

Advice on integrating environment, climate change and disaster risk reduction into the MASP of the Great Lakes Region

Desk study



Advisory Report by the Dutch Sustainability Unit

Subject: Advice on integrating environment, climate change and disaster risk reduction into the MASP of the Great Lakes region

To: Mr Benjamin Zech
Embassy of the Kingdom of The Netherlands
Kigali, Rwanda

From: Netherlands Commission for Environmental Assessment
Dutch Sustainability Unit

Technical secretary: Ms Ineke Steinhauer

Quality control: Mr Rob Verheem

Gender input: Ms Lida Zuidberg

Resource persons: Mr Niek van Duivenbooden
Mr Jan Joost. Kessler
Mr Peter de Koning
Mr Victor Langenberg
Ms Saskia Visser

Reference: SU02-16

The Dutch Sustainability Unit (DSU) is hosted by the Netherlands Commission for Environmental Assessment (NCEA) on behalf of the Ministry of Foreign Affairs.

Contact:
W: www.eia.nl/dsu
T: 030-2347653
E: vfortes@eia.nl

CONTENTS

1. INTRODUCTION.....	2
2. CONTEXT INFORMATION ON THE THEMES.....	3
3. RECOMMENDATIONS FOR INTEGRATION	4
3.1 Climate adaptation at watershed level: Protecting areas with important ecosystem services against floods, droughts and depletion	4
3.2 Disaster Risk reduction at farm level: Strengthen the resource base.....	5
3.3 Social and environmental sustainability in value chains..	6
3.4 Mineral resources and conflicts	7
4. RECOMMENDATIONS FOR THE MASP 2012–2015.....	7
4.1 MASP Section 2	9
4.2 MASP Section 3.2	10
5. RECOMMENDATIONS FOR THE BEMO'S	13
6. INDICATORS.....	14

Appendix 1

- References

1. INTRODUCTION

The Great Lakes Region (covering Rwanda, Burundi and Uganda and East DRC) is a regional programme delegated to EKN Kigali in Rwanda. The embassy needs to submit a new regional MASP in October 2013. The current MASP will be substantially revised based upon a new context analysis, due to be carried out in September 2013. In revising its current MASP the embassy seeks to better integrate environment, climate and disaster risk reduction (DRR). EKN requested the DSU to assess the current MASP and advice on how best to accommodate these sustainability issues (integration of gender considerations into the MASP is a separate assignment).

The DSU received a request from the EKN Kigali to:

1. Provide recommendations for improved integration of environment, climate change and disaster risk reduction into the regional MASP (especially in the food security and developing water programmes) taking into account the linkages of these themes with the national MASPs;
2. Review the current portfolio of projects within the themes, to check that environment, climate change and disaster risk reduction are optimally integrated, and to give concrete recommendations to strengthen these topics where optimization is possible;
3. Propose a set of (multi-purpose) indicators on environment, climate change and risk reduction for the MASP program intervention logic. These indicators will form the basis for progress reporting by the embassy to DGIS, but they can also help to focus reformulation and implementation of the programme, if needed.

The multi-annual strategic plan of the Great Lakes region has three elements: (1) a regional perspective on the bilateral programmes in these countries (especially concerning security and rule of law, (2) targeted activities in Eastern DRC, and (3) a regional programme with a largely economic perspective focusing on cross-border issues and cooperation and specifically targeting food security, water management and renewable energy. For the regional MASP a new context analysis will be carried out in September and the resulting revisions may be substantial, which the DSU cannot yet take into account. Yet, this advice may feed into this context analysis and the new regional MASP.

In line with the expected outputs, the DSU takes a practical approach in our advice, by providing recommendations for improving the integration of environment, climate change and disaster risk reduction in the MASP and the portfolio of regional projects, and proposing a set of indicators. In addition to the advice provided for the national MASPs of Rwanda and Burundi, the DSU will focus in this advice on (a) the added value of a regional MASP on synergy and regional exchange on national issues; (b) regional level strategic activities.

2. CONTEXT INFORMATION ON THE THEMES

The regional context analysis is currently under revision. The former regional context analysis (of 2011, Annex 5 to the MASP) emphasized various elements with respect to economic opportunities. The whole region has rich agricultural resources and a high population growth, resulting in a high pressure on national resources. The main cash crops are tea and coffee. DRC East Congo is resource-rich in minerals, there are oil reserves in Uganda and DRC, methane in Rwanda as well as hydropower in the region. The region is landlocked and for trade dependent on coastal states in East Africa. Inter-regional trade is very limited with high transportation costs. The economic development potential is challenging and export beyond neighbouring countries is expensive and/or takes much time. In contrast, the Great Lakes themselves are an important and intensive transport route for local and regional trade. The region has received increased attention for oil and gas exploration. The lakes and the fish populations are very vulnerable to oil spills and severely affect the food security of communities.

In spite of the high land pressure, the region has remaining natural areas with high international ecosystem and biodiversity, and consequently also tourism values. First are the wetlands, of which several have been classified as Ramsar sites (4 in Burundi, 1 in Rwanda and 12 in Uganda). There are also several national parks (3 in Burundi, 3 in Rwanda and 9 in Uganda), of which several are inter-connected with important cross-boundary effects and management challenges. The most important are Rwenzori (a UNESCO world heritage site) and Nyungwe-Kibira, with famous forest resources and animal species (gorilla, chimpanzee). There are important tourism incomes from these areas. Management of these areas is under high pressure due to regional conflicts.

Large parts of the Great Lakes Region are currently highly vulnerable to climate change as it strongly relies on rain-fed agriculture for rural livelihoods and a few agricultural exports (coffee and tea). The region experienced a temperature increase of 1.4 °C since the 1970s, and climate scenario's predict an increase in average monthly temperature with 1.5–2.7 °C till 2065 (which will affect the coffee and tea producing areas). Moreover, the climate scenario's predict an increase in the average annual rainfall by up to 20% (in the period from 1970–2050) and more intense periods with drought and floods (which will affect all rain-fed agriculture).

Projections for East Africa show an increasing trend in rainfall intensity for both rainy seasons which is likely to bring the negative consequences of floods and storms which result in landslides, crop losses and damage to infrastructure. The extremes within a country are also increasing (e.g. heavy rains in the northern and the western province of Rwanda and in the eastern province rainfall deficits over the last decades). Temperature rise may increase the spread of vector-borne diseases, impacting negatively on animal and human health, and crop production with associated impacts on food security and export earnings.

3. RECOMMENDATIONS FOR INTEGRATION

Based on the new policy note 'Wat de wereld verdient' and the DME advice of July 2013¹, the following recommendations are provided on integrating environmental sustainability, climate change (mitigation and adaptation) and disaster risk reduction (as a result of climate change and natural disasters), at different levels of scale and entry points.

3.1 Climate adaptation at watershed level: Protecting areas with important ecosystem services against floods, droughts and depletion

At the *watershed (incl. terrestrial aspects) level*, areas can be identified that play a key role in replenishing aquifers, run-off and flood control and for preserving biological resources (e.g. fish) as well as biodiversity. It is thus important to have proper spatial plans for infrastructure developments (roads, hydropower) and agricultural expansion. In some cases rehabilitation of degraded land (of areas with important environmental services) is needed. There are important linkages between agricultural land-use, erosion and the viability of fish production, for example in Lake Tanganyika and the Akegera basin (with Lake Victoria). As an example of regional implications: in the Lukaga, DRC, there are initial plans to setup a barrage to regulate the lake level. There are several impact scenarios modelled. One includes the impact on shore-communities by lake levels 4 meters higher than current level. If this happens a great deal of Bujumbura including the lower Rusizi planes and park as well as a Bujumbura municipal waste site will inundate. This illustrates the need for IWRM.

These linkages will only become more important in the scope of climate change. There is a need for regional planning of climate adaptation and disaster risk reduction priorities within the projected economic development from a regional perspective. This requires IWRM and spatial planning at a regional scale, which is subsequently translated in national and local/lower-level watershed planning. This is of course a complex and sensitive subject. Regional entities are yet not capable of such a process. Experiences from the Zambezi river show that an analysis of environmental flow management and regional discussions can lead to more understanding and co-operation (experience EKN Maputo). Both a bottom-up approach (identifying economically important farmland areas to be protected) and a top-down approach (identifying areas with key ecosystem services to be protected) are required². The ongoing decentralization processes in the countries provide an opportunity to plan and discuss priorities on these levels and inform the regional level (and vice versa). Decentralised spatial planning based on a bottom-up approach informs regional levels

¹ Memo by DME on climate and environment as part of the "Aanschrijving herziening MJSP".

² Andriessse, W., L.O. Fresco, N. van Duivenbooden & P.N. Windmeijer, 1994. A multi-scale approach to characterize inland valley agro-ecosystems in West Africa. *Neth. J. Agric. Sci.* 42: 159-179.

and provides an enabling environment for proper inclusion of local stakeholders (and thus may reflect their interests) groups.

There is an ongoing IUCN Peace Parks Initiative in the Great Lakes region with linkages to 3 countries: Kibira National Park: Burundi (IUCN Category IV, 40,000 ha), Virunga National Park: Democratic Republic of Congo (IUCN Category II, 780,000 ha) and Volcanoes National Park: Rwanda (IUCN Category II, 15,000 ha). Pressures by refugees are an ongoing challenge. These initiatives need support, not only because the areas have important regional biodiversity functions but also ecosystem services (e.g. watershed protection and thus access to water and buffering of floods).

Wetlands are key in the great lakes system by acting as buffer zones from manmade influences and impacts and their use must be well planned at a regional level as impacts have important trans-boundary consequences (such as on lake fisheries, water availability, and water quality).

3.2 Disaster Risk reduction at farm level: Strengthen the resource base

In any national MASP focusing on food security and water, improving the natural resource base, being soils and water supply, is key. Soils have to enable the envisaged production and thus must have the required qualities, i.e. the right structure (water holding capacity) and fertility. The measures required to do so link up with a range of innovations for farmers ranging from integrated soil fertility, pest and water management practices to using climate smart technologies.

At a regional level, actors (government, private sector, Chamber of Farmers) can exchange expertise, experiences and appropriate technologies. A public-private (and people) partnership, which targets a concrete commonly felt problem, might be an interesting option.

In the view of the DSU³, and given the capacity of local farmers and grass-root development organisations, only climate smart adaptation techniques (like those in the upper Tana region) should be considered. Some examples are:

- Integrated water management to enhance efficiency of water use, both in rain-fed and irrigated systems, e.g. in rice (contributing to improved yields and also for reduced methane emissions);
- Enhancing the productive agro-forestry role of trees on farmlands, e.g. for food and fuel production, as windbreaks, woodlots, buffer strips, erosion control in a system of Analog Forestry;
- Integrated pest, disease and weed management: this will become even more important as an adaptation to climate change if this alters (seasonal) patterns of pests and diseases;

³ Includes land-use planning, soil erosion control, water-budgeting techniques, resilient crop varieties, rainwater capture infrastructure, etc.

- Restoring degraded soils through soil and water conservation measures, for rehabilitation and stabilization, e.g. contour ploughing, Fanya juu and bunds. This work is already carried out in Rwanda.
- Improvement of soil fertility through Integrated Soil Fertility Management (ISFM) ⁴ with optimal use of a mix of organic and inorganic fertility inputs that also enhances carbon storage.

Any intervention should of course take into account the implications for the most vulnerable groups to avoid exclusion or worse, further marginalization. Vulnerable groups include poor land-less people, women-led farmer households⁵, and subsistence farmers that might need targeted support and capacity building. Top priority, seen the topography of the Great lakes region and local and regional impacts in watersheds, should be erosion control (which can be easily integrated with soil fertility management).

3.3 Social and environmental sustainability in value chains

In all the countries in the region, agricultural productivity is too low, post-harvest losses too high, and environmental degradation a burden for the present and future. In terms of market development – in the selection of value chains to be supported – there is need to pay attention to environmental and social sustainability issues in production and processing: cash crops for example are often male dominated and do not include resource-poor/subsistence farmers (they often do not have sufficient knowledge, skills and resources to be included in co-operatives. Women have no land rights). These do not only pose risks for sustainability and exclusion (there are checklists available per value chain) but also opportunities. Throughout an agricultural value chain voluntary sustainability standards (VSS) help to improve production quality and volume to improve farmer incomes and enhance social and environmental performance. This is the case for the economically most important crops: tea (e.g. Rainforest Alliance, successful in Kenya), coffee (e.g. UTZ, successful in Kenya and Uganda), cotton (Better Cotton Initiative, BCI) and rice (Sustainable Rice Platform). It has been demonstrated that these initiatives can enhance access to markets and higher net incomes for producers, while also ensuring compliance to environmental and social sustainability norms. Although the countries and producers are in a competition they are also faced with the challenge of reaching quantities and organizing transport to export markets at high costs. Regional exchange and co-operation might help to overcome these market barriers. Rwanda and its government also have the ambition to become a

⁴ Fairhurst, T. (Ed.), 2012. Africa Soil Health Consortium: Handbook for Integrated Soil Fertility Management. CAB.

⁵ Women-led farmer households needs special attention because they often do not have legal land rights, which limits their potential to invest in their land. Resources and produce may be controlled by men.

regional transport hub and invest heavily in ICT. Both are needed for a successful marketing.

The above standards stimulate application of good agricultural practices (GAPs) and requires capacity building of producers on these techniques and improve their skills.

EKN might consider to support – with the existing cross-boundary institutes – a knowledge center that applies and exchanges knowledge on the available best agricultural practices and business skills required to access global markets. The center should link to non-governmental partners knowledgeable about social and environmental issues to mainstream these concerns at the start. It also makes sense to collaborate with VSS initiatives or stimulate and co-finance leading multi-sectoral knowledge-based platforms like the EAGLOnet. (East African Great Lakes Observatory network. More than 27 institutes, governments and privates are involved).

3.4 Mineral resources and conflicts

The relation between mineral and oil (as well as other energy) resources and conflict merits close attention in the region, to generate insights in how conflict can be avoided and cooperation and 'good governance' stimulated. Relevant subjects are international finance and value chains, trace-ability and transparency in mineral value chains, environmental and social impact assessment, appropriate governance systems, conflict resolution and mediation strategies, multi-stakeholder initiatives and round tables in the minerals sector, voluntary sustainability standards in the minerals sector (e.g. the EITI and others).

4. RECOMMENDATIONS FOR THE MASP 2012–2015

The current regional MASP 2012–2015 was reviewed to identify subjects to be taken up in the new regional context analysis. The MASP of the Great Lakes Region has listed as embassy outputs the themes of food security, water management, renewable energy, and defense, justice & security. Although the ToR for this assignment only refers to food security and water management, the DSU believes that renewable energy as well as defense, justice & security should be integrated in this advice, as there are strong linkages with environment and climate change that have not sufficiently been worked out in the previous regional MASP. Moreover, an increase in one output may be counterproductive on another output, while strengthening of programmes is aimed at. The DSU notes the following:

- Pressure on forests and vegetation in watersheds (that plays an important stabilizing role in maintaining cropland productivity) largely originates from the search for cooking wood (women!). Growing trees for cooking wood is now also being introduced on croplands. However, soil conservation and stabilization (by woody plants) is difficult to combine with production of cooking wood, even when the analogue forestry approach is applied. Basically, the dilemma is that between carbon in the soil and carbon for burning, and between land for growing fuel-wood and for growing food. The DSU suggests that the supply of alternative sources of renewable energy (solar, methane, hydro-) reducing the pressure on

- Hydropower development is a promising energy option that requires building of dams and has profound impacts on water systems (upstream and downstream of the dam) and the availability of water for irrigation (with linkages to food security) and for wetlands (with linkages to environment and biodiversity, as well as on the wetlands' function of buffering climate change). Note, that recently an agreement has been signed to construct the Kagera dam in Rwanda for regional power generation⁶, of which the expected regional environmental (and social) impacts are reportedly underestimated⁷. Finally, the expected impacts of dams should be based on different climate change scenarios. Further information is also provided in the Rwanda advice.
- There are intricate linkages between conflict (justice and security) and the exploitation of rich mineral resources in DRC, generating funds for local armies and destabilizing the region (with associated effects on food production, trade, gorilla watching, etc.). The relation between exploitation of mineral (and oil) resources and conflict (the so-called 'resource curse') is complex and has been widely studied. One option mentioned in the MASP is enhancing traceability and certification. Several studies have been ongoing but taking concrete measures would require multi-stakeholder consensus and international commitment. Here the Netherlands could play a role, given its experience in international diplomacy on peace related themes.⁸
- There are also intricate linkages between conflict (justice and security) and land tenure. This is a critical subject in the whole region, which is characterized by a very high population pressure on agricultural land and several resulting conflicts. On the other hand, land tenure security will enhance willingness to invest in sustainable land management techniques. As discussed above, climate change may increase social unrest over land tenure (whereby women-led households are even more vulnerable because their tenure is already insecure).

⁶ <http://ens-newswire.com/2013/08/13/world-bank-funds-hydro-dam-for-africas-great-lakes-region/>

⁷ "Unfortunately, as is too often the case," says International Rivers on its website, "the scope of the cumulative impacts assessment is too limited. It is mostly concerned with negative impacts on hydropower capacity: how the upstream Nyaborongo I and II dams may limit water availability for the Rusumo Falls hydropower project, and how it in turn might limit the water available for the downstream Kakono Dam, planned for 2015. There is only passing mention of the cumulative impacts on actual ecosystem functions, such as water quality, sedimentation, and vegetation. Indeed, there is no mention at all of cumulative impacts on indicator species or biodiversity in the basin."

⁸ For instance, the Netherlands has recently been leading a dialogue on sustainable coal production in Colombia and is financing an international research programme on conflict and natural resources (NWO-DGIS).

With the limited funds available for the new regional MASP, the involved EKNs have to focus. A major constraint to development in the region is a secure knowledge base and consequent applications of new, innovative approaches and green/climate smart technologies that are generated from this consolidated knowledge base⁹. EKN could play a key role in this on a regional level and in addition to its national MASPs. This knowledge base could facilitate regional exchange and implementation.

In the following part, advice on different sections of the new regional MASP is given only insofar as it relates to environment, climate change and disaster risk reduction. The intention is to provide some practical inputs to develop the rationale of the 'security' in the 'food security' program. When the intention is to enhance economic performance, trade and agricultural development and thus focus on cash crop value chains, care should be provided to sustainability and potential exclusion of vulnerable groups. A priority list could be made where the Regional and Country MASPs should focus on and strengthen each other including a subdivision per donor and to show the coherence with regional and national policy priorities (e.g. land tenure done by SDC; building capacity by Belgium).

4.1 MASP Section 2

For mainstreaming environmental sustainability, climate change, and disaster risk reduction in the proposed strategies and activities, the following points could be incorporated as additional baseline information in the next version.

Resource base

- Information on climate change with associated effects, with degree of severity of possible effects (e.g. degradation/erosion of land, lowering of the water level in the lakes) on a regional scale;
- Information on the extent of degraded lands (e.g. land sliding, erosion, soil fertility) and loss of crop productivity due to land degradation and disasters with cross-border effects;
- Information on cross-boundary river & lake systems, their linkages between countries on ecosystem services (fresh water source, fisheries);
- Information about vulnerability of biodiversity (ecosystems, wildlife, etc.);
- Information about infrastructure development with regional implications (e.g. hydropower);
- Strategies for up-scaling of best practices aimed at sustainable land-use including climate smart solutions at farm level, at local, national and regional scales

⁹ Including paying attention to constraints of female farmers and entrepreneurs – who have limited access to innovation, resources and organisations – and provide guidance to their participation in value chains.

- Information on potential effects of new hydropower plants to be constructed, dependency on oil imports (with associated GHG emissions), current investments in solar energy for houses; the environmental effects of these options;
- Strategies for up-scaling of experiences on uptake of voluntary sustainability standards for crops with commercial potentials, such as tea and coffee in the region, with regional scale effects.

Population pressure, regional conflicts & human activities

- Information about migration of people across the various nations and into vulnerable or disaster-prone areas with associated new tensions between groups of people;
- Minimum of data on regional agribusiness (incomes, employment, products, national markets, regional trade and international exports);
- Information on the current bottlenecks and 'barriers of trade' with regional implications for developing (agricultural) value chains;
- Information of the added value of the 'Dutch approach' related to regional organisations (i.e. mentioned on page 6) and priorities of the individual countries that are part of the Great Lakes Region.

4.2 MASP Section 3.2

In relation to **food security** (Output 1) the following subjects may require more attention:

- Information on regional food security challenges and its implications (migration, tensions?) and food insecure regions that cross borders.
- A description of the regional impact of climate change on food production with associated risks.
- Information on the potential of up-scaling and regional co-operation on agricultural value chains and voluntary sustainability standards (VSS).
- Information on heavily degraded areas with cross-boundary implications and the potential they have for rehabilitation (criteria for priority setting might be: production value, watershed protection; opportunity for erosion and sediment control), which is or will not be done by an individual country.
- The overall vision for (sustainable) development – without mentioning (page 6) specific projects; the DSU suggests to present the various projects in an overview later (which countries are involved; linkages to other projects, etc.).
- Note that in this current version the DSU also finds information of which the context analysis does not provide background data (e.g. 'agricultural produce moves back... neighbouring countries').

In relation to **water management** (Output 2) the following subjects may require more attention:

- Access to water in the region strongly depends upon the stabilised supply of water. IWRM is now widely accepted but implementation remains a national and regional challenge. The 3R water harvesting concept (recharge, retention and reuse) from a regional perspective can be applied to enhance understanding and insight¹⁰. Also, a spatial planning approach must be included, with relevant cross-border linkages between the different countries.

The DSU recommends to fine-tune Output 2 into 'Improved management of joint watersheds and ecosystems'. Per sub-output a clear distinction should be made between the output and the methodology envisioned and linkages with other sub-outputs should be provided.

Renewable energy has become part of the Climate Change agenda but is also crucial for agricultural production (e.g. storage facilities to limit post-harvest losses). In relation to the current **renewable energy** (Output 3) the following subjects may require more attention:

- Climate mitigation: The planning of energy generation like hydropower, oil and gas exploration and geo-thermal energy generation affects water management. The regional responsibility for water as a finite resource in these areas could be further clarified. Furthermore the impact of dam construction on up and downstream ecosystems/farmlands requires special attention.
- Climate adaptation: The re-planting of trees for fuel wood can be combined with other regional-scale objectives in water catchment areas: re-forestation of erosion-prone areas (adaptation and DRR), productive trees (Food Security) and climate mitigation (carbon sink). This might be combined with the intended voluntary credits for tree planting and REDD+ (although this proves to be very cumbersome).

Lastly, reference has been made above to the theme of traceability in minerals resources (also referred to in the regional MASP). This is a very important theme with cross-cutting relevance for conflict, security and natural resources, but the DSU is not sure whether the EKN is willing to take this up as it is a new theme.

Proposed strengthening of activities:

Given our observations and recommendations above, the DSU defined some improved outputs, methods (in brief) and the required links between the sub-outputs for the embassies in the Great Lakes Region (Figure 1) without changing too much of the current ones in the MASP.

¹⁰ The 3R water harvesting concept: Recharge, Retention and Reuse. Recharge adds water to the buffer; retention slows down the outflow and increases water tables; and reuse takes care of the recirculation of water in the system. The larger idea is that tackling a local water crisis is not so much about allocating scarce water, but extending the chain of water use and reuse, taking into account all users and the environment in the entire basin.

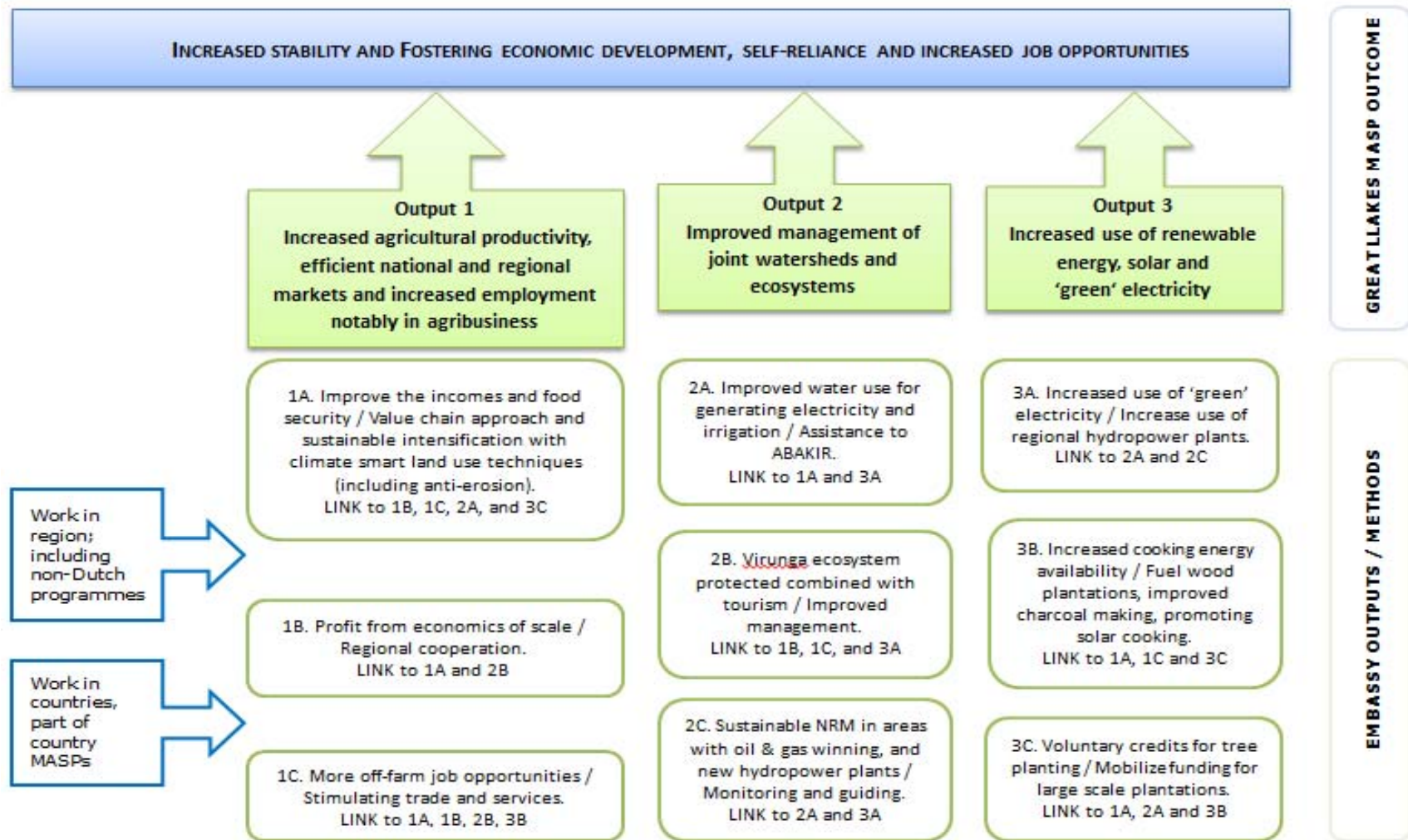


Figure 1. Schematic overview of the current outputs of the MASP-Great Lakes Region.

5. RECOMMENDATIONS FOR THE BEMO'S

The Sustainability Analysis (DME-MW-417) also already provided some recommendations for ongoing activities in Rwanda. Additional specific information on the activities discussed below is also presented in a separate digital annex (Excel sheet, which can be supplemented by the gender experts later on).

IFDC agroforestry (#18901): The project seems environmentally sound as it involves tree planting. However, the documentation does not make clear how woodlots can at the same time be used as a cash crop (harvesting of wood) as well as carbon storage, soil improvement and erosion control (so should not be harvested). A second remark is, that the hypothesis that increasing plantation wood will reduce pressure on natural forests is generally known not to be valid as long as natural forests are not adequately protected. Thus, adequate law enforcement in forest protection would be required. An indicator on the extent of (illegal) tree cutting in existing forests is required to test whether the stated hypothesis is correct. In terms of possible financing, REDD+ mechanisms may be explored as well. In a regional perspective, the subject of regional learning on strategies for up-scaling may be included. Also, the activity should be combined with initiatives to generate cooking energy from other renewable sources (such as biogas and solar energy) or even fossil origins as the competition for land for agriculture and population growth puts limits to this project option.

Catalist-2 (#23888 or 24580). This project emphasises work on Integrated Fertility Management (ISFM), including the increased efficiency of fertilizer use and the introduction of drought and disease resistant crop varieties and improved farming techniques. It also indicates the linkages with climate change through ISFM, soil organic matter, water use and drought resistant crop varieties. However, more emphasis may be given to soil conservation and high erosion risk areas, rehabilitation of degraded and fragile areas and other climate smart technologies.

In a regional perspective, and given the focus on a commercial oriented value chain approach, the question is why this (or another) regional project does not focus on crops that have the highest comparative advantage for this region, such as tea, coffee and possibly rice. These crops have good regional export and private sector development potentials. The Netherlands is internationally leading in initiatives and PPPs to stimulate sustainability in value chains (IDH) and tea in Kenya is among the best examples worldwide of securing incomes from global value chains for producers.¹¹

¹¹ See for instance recent work carried out by Aidenvironment and partners for IFC on the upscaling of VSS, whereby tea in Kenya has been identified as one of the good practices.

IUCN trans-boundary project (#24938): This project provides support to two different sub-programs. The first sub-program is on sustainable fisheries. The focus is on promoting governance in the fisheries sector and on oil exploration threats. However, the approach does not seem to take into consideration the main existing threat to fisheries being the increased sedimentation by soil erosion in surrounding areas, which can also be expected to aggravate due to climate change (this is discussed in the previous paragraphs). This is an important sustainability issue in Lake Albert and the other lakes (such as Lake Tanganyika). The second sub-program is on oil governance. An international dialogue mechanism and environmental and social impact assessment is proposed.

In a regional perspective, IUCN could also be one of the partners in initiatives to stimulate regional spatial planning, including management agreements to stop further encroachment on protected areas and stimulate rehabilitation of degraded areas with high fragility. This is justified from a food security perspective as these areas provide important ecosystem services (watershed protection, buffering, soil protection).

UNOPS Road rehabilitation (#24240): The road rehabilitation aims to contribute to food security in the Kivu by strengthening regional transport / trade (its importance is mentioned in the previous paragraphs). An environmental and social management plan is foreseen. As one identified risk is mentioned “enhanced trafficking of illegally extracted mineral resources” but no suggestions are given on how to mitigate this risk. This risk should be put in the wider perspective of illegal exploitation of minerals (see references in Chapter 3).

6. INDICATORS

This advice provides preliminary suggestions for indicators, for the embassy to monitor and report on DGIS requirements regarding environment, climate change and disaster risk reduction. This advice has so far been based on the provided documentation i.e. the MASP, the Bemos, the result chains of EKNs, the result matrix on Food security and the DME memo on water¹². Rio Markers are used by DGIS to evaluate project proposals to be fundable as climate change adaptation and mitigation programmes¹³. The DSU proposes indicators that are logically derived from the Rio Markers to allow current and future programs to be monitored and evaluated on similar criteria. The generic indicators proposed below integrate environment, climate change and disaster risk reduction (Table 1). Some of the listed indicators will also be proposed for the national MASP¹⁴, so that results can be compared and aggregated, and the relative contribution of each MASP can be assessed (something the DSU recommends strongly is to assess and

12 DME –Water unit memo on water resource management indicators of 22 Jn. 2013

13 OECD, 2011. Handbook on the OECD–DAC Climate Markers

14 A similar exercise was done for Burundi.

report on the impact of the EKN Programmes also at higher levels of scales to show relevance and impact). The cross-comparison may also show certain gaps or opportunities for future activities.

The eligibility criteria of the OECD/DAC state that the contribution should be verifiable through the provided documentation. The current assessment of the Rio Markers is based on the Bemos so it might be possible that specific M&E reports provide more information. Some projects already include relevant activities but these may need to be adjusted if more specific project documentation becomes available.

In table 1 the DSU has made a distinction between household level indicators and macro (sub-national, national or regional) level indicators. Remaining questions that still need to be answered are (i) how can the proposed indicators be specifically measured, and (ii) who will be responsible to do so, will this be the EKN and/or the projects funded by the EKN? On the question of responsibility, there are different options for the EKN, which differ for the household and macro level indicators:

- 1) 'Do nothing': Already approved projects go on as defined and do not include activities to monitor the proposed indicators, nor will additional activities be defined (beyond the projects) to collect such information (e.g. by national institutes). While some projects conduct activities with a certain relation to the proposed indicators, other do not. The EKN reports to DGIS based upon the M&E reports submitted by the projects and thus does not fully address the various climate change and environment concerns raised and reduce the potential role that the EKN's can play at the different levels of influence.
- 2) 'Integrate': In case this option is chosen, EKN has the following options:
 - (a) On household level indicators, the options are to ask relevant projects (i) to integrate monitoring of the proposed household level indicators in their M&E system (for example report on soil conservation measures disaggregated by gender), or (ii) projects request a (local) consultant to carry out a survey on the proposed indicators (baseline + survey after some years);
 - (b) On macro level indicators, it is not realistic to expect that projects collect these data, so the options would be (i) to support a scientific institute to collect relevant data (if not available) and provide capacity support to these institutes to do this in a reliable manner, or (ii) to request a consultant to gather available data and aggregate and analyse the data at one moment in time.
 - (c) Note that in most cases macro level indicators will need some sort of ground-level verification whereby local-level surveys will be required. Also, aggregation of household level data collection will generate insight in macro level data.

Table 1. Potential primary Indicators.

Purpose: to monitor and report on sustainability – climate change, environment and disaster risk reduction – on macro–level (relates to the outcome level of the result chain) and on household / project level (to improve on–going activities). This relates to ‘sustainable and inclusive growth’ (‘Wat de wereld verdient’, 2013) and the targets / result areas of the result chains of the MASP. EKN is expected to annually report on the overall outcome and its sustainability component and Rio Markers, to inform DDE, DME, and IOB on the contribution by EKN to the spearheads (and provide input on the response to the Motie Ferrier).

Entry points: spearhead Food Security and their underlying activities.

¹ **Note:** the Units should be disaggregated for gender, such as women–led farmer households and other vulnerable groups.

Subject	Level	Indicator	Unit	Link to targets / result areas:	Source of information ¹
Macro (sub–national / provincial, national or regional) level					
Environment and water	Macro and regional	Area of ecosystems – agricultural lands, forest areas, natural areas, water catchments– that is managed for long–term preservation of the resource base, socially acceptable and economically viable.	Ha or km2 , # sustainability or IWRM plans	‘Ensure environmental sustainability’	National and/or regional statistics
Environment, food security and trade	Macro	Traded volume of selected agricultural value chains, which integrate sustainability and gender based on sustainability standards.	Metric tonnes, number of producers ¹ and % total	‘More efficient markets and improved business climate’	National and/or regional statistics (based on household surveys)
Water and food security	Macro	Proportion of total water resources used for agriculture (agricultural water productivity)	Kg product per liter water applied. Per value chain	‘Increase in sustainable food production’	National and/or regional statistics
Climate change and environment	Macro and regional	Area of national and cross–boundary ecosystems with important resilience services and sinks and reservoirs of GHGs: managed	Ha or km2	‘Ensure environmental sustainability’	National and/or regional statistics

		forest and other ecosystems, afforestation, reforestation, and restoration of degraded land			
Climate change, DRR and environment	Macro	Number of administrative units that adopt a process of developing local spatial land-use plans that take into account limitations of cropland expansion, priorities for erosion control, and for rehabilitation of degraded lands	Number	'Increase in sustainable food production' and 'Ensure environmental sustainability'	National planning departments
Climate Change and DRR	Macro	Surface area of national food insecure regions.	Ha or km2	'Increase in sustainable food production'	National and/or regional statistics
Household level					
Environment, food security and trade	Household	Farmers that integrate sustainability and gender in selected agricultural value chains which are based on sustainability standards.	Number, % of producers ¹	'More efficient markets and improved business climate'	Project or local partner
Environment, climate change and food security	Household	Farmers that have been trained on good agricultural practices (GAP), especially more sustainable farming techniques and climate smart cropping systems	Number, % of producers ¹	'More efficient markets and improved business climate'	Project or local partner
Water and food security	Household	Number farmers that increase water productivity in relation to agricultural yield / ha , e.g. for the selected value chains.	Number of producers ¹ , Kg product per liter water applied. Per value chain	'Increase in sustainable food production'	Project or local partner
Climate Change and DRR	Household	Farmers adopting climate-smart and sustainable agricultural practices (e.g. resistant species, anti-erosion measures,	Number of producers ¹ , Ha or km2	'More efficient markets and improved business climate' (Project or local partner

		water saving irrigation), or area with such measures applied			
Climate Change and DRR	Household	Property (houses, fields) destroyed through flooding, land sliding, etc. in the region	Ha or km2 or US\$	'Ensure environmental sustainability'	Project or local partner

¹ Sources of information depend on the level of integration of MASP supported activities into the national programmes. Possible sources are reports from different ministries and sub-national institutes, and Dutch projects. On project-level, sources are reports preferably from existing partnerships or collaboration projects. It is also possible that another projects conducts these activities and thus their M&E reports would be used.

APPENDIX 1

References

For this report, the following sources have been used.

Documents

Andriessse, W., L.O. Fresco, N. van Duivenbooden & P.N. Windmeijer, 1994. A multi-scale approach to characterize inland valley agro-ecosystems in West Africa. *Neth. J. Agric. Sci.* 42: 159-179.

Bemo 18901. Regional Cooking wood: Sustainable energy production through Woodlots and agroforestry in the Albertine Rift

Bemo 23088. CATALIST-1

Bemo 24580. Catalist-2: Towards Viable Clusters in Agribusiness for Improved Farmers' Income and Food Security in the Great Lakes Region

Bemo 24204. UNOPS Road Rehabilitation in North-Kivu

Bemo 24938. IUCN – Transboundary ecosystem based management of fishery resources and oil governance in the great lakes of Africa

Bijsluiter resultaatvragen voor het speerpunt water

César, E., G. Ölund Wingqvist & S. von Walter, 2013. Climate change adaptation indicators. A Logic framework assessment and indicator analysis of Sida's bilateral and regional contributions under the framework of the Climate Change Initiative. 35 pp.

Christian Aid, 2010. Integrating Climate Change Adaptation into secure livelihoods. Toolkit 3: Developing a programme strategy and plan of action, 28 pp.

DGIS, 2013a. Rio Markers for Climate mitigation and Adaptation

DGIS, 2013b. Rio Markers, What, Why, and How

EKN-Kigali, 2012. Meerjarige-strategische-plannen-grote-meren-gebied

Fairhurst, T. (Ed.), 2012. Africa Soil Health Consortium: Handbook for Integrated Soil Fertility Management. CAB.

International Federation of Red Cross and Red Crescent Societies, 2007. Burundi: the lakes are disappearing. Case study on climate change – Eastern Africa zone 2007. 5 pp.

Memo CC adaptation indicators Uganda Kadi Warner

OECD, 2011. Handbook on the OECD-DAC Climate Markers

République du Burundi, 2011. Plan national d'investissement Agricole (PNIA) 2012 – 2017. 93 pp.

République du Burundi, 2013. Stratégie Nationale et Plan d'actions sur le changement climatique

Results_BUJ_FoodSecurity 2012_june2013.xls

Results Reporting ME EKN_ethiopie.xls

van Beek, C., H. Heesmans & V. Langenberg, 2013. Analysis of climate adaptation in Burundi. Alterra WUR, 9 pp.

WCS, 2009. Ten year trans-boundary plan (2009–2018) Nyungwe – Kibira Landscape, 2009. Supported by Wildlife Conservation Society.

Wiegant, D., 2013. Indicatoren voor het speerpunt Water. 13 pp.

World Bank, 2013. Turn down the heat – Climate Extremes, Regional Impacts, and the Case for Resilience. A Report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics. 213 pp.

Websites

Biogas-from-sludge solution could yield power savings for water plants. <http://www.engineeringnews.co.za/article/by-product-potential-2012-08-31> (seen on 18/8)

Carbon, biodiversity & ecosystem services: exploring co-benefits. http://www.carbon-biodiversity.net/Content/ShortProfiles/Burundi%20Profile%20110408_final.pdf (seen 19-08-2013)

On forests in Burundi: <http://rainforests.mongabay.com/20burundi.htm> (seen 18-08-2013)

On solar energy in Burundi: <http://www.solarcooking.nl/?t=3> (seen on 18/8)

The Annotated Ramsar List of Wetlands of International Importance: Burundi. http://www.ramsar.org/cda/en/ramsar-pubs-notes-anno-burundi/main/ramsar/1-30-168%5E16691_4000_0 (seen 12-08-2013)

World Bank Funds Hydro Dam for Africa's Great Lakes Region <http://ens-newswire.com/2013/08/13/world-bank-funds-hydro-dam-for-africas-great-lakes-region/> (seen on 15/8/2013)