

# TERRA Industrial Farming Complex Executive Summary

Report Prepared for

**TERRA S.P.R.L**



Report Number 471947



Report Prepared by



April 2014

# **TERRA Industrial Farming Complex Executive Summary**

## **African Milling Company Congo S.P.R.L.**

5457 Route Kinsevere  
Lubumbashi  
Katanga Province  
Democratic Republic of Congo

## **SRK Consulting Congo S.P.R.L.**

**NRC 01174**  
2056 Ave Lukonzolwa  
Quartier Golf  
Lubumbashi  
Democratic Republic of Congo

e-mail: [smaleba@srk.co.za](mailto:smaleba@srk.co.za)  
website: [www.srk.co.za](http://www.srk.co.za)  
Tel: +243 (0) 81 999 9775  
Mobile: +243 (0) 81 870 1753

**SRK Project Number 471947**

**April 2014**

### **Report compiled by:**

Natasha Anamuthoo  
Senior Environmental Scientist

### **Peer Reviewed by:**

Darryll Kilian  
Partner

# Executive Summary

SRK Consulting (Democratic Republic of Congo) Pty Ltd (SRK) was requested by TERRA SPRL (TERRA) to prepare an Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Programme (ESMP) for the development of a rain-fed maize farming project in Lumumbashi, Democratic Republic of Congo (DRC). The proposed TERRA project plans to establish a maize plantation of 10,000 hectares (ha) on two sites, Lubanda (5,000 ha) and Katofio (5,000 ha). Approximately 1,500 ha are currently being cultivated at the Lubanda site.

A local consultant (GAC) has previously conducted an ESIA for the TERRA project in April 2010. This ESIA and ESMP are required for lender funding purposes (International Finance Corporation (IFC)) and therefore needs to comply with international standards. The ESIA and ESMP intends on filling the gaps in the GAC report and is compiled in accordance with good international industry practice (GIIP) based on the Equator Principles (EP) and IFC's Performance Standards (IFC, PS) on environmental and social sustainability, as well as aligns with TERRA's corporate policies.

SRK prepared this ESIA and ESMP following the collection of additional baseline information and stakeholder engagement with informants in the project area. The ESIA includes a detailed impact assessment and management plan.

## Project location

The TERRA project is located approximately 90 km east of Lubumbashi and 80 km south of Kundelungu National Park, DRC. The project site is situated within the vicinity of the N5 road (Route Kasenga) to the south in the surrounding area of the Lubanda Village, Kasenga territory, Haut-Katanga District in Katanga Province.

## Project description

As mentioned above, TERRA is currently cultivating maize rain-fed project in a 1 500 ha area located around the Lubanda site. In the year 2011-2012 TERRA produced approximately eight thousand tons of Grade A white maize. TERRA plans to increase their production by clearing an additional 8 500 ha of land for maize plantation. The maize will be grown on a total of approximately 9 500 ha after allowances are made for access roads and related infrastructure, and will significantly increase the Katanga Province's maize production. TERRA's production will reach approximately 80 000 tons a year, which is equivalent to 8% of the current national maize deficit in Katanga. With the production of that magnitude, the TERRA agricultural project is expected to become the largest maize farm in the DRC.

In addition to the excess demand that already exists, TERRA is expected to benefit from the opportunity created by a new legislation in Katanga that requires all mining companies in the province to supply 25kg per month of maize meal to all of their employees.

Maize is the main dry land crop planned on the two farms and will be planted in October to November and harvested between May and August of the following year. The maize cultivation process and associated calendar for different stages are illustrated in the table below.

**Table 1: Maize cultivation process and associated calendar**

<b>Crops type</b>	<b>Characteristic</b>	<b>Comments</b>
Land Clearing	Dozing, levelling, etc.	From May to October
Crop processing	Ploughing	From August to November
	Seedling	
Crop husbandry	Crop establishment	From November to Earlier December
	Fertiliser for sowing	
	Maintenance at crop establishment (weeding)	
Crop handling	Harvesting	From May to September

No irrigation is necessary for the TERRA project. Maize goes through various growth stages such as: flowering, cob and kernel development, maturity and harvesting. When the husk covers the cobs, they dry out and turn brown and the grain hardens, this is when the crop should be harvested. Harvesting is done with a machine called combined harvester. The seedlings are maintained by application of different fertilizers and agrochemicals including:

- Herbicides;
- Nematicides;
- Insecticides; and
- Fertilizers.

The total range of pesticides fertilizers to be used includes nitrogenous and phosphates. Harvesting of maize is done mechanically. Harvesting machines with in-field tractor-trailer combination (7 tonne capacity trailers) delivers maize to 15 tonne trailers on the side of the fields (loading zones). Two or three of these 16 tonne capacity trailers is then hauled by one tractor to the storage facility. Mechanical harvesting of the maize will leave leaves and tops in the fields that will be burnt to avoid the growth of weeds.

Currently maize is packaged in 50kg bags stored in a warehouse. Thereafter the bags are transported by trucks over a distance of about 90kms to Lubumbashi where it is sold. Currently the works carried out on the TERRA site during the different phases have required certain facilities and infrastructures. With the development of the project, other facilities and infrastructures are planned for farming operations such as:

- Mechanical Workshop;
- Storage facilities for crops;
- Storage facilities for pesticide, fertiliser, insecticides and other chemical used for farming;
- Fuel storage and distribution facilities;
- Garages;
- Various access and on site roads;
- Domestic waste storage facility;
- Domestic and potable water reticulations;
- The electric power supply facilities with the solar panels;

- Accommodations facilities for the working force; and
- Block drainage system.

For the TERRA project power is supplied by three generators and solar panels. The type of wastes generated by the TERRA project includes:

- Organic waste: maize crops remained after harvesting trees;
- Waste water: pack house, spray and fertigation stations;
- Iron/metal (nails, welding rods etc.) used oil filters, parts that are replaced from machineries/generators;
- Office paper, packing boxes: from office work;
- Agrochemical containers from agrochemical usage; and
- Used engine oil and used lubricants from farm machinery maintenance.

Wastes will be disposed of in accordance with DRC and lender requirements including the IFC EHS Guidelines. A waste management facility (WMF) is on the site including hazardous waste from the project. Co-processing (incineration) or project-generated and local waste will require feasibility assessment as the size of the farming operation increases. Package sewage treatment plants have been chosen over septic tank based on the improved treatment of sewage and larger numbers of employees which the system can deal with.

TERRA provides accommodation facilities for its employees. The accommodation capacity currently is as follows:

- 10 expats;
- 5 for seniors Congolese;
- 30 for general workers; and
- Housing for 200 labours and 40 regular staff also provided.

TERRA plays an integral role in developing communities in close proximity to its farming activities, which in turn has a positive and multiplier effect on the economy in the region. TERRA has worked with the Local Government in identifying the needs of the local community and has already donated the following:

- Two boreholes in the Lubanda villages;
- Regular donation of medicines to local clinics as a contribution to health and family welfare of the surrounding villages; and
- Installation of 10, 50 watt solar street lights at strategic points.

The following are earmarked projects over the next five years, where TERRA will continue to work with relevant authorities to identify priorities:

- Revamp schools and provide educational material
- Create training program for small groups farmers
- Continue solar lighting solutions for surrounding villages
- Continue water solutions.

## **ESIA and ESMP approach**

The ESIA and ESMP is being undertaken to ensure that the environmental and social impacts of the project are fully understood and adequately managed. The ESIA also provides valuable input into project planning decisions. For this project, the process involved the development of an ESIA to meet international legislative requirements. SRK has undertaken an ESIA which will be submitted to the IFC for disclosure (60 days). Thereafter the report will be updated based on feedback from the IFC, TERRA and its agents. TERRA is recommended to compile a comprehensive ESIA which complies with GIIP, including with the IFPCS and World Bank EHS standards.

## **Stakeholder engagement**

SRK undertook focus group and key informant meetings between December 2013 - March 2014 for the ESIA during which stakeholders were informed about progress with the project and were invited to comment. Information sharing and planning meetings were also held with traditional and administrative authorities representing local. Stakeholder comments reflected a positive perception about the project, with perceived benefits including provision of job and business development opportunities, poverty reduction, and promotion of education, improvement to infrastructure (notably roads and electricity) and health facilities, as well as increased social mobility being major themes. Government officials responded favourably in terms of expectations of macroeconomic benefits and improved availability, as well as pricing of maize in DRC.

Comments, issues and overall perceptions expressed by stakeholders consulted during the focus group meetings and key informant interviews undertaken by SRK in February 2014 for the ESIA mirrored those of the ESIA conducted in 2010 by GAC. Items noted included a request for support for local farmers, improved road access, improved lives for the youth, reduced reliance on charcoal-making which impacts on the environment and alcoholism linked to unemployment. Opportunities for collaboration by TERRA with local non-governmental and government (including police) structures were noted. Concerns raised included perceived low salaries, limited availability of potable water for both communities, loss of agricultural land from the project footprint as well as air pollution and dust impacts from the project. Since the GAC ESIA in 2010, TERRA has addressed some of these issues by complying with the DRC Labour Code with regards to salaries and has installed two boreholes in the surrounding villages as part of TERRAs corporate social responsibility.

Public disclosure of the ESIA was undertaken through the distribution of a Background Information Document (BID) in French. The BID describes the project and provides a summary of the key findings and recommendations of the specialist studies. Stakeholders were notified by letter in French and Swahili. The BID indicates where to find the reports and how to comment. Stakeholders had the opportunity to comment either by completing the comment form available with the BID or writing a letter or sending an email by 20 March 2014 to the contact details provided.

Copies of the BID together with the notification letter and comment form were delivered to the relevant authorities in Lubumbashi, the Territory Office in Kasenga and Kipushi, as well as to traditional authorities and community leaders in the project area, for distribution to community members.

A total of approximately 100 comments sheets in French were distributed to stakeholders during scoping phase of the ESIA update. To date, the key comments received from stakeholders on the ESIA update, focus mainly on the following:

- Employment opportunities for local communities;
- Concern about potential impacts of project related activities on water resources in the area; and
- Hope that TERRA will continue to adhere to high standards and provide fair treatment and good salaries to employees.

For a detailed description of the key issues raised during stakeholder engagement, refer to Appendix B of the ESIA. An additional round of stakeholder engagement is proposed for the comprehensive ESIA and ESMP phase.

## Baseline environment

The table below summarises the biophysical and socio-economic trends in the TERRA project area.

Aspect	Description
Geology	The project is located within the Central African Copper belt and the stratigraphy of the area is divided into a younger Kundelungu Supergroup underlain by an older Roan Supergroup. The project area is entirely underlain by the Kundelungu Group, formerly called the Upper Kundelungu, of the Katangan Series. The Kundelungu is 300 m thick, comprises mainly argillaceous to sandy clastic rocks and is underlain by the ' <i>Petit Conglomerat</i> ' a <i>diamictite</i> .
Topography	The project area is characterised by a flat area with gently undulating topography at the North limit of the concession. The TERRA farms are situated in the "Highlands" The area's elevation is roughly 1,200m above sea level.
Soils	The soils in the Lubanda area can be grouped with the soils north and east of the Lubanda Lake, and extended to the south of the lake towards Minga. Upper layers with humus are visible in the total area and are the result of bush fire and the thickness increases from the savannah to the light forest areas. In general these soils are sandy soil, rich in clay and belong to the zonal soils of type A-2, yellowish red and well drained. The soils in the concession area of Lubanda are characterized by three groups of soil: <ul style="list-style-type: none"> <li>• The ferrisols or ferrasols;</li> <li>• The sandy formations of pilocene; and</li> <li>• Alluvium moderns, hydromorphic.</li> </ul> Due to low (nearly no) human activity in the area, the soil is expected to be clean. Soils are not prone to erosion in the TERRA concession.
Land use	The site is located within an area characterized by livestock farming and rural settlements. Shifting cultivation forms the basis of the farming system in the Lubanda and Katofio area. Food crops (cassava, plantains, bananas, maize, soya beans, beans and sweet potatoes) are produced. Typically, an average household may own 5-10 ha of land but usually only 1ha or less under cultivation. Natural resources used regularly by local residents include wood, fish and wild animals, building materials, medicinal plants, and potable water.
Biodiversity	The DRC is considered to be the most biologically diverse country in Africa, with at least 11000 plant species having been recorded, of which 29% are found only in the DRC. The study area is dominated by miombo woodland, followed by scrub, cultivation, and wetland habitat. No species of conservation importance (i.e. Red Data and DRC legislation) were observed. Alien invasive and weedy plant species occur throughout the TERRA concession, but are primarily

Aspect	Description
	<p>associated with disturbed/transformed areas such as along roads and around fields and villages.</p> <p>Faunal diversity in the TERRA farming area is represented by mammals, rodents, fish, birds, molluscs and invertebrates. The general degraded character of natural habitats in the concession areas has resulted in a deteriorated faunal diversity.</p> <p>No Red Data mammals were recorded within the TERRA concession during the faunal surveys. Occurrence of these mammals is limited by continued habitat disturbance and loss regionally.</p> <p>The TERRA concessions area is located 80km from the Kundelungu National Park, which is a sensitive area. The hydrological system of the concession is dominated by the presence of Lubanda Lake, which according to DRC regulations, are also sensitive ecosystems.</p>
Water resources	<p>There are no restrictions on the use of irrigation water on either of the farms but irrigation is at present only done on the Lubanda farm. The project area is characterised by a flat area with gently undulating topography. The hydrology system of the concession area is predominantly characterized by the Lubanda lac and wetland area.</p> <p>Three main rivers cross through the project area and all the rivers converged at the Lubanda Lake: the Kafira River, flowing in a northerly direction, the Kabemba in the East and the Kalemba River, which originates from the West cross the Lubanda village and flows eastwards to connect onto the Lubanda Lake. These rivers, as well as the wetlands including the Lubanda Lake, are used as a source of potable water to the surrounding villages.</p> <p>While the proposed site preparation and facility for farming activities for the project are not anticipated to cause any short-term or long-term groundwater impacts, GIIP will need to be employed during the farming operation to ensure impacts (if any) are minimal and are properly mitigated.</p> <p>The water is of good quality with levels within the guideline limits with the exception of iron (with concentration ranging between 1.4 and 2 mg/l) which is above the stipulated concentration limit for drinking water of 0.3 mg/l.</p> <p>There are two boreholes in the project area that are used for domestic purposes.</p>
Climate	<p>The TERRA project is located south of the equator within a tropical wet and dry climatic zone, with a five-month dry season (May to September) and a seven-month rainy season (October to April). Average rainfall is 1000 mm per annum. Temperatures vary between 1 degree Celsius and 37 degrees Celsius but average temperatures are between 6 degrees Celsius in June and 33 degrees Celsius November.</p> <p>South-easterly winds prevail during the dry season while north westerly winds are prevalent during the wet season. Wind speeds are generally low, less than 5 or 10 km/h.</p>
Air quality	<p>Due to the current lack of industrial development, air pollution levels in the area are low. Key emissions are airborne dust from vehicles on the nearby road; smoke from burning of agriculture residues and bushes; and coal and dust from household fires. Transportation through this area is very limited coupled with the presence of a few income generating activities, the air quality is expected to be good. There is no information on the effects of climate change on the rivers in the area and potential floods. The DRC is deemed to be a sink for carbon.</p>
Noise	<p>The TERRA project will generate no significant noise levels during its farming operations. The principal noise emission source is tractors, vehicles and generators. DRC Regulation<sup>2</sup> allows ambient noise level during the day (07:00 to 19:00) of 45 dBA and during the night (19:00 to 07:00), 40 dBA.</p>
Visual character	<p>Visual intrusion and loss of a "sense of place" may occur directly as a result of installation of project infrastructure and changes to the landscape (due primarily to vegetation clearing and construction of associated infrastructures). Indirect impacts may also result from dust blown from exposed surfaces and farming operations such as tillage, ploughing , as well as lighting of site infrastructure in an otherwise relatively unlit environment, both of which could be visible from a considerable distance. Non waste such as building rubble and domestic waste, both directly and indirectly (due to increased population and development in the</p>



Aspect	Description
	area) related to the Terra Project, is another aspect that could result in a negative change in visual character of the area.
Traffic and transportation	<p>Traffic volumes in the study area are low, with only 3289 vehicles observed over a period of 24 hours on the N5 highway. A large portion of this traffic is attributed to light vehicles, followed by light trucks and light cars. Very few heavy trucks utilise this route.</p> <p>The main highway in Lubumbashi is the N5.</p>
Socio-economic	<p>There are over 250 ethnic groups in the DRC, the biggest of which include the Lubas, the Kongos, the Mongos and the Mangbetu-Azande. The Bembas are by far the most dominant ethnic group in the area.</p> <p>A household survey was conducted within the project area. 91.3% of males constitute household heads, leaving a small percentage of women-headed homes. There are less males aged 0-45 than females in the project area.</p> <p>French is the official language and the mode of instruction at schools in the DRC. Lingala is mostly spoken in and around Kinshasa (the capital), in the west of the country. However, most people in the project area stated that Kibemba was their first language (73%).</p> <p>Land in the project area is easily accessible to households, where people are allowed to use the land free of charge provided that prior consent is given by the traditional authority – usually by the village chief.</p> <p>Literacy rates in the project area are low. The results of the household survey show that 29.5% of the people aged 6 and older are not and have not attended school, that 21.4% of the people aged 18 and above have a secondary education or more and that 2% of the population in the area has some form of tertiary education.</p> <p>People living in the project area sought their basic medical advice from a number of clinics, health posts, dispensaries and pharmacies. However, medical facilities are not adequate in terms of quality and quantity and that patients travel to Lubumbashi to treat more severe cases.</p> <p>Households typically comprise one structure with two to three rooms including bedrooms and living room, forming a compound. People cook and shower outside. People in the project area get their water from two main sources, namely hand dug wells and streams/rivers.</p> <p>Employment opportunities in the area are scarce. Most people therefore rely on the informal sector or on subsistence farming and animal husbandry to meet their basic needs.</p> <p>Farming is the main activity in the area, followed by sand exploitation, fishing and hunting.</p>

### Impacts identified during the ESIA

A standardised impact assessment methodology was used to identify and rate the significance of potential environmental and social impacts arising from the proposed project. It should be noted that a precautionary approach was applied in assessing impacts given that certain baseline investigations are still underway. Hence the significance of impacts may change in the comprehensive ESIA. The negative environmental and social impacts can be mitigated by identified management measures and the significance of the majority of potential impacts can be reduced to low negative post-mitigation.

### Environmental and Social Management Plan

The ESMP presents the management/mitigation measures of the identified potential impacts associated with the project, including air quality, water resources, biodiversity, noise, traffic, economic development and social. It also sets out the organisational structure, roles and responsibilities of staff and the requirements for monitoring, review and reporting.

### Plans developed and pending

Key plans containing specific management and mitigation measures provided by specialists and the SRK project team are included in the main body of the ESMP. The Stakeholder Engagement Plan (SEP), incorporating the stakeholder grievance mechanism is the only 'stand-alone' plan. The list of plans to date is as follows:

- Environmental Awareness Plan;
- Construction and Land Clearing Control Plan;
- Community Health and Safety Plan (CHSP);
- Emergency Preparedness and Response Plan (EPRP);
- Cultural Heritage Management Plan and Chance Find Procedure;
- Influx Management Plan;
- Contractor Management Plan;
- Employment and Capacity Plan; and
- Water Management Programme.

Additional plans that should be included in the comprehensive ESIA and ESMP include:

- Water quality and quantity;
- Air quality management plan;
- Biodiversity management plan;
- Waste management plan; and
- Occupational health and safety plan (OHSP).

## **Conclusion**

SRK has undertaken the ESIA which will be submitted to the IFC for disclosure (60 days). Thereafter the report will be updated based on feedback from the IFC, TERRA and its agents. TERRA is recommended to compile a comprehensive ESIA which complies with GIIP, including with the IFCPS and World Bank EHS standards.

This ESIA/ESMP is the first and only SRK key deliverable towards the development of a comprehensive ESIA and ESMP during 2014. It should be noted that owing to the limited baseline information and data available at this stage, the impact assessment has taken the precautionary approach with negative impacts potentially rated higher than they might. The ESIA incorporates the following components:

- An outline of the baseline environment and description of the proposed activity;
- A description of the ESIA and ESMP process, as well as stakeholder documentation including the key issues and concerns raised by stakeholders during the project process to date;
- Overview of findings of the specialist studies undertaken to date; and
- Environmental and social impact assessment and management measures for the construction and operational phases.

The ESIA has involved one round of stakeholder engagement with government, community and non-governmental role players, with more engagement proposed to follow in the process of developing the final ESIA and ESMP. Stakeholder documentation has included a BID for the ESIA and ESMP. The report proposes measures in the Stakeholder Engagement Plan (SEP) (including grievance mechanism process) to address stakeholder issues during all project phases. Concerns about the project are explained in the Issues and Responses Report (IRR) (Appendix B of the main report). The project is widely welcomed by stakeholders, with development expectations including employment and services.

As part of the ESIA by GAC, a site survey for baseline data collection, and environmental monitoring for data collection was carried out by the experts of GAC in 2010. The subsequent ESIA by SRK included an additional site survey undertaken from December 2013 to March 2014 by key specialists from SRK's project team to fill critical gaps and update the baseline information where possible. The four month project timeframe did not however allow for detailed primary data collection and analysis, and where relevant, limitations in this regard are noted. The following specialist studies were undertaken by SRK: surface and groundwater; socioeconomic; and biodiversity, which updated the baseline information presented in the 2010 ESIA. The project is anticipated to bring regional and local economic benefit including through job creation. Key potential negative impacts requiring careful management during construction include impacts from construction activities (e.g. loss of flora and biodiversity, noise and dust), social disruption from influx of workers, traffic and road safety, as well as soil erosion. During operation, key potential negative impacts could include groundwater drawdown leading to lowering of the water table, which in turn could impact communities' water availability. Air pollution from dust of construction and tractors and ongoing social disruption from traffic and risk of disease are potential impacts for communities in the immediate vicinity of the development.

Findings from specialist input to the ESIA include the need for review of community development issues which should proceed as a priority during the comprehensive ESIA and ESMP phase. These issues will form the focus of in-depth social baseline investigations, analysis and recommendations.

The comprehensive ESIA and ESMP should contain detailed recommendations and plans for management, monitoring, audit and review for the lifetime of the project, covering aspects including social impacts, air pollution, water quality and quantity, cultural heritage as well as biodiversity.

It is anticipated that it will be possible to successfully mitigate impacts associated with the development, with no fatal flaws having been identified to date. The ESMP should be integrated into TERRA's ESMS which should be aligned with the requirement for certification.