



## **Tilenga Project**

### **ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT**

January 2018





### WHO IS WHO?

### Areas of operation:

- Contract Area 1 (CA 1)
- Exploration Area 1A (EA 1A)
- Licence Area (LA 2)

### **Project developers and partners**



### **Project ESIA Consultants**

• AECOM and Eco & Partner Consult are lead authors of the Environmental and Social Impact Assessment for the Project







### **OBJECTIVES OF THIS MEETING**

- 1. Provide a general progress update on the Project.
- 2. Summarise key findings of the Project ESIA (impacts and mitigation & enhancement measures).
- 3. Summarise potential cumulative impacts resulting from the combined effects of the Project and other developments and proposed mitigation strategies requiring collaboration.
- 4. Discussion (questions, comments, concerns).





### NATIONAL CONSULTATION MEETINGS

No.	Stakeholders	Date
1	National Forest Authority, UWA, Association of Uganda Tourism Operators (AUTO), Ministry Tourism Wildlife and Antiquities (MTWA)	15 Jan
2	Directorate Water Resources Management	15 Jan
3	Ministry of Gender Labour and Social Development	15 Jan
4	The AIDS Support Organisation (TASO), Uganda AIDS Control Program, Uganda Sanitation Fund Program, Ministry Health	16 Jan
5	Ministry of Lands, Housing and Urban Development, Department of Physical Planning, Department of Human Settlement, Department land administration +USMID, CGV, Surveys	16 Jan
6	National Planning Authority (Directorate of Development Planning, Office of the Prime Minister, Ministry of Local Government, UETCL, REA, Ministry of Works (UNRA), Ministry of Education, Oil and Gas Police & other police, Ministry of Defence	16 Jan
7	Ministry of Agriculture, Animal Industries and Fisheries, National Agricultural Research Organisation, National Agricultural Advisory Services, National Fisheries Resources Research Institute (NAFIRRI)	17 Jan
8	Civil Society Coalition, Oil and Gas, Maendeleo Ya Jami, LandNet, IRCU, Cross Cultural Foundation of Uganda, BULOGA, Uganda Human Rights Commission	17 Jan
10	Ministry of Energy, Petroleum Authority Uganda	18 Jan
11	NEMA	18 Jan



### LOCAL/REGIONAL CONSULTATIONS

Meeting No.	Local/Regional Stakeholders	
1	Regional District Commissioner, District Police HQ	
2	Buliisa District Government – Technical Committees, including: District Education Officer District Health Officer District Production Officer District Environment Officer District Commercial Officer	
3	Nwoya District Govt Technical Committees, including: District Education Officer, District Health Officer, District Production Officer, District Environment Officer, District Commercial Officer	
4	Pakwach District Govt Technical Committees, including: District Education Officer, District Health Officer, District Production Officer, District Environment Officer, District Commercial Officer	
5	Masindi District Govt Technical Committees, including: District Education Officer, District Health Officer, District Production Officer, District Environment Officer, District Commercial Officer	
6	Hoima District Govt Technical Committees, including: District Education Officer, District Health Officer, District Production Officer, District Environment Officer, District Commercial Officer	
7	Bunyoro Kitara Kingdom	
8	Acholi Chiefdom	







Exploration Areas

### **PROJECT LOCATION**

- Located in Lake Albert region
- The oil fields are in Buliisa and Nwoya Districts
- Some facilities will also be located in Masindi and Pakwach Districts
- Part of the Project is in the Murchison Falls National Park, an important biodiversity and tourism area
- South of the Victoria Nile, villages in Ngwedo, Buliisa and Kigwera sub counties and Buliisa Town Council will be directly affected by the Project.





### **TILENGA PROJECT**

- Development of six oil fields northwest of Lake Albert in Buliisa and Nwoya Districts.
- Infrastructures will be built to extract crude oil from the ground, separate oil/gas/water and transport the oil to Kabaale in Hoima.
- The Project is named 'Tilenga' a combination of the Bunyoro and Acholi names for an antelope – *Engabi* in Bunyoro and *Til* in Acholi.

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### **PROJECT COMPONENTS**

Permanent components	Temporary components
Industrial area (CPF and other facilities)	Construction camp (within Industrial Area)
Wellpads	Construction support base (within Industrial area)
Pipelines and flowlines	Construction support base (at Tangi)
Lake water abstraction system	Logistical check point
Nile River Pipeline Crossing	Borrow pits
Nile River Ferry crossing with associated jetty	
Roads	



### **AVOIDANCE PROTOCOL IN THE DESIGN PROCESS**

TEP Uganda and TUOP recognised the project must follow national and international best practices, like IFC Performance Standards requirements, in particular the requirement for the *assessment of feasible alternative* of the Project *to respond to social and environmental characteristics* of the Project area.

#### In practice:

- Placed social and environmental considerations in the decision-making process
- Apply the mitigation hierarchy in the decision making process of engineers with avoidance being at the forefront of planning and design
- Reduce the physical footprint of the Project.

#### E.g. Outcomes:

- Number of well pads reduced from 45 to 34
- Optimisation of the pipeline network
- Location of key Project facilities to reduce land acquisition, avoid loss of cultural sites, community access, and sensitive environment features, etc.





### INDUSTRIAL AREA AND CENTRAL PROCESSING FACILITY

#### **Industrial Area**

An industrial area will be built around the village of Kasinyi in Ngwedo sub-county.

The Industrial Area includes:

- Central Processing Facility (CPF)
- Operations Support Base
- Construction Camp
- Operation Camp
- other supporting facilities...



Example of a Central Processing Facility

### Central Processing Facility (CPF)

Oil will be piped to the CPF where gas and water will be removed from crude oil. This is safely done everywhere in the world.

#### Oil

From the CPF, crude oil will be pumped to Kabaale in Hoima by pipeline. From there some oil will be supplied to the Refinery and some to the Crude Oil Export Pipeline going to Tanga in Tanzania.

#### Gas

Gas separated from oil will be used for power generation.

#### Water

Water separated from oil (at CPF) and water abstracted from Lake Albert will be pumped to the reservoirs for maintenance of reservoir pressure during oil production.











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- 10 well pads North of Victoria Nile
- 24 well pads South of Victoria Nile
- Well pads will be up to 8 to 12 Ha in size.
- Each well pad will have between 4 and 21 wells
- The wells are used to get oil out of the ground and to pump water into the oil field.
   Pumping water into the oil field helps to get oil to flow out.
- Access roads will be built for each well pad.

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### **PIPELINES AND FLOWLINES**



#### Example of pipeline construction

- Combined length will be approximately 235 km
- The pipelines and flow lines will used to transport:
  - Oil
  - Water

#### More info about the pipelines

- All pipelines outside the CPF will be buried.
- A 30 m construction corridor will be needed during pipeline construction. The construction corridor will be restored. In some areas a permanent service track (road) will be maintained to allow surveillance and access to the well pads and flowlines.

(Note: During construction, access will be restricted for safety purposes. After construction, the ROW will be retained for maintenance but movement not restricted).





### **PIPELINES AND FLOWLINES**

 No trees or structures (Permanent or Temporary) allowed over the permanent Right of Way.





### **OTHER PROJECT INFRASTRUCTURE**

- Nile River Pipeline Crossing (to be installed under the riverbed)
- River Nile Barge (to be located close to current Paara ferry crossing) with associated jetty and building for logistical support.
- Lake Water abstraction System near Lake Albert shore.
- New field roads, upgraded roads, upgraded airstrips(Bugungu)
- Workers' Camps and Operational Support Bases
- Other facilities borrow pits, waste disposal areas







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### **PROJECT PHASES**

The Project will be developed in 4 phases. Some phases will overlap.



# WHAT IS AN ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)?

- A study of the social and environmental impacts of a project.
- Identifies measures to reduce adverse impacts and maximise benefits.
- The ESIA follows national and international laws and standards
- Product will be an ESIA Report to be submitted to NEMA. This will contain a Commitment Register that will summarise all the mitigation measures for the Project. These will be used to develop the Environmental and Social Management Plan (ESMP).









### **BASELINE DATA COLLECTION**

- Environmental and social specialists did many baseline surveys to understand the existing conditions in the Project Area. The results are reported in the ESIA.
- Changes to the existing environment (Beneficial and Adverse) are considered during the impact assessment and mitigation measures are developed to reduce the adverse and enhance the beneficial impacts.
- Views and information from local stakeholders was a very important part of the surveys.
- The survey results are helping engineers plan the Project as sustainably as possible. For example, by avoiding sensitive social and environmental areas.



Preparing for aquatic surveys

Soil surveys

Social surveys





### HOW WILL IMPACTS BE MANAGED

### **MITIGATION HIERARCHY**

- Impacts will be managed through *mitigation measures*
- They are based on the results of the ESIA and informed by stakeholder consultation
- They follow the mitigation hierarchy





### ADDITIONAL MITIGATION MEASURES DEVELOPMENT PROCESS

Development of mitigation measures occurred via the following extensive process:

- Mitigation and enhancement measures were identified by each technical specialists to help avoid or minimise any adverse impacts, and enhance further any beneficial impacts
- These were then discussed internally, with the Project Developers and other Project teams -
  - 2 day internal AECOM workshop with ESIA technical experts October 2017
  - 3 day workshop between ESIA Team and Project Developers November 2017
  - 2 day workshop between ESIA Team, Project Developers and FEED Team November 2017
- This lead to the **development of a master Commitment Register** which is currently being finalised and agreed between all parties. This register will be used to develop the Environmental and Social Management Plan (ESMP).



### CONTENTS OF ESIA

#### ESIA Non-Technical Summary

#### Volume 1

**Executive Summary** 

1 Introduction

2. Policy, Regulatory and Administrative Framework

- 3. Impact Assessment Methodology
- 4. Project Description and Alternatives
- 5. Stakeholder Engagement
- 6. Air Quality and Climate
- 7. Noise and Vibration
- 8. Geology and Soils
- 9. Groundwater
- 10. Surface Water
- 11. Landscape and Visual
- 12. Waste

- 13. Terrestrial Vegetation
- 14. Terrestrial Wildlife
- 15. Aquatic Life
- 16. Social and Socio-Economic
- 17. Archaeology and Cultural Heritage
- 18. Community Health and Safety
- 19. Ecosystem Services
- 20. Unplanned Events
- 21. Cumulative Impact Assessment &
- Transboundary Impacts
- 22. Environmental and Social Management Plan
- 23. Residual Impact Assessment and Conclusions.

Volume 2 **ESIA** Appendices



## POTENTIAL IMPACTS AND MITIGATION MEASURES





### LAND TAKE & RESETTLEMENT

### **Potential Impacts**

- Impact on:
  - houses and physical assets
  - crops and other economic assets
  - access to land and natural resources
  - community and public infrastructure
  - cultural assets
- Indirect effects:
  - Land speculation
  - Changes to land tenure
  - Conflict over land and compensation
  - Changes to livelihoods







#### Mitigation Measures

- As much as possible, avoid areas which need resettlement
- Consultation and Grievance Mechanism
- Land Acquisition and Resettlement Framework (LARF)
- Resettlement Action Plans (RAP)
  - Replacement land and housing
  - Compensation
- Livelihood Restoration Plans
- Cultural Heritage Management Plan



### **EMPLOYMENT AND PROCUREMENT**

#### **Potential Impacts**

- Direct jobs (approx.):
  - 2000 workers for site preparation and enabling works
  - **4000** workers during peak construction
- Aim to have average of 70% Ugandan nationals in the workforce.
- Local communities prioritised.
- Opportunities to supply goods and services to the Project will create indirect job opportunities











- National and Community Content Programme:
  - Plans for maximising local and national recruitment
  - Training and skills development
  - Fair hiring strategy
- Procurement Strategy
- Community Impact Management Plan
  - Livelihood support programmes
  - Education and training support
  - Financial literacy training



### **ECONOMIC IMPACTS**

#### **Potential Impacts**



#### Increased government revenue

- Payment of taxes and fees to the state
- Payment of local taxes
- National Government revenue sharing with Local Government
- Increased local revenue
  - Payment of salaries to employees
  - Contracts with local suppliers

#### Inflation

 Higher demand for goods and services during construction





### National and Community Content Programme:

- Plans for maximising local and national recruitment
- Training and skills development
- Fair hiring strategy



### **HEALTH AND SAFETY**

#### **Potential Impacts**

- Impacts related to increased road traffic, particularly during construction
- Influx may lead to the following indirect impacts:
  - Pressure on health services
  - Sanitation
  - Increased risk of disease spread.









#### Key Mitigation Measures

- Community Health, Safety and Security Management Plan:
  - HIV Workplace Policy
  - Malaria Management Plan
  - Road Safety Plan
  - Sensitisation on health issues
- Influx Management Strategy
- Community Impact Management Plan
  - Investment in health, water and sanitation infrastructure

### Company organization and policies

Workers camps with no alcohol/drugs



### TOURISM

#### **Potential Impacts**

- Impact on tourism activities
- Impact on tourist amenities









Key Mitigation Measures

- Tourism Management Plan
  - Managing relationships with tourism stakeholders
  - Looking into a potential Visitor Centre
  - Tourism promotion strategy
- Environmental Conservation initiatives
  - Community based tourism & conservation programs to develop alternative forms of income.
- Support for Cultural Activities
- Supporting the development of a District Land Use Plan and implementation of MFNP Management Plan



### **ARCHAEOLOGICAL AND CULTURAL HERITAGE**

#### **Potential Impacts**



- Access to sacred trees, places of worship, watercourses, springs and marshes
- Impact on sacred sites
  - Relatively high number of cultural sites (e.g. family shrines) in and around the Industrial Area
  - Potential impact due to relocation, etc.
- Influx of personnel and others with different cultural background may change local values systems and beliefs
- Potential impact on remains of archaeological value







#### Mitigation Measures

- Cultural Heritage
  Management Plan
- Chance Find Procedure
  - Relocation of cultural sites and graves in consultation with local leaders, communities and families
  - Understand rituals and ceremonies to be followed and establish requirements
- Relocation of places of worship in accordance with religious requirements
- Ongoing consultation with cultural leaders



### **AIR QUALITY & CLIMATE**

#### **Potential Impacts**



- Potential impact on air quality as a result of:
  - Fugitive emissions of dust
  - Fugitive emissions of fine particulates
  - Vehicle exhaust emissions
  - Emission from combustion
- Increased GHG emissions as a result of:
  - Loss of existing carbon sinks (vegetation and soils)
  - Increased vehicular and plant use (energy and fuel consumption)



- Dust Management Plan
- Equipment selection in line with Best Available Technique
- Selection and regular • maintenance of machinery and vehicles
- Re-vegetation of sites and exposed areas as soon as practicable
- Protect and restore woodland, promote alternative and efficient use of energy



### **NOISE & VIBRATION**

#### **Potential Impacts**



- Increased bustle of activities during:
  - Construction activities at various sites
  - Well drilling
  - Increased vehicular traffic
  - Equipment and plant operation



#### Mitigation Measures

- Noise and Vibration Management Plan
  - Limitations on working times (Daylight hours where possible)
- Noise Screening barriers
- Low-noise and vibration rated machinery
- Vehicle and machinery maintenance
- Logistics planning to reduce movements
- Notice to residents of activities



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### **GEOLOGY & SOILS**

### **Potential Impacts**



- Soil compaction
- Potential soil erosion
- Impact on surface drainage patterns
- Soil quality



- Soil management
- Erosion and Sediment Control Plan
- Appropriate drainage design
- Waste Management Plan
- Spill prevention, control and countermeasures plan



### GROUNDWATER

#### **Potential Impacts**

- Groundwater flow
- Groundwater quality domestic or agricultural users
- Groundwater availability for users
- Potential reduction in groundwater as a result of reduced infiltration of surface water



#### Mitigation Measures

- Sustainable Water Use
- Drainage design
- Waste Management Plan
- Spill prevention, control and countermeasures plan
- Oil spill contingency plan



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### SURFACE WATER

#### **Potential Impacts**



- Potential change in flow regime of water courses
- Abstraction of surface water from Lake Albert resulting in turbidity, suspended solids
- Surface water quality
- Flood risk





- Avoidance protocol
- Surface Water Management Plan
- Drainage design
- Waste Management Plan
- Spill prevention, control and countermeasures plan
- Oil spill contingency plan



### LANDSCAPE AND VISUAL

#### **Potential Impacts**

- Physical presence of infrastructure within MFNP
- Scale and mass of Industrial Area within grazing landscape
- Movements of machinery and personnel within MFNP
- Loss of characteristic landform, vegetation and tranquillity.
- Change in land-use and land pattern



- Avoidance of large scale infrastructure in MFNP
- Activities to be planned in consideration of tourism season as much as practicable
- Utilise topography to integrate project infrastructure
- Limit unnecessary vegetation loss
- Restoration of disturbed ground
- Screening of infrastructure using reinstatement planting, and additional planting
- Consideration of materials and colours that match surrounding area
- Cluster drilling to minimise the footprint within landscape.
- Limit the extent of lighting





### WASTE

#### **Potential Impacts**



- Mitigation Measures
- Waste Management Plan
- Waste facility improvement strategy
- Waste minimisation and recycling
- Spill prevention, control and countermeasures plan

 Impacts associated with Project waste generation and management (hazardous and non-hazardous waste during construction and operation)





### **BIODIVERSITY: TERRESTRIAL VEGETATION**

#### **Potential Impacts**



- Potential impact or fragmentation of vegetation within Protected Areas (including MFPA and Budongo FR) and/or on Natural or **Critical Habitat**
- Indirect effects across landscape from human population influx including increase in biomass collection and loss of woody areas
- **Invasive species**





- **Avoidance Protocol**
- Site Clearance Plan
- Site Restoration Plan
- **Invasive Species Plan**
- Coordination with MFPA Management Plan
- **Biodiversity Action Plan for Net** Gain /No Net Loss
  - Reducing Human Pressures on MFPA
  - Conserving and Restoring Wetland Vegetation
  - **Conserving and Restoring Forests** and Forest Connectivity



### **BIODIVERSITY: TERRESTRIAL WILDLIFE**

#### **Potential Impacts**



- Potential impact on threatened species and habitat
- Impacts to terrestrial wildlife from construction and operational activities (e.g. vehicles, human presence)
- Indirect effects across landscape from human population influx and economic development





- Avoidance Protocol
- Detailed generic and species specific mitigation for all phases
- Site Clearance Plan
- Site Restoration Plan
- Coordination with MFPA Management Plan
- Biodiversity Action Plan for Net Gain /No Net Loss
- Activities to be planned in consideration of seasonal sensitivities as much as practicable



### **BIODIVERSITY: AQUATIC ECOLOGY**

#### **Potential Impacts**

- Potential impact on spawning and aquatic habitat
- Potential population influx increasing fishing activity







- Avoidance Protocol
- As above for terrestrial ecology
- Biodiversity Action Plan for NG/NNL
- Community based fisheries management and monitoring plans
- See surface and groundwater mitigation



### **ECOSYSTEM SERVICES**

#### **Potential Impacts**

- Impacts on tourism in protected areas, MFPA and Budongo Forest Reserve
- Increase in fishing as a result of influx
- Increase in bushmeat hunting as a result of influx and improved access
- Increase demand for woody biomass leading to further loss of woodland and forest
- Reduction in quantity of, or access to, communal grazing lands







#### Key Mitigation Measures

- Influx management strategy
- Tourism management initiatives
- Community based fisheries management and monitoring plans.
- Enhance monitoring and enforcement of regulations on fishing, hunting and biomass collection;
- Also see biodiversity, carbon and social mitigation



### **CUMULATIVE IMPACT ASSESSMENT**

#### CIA is an integral part of the Project ESIA and is a requirement of both:

- Ugandan EIA Regulations
- IFC Performance Standard 1 (PS1)

The objectives of the CIA are to:

- **Determine the cumulative impacts** of the Project, plus other projects and activities, and natural environmental drivers .
- Identify the mitigation and management measures commensurate with he Project's contribution to cumulative impacts.
- Identify where there is a need for a multi-stakeholder, collaborative approach to implement management actions that are beyond the capacity of the Project to implement in isolation.





### **OTHER PROJECTS CONSIDERED BY THE CIA**

### Other Developments:

- A feeder pipeline linking the CPF to the delivery point, near the refinery project in Kabaale
- The industrial park and refinery at Kabaale
- Export pipeline (EACOP)
- Waste management facilities
- Kingfisher field development (KFDP)
- Kaiso Tonya field development (LA-2 South)
- Other major transport infrastructure upgrades including Critical Oil Roads
- Major hydro power projects on the Nile
- Other power infrastructure including generation and transmission line upgrades.
- Others developments including railway upgrades, industrial development, agricultural development.



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### **PRIORITY VECS FOR CIA**

- We are not assessing all environmental and social issues covered in the ESIA but prioritizing particular Valued Environmental and Social Components (VECs).
- The prioritisation process was informed by stakeholder consultation.

#### **Biodiversity**

- Critical and Natural Habitat
- Species of conservation concern

#### **Ecosystem services**

- Protected areas and nature based tourism (MFPA & Budongo FR)
- Sustainable woodland and trees for building, cooking, medicinal products and cultural uses
- Bushmeat
- Lake Albert capture fisheries
- Open-access grazing land and pastoral way of life

#### Social and health

- Food Security
- Safe drinking water resources
- Community health
- Primary and secondary school education
- Access to land and shelter
- Local economic stability
- Safe communities
- Social cohesion

#### **Climate linked to carbon emissions**



### **CIA RECOMMENDED APPROACH (IFC HANDBOOK)**





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### **CIA MITIGATION**

- Project level mitigation contributes to the mitigation of cumulative effects. However, a number of measures require support and collaboration in order to be effectively implemented e.g. tourism, fisheries, influx management.
- 2. The CIA will **highlight mitigation that could also be applied to other developments** that are having the same impacts. Government agencies can then support the mitigation of cumulative impacts by ensuring that other developments apply similar measures.
- 3. For some Project level mitigation measures there are **opportunities to invite other developers or agencies to contribute** funding (or some other form of support) in order that the initiative can be extended across a broader area or for other communities.
- 4. Identifying possible **supervision mechanisms** in order to implement measures that are beyond the capacity of the developer to implement in isolation, recognising that government and regional planners have ultimate responsibility for CIA.





### **NEXT STEPS**

### **ESIA SUBMISSION PROCESS**

- Finalise ESIA Report and submit to NEMA (Q1 2018)
- ESIA approval certificate awarded by NEMA pending findings of ESIA

### **OTHER PROJECT ACTIVITIES**

- Complete remaining Resettlement Action Plans and begin land acquisition process
- Appoint engineering contractors
- Begin Site Preparation & Enabling Works Phase 2018



### QUESTIONS

### We want to know what you think

Now is your chance to ask some questions!

You can also contact us later using these details:



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# **THANK YOU!**

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