



Environmental and Social Review Summary **Kenya Triumph Power Generating Company Limited**

This Environmental and Social Review Summary (ESRS) is prepared by MIGA staff and disclosed prior to the date on which MIGA's Board of Directors considers the proposed issuance of a Contract of Guarantee. Its purpose is to enhance the transparency of MIGA's activities. This document should not be construed as presuming the outcome of the decision by MIGA's Board of Directors. Board dates are estimates only.

Any documentation that is attached to this ESRS has been prepared by the project sponsor, and authorization has been given for public release. MIGA has reviewed the attached documentation as provided by the applicant, and considers it of adequate quality to be released to the public, but does not endorse the content.

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| Country: | Kenya |
| Sector: | Power |
| Project Enterprise: | Triumph Power Generating Company Limited |
| Environmental Category: | A |
| Date ESRS Disclosed: | January 13, 2012 |
| Status: | Due Diligence |

A. Project Description

The Triumph Power Generating Company ("Triumph") will construct and operate a greenfield 81 MW heavy fuel oil power plant in Athi River Township (Kenya) in an Export Processing Zone (EPZ). The project is part of the Kenyan Government's least cost power development plan and one component of a larger World Bank lending program to Kenya Power and Lighting Company ("KPLC") that will support the creation of three Independent Power Producers (IPPs) in Kenya. The thermal power plant will include engine-generator sets (containing ten 9.0 MW medium speed diesel units), heavy fuel oil handling systems (storage tanks), distillate fuel oil handling systems, thermal oil system, water systems, compressed air systems, fire protection system, electrical systems, buildings (power house, maintenance building), commissioning, testing and start-up activities. The plant feeds into an existing 66 kv distribution system and no transmission line will be built. Fuel will be supplied by tankers and pumped into storage tanks.

The power plant will be located in the Athi River area of Mavoko in Machakos District on 5 ha of the EPZ located behind the East African Portland Cement Company. The site is part of the land owned by the EPZ and leased to Triumph. Currently the site consists of eroded grassland. The nearest community is approximately 0.3 km away. Construction material such as stone, cement, steel, pipelines, sand, gravel and wood will be locally sourced from existing local commercial suppliers.

The project enterprise will enter into a 20 year Power Purchase Agreement ("PPA") with KPLC, the national transmission and distribution company. KPLC is the offtaker for the Triumph project and is the sole electricity distributor in Kenya. The project enterprise is Triumph Power Generating Company, a special purpose company incorporated in Kenya by a consortium of Kenyan investors.

B. Environmental and Social Categorization

The project is one component of a larger World Bank lending program to KPLC that will support the creation of three IPPs (Gulf Power, Thika Power, Triumph Power). The World Bank has categorized these IPPs collectively as Category “A” projects. The proposed Triumph project has also been categorized as “A” to maintain consistency with the World Bank/IFC’s (Gulf and Thika) categorization. The proposed Triumph project will have environmental and social impacts that can be managed through mitigation measures. The key environmental and social impacts include: air quality, noise, occupational health and safety, community health and safety, traffic management, hazardous material and waste management.

The primary lenders to the project are Equator Principle signatories. As part of its lending consideration, an environmental and social assessment based on the requirements of the Equator Principles was conducted and as such the project will be implemented in accordance with the Equator Principles.

C. Applicable Standards

While all Performance Standards are applicable to this investment, based on our current information the investment will have impacts which must be managed in a manner consistent with the following Performance Standards:

- PS1: Social and Environmental Assessment and Management Systems
- PS2: Labor and Working Conditions
- PS3: Pollution Prevention and Abatement
- PS4: Community Health, Safety & Security

The Project site is located on vacant land owned by the municipal government and within an area designated as an Export Processing Zone (EPZ). The project enterprise (Triumph) entered into a lease agreement for 50 years starting in December 2010. Prior to being established as an EPZ, this land was eroded grassland and no economic or physical resettlement took place. Therefore, PS5 Land Acquisition and Involuntary Resettlement is not applicable. PS6 Biodiversity Conservation and Sustainable Natural Resource Management is not applicable as the site is located in a degraded habitat within an EPZ. PS7 Indigenous Peoples (IP) is not applicable as the site is located within an EPZ, and no IP were sighted in the area during the EIA. The project enterprise will develop and implement a chance finds procedure as part of its construction environmental management plan to address any potential cultural heritage issues.

D. Key Documents and Scope of MIGA Review

MIGA reviewed these key documents and discussed environmental and social issues with World Bank and IFC E&S specialists who had carried out site visits to the set of 3 proposed IPPs:

- Integrated Safeguards Datasheet Appraisal Stage for the Kenya Private Sector power Generation Support Project prepared by the World Bank, December 2011

- Environmental and Social Impact Assessment (ESIA) Study Report for Athi River 81 MW Thermal Power Plant, Triumph Power Generating Company, November 2011
- Environmental and Social Management Framework for the Partial Risk Guarantees Project for Independent Power Producers in Kenya, May 2011

MIGA reviewed these key documents and discussed environmental and social issues with World Bank and IFC E&S specialists responsible for the set of 3 proposed IPPs. The World Bank has disclosed information related to this project since May 2011. In addition to the General Environmental, Health and Safety Guidelines, the World Bank Group Environmental, Health and Safety Guidelines for Thermal Power Plants apply to this project.

E. Key Issues and Mitigation

PS1: Social and Environmental Assessment and Management Systems

Social and Environmental Assessment:

The project cycle covers construction, operation and decommissioning. The Environmental (Impact Assessment and Audit) Regulations, 2003 in Kenya requires that an Environmental Impact Assessment (EIA) is undertaken for a project such as this one. Completed in November 2011, the Environmental and Social Impact Assessment (ESIA) and Environmental Management Plan (EMP) contain sections on environmental, social, economic and cultural impacts resulting from the project during both construction and operation. It also includes considerations of alternative locations as well as not proceeding with the project. Community and local authority consultation was carried out during the ESIA. In compliance with EIA regulations, the project ESIA was publicly disclosed by The National Environmental Management Authority (NEMA). NEMA has subsequently issued an EIA license for the Project in July 2011. The ESIA addresses the potential impacts from the project and outlines proposed mitigation measures.

The NEMA license conditions require the EMP comply with certain aspects of ISO 14001 management systems and the Occupational Safety and Health Act (OSHA) 2007. The project enterprise will seek to obtain ISO 14001 and OSHA 18001 certification during the course of project implementation. A timetable for certification will be submitted to MIGA.

Organizational Capacity and Management Programs:

A Health, Safety and Environmental (HSE) management team will be established by Triumph as per the ESIA. This team will include an HSE Manager and Safety and Environmental Engineers, Project Management Engineer, Construction Manager, and an Engineering Manager. The Project Management Engineer will have the overall responsibility to implement the project according to the commitments made in the environmental, health and safety plans. Regular conduct inspections will be conducted on site and monitoring reports will be shared with Project Management.

A general environmental management plan (EMP) for both construction and operations phases is included in the ESIA. The main contractor will be expected to prepare a detailed environmental management plan (EMP) for the construction phase in order to minimize environmental impacts of construction works associated with the project. A detailed operations phase Environmental

and Social Management Plan (ESMP) has been prepared which covers planning and design, pre-construction and construction activities, operations and closure.

The key environmental and social issues to be addressed by the management programs include the management of: (i) construction waste; (ii) occupational health and safety practices and training during construction and operation; (iii) labor and working conditions including workers' accommodation hygiene and food safety; (iv) air emissions and noise; (v) compliance with permitting requirements; (vi) emergency preparedness and response including first aid; (vii) drainage and storm water runoff; (viii) chemical storage and handling; (ix) traffic safety; (x) solid and liquid waste; (xi) equipment maintenance; (xii) auditing of contractors implementation of the construction environmental management plan (included in the ESIA); (xiii) community engagement with regards to labor, health/communicable diseases and safety; (xiv) environmental and social performance monitoring and internal reporting including verification of monitoring data by a qualified third party consultant.

Although the main contractor will develop an environmental management system (EMS) for the construction phase, overall environmental, health and safety performance will be the responsibility of the project enterprise. The project enterprise will develop an EMS for operations phase and will seek ISO certification for this.

Monitoring and Reporting:

The project enterprise will establish an E&S monitoring and reporting program for both construction and operation phases of the project. Activities to be monitored during construction include: vehicles accidents, erosion control and water quality, noise and dust generation, waste disposal, employees health and safety practices including accidents and lost time incident and root cause analysis, and job creation within local communities. During operations, monitoring should include: point source and ambient air emissions, noise, occupational health and safety of employees and contractors, quality of effluent discharge, water and fuel consumption, sulfur content in fuel, green house gas emissions, and job creation within the local communities. Specific parameters will be allocated to each of the activities above in order to track, monitor, and analyze E&S performance and ensure compliance with local laws and MIGA's performance standards. An independent engineer will also assess compliance, effectiveness of mitigation systems, accuracy of measurements, etc. within the project's annual operating report. The outcome of the monitoring activities, including information on HSE performance will be reported annually to external stakeholders, surrounding communities and to MIGA. Furthermore, the project enterprise will submit an environmental audit report in the first year of occupation/operations/commissioning to confirm compliance which will include an air dispersion model to NEMA and MIGA.

Training:

The project enterprise will identify training needs for the staff responsible for implementing the management programs. The HSE manager along with the main contractor will ensure that the contractor's management and their sub-contractors receive environmental induction training on occupational health and safety issues as per the requirements of Kenyan legislation under OSHA Act 2007 prior to commencement of the construction phase.

PS2: Labor and Working Conditions

Approximately 100 jobs will be made available during the construction phase and approximately 60 jobs during the operational phase. The project enterprise has developed a construction HSE management plan, safety action plan and an occupational health action plan to address worker health and safety issues. Designated staff will be trained in fire safety and spill response. Fire extinguishers, hydrants and pumps, first aid kits will be readily available at the project site to ensure compliance with fire risk reduction rules of Kenya and international good practices. An occupational health and safety manual will be provided to all personnel on the project site. Worker camps will be constructed on the lower northern part of the project site. Exact numbers have yet to be defined, however, this facility will be constructed and managed in accordance with agreed EMP. The construction of the camps will include basic utilities and managed in terms of health and hygiene, catering facilities, waste management, and lighting. STD and HIV/Aids awareness campaigns will be conducted for those living in the camps. A site HSE manager will regularly conduct health and hygiene inspection at the job site including workers' accommodation to ensure compliance with medical and health rules and regulations. The project enterprise will also refer to IFC guidelines on workers' accommodation. As per the E&S performance monitoring requirements in PS1, the project enterprise will track, investigate, analyze, and report on incidents and accident and use lessons learned as part of the training program.

A human resources policy manual which outlines the employee's right under national employment laws as well as their rights with regards to wages and benefits will be submitted to MIGA. The human resources policy manual will describe policies and practices with regards to equal opportunities; harassment; recruitment and selection including that of contractors and casual staff; induction; employment conditions (work hours, grievance procedure, code of conduct); employment services and benefits (salary advances, emergency loans, house loans); leave entitlements (annual leave, sick leave, maternity and compassionate leave); health management; work place security and safety; performance planning and career development; internships; retirement; retrenchment; disciplinary actions and exit interviews. Each new employee signs a work contract and will be provided with a copy of the company's human resources policy and manual. A grievance system regarding both community and workers will be established.

The human resources policy manual will also outline the rights of employees to be unionized and has provisions for unionized and non unionized employees with regards to grievance mechanism (involving union in the process for unionized staff) and retrenchment (in accordance with union agreement for unionized staff).

PS3: Pollution Prevention and Abatement

MIGA's review considered the project enterprise's proposed management of resource use, waste disposal, air emissions and noise on the surrounding human and natural environment in its construction and operations phases.

The key pollution abatement issues of concern for the project and proposed mitigation measures for construction and operation phases are addressed in the environmental and social management plans and include: air quality (emissions and dust), noise, soil erosion, disposal of excavated soil, water supply, hazardous and non-hazardous waste management, workers' accommodation effluent management, solid waste management, drainage and storm water runoff.

Dust - Exhaust emissions are likely to be generated by the construction equipment during the

construction phase. Particulate matter pollution is likely to occur during site clearance, excavation and spread of topsoil during construction. Air quality issues during the construction phase such as dust from site excavation, vehicular movements, smoke from equipments and trucks will be mitigated through construction environmental management plan. Furthermore, the project enterprise will develop and implement a traffic management plan to ensure proper air emission management, planning of routes to be used by construction vehicles and safety. It is unlikely that dust emissions during operations will be a significant impact.

Air quality - The expected thermal plant emission data was reviewed and the air pollution levels analyzed and modeled based on a 2.0% sulfur content of the diesel fuel. The operational air quality impacts were assessed for nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter (PM). During the relatively infrequent periods of calm conditions generally during the early mornings in the cold season, the plant will undertake mitigation measures to minimize adverse effect of the pollution exposure. It is predicted that, with mitigation measures implemented, air pollution levels will not exceed WBG guidelines. Air pollution levels are therefore predicted to comply with applicable legislative requirements. Air pollutant concentrations will be measured at monitoring sites that are representative of population exposures. The stack chimney of the generators will be constructed to a height of 65 m and stack emissions will be regularly monitored using an inbuilt monitoring system and emission control measures, including primary combustion control and secondary flue gas treatment. Air quality monitoring stations at 1.0 km and 5 km west of the project site will be set to collect SO₂ and NO₂ data.

While the project will reduce dependence on wood burning for cooking and on diesel consumption in small generators, greenhouse gas impacts have not been calculated. The project enterprise will provide approximate estimates based on current information and they will be required to report on GHG emissions as part of its annual environmental and social monitoring reports.

Noise - The construction phase will likely have adverse impact on ambient noise mainly due to use of heavy equipment and vehicles. Construction activities will generate noise levels to a limit of 85 decibels. The Noise Quality Assessment showed that the spatial noise distribution meets Kenyan Regulatory Noise standards within the environs of the facility. However, within the facility vicinity the noise may occasionally approach the limits. Mitigation measures outlined in the ESMP adequately address these impacts. The power plant will be designed to the requirements of National Regulations: LN 25; LN61. Measures, such as PPE for workers, installation of silencers on the generators, employee exams and noise monitoring, will be in place to prevent/reduce operational noise impacts.

Water – during construction, water will be required for mixing of concrete and other uses. This water will be sourced from the Mavoko Municipal Council or using contracted water browsers. Any other additional needs for water, if abstraction from a water source is required for example, will be carried out in accordance with Environmental Management and Coordination (Water Quality) Regulations 2006 so as not to interfere with downstream users and to ensure that waste water effluents, including thermal discharge are within acceptable limits.

Waste - Waste will be segregated into construction, domestic, hazardous, and oily sludge and managed in a manner consistent with WBG guidelines and local regulatory requirements. Both the contractor's environmental management plan and the project enterprise's environmental and social management plan will include waste management procedures. The project enterprise will

develop an integrated solid waste management system focusing on source reduction, recycling, composting and incineration. Waste will be disposed at approved facilities. Storage, handling and use of HFO at the facility can present potential hazards in relation to accidental spills and fire. As part of the environmental management plan, the project enterprise will develop emergency preparedness and response plan for both construction and operations phases.

The cement factory emits largely dust and the plant largely NO₂ and SO₂. In terms of potential cumulative impacts on the air shed from this project and the neighboring cement company, an exhaust gas dispersion analysis done for the power plant's ESIA will be re-done in first operating year to collect data on the cumulative impacts of the EPZ. Additionally, the project enterprise will install air pollution control mechanisms and carry out continuous monitoring of stack emissions and air quality monitoring.

PS4: Community Health, Safety & Security

MIGA's review considered the project enterprise's capacity with regard to the management of the impacts of the construction and operation of its facilities on the health, safety and security of surrounding communities.

The ESIA includes a comprehensive socio-economic impact assessment. The project enterprise will include in its environmental management plans procedures to minimize health, safety and security impacts to surrounding communities from construction and operation phases. These procedures will focus on managing ambient air quality, noise, increased traffic and parking, control of safety of delivery of raw materials, entry to the site from the dual carriage way, accident management, roadside spill response system, defensive driving and drugs and alcohol testing for truck drivers, health management including HIV/AIDS awareness and testing campaigns for site workers and local communities. A community grievance mechanism will be put in place to allow community members to lodge their grievances. The project enterprise will maintain a register of complaints during construction and operation phases including actions taken to address complaints.

The project enterprise will put in place an emergency preparedness and response system that will be tested for its integrity as described in PS3 above.

The project enterprise will retain unarmed security contractors to protect its personnel and equipments. The project enterprise will ensure that security personnel have undertaken necessary screening and training in accordance with good industry practices.

F. Environmental Permitting Process and Community Engagement

The ESIA includes a comprehensive socio-economic impact assessment which also outlines stakeholder consultation/analysis. The stakeholders identified as part of the stakeholder consultation/analysis include: East African Portland Cement Company, Technology Development Centre, Empakasi Community in Athi River, Kasoito village within Athi River, Noonkopir Community in Kitengela. In addition, a number of lead government agencies and other stakeholders were consulted during the ESIA process, including the Kenya Wildlife Service, Mavoko Water and Sewerage Company, Mavoko Municipal Council, Athi river town

community/general public and the village elders, etc. Interviews and community meetings were conducted with these various stakeholders to assess attitudes toward the proposed project including administration of questionnaires.

Some of the concerns raised were: existing pollution in the area, jobs for locals, training options for the Technology Development Centre, increased security in the area as a result of night lighting and some community development projects i.e. footbridge for the community, electricity in schools, dispensary, etc. These consultations included the provision of information about the project during the consultation and the stakeholders' comments were judged to be free in their expression. The comments were all positive toward the Project, and no general or specific objections were made. Community consultation outcomes/concerns were included in the ESIA, which is now publicly available.

The project enterprise will hire a community liaison person who will be responsible to develop a stakeholder engagement plan prior to commencement of construction activities and set up a grievance mechanism.

G. Availability of Documentation

[Environmental and Social Impact Assessment](#) (link to the World Bank's website)

The ESIA is also available for viewing at the following locations: KPLC website www.kplc.co.ke, Triumph website www.tecaflex.co.ke/triumph/index.php, World Bank Public Information Center in Nairobi, Kenya.