MINISTRY OF WORKS AND TRANSPORT
STANDARD GAUGE RAILWAY PROJECT

DEVELOPMENT OF THE SGR-UGANDA PROJECT

A PRESENTATION TO ISU/AAQS GENERAL ASSEMBLY

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OUTLINE OF PRESENTATION

1. UGANDA DEVELOPMENT PHILOSOPHY
2. SGR DEVELOPMENT CONTEXT
3. PROCUREMENT
4. THE SGR SPECIFICATIONS
5. SGR IMPLEMENTATION STRATEGY
6. LOCAL CONTENT
7. PROGRESS OF SGR
8. CHALLENGES
9. WAYFORWARD

SGR Reliable Connectivity

Some Key Questions

- Is this a white elephant.. Will it attract investment
- Wont it allow the country to became an more of an import economy than export oriented economy
- How will it stimulate industrialization in Uganda
- Why go to China not Europe or America for Railways

Development Context -Intro

- Uganda Vision 2040, NDP1, NDP2-GoU put emphasis on infrastructure development. SGR part of infrastructure in plans
- To transform country into export oriented economy
- Uganda to effectively trade—
  - World trade (UNCTAD) in 2014 –USD 24 trillion, USD18.5 trillion in goods and USD 5 trillion services.
  - USD 2 trillion in agriculture, USD13 trillion in manufactured goods, USD 3 trillion in natural resources
  - World GDP $78 trillion while UG GDP $25bn
- Global competitiveness is key for attraction of FDI in global value chains. There is worldwide competition for investors by different countries, -**Investors go to more attractive destinations**
- Investors should manufacture in Uganda and export to high end markets of Europe, Asia and America
- Infrastructure must meet international quality parameters (reliability

SGR Reliable Connectivity

SGR DEVELOPMENT CONTEXT

- Need for a bulk transport system to offer globally competitive quality and quantity of service required.
- Transform the economy from import to export oriented,- SGR is an Export enabler.
- Integrate Uganda into International trade,
- Conducive investment climate that is globally competitive to attract large FDIs inline with Global Value chains,
- Existing railway (MGR) quality of Service low due to infrastructure dilapidation, old technology and age

SGR Reliable Connectivity

SGR DEVELOPMENT CONTEXT
Why Uganda Needs the SGR?,

- Country has failed to attract investment due to high cost of doing business (USD0.21per ton-km whereas the world average is USD0.03per ton-km).
- Currently Import economy-NOT sustainable, Trade deficit today over USD 3.4Bn.
- Loss in Transport costs today estimated at USD 1.2bn per annum (Hign cost).
- **Reliability, efficiency and safety to low currently**.
- Reduce **travel times** from Mombasa to Kampala from current seven days by road or 10-14 days by Metre Gauge Railway to one day
- Reduce the road wear and tear and the Maintenance costs by shifting over 70% of export/import cargo from .

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SGR DEVELOPMENT CONTEXT: Regional Dev't Approach

- **Kenya**, **Uganda**, **Rwanda** & **South Sudan** committed to seamless railway transport system under Northern Corridor Integration Projects (NCIP).
- Spearheaded by Heads of State.
- Same Standard and specification
- Common railway Policy
- *All to be fast tracked to connect to the port of Mombasa*
- *Seamless important to reduce non-tariff barriers and increase internal market*

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SGR DEVELOPMENT CONTEXT: EAC Railway Masterplan

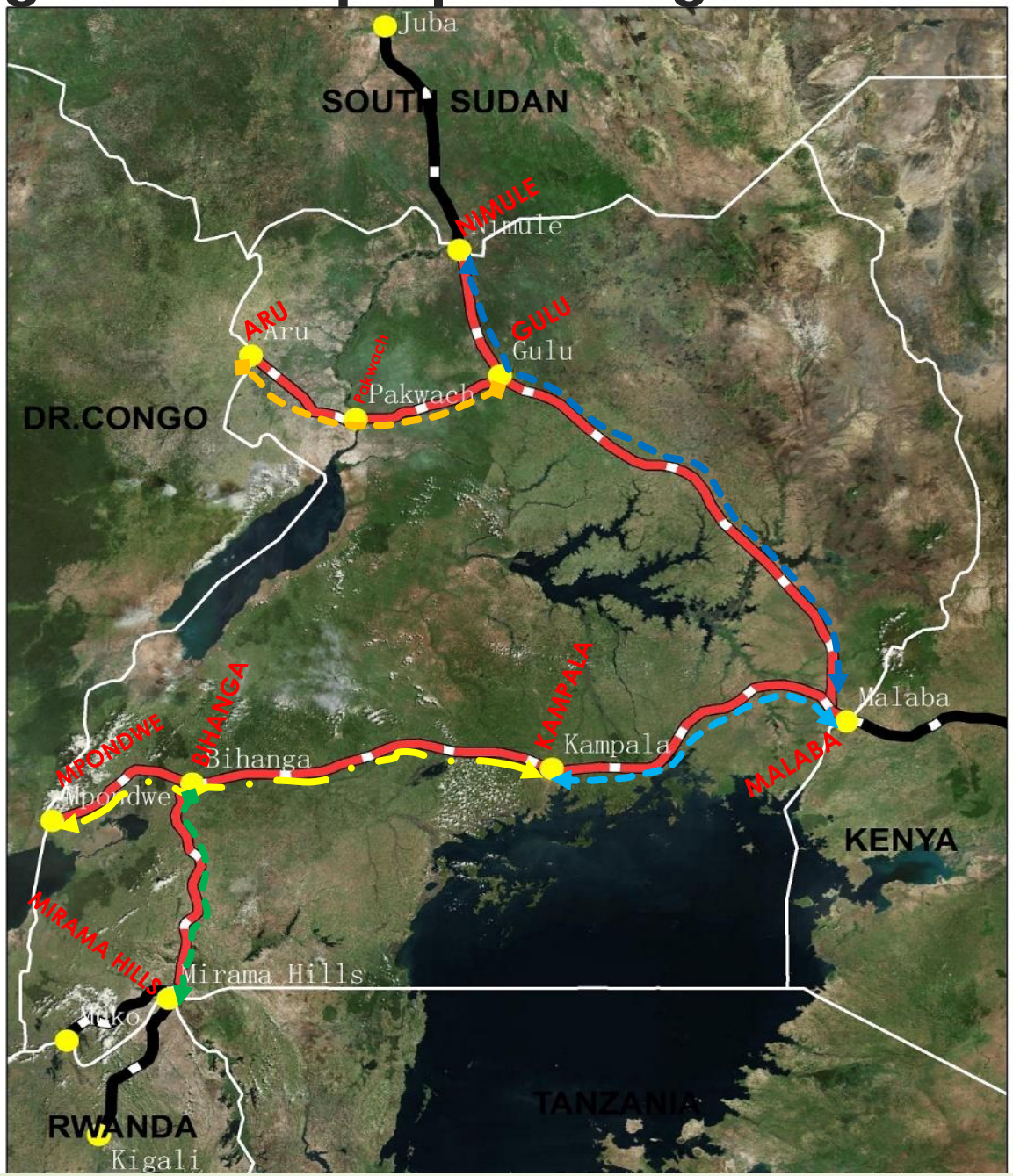
- **SGR NETWORK BEING DEVELOPED AS PART OF THE EAST AFRICAN RAILWAY MASTERPLAN OF THE EAC**

- **Kenya, Uganda, Rwanda & S.Sudan** to develop the SGR leg under Northern Corridor. **(from Mombasa Port)**
- **Central Corridor** to be developed through Tanzania **(From DarSalaam Port**

SGR Reliable Connectivity

The SGR Uganda Scope |Coverage

In Uganda – 1724KM of SGR to be constructed in a phased manner starting with the Malaba-Kampala Route



- Eastern Route: Malaba-Kampala - 273KM-Thru 11 district (including spurs);
- Northern route: Tororo-Gulu-Nimule/Gulu-Pakwach-Vura - 751KM;
- Western Route: Kampala-Bihanga/Mirama Hills/ Bihanga-Kasese-Mpondwe – 662KM

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PROCUREMENT

- Heads of States directed development of SGR 25/6/2013 in timely manner and to be seamless across the regions.
- A contractor (CHEC) was procured for the Eastern and Northern SGR routes following the PPDA law and an EPC/Turnkey contract was signed between MoWT and CHEC.
- Contractor embarked on preliminary works (report attached) culminating into the Bankable feasibility study (EPC/Trunkey approach)
- Addendum done prioritizing the Eastern route after the approval of Contracts Committee-MoWT and Solicitor General.

PROCUREMENT

- Contract price for SGR Eastern route is USD 2.3 Billion including provisional sums, civil works, electrification,signaling.

Why EPC/Turnkey Contract?

- Most common form of contract used to undertake construction works on large-scale and complex infrastructure projects.
- Under an EPC Contract, a contractor is required to deliver a complete contract for a fixed price by a fixed date.
- Risk of Engineering, construction and procurement are transferred to the contractor.
- Addenda and claims are eliminated.
- Payment done on milestones hence faster implementation.

Design philosophy

- NCIP seamlessness
- Railway as a system not look at components like rails, embankments because system standards, component standards, element standards and materials standards
- Investment versus Operation and maintenance –Balance
- Lifecycle costs
- Chinese philosophy—using their own government standards

THE SGR SPECIFICATIONS AND STANDARDS

- **Design Standards:** GB50090-2006 Code for design of Railway line-National Standard of PR China.
- **Railway Classifications:** China Railway Class 1 Standard.
- **Track gauge**: "Standard" 1.435m
- **Traction Type:** Electric Traction
- **Number of Main Track:** Single Track
- **Design Running Speed:** 120 kph for Passenger Trains and 100kph for Container freights.
- **Axle Load:** 25 tonne
- **Train trailing load/Traction Tonnage:** 4,000 gross tonne

SGR Reliable Connectivity

THE SGR SPECIFICATIONS AND STANDARDS (Cont'd)

- **Freight train payload:** 216 (20ft) containers
- **Passenger train capacity:** 960 Pax
- **Railway capacity: over** 20-35 Million Tons Per Year
- **Rail Section:** 50Kg/m
- **Construction Clearance:** Double Stack/Double Decker Transport with Electric Traction.
- **Intersection Type:** No Level Crossings,
- **Design Life:** 100yrs for Major structures,
- **Flood Return Period:** 300 and100 year flood return periods for major, medium and minor structures respectively.
- Signaling – fully automated

THE SGR SPECIFICATIONS AND STANDARDS (Cont'd)

For Class 1: railway as per TB 10002.1-2006: No level crossing on the railway line

Safety:

Aim: Ensure Safety of Road Users, Achieve Seamlessness, minimize derailments & accidents per million train kilometers. To avoid Non Tariff Barriers

i. No level crossing

Mukono-Katosi Road Railway level

Harmonized SGR-Flyover at Access Road Level.

THE SGR SPECIFICATIONS AND STANDARDS (Cont'd)

ii Separated Grade Crossings.

Raised Embankments

Rail Over Road crossings

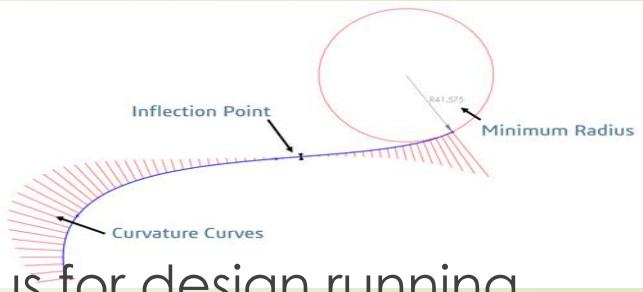
Viaducts

Community Road Crossings

Rail Over Rail Crossing

SGR Reliable Connectivity

Curvatures



- As per GB:50090 Code for design of railway track minimum radius for design running speed for passenger trains for 120km/hr is general 1200m

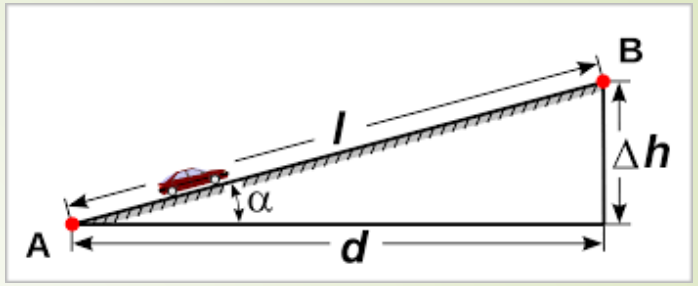
but difficult areas 800m. (NCIP Agreed on)

Relationship between radius of curvature and maintenance cost (120km/hr)

Radius of curvature	R ≤ 400	400<R≤600	600<R≤800	R >800
Maintence cost per (USD 10,000/year.km)	4.32	3.25	2.86	1.51
Percentage Increase (%)	286	215	189	100

- The curvature determines the investment costs, operation safety, topographical conditions and transport properties.
- Change on curvature should note the impact on speed and maintenance costs.
- If the speed increases then wider curvatures are required and higher investment costs

Gradients



- The ruling grade is determined by railway class, terrain conditions, type of traction and transport demands
- For gradients, according to GB 50090-2006 for hilly areas and electric traction, the recommended gradient / ruling grade is 1.2% or 12‰.
- It affects traffic capacity, train operational safety, investment and maintenance cost
- Analysis for 0.6% and 1.2% done for the malaba-Kampala section
- **Adopting 1.2% saves 15% of investment costs compared to 0.6%**
- The train operation time for 1.2% and 0.6% is the same
- 1.2% adopted for the line.
- Increasing gradient reduces the investment cost but greatly increases operation and maintenance and pusher grades (Section) will be required on the line
- **This same ruling grade of 1.2% was agreed upon at NCIP level**

Electrification

- **The design based on TB 10007-2006**
  Design code for electric traction feeding
- SGR requires 50-100MW
- O&M – Electric traction 30-40% cheaper than diesel
- 8.82kWh per 1000GTKM compared 2.52ltres of diesel per 1000 GTKM
- Environmentally friendly
- Overhead catenary system
- Concrete poles
- 5 traction sub station (Tororo, Buwola, Iganga, Nyenga and Namanve)
- Two feeds into traction substation

4.0 SGR IMPLEMENTATION STRATEGY

- **Land Acquisition:** Using in-house approach
- **Mode of Implementation:** EPC/Turnkey
- **Cost:** USD 2.3 billion (civil works, electrical installations, locomotives and rolling stock ,etc.)
- **Contract Period:** 42 Months
- **Construction Plan:** 4 Major Camps, 13 Minor Camps, Construction will be done along the whole route concurrently,
- **Construction Supervision:** By Consultant,
- **Quality Assurance:** by the employer(SGRP).
- **Environmental and Social safeguards:** strategies developed by SGRP

4.0 LOCAL CONTENT

What is SGR Local Content?

- It is the added value brought to Uganda through the competitive and gainful participation of citizens and the Ugandan private sector in the railway development and maintenance
- Local content mainstreaming is enshrined in the Malaba-Kampala SGR EPC contract. Our target is to achieve 40% of the contract value

Local Content Objective

- An affirmative action to enable the private sector and or indigenous Ugandans to effectively participate in the development, maintenance and operations of the SGR by ensuring preference to domestically produced/ sourced goods and components or substantial value addition

Vision 2040

4.0 SGR LOCAL CONTENT >>>>>

Specific objectives

- To develop the Ugandan local businesses to become **competitive locally and internationally** through the empowerment of local suppliers to meet the needs and standards of the SGR project
- To have **local goods and services** that meet the standards and specifications procured by the contractors in line with the terms and conditions of their contract
- To have **appropriate technology transferred** to Ugandans for developing, managing and operating the new railway system
- To **maximize participation of skilled and unskilled** Ugandans in project activities
- To enhance **value addition and job creation** through the use of local businesses.
- To Ensure **sustainable development** of the railway industry in particular and the economy in general

4.0 SGR LOCAL CONTENT >>>>>

Opportunity Areas

- 100% Cement to be locally produced & procured.
- 90% of concrete reinforcement bars to be locally produced,
- 100% earth Materials locally sourced (Sand, Aggregates, gravel) etc,
- Labour to be acquired in a ratio of 9:1 gradually within the first 18 months.
- All fuel and Lubricants to be sourced locally,

Vision 2040

SGR Reliable Connectivity

4.0 Local Content >>>>>(Cont'd)

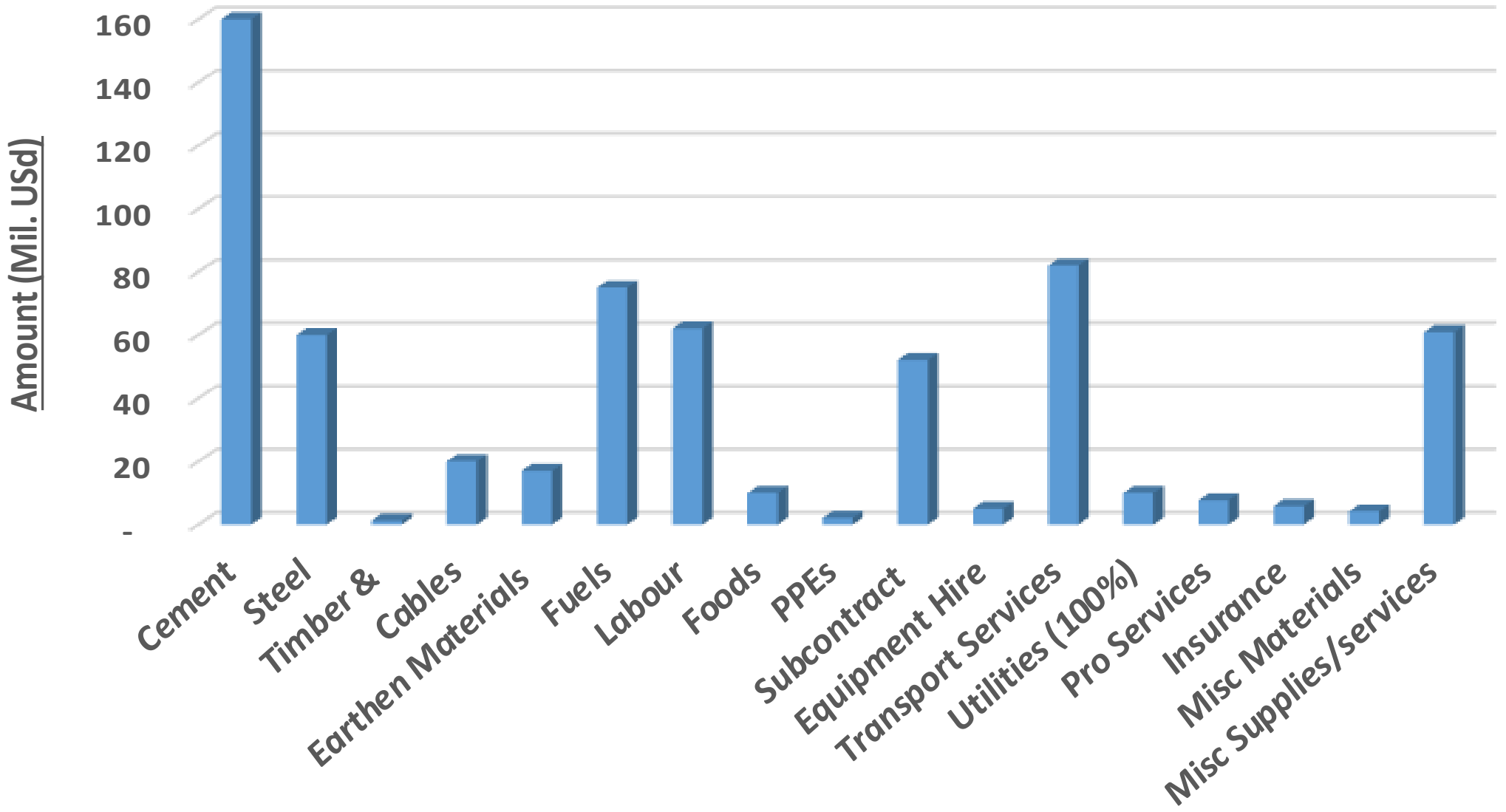
Other Opportunities

- Consultancy services
- Training
- Financial services
- Insurance services
- Communication services
- Legal Services
- Security services
- Equipment Hire and leasing
- Tourism and Hospitality
- Medical and Health Services
- etc

Vision 2040

SGR Reliable Connectivity

Estimated Summary of Opportunity Areas Quantified/ Costed



Vision 2040

SGR Reliable Connectivity

5.0 SGR PROGRESS

In preparation for construction, the following have been done;

Engineering studies:

- Completed feasibility study and preliminary engineering design of the Malaba-Kampala SGR route
- Prepared a bankable feasibility study based on China Class I standards;
- Conducted an seismic hazard assessment study for the SGR route;
- Conducted a mineralogical assessment study for the SGR route;
- Carried out a Geo-hazard Assessment study;
- Carried out a study on the electricity extension to the five SGR traction substations;

5.0 SGR PROGRESS>>>>>>>>>>.

Strategies, policies and guidelines

- Developed several strategies (e.g. Local Content Strategy, Quality Assurance Strategy, Environmental Safeguards Strategy, Social Safeguards Strategy, Capacity Building Strategy, Occupational Safety and Health (OSH) Strategy, etc)
- Signed MoUs with several institutions including the Engineers Registration Board (ERB), the Ministry of Internal Affairs and the Uganda National Bureau of Standards (UNBS).

5.0 SGR PROGRESS……

Land Acquisition:

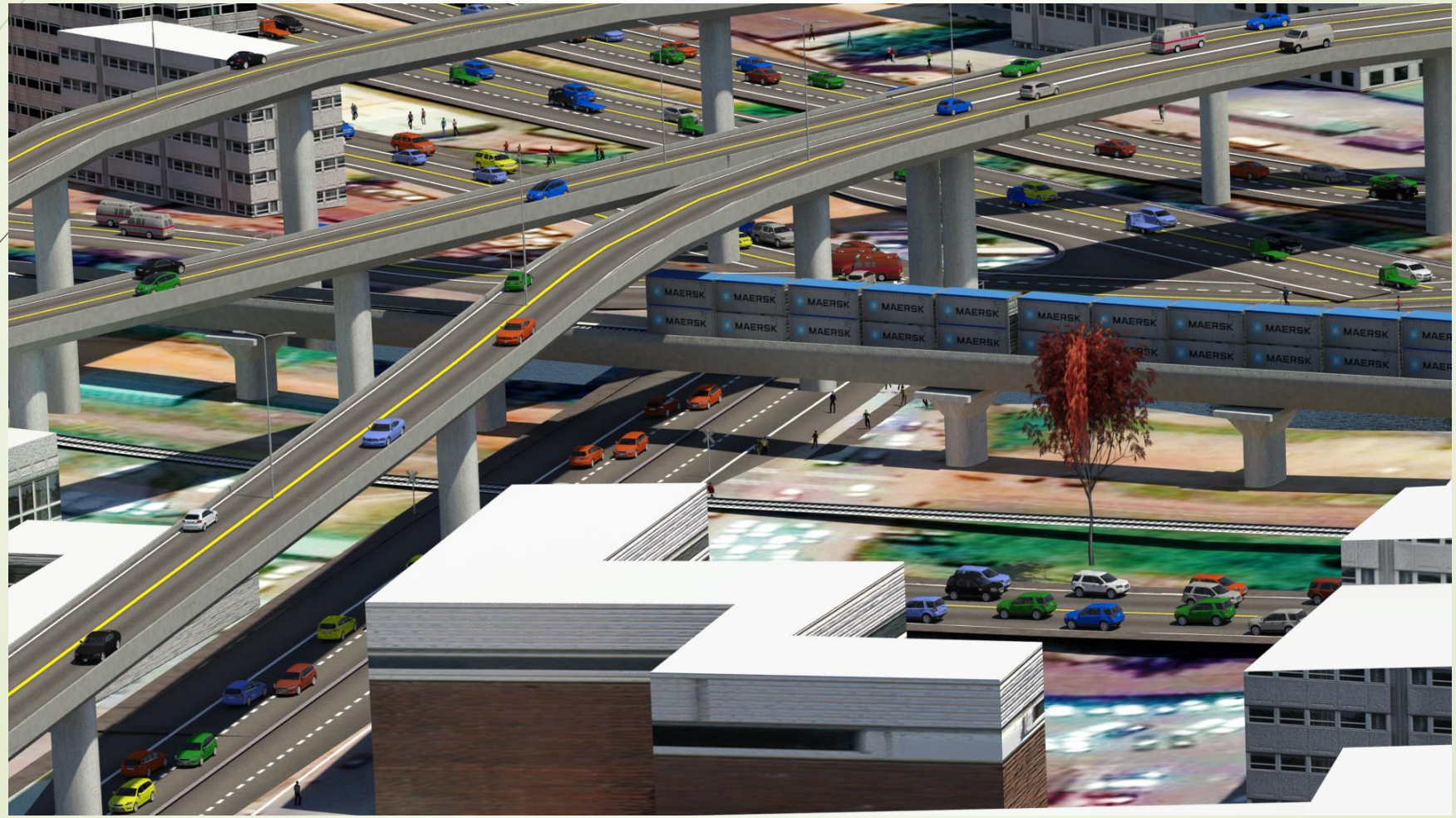
- 100km compensated up to mid-Iganga district
- RAP done for 224km (82%) of the main route,
- Sensitization and Mobilization done for 11 Districts,
- 53km in Swamps and

  NEMA Certificates acquired
- 8.9Km through Forest Land,
- National control points constructed

5.0 SGR PROGRESS……

Design reconciliations:

- At Access Road, SGR, Kampala Flyover and KCCA harmonized.



5.0 SGR PROGRESS……..

Design Reconciliations

- District Community & other National Roads and SGR
- Power Transmission Lines (UETCL) and SGR,
- Sewerage and Water infrastructure (NWSC) with SGR,
- Kampala-Jinja Expressway and SGR
- Bukasa Port Development

5.0 SGR PROGRESS……

UETCL/SGR Power Connection

- SGR to use **Bulk Power** Supply from UETCL
- SGR to have Five Power Traction Substations as:

1. Tororo
2. Buwoola
3. Iganga
4. Bulamagi
5. Kampala East (Namanve)

- A power connection plan developed for connecting the above stations to **reliable power supply** (98%) and a **redundancy** supply line.

6.0 CHALLENGES

Physical Planning:

- Lack of detailed National integrated infrastructure plan for the country.

Land Acquisition Challenges

- Illegal settlements in Wetlands, and Forest Reserves.
- Court cases and injunctions.

Misinformation about the project

- There Lack of scientific reasoning in contextualizing engineering projects.

Weak construction materials testing sector and regimes in Uganda

6.0 WAY FORWARD

1) There is need to address the common challenges in the local private sector (consistency in quality, quantity & competitive pricing).
2) The Professionals ought to take their cardinal role in guiding the public with respect to upholding professionalism and meeting the standards.
3) There is need to adopt necessary technology from other developing countries to leapfrog the technology ladder. Particularly the estimation of quantities for construction items.
4) There is need for fast-tracking the Uganda Construction Industry Commission Bill 2017.
5) The SGR is a transformational project for Uganda that will not only stimulate industrialization, but provide the needed momentum to lift the country into middle income status. Any delay will impact on the country significantly.

VISION: “Modern and efficient railway transport systems in Uganda by 2025”.

MISSION: “To develop in a cost effective manner the SGR network in line with the regional SGR Protocol and the Greater Kampala Light Rail Mass Transit (LRT) system”.

FOR GOD AND MY COUNTRY

THANK YOU