

- *Benefit sharing arrangements* must be very clear and well understood in advance by all affected before REDD+ programme implementation.
- There is a need for *gender aspects and human rights issues* to be addressed in Strategy implementation.

  When making REDD+ implementation plans it should be compulsory to reflect on the roles of women and men and include mitigation against possible negative effects on women. Women's limited land tenure or land ownership situations are in particular important. Women have most often been excluded from decisions on land use. To ensure women's effective participation in the projects different entities at community level could be sensitized on the roles of women in forestry management, and agreeing on their rights and entitlements on land.
- *Clear roles and responsibilities* need to be defined and well understood for all implementing units.
- *Capacities* need to be built at all levels and for all stakeholder categories. This includes environmental management and enforcement capacities.

  Apart from technical training, there is a need for capacity development and training in environmental and social issues, integrating gender, culture and other social inclusion issues, plus a need for capacities to manage a robust MRV system and a safeguards information system.
- *Government REDD+ funds for field implementation* should be channelled directly to the lowest possible administrative units, without intermediary stops or steps that would provide opportunities for leakage.

  REDD+ implementation is in most parts executed from the Districts and needs to be implemented through the district development planning processes. There is a key role for the District Forest Service (DFS) in receiving REDD+ funds based on performance outputs. DFS will play a key role and is envisaged to cover the many direct and indirect REDD+ costs at the local level. Funds must be made available on time taking the need for funds to seasonal activities into consideration.
- *Government budget allocation* to lower levels of the Government need be significantly (actually several times) increased, not least to the forestry sector.

  This is much needed, not only for the implementation of REDD+ activities but also for the DFS and others to enforce existing laws. The Government with relevant Ministries are of course aware of the conditions and limitations, but now a prioritization of budget allocation is needed both to development expenditure (e.g. costs for installing equipment, systems, actual tree planting) and to re-current expenditure (wages and salaries, consumable, etc.).

- Ensure that forestry activities *contribute to food security and nutrition*.

  Natural forests can be as a safety net for rural communities and a pathway to poverty reduction, including providing forest food in times of crisis. REDD+ programmes could be developed as a safety net in response to household needs, including shocks.

13.3 SESA recommendations in Final Strategy

As said, this SESA study has delivered the above recommendations and key issues for further development of the Strategic Options. A close study of the Draft Final REDD+ Strategy document reveals that the key issues indeed have been incorporated into the different Strategies, as follows (Table 10):

Table 10. Key issue coverage in the Draft Final National REDD+ Strategy

Issue / recommendation	Addressed in Strategy			Action and Strategy number
	Yes	Partly	No	
Enforce existing laws		X		Action to enforce or implement in forestry sector (Strategy 8)
Land tenure			X	Action called for in separate programme outside of REDD+ (Strategies 4 and 7)
Governance, including anti-corruption		X		Anti-corruption plan to be a compulsory component of REDD+ plans (Strategy 8)
Integrate with poverty reduction	X			Part of REDD+ objectives (Strategies 1, 2, 3, 4, 5, 6 and 7)
Compensate earlier evicted people			X	Outside of Strategy scope
Resettlements			X	Not reflected
Slow CFM implementation	X			NFA administrative measures and strong instructions to the field (Strategy 4)
Boundaries of protected areas		X		Clearly and permanently marked in the terrain (Strategy 4)
Private owners of natural forests	X			Incentives for maintaining their forests (Strategies 2 and 3)
Politicians unduly interference		X		Interference to be eliminated or mitigated (Strategy 8)
Clear benefit sharing arrangements (BSA)		X		BSA made very clear and well understood in advance (Strategy 8 and section Implementation Arrangements and Financing)
Gender aspects and human rights	X			To be addressed in plans for Strategy implementation. (Across all Strategies)
Clear roles and responsibilities	X			Defined for all implementing units. (Section in implementation arrangements plus across all Strategies)
Capacity development all levels	X			To be built on all levels and for all stakeholder categories (Section on Implementation arrangements, Financing and across Strategies)
REDD+ funds channelled down		X		Normal government channels will be used (Strategy 8 and section Implementation Arrangements and Financing)

Increased Government budgets to forestry sector	X			Suggested significantly increased (Section on Financing And Institutional Arrangements)
Natural forest and food security	X			Forestry activities contribute to food security and nutrition (Strategies 1, 2, 4, 6 and 7)

An Environmental and Social Management Framework (ESMF) should focus on outstanding or residual issues not covered in the Strategy[7]. Based on information in Table 18, identified outstanding issues for inclusion in the ESMF are (Table 11):

Table 11. Outstanding issues addressed in the ESMF

Issue / recommendation	Comment
Land tenure	Need be a separate long-term project
Resettlements	Policy needed for forestry sector

[7] The wording is ”to address any residual risks related to REDD Strategy implementations that are not addressed via the SESA process”

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Annex 1 SESA strategy, approach and methods

The SESA strategy, approach and methods are described in detail in the SESA inception report[8], submitted to the National Focal Point on 31stMarch 2017. A summary follows:

Strategy: The strategy, or main approach, of the SESA is featured by the following elements:

- Carrying out a hybrid SESA, combining policy and impact-centred approaches to strategic assessment where policy and impact-centred approaches complement each other in order to promote environmental and social sustainability at different levels of the decision-making ladder.
- Working in an integrated manner with the strategy development expert team and the REDD+ Secretariat, taking full advantage of the work already carried out.
- Compressing the time line so that the main reports of the SESA three steps of work can be delivered on time. This implies that continued work will be carried out without waiting for validation of the previous step. The validation processes will be carried out in parallel with the continued work.
- Data collection heavily relying on the previous experience of members of the expert team and a meta-study based on the relevant project and research reports from various parts of the country, published in the past 5 years.

The SESA work has strong links to other REDD+ deliverables for Uganda's REDD+ National Strategy formulation.

Approach: The technical approach builds on the following main principles:

1. Making wide use of the existing information.
2. Adopting a participatory, consultative approach, including iterative communication with the REDD+ Focal Point and Secretariat, and the SESA/Safeguards Taskforce under the National REDD+ Technical Committee.
3. Planning and conducting the assignment to enhance the utilisation of results.
4. Being rigorous about triangulation when identifying environmental, social and institutional factors of importance.
5. Draw on individual team members' wealth of subject experience for the analysis.

The more detailed approach to the SESA work is to

- Include the following main steps: (i) situation assessment and stakeholder analysis, (ii) environmental and social priority setting, (iii) institutional and capacity assessment, and (iv) formulation of policy, legal, institutional, regulatory, and capacity recommendations in an ESMF.
- coordinate and use as much material and experience as possible from the strategy work:
    - inclusion in the SESA team of some experts that also work with the strategy,

[8] Arbonaut, 2017. Consultancy Services for the Strategic Environmental and Social Assessment, Inception & Scoping Report 31 Mar, 2017

    - use of information from the Strategy Options reports,
    - participation in the consultations carried out through the strategy assignment,
    - joint multi-stakeholder consultation and dialogue throughout the process.
- draw on findings, analyses and conclusions from a number of studies and reports carried out as a part of the Uganda REDD+ activities,
- collect information from earlier studies and reports from Uganda in a meta-study,
- draw upon community consultations in Albertine Rift, Karamoja Region, Mt Elgon Region, Mid-west and Central regions.
- limit the number of additional deliveries and reduce the ambition level for the same to a concept note level, referring to the ESFM, SESA road map, Implementation Plan, schedule and budget.

Methods: The SESA expert team made use of a range of data-collection and triangulation tools, ensuring that evidence is gathered from a variety of sources and a wide range of key informants and stakeholders in a mixed-methods approach. Data collection methods include: a desk review with evaluation of key documents, reports, guidelines and policies, and consultant reports; and a meta-study of collected relevant reports and grey literature from Uganda. For complementary identification of environmental, social and institutional issues a series of semi-structured face-to-face, skype and telephone interviews and focus group discussions were held. These were combined with priority setting exercises focusing on identification of priorities and important environmental and social strategies for the future. Records of people consulted, literature reviewed, etc. are presented in Annexes 3, 5 and 6 to this report.

When discussing with key informants from selected institutions the Team used a set of questions, designed by the SESA team to collect the required information. As a reminder, a list of the then six strategy options were handed over to the respondent at the beginning of the discussions, which lasted approximately two hours. Depending on the respondent's interest, availability and prevailing situation, everyone was not compelled to respond to all the questions on the list.

Group consultations were organized together with the REDD+ secretariat, involving the SESA Task Force members and the technical committees and invited key informants. A half day meeting was organized on April 10, 2017 at the NFA offices, where the SESA team presented progress of activities right from inception to the on-going identification and prioritization activities. Comments and suggestions from this meeting were useful in enriching the subsequent consultations with the rest of the stakeholders. A full list of people consulted is annexed to this report (See Annex 3).

When weighing the evidence, the strength of findings was ascribed according to the nature of the evidence and the triangulation of the finding. Stronger evidence means stronger conclusions.

As expected, the collected information was very diverse, and of varying quality and strength. To ensure a systematic approach the SESA used evaluation matrices that cover all assessment issues and related questions and analysed the information grouped by the respective Strategic Option.

Assessments: The SESA used the OECD DAC evaluation framework assessing the general relevance, efficiency, effectiveness, sustainability, expected outcomes and impacts of the different Strategic Options, focusing on environmental and social aspects. The assessment of cross-cutting objectives (e.g. gender equality and inclusiveness, reduction of inequality, human rights, participation of indigenous people and easily marginalised groups, and good governance) was integrated into the assessment. Emphasis was on assessing the additional value of the Draft Final National REDD+ Strategy and on recommendations for the formulation of strategies to mitigate negative and strengthen positive expected results in the implementation phase.

Assessment of the efficiency and effectiveness of the Ugandan forestry, agriculture, wildlife and environmental organisations as change and support agents was carried out to provide valuable inputs to the SESA and recommendations. The SESA focused on analysing how well the organizations on different levels (sub-county, district, national) are positioned to achieve intended REDD+ objectives. The SESA set out to gain in-depth understanding of Uganda's vision for behavioural changes and the priorities for environmental and skills development services required in order to meet that necessary changes. The institutional assessment made in the Benefit Sharing consultancy[9]provided valuable inputs to this analysis.

When assessing the organisations, the SESA distinguished between human resources, organisational and systems development, the latter addressing the network and linkages among organisations, the regulatory environment, and the value framework. For this a tool for institutional assessment was used that is widely used and accepted in the public and private sector: the 7S Framework[10],originally developed by McKinsey Consultants.

Setting priorities: Determination of priority environmental and social factors was made by ranking identified factors along the following dimensions:

- Impact/Ease of implementation
- Benefit/Cost of implementation
- Importance/Urgency to implement

The SESA used the Impact/Ease of implementation grid combined with the Benefit/Cost priority setting grid and the Importance/Urgency grid, see the matrices below for illustration of these concepts.

Impact/Ease

High impact low ease of implementation *Strategic*	High impact high ease of implementation *Quick win*
Low impact low ease of implementation *Avoid*	Low impact high ease of implementation *Debatable*

[9]E.g. Indufor, 2017.Benefit Sharing Arrangements for Uganda's National REDD+ Strategy Executive Summary to BSA Options Assessment. Final Report, Feb 10, 2017

[10] See https://www.mindtools.com/pages/article/newSTR_91.htm

Benefit/Cost

High benefit low cost *Quick win*	High benefit high cost *Strategic*
Low benefit low cost *Debatable*	Low benefit high cost *Avoid*

Importance/Urgency

High importance low urgency *Strategic*	High importance high urgency *Quick win*
Low importance low urgency *Avoid*	Low importance high urgency *Debatable*

The Process

The SESA work process is illustrated in Figure 1 in the main text.

The initial identification of Strategy Options was presented in year 2012. Based on this a comprehensive assessment and analysis of the options were made in 2016, and a first round of consultations was carried out in February 2017 on community, regional and national levels. Following this, a new Strategy Options document was developed, dated April 2017, and a Draft SESA Identification and Priorities Report submitted at the end of the same month. Both documents were presented and discussed at a second round of consultations in the period 12-19 May, 2017, this time on the national level and with local level representation. Based upon outputs from the consultation, inputs from SESA and comments received, a new Strategy Options report was developed end of May, and further expanded in June. The D8 Draft Final National REDD+ Strategy Report (June, 2017) and the Draft Final National REDD+ Strategy (September, 2017), form the basis for the SESA Final Report (September, 2017) and the SESA Identification, prioritization and Process Report (September, 2017).

Validation: The SESA had the following methods to validate findings and recommendations:

- Targeted interviews with knowledgeable key stakeholders in the process of listing environmental and social issues
- Priority setting exercises with participation of key stakeholders, carried out as a part of the targeted interviews;
- Separate SESA targeted consultations on environment and social aspects held in parallel to the consultations around the REDD+ Strategic Options[11].

[11]Arbonaut, May 2017. Report of the National Consultative Workshop on Strategic Environmental and Social Assessment (SESA) of the National REDD+ Strategy for Uganda.

Annex 2 Regional review

1. Mount Elgon

1.1 Environmental characteristics

Mt. Elgon Ecosystem is an invaluable water catchment for Uganda (and also Kenya and the countries along the Nile basin). However, the region is reportedly experiencing effects of a changing climate in the form of reduced stream-flow (e.g. the Manafwa river base flow)and reduced recharge of groundwater (Olago et al., 2015) partly as a result of degradation of forests within the region.

Satellite images from the 1970s to present indicate that the Mt. Elgon region has experienced significant reduction in forest cover due to clearance for agriculture. The mountain Elgon area has been a site of degradation and in some instances complete clearance of forests on private land. There has also been encroachment into the Mt. Elgon national park.

Additionally, degradation and deforestation in the area has resulted in a reduction in the stability of the shallow soils particularly on the eastern slopes of Mt. Elgon resulting in landslides. The soils have also been destabilised and exposed to risks of landslides by the excavation of slopes in some areas mainly for purposes of building houses (Knapen et al. 2006). Degradation of catchments forests has resulted in soil erosion (Figure 2) which silts water bodies in the region altering the quality of water as in the case of river Manafwa. The river has clean water as it emerges from Mt. Elgon area in Bududa district but picks soil from the extensively farmed Butaleja District and is brown and turbid by the time it gets to Manafwa District (NEMA, 2010). Other affected rivers are Siti, Kere and Kaplegep. There generally is wide-spread soil erosion and landslides and changes to montane ecosystems (Mugagga et al. 2012). Otherwise the area has fertile soils that support dense populations and are as a result intensely cultivated. Heavy rains, in the range of 1250 – 2000 mm are received per year (Byabashaija et al. 2004).

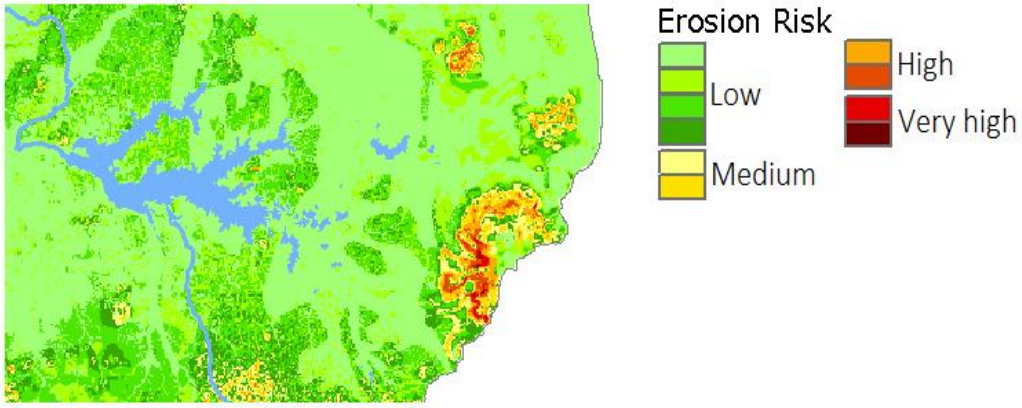

Figure 2.Erosion risk at the Mt. Elgon (Mt. Elgon Regional Ecosystem Conservation Programme)

1.2 Social characteristics

The Mt. Elgon region has some of the highest population density in the country. It is estimated to be home to 1,000 people/Km^2 with the population growing at 3.4 percent/year. From a review of literature covering this region, a lot of the social and even environmental factors of relevance to implementation of the REDD+ National Strategy are related to this high human population.

Some of the negative conditions associated with a high human population in the area include land fragmentation, increased risk of land damage and hampering the search for solutions to land damage (Knapen et al., 2006). Relocation is unsustainable as people return to high risk areas (Osuret et al. 2016). Further, the high human population has built pressure to encroach on the forests of both Namatale CFR and Mt. Elgon National Park as communities seek for rent from nature.

Moreover, most of the residents in the area are subsistence farmers, lacking in modern farming methods and generally have a low usage of farm inputs (Wafula, 2014).Land holding is low. At 0.5 – 2.0 ha, it is some of the smallest in the country. The region also has some forest dependent communities (the Benet-Ndorobo people) that were evicted from the national park, but continue to depend on its resources, as do other poor households in the vicinity, resource access arrangements with the UWA. Communities also participate in beekeeping schemes and some Taungya farming. However, the benefits are very modest in volume (Vedeld 2016).

This region also has pronounced long-standing conflicts over access to land. Even earlier efforts to degazette portions of Mt. Elgon National park for the benefit of Benet-Ndorobo people have not helped as the land got captured by the local elites (mainly the wealthy and politicians). There also are the purportedly "illegitimate" claims of former workers in the saw mill that had been established by the Forest Department (See Nsubuga, 2013). Given the scarcity of land in the area politicians frequently interfere and try to help local people forcefully settle on land gazetted for protection purposes.

1.3 SESA conclusion

From the studies of the literature, the SESA team takes note of the following major environmental or social issues, specific to the Mt Elgon region and of relevance to REDD+ implementation:

- Given the observed unsustainable nature of relocations, the problem of landslides and flooding can be addressed through improvements in farming methods of the kind suggested in SO1. Improved and intensified agricultural production will reduce the need for extensive clearing of land.
- There is a need to settle the land issues of the forest-dependent people earlier evicted from the protected areas in the region. Ethnic ties, sacred sites, customary rights and fairness need be highlighted in this respect. There is a big risk that a "no-action" scenario would lead to affected people not joining or even counteracting SO 4, rehabilitation of natural forests. There is a need for a policy for people's voluntary and involuntary resettlements outside protected areas.
- Boundaries of protected areas need be clearly and permanently marked in the terrain, an activity needed to be included in the implementation.
- Politicians' unduly interference in the land issues in the region need to be minimized.

2. Karamoja Region

Karamoja region is located in the northeast of Uganda and comprises the seven administrative districts of Nakapiripirit, Moroto, Kotido, Kaabong, Napak, Amudat and Abim districts. The population of the region is estimated at 1.2 million people majority of whom (70%) reside in rural areas. About 12% of the land area is covered by CFRs (UIA, 2006). The region has a number of environmental and social issues of relevance to the implementation of the Draft Final National REDD+ Strategy .

2.1 Environmental characteristics

Karamoja is mostly a semi-arid plain with a harsh climate and low annual rainfall, which does not often exceed 800 millimetres per year and is sometimes around 500mm. November to March is the driest (and hottest) period. Water is perhaps the most limiting factor to agricultural production in the area. Only one rainy season exists (UIA 2016). As such, Climate Smart Agriculture is a safer means to agriculture-based livelihoods in the region including the use of irrigation at least for vegetables on the Western side where a market for these exists.

The soils are some of the most fertile in the country, but their characteristics are rapidly changing as the cultivation of crops spreads out in the region and concomitantly the grazing of livestock is concentrated, particularly around areas with a reasonable water supply such as dams and valley tanks. Continuous tilling of the land has exposed the soils to increased risks of surface run-off and soil erosion. These will continue to be a problem as more households shift from livestock to crop production in response to increased cattle rustling and insecurity. Analysis of land cover and land use change over the last 30 years (1986 - 2013) revealed that croplands had increased ten times in the last 13 years coinciding with a heightened encroachment on bushland over the same period. The increment was attributed to interventions by the Uganda Government and its development partners to promote crop cultivation in the area for food security. Loss of tree cover in the Karamoja region has aggravated levels of soil erosion and adversely affected availability of the much-needed pasture (Egeru et al. 2014b). Adoption of Sustainable Land Management (SLM) and other practices that protect and improve the productivity of land is thus vital.

Deforestation and tree cutting are also wide-spread in areas where mining of any of limestone, gold and marble has taken place, but also through the charcoal burning which is increasingly being adopted as a source of income. Charcoal production is the main 'fall-back' alternative to pastoralism and agro-pastoralism (Bizzarri, 2009).

2.2 Social characteristics

There is a high level of food insecurity. An assessment of the food security and nutrition status carried out in 2014 revealed that only 13% of the households in the region were able to meet their own needs for vegetables, cereal and tuber from their own cultivation (Wamani, 2014). Karamoja is chronically a food insecure region that has suffered several years of drought. The region has some of the worst indicators for health, nutrition and food security (Mubiru & Magunda, 2010). The region also has some of the worst indicators for poverty which has implications for implementation of strategy activities especially those requiring significant investment on the part of the households.

Further, most of the land is under a traditional system of ownership where it is held communally and customarily (UIA 2016) and this has to be taken into consideration when large scale investments are planned.

In terms of gender, deforestation has increased workload and drudgery for women and children who travel long distances and spend more time searching for firewood. Women have taken to firewood trading as a new livelihood option. Generally, women are increasingly becoming "bread earners" for the family and this is a major change in the socio-economic set up in Karamoja. Women also fetch water in towns to earn a living and this increases their leverage as "bread earners" for the family. The communities also report cutting of grass and selling the grass for roofing houses. In Abim district the harvesting of bamboo for house construction, poles and sale has been reported.

2.3 SESA conclusion

From the studies of the literature, the SESA team takes note of the following major environmental or social issues, specific to the Karamoja region and of relevance to REDD+ implementation:

- Given the growing importance of crop production, SLM should be prioritized to protect and promote the productivity of land.
- Ensure that forestry activities contribute to food security and nutrition. Natural forests can be a safety net for rural communities and a pathway to poverty reduction by providing seasonal incomes from sustainable forest management (SFM). REDD+ programmes could be developed as a safety net in response to household needs, including shocks.

3. Northern Region

Northern Uganda is a flat lowland area bordering Sudan, Kenya and the Democratic Republic of Congo. The rainy seasons are from March to May and September to November. The rest of the year is extremely hot and dry.

3.1 Environmental characteristics

The environmental characteristics of the Northern region have been largely impacted by the prolonged insecurity in the area. However, the results of this were mixed. There was a major loss of woody vegetation in the two districts of Lira and Apac, but an increase in woody cover was attained in the three districts of Kitgum, Pader and Gulu due to the concentration of would-be users in Internally Displaced People's camps. The situation changed upon the return of peace and people. There now is a rampant degradation through the indiscriminate cutting of trees for charcoal mostly by businesspeople who have obtained land leases from the owners (NTV Uganda, 2013). The degradation is not limited to private land, but also in the Central- and Local – Forest Reserves which are many in the area (Figure 3).

Another major force for degradation of the woodlands of Northern Uganda are uncontrolled fires in the region. The frequent droughts are an enabling condition for these wildfires. The region is thus an appropriate site for Integrated Wildfire Management.

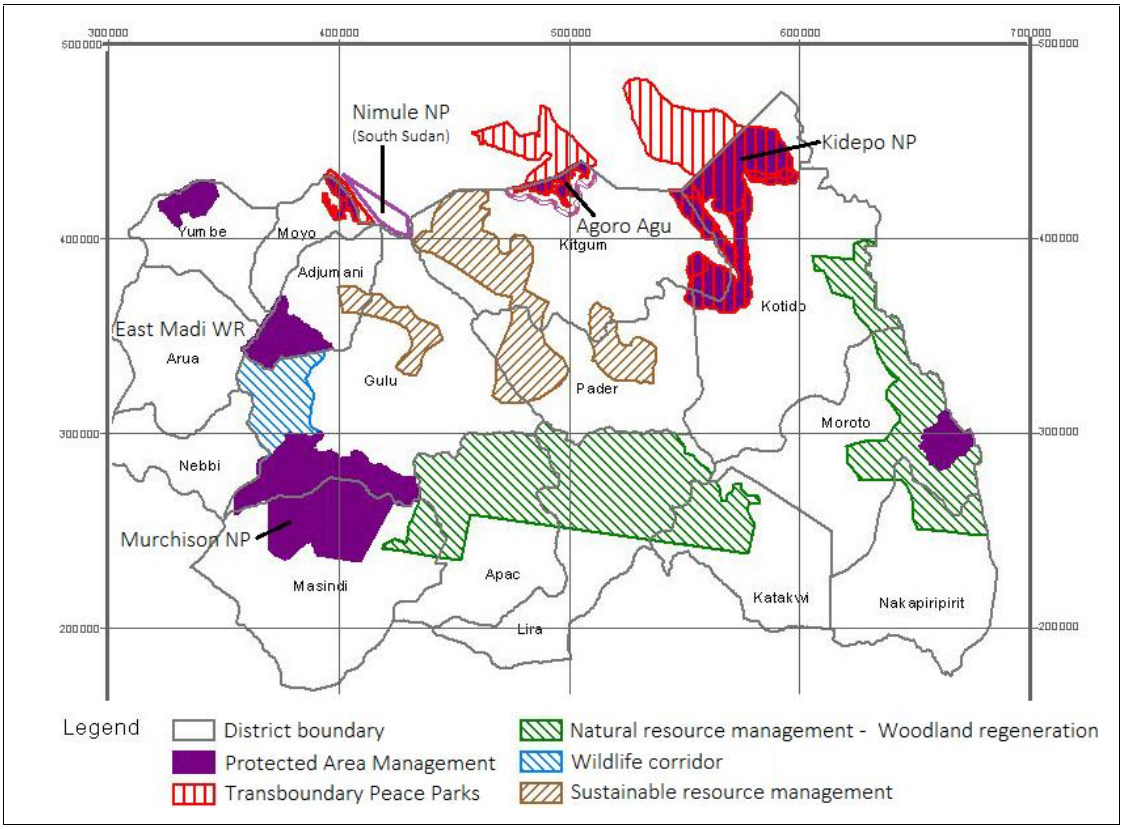

Figure 3.Protected areas in Northern Uganda/Upper Nile(Nampindo *et al*. 2005)

2.4.2 Social characteristics

The northern region of Uganda is very poor, more than 70% of the population in northern Uganda live below the poverty line. More than 60% of adults in the north are unemployed, and their families suffer from extreme poverty.

Most families depend on subsistence farming, but the weather patterns are harsh. There are frequent wildfires and often a critical shortage of water leading to poor harvests and food insecurity.

The region has had an influx of refugees from the insecurity arising from a civil war in Southern Sudan. On the one hand, this increases the struggle over resources, but also provides a potential market.

There has also been growing interest from external actors to acquire land in the region for large-scale agriculture. The region is particularly attractive because the nature of large land holding means an investor can accumulate large contiguous land by acquisition of leases from a few holders of customary land. Also, the land is relatively flat which makes it possible to do mechanisation.

3.3 SESA conclusion

From the studies of the literature, the SESA team takes note of the following major environmental or social issues, specific to the Northern region and of relevance to REDD+ implementation:

- There is a need for clear guidelines for foreigners seeking to access large tracts of land for agriculture, with clear checks to ensure that local livelihoods are improved and not impoverished by the arrival of these investments.
- Wildfire management is critical and to the extent possible should be done in collaboration with communities so that in the process, local livelihoods also benefit.
- Ensure that forestry activities contribute to food security and nutrition. Natural forests can be a safety net for rural communities and a pathway to poverty reduction by providing seasonal incomes from sustainable forest management (SFM).

4. Mid-West

The region referred to as the Mid-Western region includes the Albertine rift and the surrounding districts such as Masindi, Hoima, Kiryandong, Kibaale, Kyenjojo, Kamwenge and Rwenzori subregion

4.1 Environmental characteristics

The Mid-West has wide habitat diversity within its dense network of national parks, wildlife reserves and forest reserves (natural forest) (MWE/NFA 2016). It includes the Albertine Rift which is one of the most biodiverse regions on the continent. It is home to more than half of Africa's birds, 40% of Africa's mammals and about 20% of its amphibians and plants. It also conserves more threatened and endemic species than any other region of Africa, and as a result is recognized globally as a Biodiversity Hotspot, a Global 200 Ecoregion and an Endemic Bird Area (Plumptre, 2002). It is vital that implementation of the SOs does not jeopardize this valued biodiversity.

The region has experienced massive clearance of private natural forests. Many of them have been converted into agricultural land for quick gains. The conversion of natural forests has even encroached on protected areas, some of which now have contested boundaries.

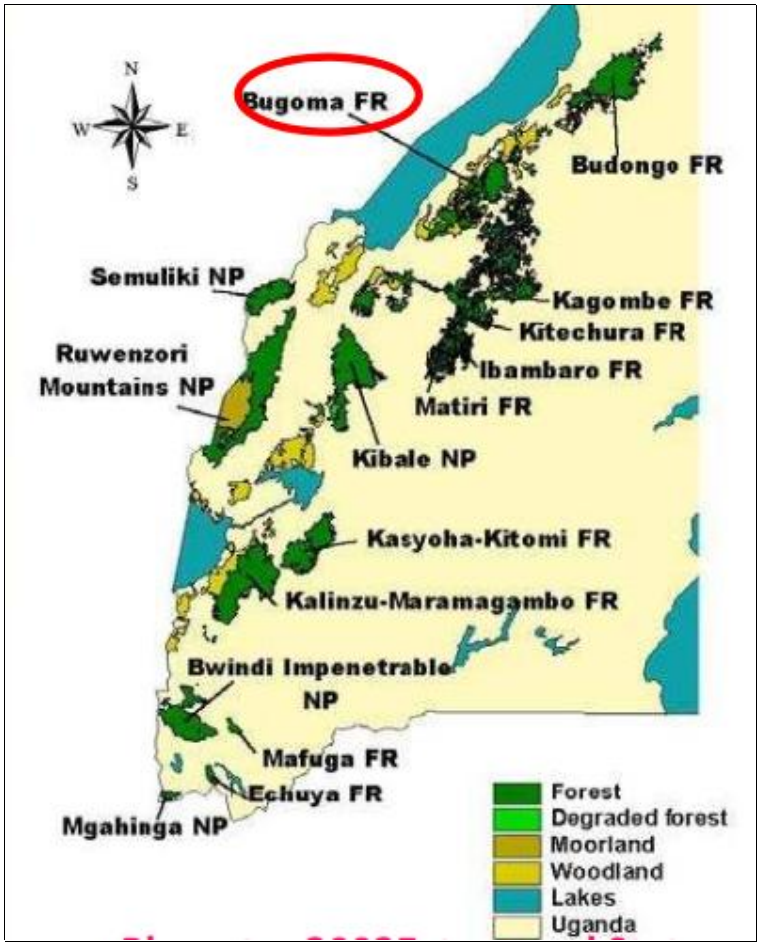

Figure 4.Extent and Status of Forests in the Ugandan Albertine Rift

Source: Plumptre(2002)

4.2 Social characteristics

The region has a high human population density reaching over 1,000 people per square kilometre in some areas. It generally includes some of the most densely populated districts in Uganda (GoU 2015; National Population and Housing Census 2014). This comes with pressure on the land resources. Most families depend on subsistence farming, but with primitive tools and a lack of irrigation, fertilizers and modern farming techniques. Because of the dense and growing population in this region, the availability of farmland is steadily decreasing which has implications for land-based interventions.

Further, the land dynamics in the area are being altered by activities relating to oil exploration (including digging of wells and drilling) in the region including changes in land ownership. There is a reported increase in land conflicts and displacements. There also is an influx of migrants seeking to tap into the opportunities created by the nascent oil and gas industry (ULA 2011). These migrants have come into the area as a result of pull factors, but there is also another category that has come in as a result of push factors from their areas of origin. This category includes refugees from conflicts over the past 40 years with civil wars in Uganda, Rwanda, Burundi and the Democratic Republic of Congo

(DRC). Recently there has been an influx of people from Rwanda and Congo, resulting in significant population increases. For example, the population of Kibaale district doubles after every 10 years, growing at 5.4% compared to the national rate of 3.2% (UBOS, 2012).Kyenjojo and Kibaale are two of Uganda's most favoured rural districts for immigrants, locally referred to as Bafuruki. There has been a significant increase in the number of settlers in both districts over the recent decades. It is estimated that by 1965, only about 10% of the population in Kibaale were immigrants (Beattie, 1971), but the figure had risen to more than 50% by early 2000 (Namyaka, 2003).

Many of the immigrants depend on the rent from nature with some even having settled on degraded CFRs and wetlands. As such, many of these originally forested areas have been degraded (for example the Matiri-Kagombe complex in Kibaale and Kyenjojo districts) and are good candidate areas for many of the sub-options of the Draft Final National REDD+ Strategy including tree planting (at different scales) and establishment of enclosures to facilitate natural regeneration or entering arrangements for Participatory Forest Management.

4.3 SESA conclusion

From the studies of the literature, the SESA team takes note of the following major environmental or social issues, specific to the Mid-Western region/Albertine rift and of relevance to REDD+ implementation:

- Private owners of natural forests need to be incentivized to maintain these forests.
- Boundaries of protected areas need to be clearly and permanently marked in the terrain.
- There is a need to settle the issue of compensation to forest-dependent people earlier evicted from protected areas. Ethnic ties, sacred sites, customary rights and fairness need to be highlighted in this respect.

5. Central Region

Central Uganda, home to the country's capital city, Kampala, has 16 districts. The region shares a large portion of Lake Victoria with Tanzania to the south and Kenya to the east. Lake Victoria is Africa's largest lake and the world's second largest inland freshwater lake.

5.1 Environmental characteristics

The soil in the lake region is especially fertile and among the most productive in the world. The annual rainfall can be as high as 80 inches, occurring mostly during two rainy seasons: March to May and September to November.

The climate in this region, with abundant rainfall, is ideal for farming. Also, some individual farmers in the region are already using simple technologies to harvest and store rainwater in ponds lined with polythene for irrigation use in the dry season (Ekesa et al. 2015).

There has been wide-spread degradation of the forests in the region resulting into the washing of nutrients from the agricultural lands that cause eutrophication of water bodies. Siltation and eutrophication are particularly a problem around Lake Victoria.

5.2 Social characteristics

The central region differs from all the others by its proximity to the market from the elites in Kampala and peri-urban areas who provide the best market for both agricultural and forestry produce. Residents in these areas generally have higher incomes, but also a population density that is generally higher than the national average of 177persons/km^2. For example, Wakiso district has 1206 persons/km^2 (Ekesa et al. 2015). The region is thus a suitable target for the greenhouse production of vegetables particularly in the peri-urban districts. Also, this area has attained a high concentration of plantation forest in recent times due to the existence of market for different products including those from thinning.

In central Uganda, the most prevalent system of land tenure is *Mailo*. In this system, colonialists gave land to notables and elites in the early 1900s. The individuals receiving this land often lacked the means to till the area so they began settling tenants. In 1928, these tenants received eviction protection so that they could not be forcibly removed from the land with no compensation. Only *Mailo* owners have the opportunity to acquire titles to the land, but the tenants have strong rights to the land as well. Some *Mailo* farmers exist today, but the majority of individuals occupying the land are tenants. Recently, there have been evictions of tenants which is likely to interfere with individual decisions to invest in tree growing. Related to this is a certain level of discrimination against women in accessing land. For example, traditionally women do not inherit their parents' land.

5.3 SESA conclusion

From the studies of the literature, the SESA team takes note of the following major environmental or social issues, specific to the Central region and of relevance to REDD+ implementation:

- The problems of land ownership and shared utilization rights need to be solved, so that the tenants can be certain that the returns from an investment in the land (e.g. land productivity or a forest plantation) come back to the user.
- There is a need for gender aspects and human rights issues to be addressed in Strategy implementation so as not to disadvantage particularly women. Deliberate interventions are needed to mitigate the inherent cultural injustices meted against women.

Annex 3 Effects on vulnerable groups

With reference to Section 11.1 of the main text of this report, the full content of Table 9 is provided:

Table 9. Possible positive and negative effects on different vulnerable groups.

Strategic Option 1: Climate smart agriculture.

Social Category	**Potentially positive effects**	**Potentially Negative effects; Problems; Comments**
Children and orphans	-Improved food & nutritional security -Reduced workload on firewood, water & fodder. -Improved health	none
Elderly	-Improved food & nutritional security -Improved access to water -Increased productivity from improved inputs & management practices	-Might not afford the promoted technology (high capital involved) -Interventions under CSA are labour intensive/ energy demanding for the elderly to manage
Women and widows	-Will get skills & inputs for better agricultural production -Increased productivity & better livelihoods -Improved food & nutritional security -Reduced workload with improved technologies -Increased wood needs supply from agroforestry -Enhanced green jobs for women (from nature interventions) -Reduced vulnerability & risks to Climate Change hazards	-Women have limited access and ownership to land, thus poor participation. -Ltd access to information, -Ltd access to technology -If technology does not target women's roles, their workload might not reduce. -Agric. Intensification might increase women's workload e.g. weeding, mulching, fodder collection, etc. -Poor women might not afford the promoted technologies
Youth	-Enhanced skills & inputs for better agricultural production -Increased productivity & better livelihoods -Improved food & nutritional security -Reduced workload with improved technologies -Increased wood needs supply from agroforestry -Enhanced green jobs for youths (from nature interventions) -Reduced vulnerability & risks to CC hazards	-Youth have limited access & ownership to land, thus ltd decision on land-use. The youth are highly active, dynamic & energetic. The technology promoted need to tap on their abilities & capacities for increased productivity. -Poor youths might not afford the promoted technologies
People with disabilities	-Intensive agriculture would increase food & nutritional security - Increased productivity from improved inputs & management practices	-Technologies need to take care of key disabilities

Landless/small land holders	-Will get skills & inputs for better agricultural production -Increased productivity & better livelihoods (from intensive agriculture) -Improved food & nutritional security -Increased wood needs supply from agroforestry -Enhanced green jobs (from nature interventions) -Reduced vulnerability & risks to CC hazards	-The landless cannot participate, apart from labour service
Internally displaced people and refugees	-Increased land productivity will help prevent internal migration -Food & nutritional security for the displaced	-CC & poor land productivity can lead to internal migration -Land tenure insecurity might hinder the refugees' participation
Indigenous marginalized populations	Possibilities for improved livelihood, if given grants and technical assistance	-Most of them are landless, or have small plots of land (Batwa, Benet, Iks) + others -Others e.g. Batwa, are not agriculturalists, and have no land to till -They tend to periodically move from one place to another in the forest ecosystem (their home), targeting them has to be strategic. -Their technical capacity is very limited to enable them adopt the CSA technologies

Strategic Option 2: Sustainable fuel wood and (commercial) charcoal use.

Social Category	**Potentially positive effects**	**Potentially Negative effects; Problems; Comments**
Children and orphans	-Reduced workload on fuelwood collection	- Food insecurity if land is put to tree production rather than food production
Elderly	-Increased access to fuel wood and other forest products	-Tree growing requires high energy & engagement, which the elderly might not stand or afford.
Women and widows	-Increased supply of wood needs e.g. residues for fire wood -increased incomes (for those involved) -Employment opportunities -Benefit from energy efficient stoves use -skills in making & selling of energy stoves -Can use charcoal residues to make briquettes	-Women don't own land therefore can't participate -Tree growing is long term, with no land & tree ownership security, they won't participate -Most tree growing & charcoal business dominated by men (too heavy work for women) -A lot of capital involved, women cannot afford -Food insecurity as men might grow trees on agriculture land for money.
Youth	-Increased availability of wood needs for different uses -Enhanced employment opportunities	-Many youths don't own land, & cannot make decisions on land use/plant trees -Tree planting is long term, not very attractive to youths compared to other industries

	-Can engage in the trade for charcoal, timber, etc.	
People with disabilities	-If they have land and capital, they will benefit in different ways -Improved access to energy needs	
Landless/small land holders		-Tree growing is unaffordable to the landless or small land holders given competing production needs.
Internally displaced people and refugees	-Afforestation interventions could be more for environmental than resource needs (the refugee society is very dynamic)	-Limited or no ownership, access and control to land might hinder their participation
Indigenous marginalized populations		

Strategic Option 3: Large scale timber plantations.

Social Category	Potentially positive effects	Potentially Negative effects; Problems; Comments
Children and orphans		
Elderly		
Women and widows	-Increased availability of NTFPs (f/wood, raw materials, etc) -Social facilities that come with large Companies. e.g. health & water facilities. -Increased incomes (labour, small businesses)	-Charcoal kilns might use all the residues so, no firewood for women to collect -Vermin and insecurity as forest cover increase -No benefit sharing from large scale forests for communities
Youth	-Increased employment opportunities for the youths -Can get engaged in the trade for timber & charcoal	-Benefit sharing arrangements from the private companies need to target the youths in the area (employment, other social services)
People with disabilities		
Landless/small land holders		-Can only sell labour
Internally displaced people and refugees		
Indigenous marginalized populations		

Strategic Option 4: Restoration of natural forests in the landscape.

Social Category	Potentially positive effects	Potentially Negative effects; Problems; Comments
Children and orphans	-Increased access to NTFPs e.g. fruits & raw materials	-Vermin can lead to food insecurity

		-Life threats from wild animals
Elderly	-CFM arrangements should provide for the inclusion of the elderly	-BSAs need to clarify on the benefits for groups like the elderly
Women and widows	-Increased availability of NTFPs -Under CFM, BSAs can improve women access to forest products & other benefits -Increased engagement opportunities in forest based industries like ecotourism, basketry, etc.	-Restricted access limits resources for women, as they are limited on private land -CFM agreements & benefits involve men as land owners & household heads, accruals don't reach women & children. -Vermin destroy food crops in women' gardens
Youth	Increased employment opportunities in protected areas.	-Youths are very active, closure of forests for regeneration might push them to private land forests and wetlands for agriculture & other products. -Need feasible income generating alternatives targeting the youths.
People with disabilities	-Depending on nature of disability, they will benefit from improved/ access to NTFPs under CFM	-Vermin and insecurity issues may affect them
Landless/small land holders	-Can benefit from CFM and BSA arrangements	-The landless have limited alternatives. If BSAs are not favourable, they force their way to natural forests, or turn to fragile ecosystems like wetlands & forests on private land
Internally displaced people and refugees	-Highly involved in encroachment. Restricted access is necessary given their detrimental impacts on the ecosystem	-Limited or no access leaves refugees with no alternatives as they have no land. Might shift effects on wetlands & private land forests.
Indigenous marginalized populations	-Forest regeneration increases availability of NTFPs -Can access different forest products through CFM.	-Their dependence and survival is naturally on forests. Restricted access affects their livelihood. -They can hardly engage in re-afforestation & regeneration activities, because of their limited capacity.

Strategic Option 5: Efficient cooking stoves

Social Category	**Potentially positive effects**	**Potentially Negative effects; Problems; Comments**
Children and orphans	-Reduced workload on firewood collection -Reduced health risks & indoor air pollution	
Elderly	-Savings on amount of fuelwood, -Saving on time, energy spent looking for firewood -Improved health from avoided indoor pollution	-Technologies to be promoted should be user friendly & affordable to the elderly
Women and widows	-Reduced amount of fuel wood used -Skills development	-Initial capital unaffordable to rural women e.g. biogas

	-Enhanced safety & health (reduced risks to respiratory illnesses) -Reduced incidence of GBV due to reduced frequency of firewood collection -Reduced burden for girls & women on firewood collection	-It might increase women work load e.g. collecting cow dung during dry season in Karamoja. -Communities where buildings are too small e.g. Karamoja, It leads to low adoption -Poor flexibility of cook stoves to fit sizes of cooking pots
Youth	-Saved time and wood compared to inefficient energy use -Can benefit from the skills e.g. construction, promotion and trade in energy efficient stoves	
People with disabilities	-Reduced work load and burden of searching for firewood -Reduced wastage of fuel wood -Can benefit in skill development (fabrication and construction of stoves)	
Landless/small land holders	-Very important intervention to reduce their costs for energy	-For some communities with small housing units, no kitchens, technologies need to be flexible enough to enable adoption
Internally displaced people and refugees	-A very important intervention for refugees, to ease their burden of looking for firewood	-Efficient energy for refugees should consider their social set-ups to enable adoption.
Indigenous marginalized populations	-Difficulties for many groups to adopt these technologies	The Ips depend on dead wood for cooking, they never use or produce charcoal and can hardly adopt efficient technologies. -Housing structures are often very tiny to accommodate the efficient fuel stoves or they pose health risks to them and the children.

Strategic Option 6: Integrated wild fire management

Social Category	**Potentially positive effects**	**Potentially Negative effects; Problems; Comments**
Children and orphans	-Reduced life risks from fires & smoke	-Benefits of fresh pastures from burnt areas are lost, which might increase in hardships in grazing
Elderly	-Improved life and property safety	
Women and widows	-Reduced & property risks from fires & smoke	-Loss of values like plant species that grow in burnt areas.
Youth	-Improved life and property safety	-Lost opportunities for new pastures from burning. Youths might move distances searching for pastures
People with disabilities	-Reduced life risks from fires and smoke	
Landless and small land holders	-Increased security to life & property	

Internally displaced people and refugees	-Reduces their life and property risks -Refugees are highly likely to engage in wildfire lighting. Their involvement is important for the success.	-Insecurity threats to refugees
Indigenous marginalized populations	-Increased security for life and property	

Strategic Option 7: Livestock rearing in the cattle corridor

Social Category	Potentially positive effects	Potentially Negative effects; Problems; Comments
Children and orphans	-Improved food & nutritional security -Reduced workload on water & fodder provision -Improved health of these people	none
Elderly	-Improved food & nutritional security -Improved access to water -Increased productivity from improved inputs & management practices	-Might not afford the promoted technology (high capital involved) -Interventions under CSA are labour intensive/ energy demanding for the elderly to manage
Women and widows	-Will get skills & inputs for better livestock management and production -Increased productivity & better livelihoods -Improved food and nutritional security -Reduced workload with improved technologies -Increased water, fodder and fuelwood needs supply from agroforestry and water dams and tanks -Enhanced green jobs for women (from nature interventions) -Reduced vulnerability and risks to Climate Change hazards	-Women have limited access and ownership to land, thus poor participation. -Ltd access to information, -Ltd access to technology -If technology does not target women's roles, their workload might not reduce. -Agric. Intensification might increase women's workload e.g. weeding, mulching, fodder collection, etc. -Poor women might not afford the promoted technologies
Youth	-Enhanced skills & inputs for better agriculture and livestock production -Increased productivity & better livelihoods -Improved food and nutritional security -Reduced workload with improved technologies -Increased water, fodder and wood needs supply from agroforestry and water dams -Enhanced green jobs for youths (from nature interventions) -Reduced vulnerability and risks to CC hazards	-Youth have limited access & ownership to land, thus limited decision on land-use. The youth are highly active, dynamic and energetic. The technology promoted need to tap on their abilities and capacities for increased productivity. -Poor youths might not afford the promoted technologies
People with disabilities	-Intensive livestock rearing would increase food & nutritional security	-Technologies need to take care of key disabilities

	- Increased productivity from improved inputs & management practices	
Landless and small land holders	-Will get skills & inputs for better livestock production and rearing -Increased productivity & better livelihoods (from improved livestock rearing) -Improved food & nutritional security -Increased water, fodder and wood needs supply from agroforestry and water dams -Enhanced green jobs (from nature interventions) -Reduced vulnerability & risks to CC hazards	-The landless cannot participate, apart from labour service
Internally displaced people and refugees	-Increased land productivity will help prevent internal migration -Food & nutritional security for the displaced	-CC and poor land productivity can lead to internal migration -Land tenure insecurity might hinder the refugees' participation
Indigenous marginalized populations		-Most of them are landless, or have small plots of land, often without titles (Batwa, Benet, Iks) + others -Others e.g. Batwa, are not agriculturalists, and have no land to till -Their houses cannot support water harvesting (cannot adopt water harvesting technologies). -They tend to periodically move from one place to another in the forest ecosystem (their home), targeting them has to be strategic.

Annex 4 Evaluation of Strategic Options based on World Bank Safeguards

Safeguard	SO1: Climate smart agriculture	SO2: Sustainable fuelwood& charcoal use	SO3: Large-scale commercial timber plantations	SO4: Rehabilitation of natural forests in the landscape	SO5: Energy efficient cooking stoves	SO6: Integrated wildfire management	SO 7: Livestock rearing in Cattle Corridor
Environmental considerations							
Environmental assessment OP/BP 4.01	CSA will substantially improve microclimate, bring in SLM, reduce degradation, intensify agriculture, and bring agriculture to modern times. Agroforestry & stall-feeding can substitute chemical fertilization. **Score: +High**	The SO2 aim at locating all commercial energy wood production to woodlots and plantations, combined with agroforestry crops. Timber plantations will also be agroforestry with coffee & other shade crops. Improved charcoal kilns use planted trees & reduce natural forest exploitation. **Score: +High**	This SO3 have got direct environmental impacts as large plantations impact positively on local climate. The introduced tree species are easier to monitor legally on commercial markets. Improved charcoal kilns from plantations will make charcoal markets legal and more fundable. **Score:+High**	This SO4 intends to stop illegal use of forests and their encroachment, by allowing in organized manner CFM/PFM rights to forest-adjacent communities against proof of woodlots on farmlands from where all wood will be taken. Only NTFPs with needed restrictions allowed from forests. **Score:+High**	This SO5 has huge impact on deforestation as current rampart traditional charcoal production and use is second highest driver of deforestation & degradation after wildfires. With improved kilns and energy efficient stoves wood use can be reduced to 15-20% of current use amounts. **Score:+High**	This SO6 has the greatest impact on carbon emissions in Uganda among the REDD+ SOs. It also has got substantial climate change impact due to its increasing of air temperatures, degrading soils, depletion of nutrients, impacts on vegetation & smoke pollution. **Score:+High**	The organizing of livestock rearing with fodder agroforestry plantations and water dams reduces somewhat livestock impacts on the environment and distribute the negative ones over larger areas. The breeding programme increase production efficiency with fewer animals/household. **Score:+High**
Natural habitats OP/BP 4.04	CSA will substantially reduce natural habitat encroachment – thus support conservation of biodiversity. **Score:+High**	SO2 aim at locating all commercial energy wood production to woodlots and plantations, reducing exploitation of natural habitats.**Score:+High**	Large timber plantations are normally established on degraded forest lands and not in pristine natural habitats. **Score:+High**	Due to the CFM/PFM agreements all wood use should be produced on farmlands. Thus less pressure on natural habitats. **Score:+High**	Due to the reasons stated above this SO5 has huge impact on natural habitats. **Score:+High**	The same reasons as above. **Score:+High**	If fodder production is increased on farmlands it reduces somewhat pressure on natural habitats. With more efficient livestock management less pressure. **Score:+Medium**

Forests **OP/BP 4.36**	CSA will reduce forest encroachment & deforestation. Thus support forest rehabilitation & biodiversity. **Score: +High**	This SO2 aim at locating all commercial energy wood production to woodlots and plantations. Thus reduce exploitation of forests. **Score: +High**	Positive indirect impacts as the plantations bring timber, pole and energy wood production out of the natural forests. **Score: +High**	SO4 aim at rehabilitating forests and forest biodiversity in organized manner together with local communities. Raising awareness on forests. **Score: +High**	SO2, SO3, and SO4 together with SO5 all together aim at getting energy wood produced outside forests. Thus impact is huge. **Score: +High**	Both forests and plantations are at high risk from fires in particular drier areas and IWM thus reduces the hazards. **Score: +High**	Efficient & organized livestock management reduces pressure on forests, but expanding populations of both humans and cattle eat up the benefits. **Score:+Medium**

Safeguard	SO1: Climate smart agriculture	SO2: Sustainable fuelwood& charcoal use	SO3: Large-scale commercial timber plantations	SO4: Rehabilitation of natural forests in the landscape	SO5: Energy efficient cooking stoves	SO6: Integrated wildfire management	SO 7: Livestock rearing in Cattle Corridor
Pest management **OP/BP 4.09**	Multi-cropping with agroforestry is better than monocropping. RWH with tank & drip irrigation reduce crop water stress & thus part in pest control. Greenhouse cultivation will require change of plant species in greenhouses and actual GH site every 3rd year. **Score: +Medium**	The agroforestry system & annual harvesting of both trees and crops will reduce pest appearance, despite intensive cultivation. **Score: +Medium**	There are likely to be some pests and diseases on the introduced tree species, but these are not the same ones as on indigenous tree species. Plantation management and firefighting management plan are needed. **Score: +Low**	This criterion is only in-directly relevant as it forces communities to have agroforestry practices on their farms instead of monocultures and thereby reducing pest hazards. Thus only positive impacts. **Score: +High**	This criterion is not relevant.	Wildfire cause many trees to die or almost die, which means easy meals for pests. The SO6 thus reduces the pest hazards for trees. However, ticks and snake problems have been tackled with fires and thus these prevails. Ticks on cattle can be reduced by stall-feeding. **Score: +Medium**	Ticks will remain a problem with free-grazing cattle. Stall-feeding may reduce the tick problem to an extent but not eradicate it. Breeding improvements are unlikely to solve this problem, but can somehow reduce it. **Score: +Medium**
Physical cultural resources **OP/BP 4.11**	CSA reduces pressure on physical cultural resources. **Score: +High**	SO2 reduces pressure on physical cultural resources. **Score: +High**	SO3 reduces pressure on physical cultural resources. **Score: +High**	SO4 reduces pressure on physical cultural resources. **Score: +High**	This criterion is not relevant.	SO6 greatly reduces hazards for physical cultural resources. **Score: +High**	This criterium is not relevant.
Indigenous people **OP/BP 4.10**	Indigenous people often lack lands. A special grant project to support	Indigenous people often lack lands. A special grant project to support	This is not an option for indigenous people directly as these	This SO4 intends to support indigenous people. If these do not have land for	Indigenous people lack resources to switch from traditional to	Indigenous people will need guidance and training on integrated wildfire	Indigenous people often lack land, but special grant may enable these

	these people is to be funded in parallel to REDD+. **Score: +High**	these people is to be funded in parallel to REDD+. Work opportunities under other land owners possible. **Score: +Medium**	seldom have got sufficient lands or capital for plantations. Woodlots are under SO2. **Score: +Low**	community woodlots they should get such land from NFA as part of the CFM/PFM agreements. **Score: +High**	improved stoves. However, with grant support also these communities can participate in SO5. **Score: +Low**	management. Of high relevance for indigenous people. **Score: +High**	people to benefit from improved livestock rearing. **Score: +Medium**
Involuntary resettlement OP/BP 4.12	This SO1 aim to increase farm intensification & thus no resettlements. **Score: +High**	This SO2 aim to increase farm intensification & thus no resettlements. **Score: +High**	SO3 may cause resettlement of people who are encroaching on lands they do not have right to live on. **Score: -Low**	The SO4 may be part of the solution to stop settlements in forests. **Score: +High**	This criterion is not relevant.	Integrated wildfire management reduces involuntary resettle-mentation caused by huge wildfires. **Score: +High**	SO7 may even enabling some households to stay on in places that they otherwise would have to leave an area. **Score: +High**

Safeguard	**SO1: Climate smart agriculture**	**SO2: Sustainable fuelwood& charcoal use**	**SO3: Large-scale commercial timber plantations**	**SO4: Rehabilitation of natural forests in the landscape**	**SO5: Energy efficient cooking stoves**	**SO6: Integrated wildfire management**	**SO 7: Livestock rearing in Cattle Corridor**
Social considerations							
Social assessment OP/BP 4.01	Many positive impacts: Increases income generation substantially, enables business-like operations. Families have more work opportunities without expanding farm area. **Score: +High**	Many positive impacts: Increases income generation substantially, enables business-like operations. Families have more work opportunities without expanding farm area. **Score: +High**	This SO3 is not intended directly to poor marginalized households, but these can work for others. Fairly good income generation for owners. **Score: +Medium**	Poor and marginalized people, but also other households find social security and income from forests. Thus important that rural people get legal access to NTFPs with CFM agreement **Score: +High**	The energy efficient (EES) and improved charcoal stoves (ICS) have rather small initial investments after which there are substantial annual cost savings to be made. **Score: +High**	Reduction in wildfires improve local climate, health, income generation and reduce loss of property. Communities want restrictions in wildfires. **Score: +High**	Many positive impacts: Increases income generation substantially. Families have more work opportunities in poor drought stricken areas. Social prestige from livestock owning. **Score: +High**

Natural habitats OP/BP 4.04	Most forest-based products can be derived from agroforestry system on farm lands. Less income needs from natural habitats. **Score: +High**	Most forest-based products can be derived from agroforestry system on farm lands. Less income needs from natural habitats. **Score: +High**	Some plantations may put some pressure on natural habitats from poor house-holds income generation. Thus all SOs are needed. **Score: +Low**	Most forest-based products can be derived from agroforestry system on farm lands. Less income needs from natural habitats. **Score: +High**	Increase energy efficiency saves both costs and natural habitats. **Score: +High**	Reduces fire hazards to natural habitats & biodiversity and thus to NTFP incomes. **Score: +High**	SO7 move away substantial pressure from natural habitats. **Score: +High**
Forests OP/BP 4.36	Agroforestry-based income reduce pressure on forests. **Score: +High**	Agroforestry-based income reduce pressure on forests. **Score: +High**	The same issues here. Thus all SOs support each other. **Score: +Medium**	Agroforestry-based income reduce pressure on forests. **Score: +High**	Agroforestry-based income reduce pressure on forests. **Score: +High**	Apiculture and cattle can be moved to farms. Thus fires not needed. **Score: +High**	Less pressure on forests as people have increased resources on farm lands. **Score: +High**
Pest management OP/BP 4.09	Agroforestry reduces pest problems & thus positive impact on income. **Score:+Medium**	Agroforestry reduces pest problems & thus positive impact on income. **Score: +High**	May cause small reduced income to neighbours from pests. **Score: +Medium**	Not relevant.	Not relevant	Cattle to be stall-fed and tick problems reduced and no fires needed. **Score: +Low**	Agroforestry reduces pest problems & thus positive impact on income. **Score: +Medium**
Physical cultural resources OP/BP 4.11	Positive impact from less encroaching. **Score: +High**	Positive impact from less encroaching. **Score: +High**	No clear social impacts in this sense. **Score: +Medium**	Only positive impacts. **Score: +High**	Not relevant	Only positive impacts. **Score: +High**	Not relevant

Safeguard	SO1: Climate smart agriculture	SO2: Sustainable fuelwood& char-coal use	SO3: Large-scale commercial timber plantations	SO4: Rehabilitation of natural forests in the landscape	SO5: Energy efficient cooking stoves	SO6: Integrated wildfire management	SO7: Livestock rearing in Cattle Corridor
Indigenous people OP/BP 4.10	Extension and grant funding is needed to involve indigenous people. A grant bud-get for marginalized people is piggy-backed to the REDD+ scheme.	Marginalized and indigenous people can work for other landowners and on small-scale (much less than a hectare) these people can invest themselves in this. **Score: +Low**	The SO3 is not targeting marginalized and indigenous people, but they can work for other landowners. **Score: +Low**	This SO4 is especially important for marginalized and indigenous people's income generation. The CFM make NTFP collection legal.	These people need grant support and extension to adopt the EES. Such grant funding is to be piggy-backed to the REDD+ operations. **Score: +Low**	The SO6 is especially important to involve marginalized and indigenous people. income generation. Grant funding for	Extension and grant funding is needed to involve indigenous people. A grant bud-get for marginalized people is piggy-backed to the REDD+ scheme.

	Score: +High			**Score: +High**		awareness & extension. **Score: +High**	**Score: +High**
Involuntary resettlement **OP/BP 4.12**	This SO1 does not result in any involuntary resettlements. **Score: +High**	This SO2 does not result in any involuntary resettlements. **Score: +High**	Most plantations are established on degraded sites, which may have been part of poor households' in-come generation without owners' permission. **Score: +Low**	This SO4 may be part of solution to reduce involuntary resettlement of illegally encroaching people. **Score: +High**	Not relevant	Only positive impacts. **Score: +High**	This SO1 does not result in any involuntary resettlements. **Score: +High**
Overall risk criteria ranking of both environmental and social safeguards	**Score: +High**	**Score: +High**	**Score: +Medium**	**Score: +High**	**Score: +High**	**Score: +High**	**Score: +High**