Ethiopian Railways Corporation (ERC)

Addis Ababa Light Rail Transit Project

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OUTLINE OF THE PRESENTATION

- WHY RAILWAY?
- NATIONAL RAILWAY NETWORK OF ETHIOPIA
- GENERAL LRT PROJECT INFORMATION
- FEATURES OF LRT PROJECT
- LRT PROJECT CURRENT STATUS
- CHALLENGES AND OPPORTUNITIES

WHY RAILWAYS?

- Ethiopia covers 1.1 M sq. km
  - *Vast to cover with only road transport*
- Economic (Heavy haul with bare minimum cost needed)
  - *For mining*
  - *Agriculture*
  - *Export-import*
- Social and political cohesion
- Instigates investment
- Emergency delivery
- Increased land value

KEY FOR DEVELOPMENT!

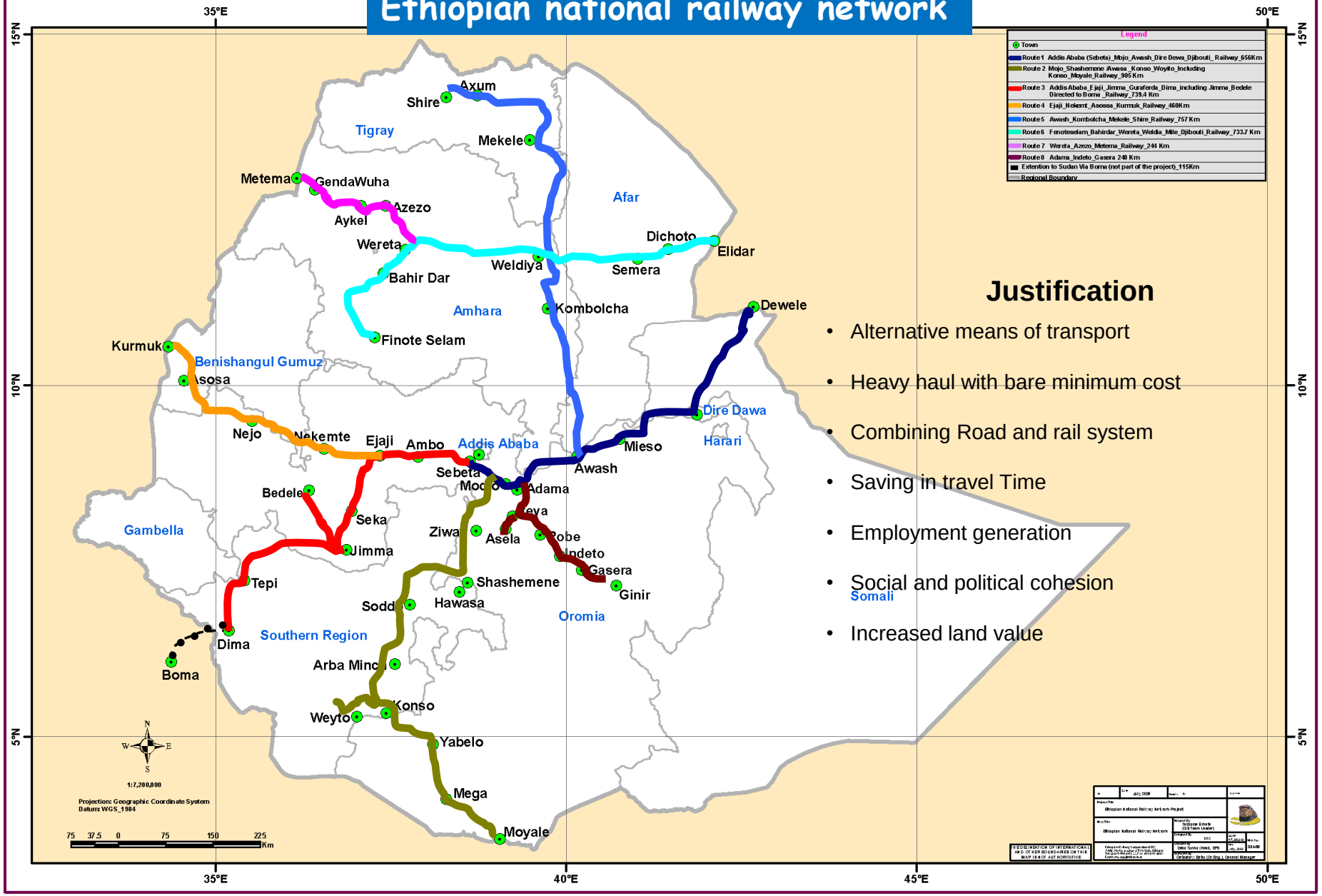
CoM of FDRE R.NO 141/2007------ERC

NATIONAL RAILWAY NETWORK OF ETHIOPIAN

- More than 5000 km of rail network
  - Different multi objective Socio-economic indicators or criteria have been utilized to prioritize for the development of National Railway Network
  - Two phases for the implementation
- Addis Ababa LRT Project

The selected ENRN and LRT have been surveyed (500 m band) using the latest technology that found in the world i.e. **Airborne Laser Scanning Technology (3D Object Mapping)** using Light Detection and Ranging (LiDAR) technology.

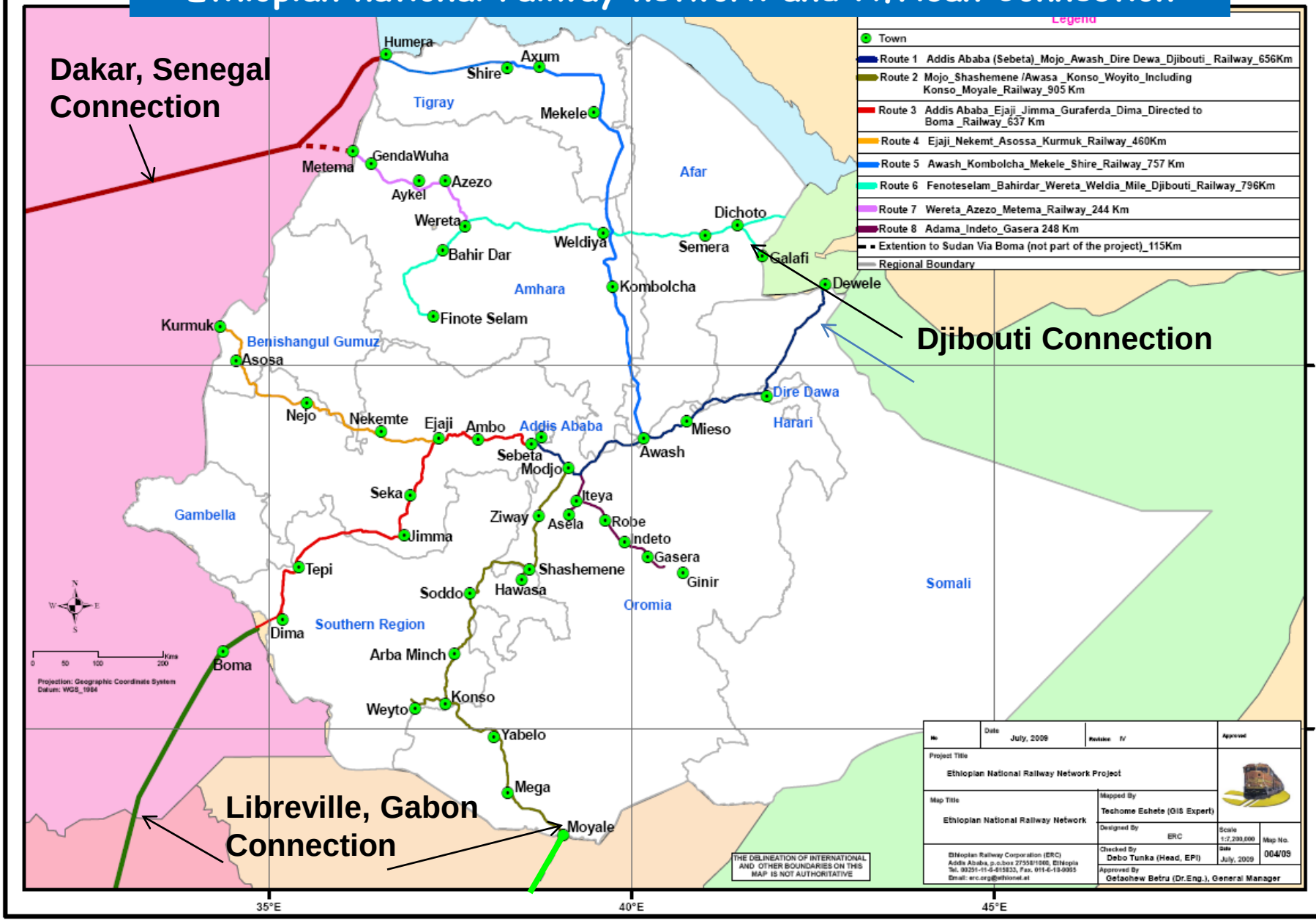
Ethiopian national railway network



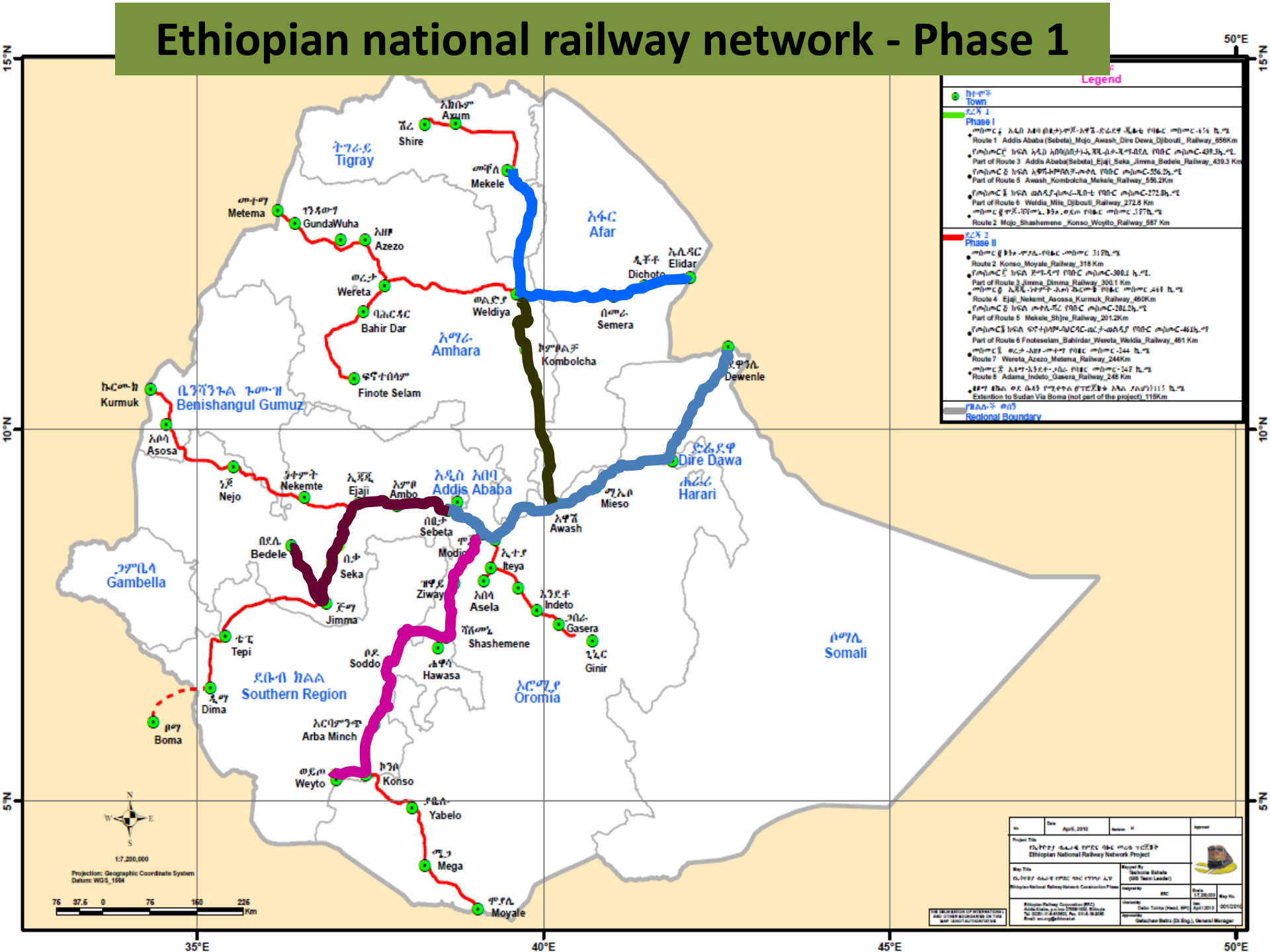
Justification

- Alternative means of transport
- Heavy haul with bare minimum cost
- Combining Road and rail system
- Saving in travel Time
- Employment generation
- Social and political cohesion
- Increased land value

Ethiopian national railway network and African Connection



Ethiopian national railway network - Phase 1



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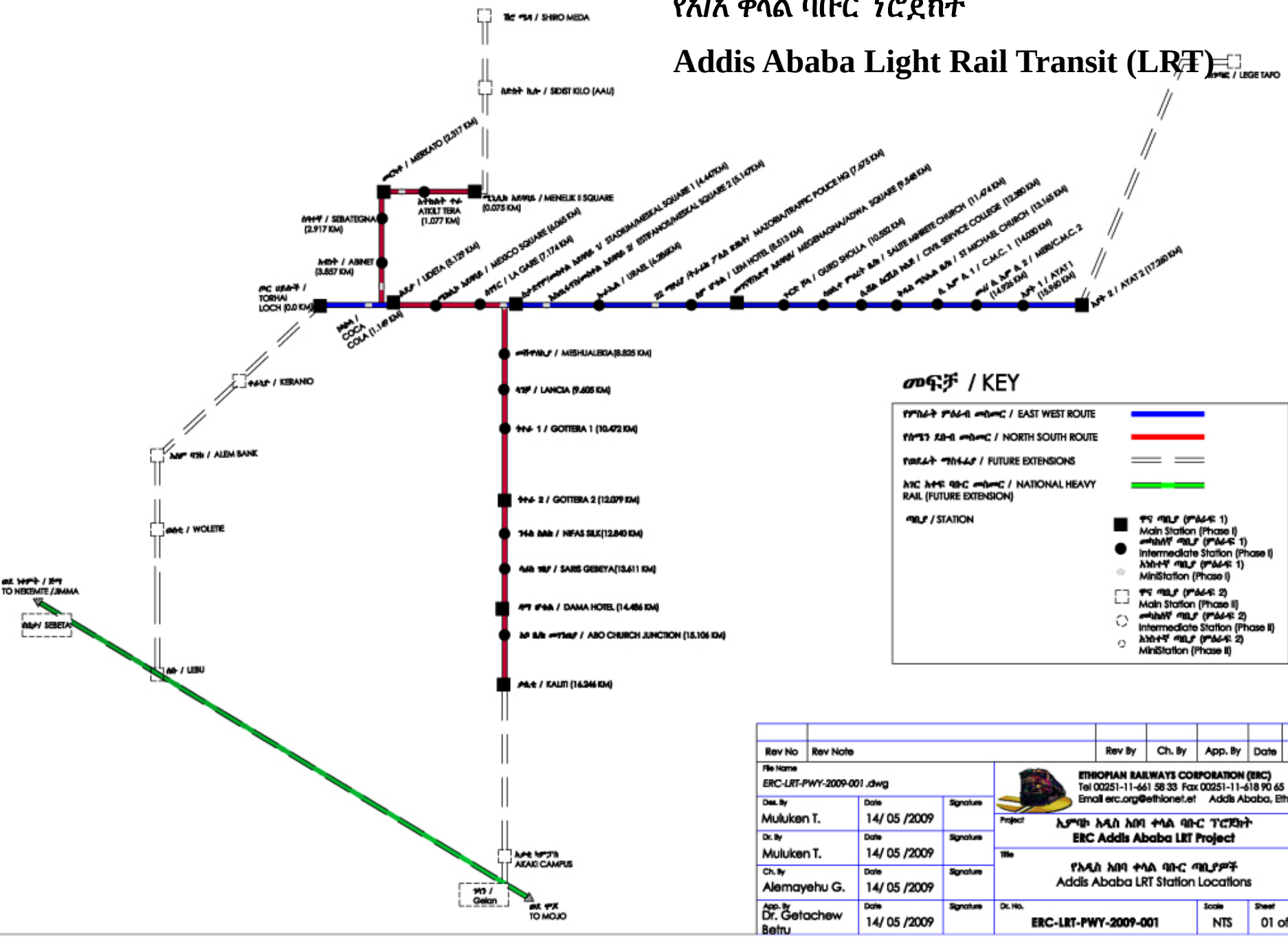
Addis Ababa Light Rail Transit (LRT)



መፍቻ / KEY

- የምስራቅ ምዕራብ መስመር / EAST WEST ROUTE
- የሰሜን ደቡብ መስመር / NORTH SOUTH ROUTE
- የወደፊት ማስፋፊያ / FUTURE EXTENSIONS
- ብሔር አቀፍ ባቡር መስመር / NATIONAL HEAVY RAIL (FUTURE EXTENSION)
- ጣቢያ / STATION
  - ዋና ጣቢያ (ምዕራፍ 1) Main Station (Phase I)
  - መካከለኛ ጣቢያ (ምዕራፍ 1) Intermediate Station (Phase I)
  - አነስተኛ ጣቢያ (ምዕራፍ 1) MiniStation (Phase I)
  - ዋና ጣቢያ (ምዕራፍ 2) Main Station (Phase II)
  - መካከለኛ ጣቢያ (ምዕራፍ 2) Intermediate Station (Phase II)
  - አነስተኛ ጣቢያ (ምዕራፍ 2) MiniStation (Phase II)

Rev No	Rev Note	Rev By	Ch. By	App. By	Date	Sign.

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Des. By: Muluken T.	Date: 14/ 05 /2009	Signature
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Ch. By: Alemayehu G.	Date: 14/ 05 /2009	Signature
App. By: Dr. Getachew Belru	Date: 14/ 05 /2009	Signature

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ERC Addis Ababa LRT Project

Title: የአዲስ አበባ ቀላል ባቡር ጣቢያዎች
Addis Ababa LRT Station Locations

Dr. No.: ERC-LRT-PWY-2009-001 | Scale: NTS | Sheet: 01 of 01

GENERAL LRT PROJECT INFORMATION

- **Addis Ababa's Transport problems are diverse**
  - Aged Fleet,
  - Chaotic movement of mini-bus taxis
  - Environmentally unacceptable emission
  - Unsafe, Hazardous to life and property

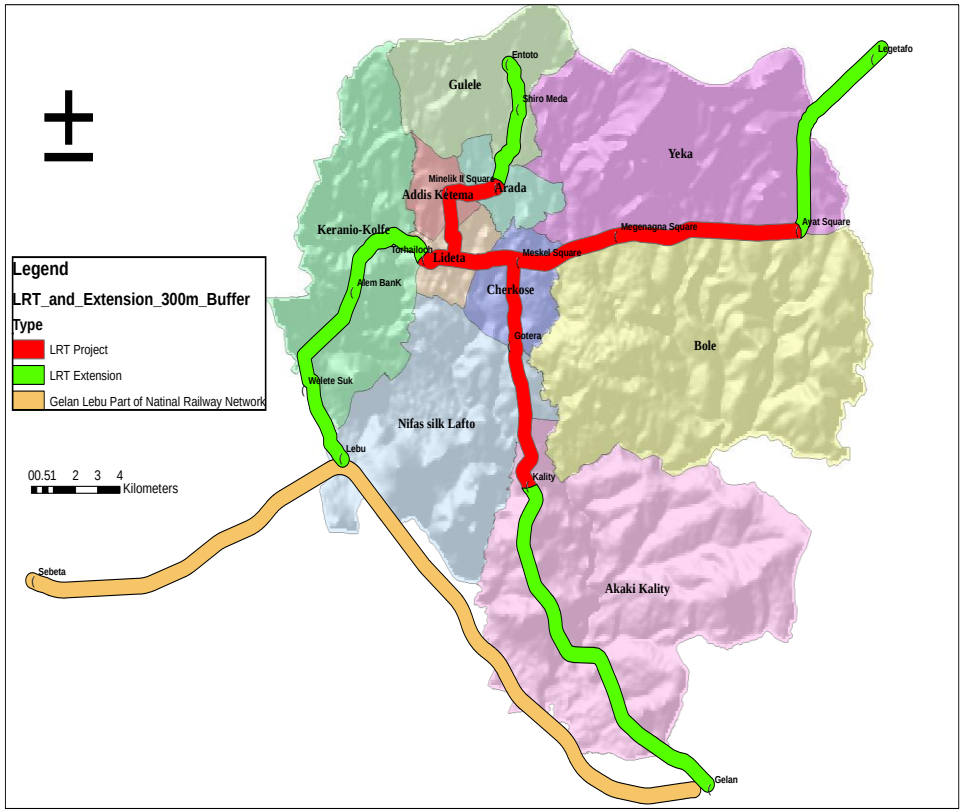
PEDESTRIANS +PASSENGERS → **HIGHER ORDER PMTS**

PMTS SELECTION

Criteria

- Capacity
- Cost
- Impact
- Safety
- Reliability
- Comfort
- Environmental friendliness
- Efficiency
- Attractiveness
- Accessibility to the physically challenged

PMTS & Kifle Ketemas



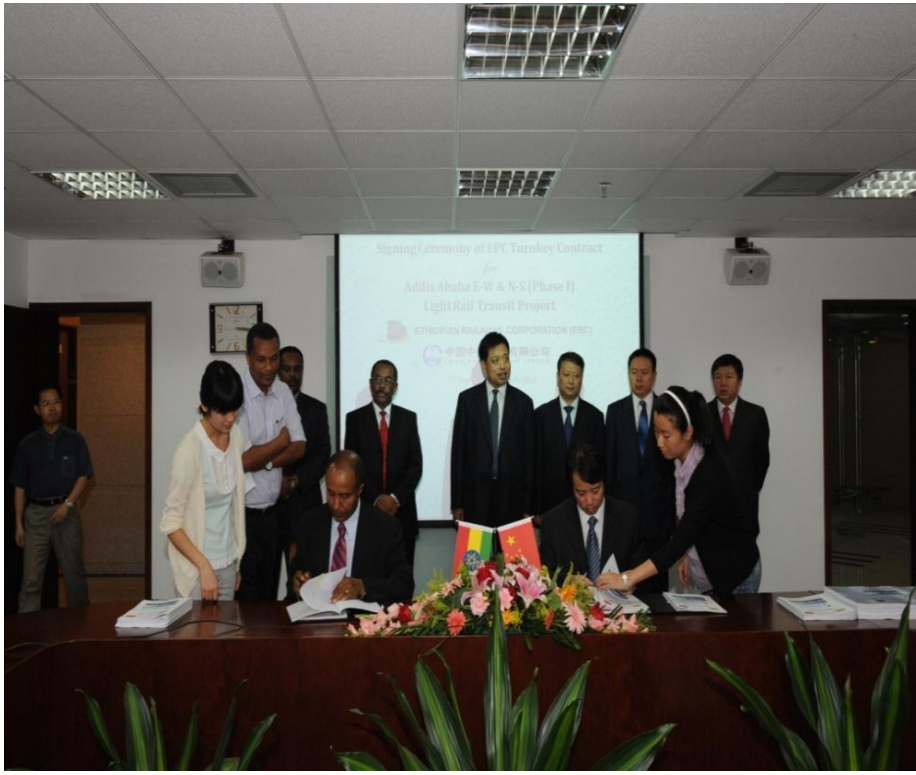
SPECTRUM OF CHOICES FOR PMTS

- **Bus systems**
  - Buses in Mixed Traffic
  - Buses on Dedicated Lanes
  - Bus way/Bus Rapid Transit (BRT)
  - Guided Buses
- **New technologies**
  - Rubber Tyred Electrical Guided systems
  - Trolley buses
- **Urban rail systems**
  - Tramways
  - Light Rail Transit (LRT)
  - Fully elevated Automatic Rapid Rail Transit
  - Metro

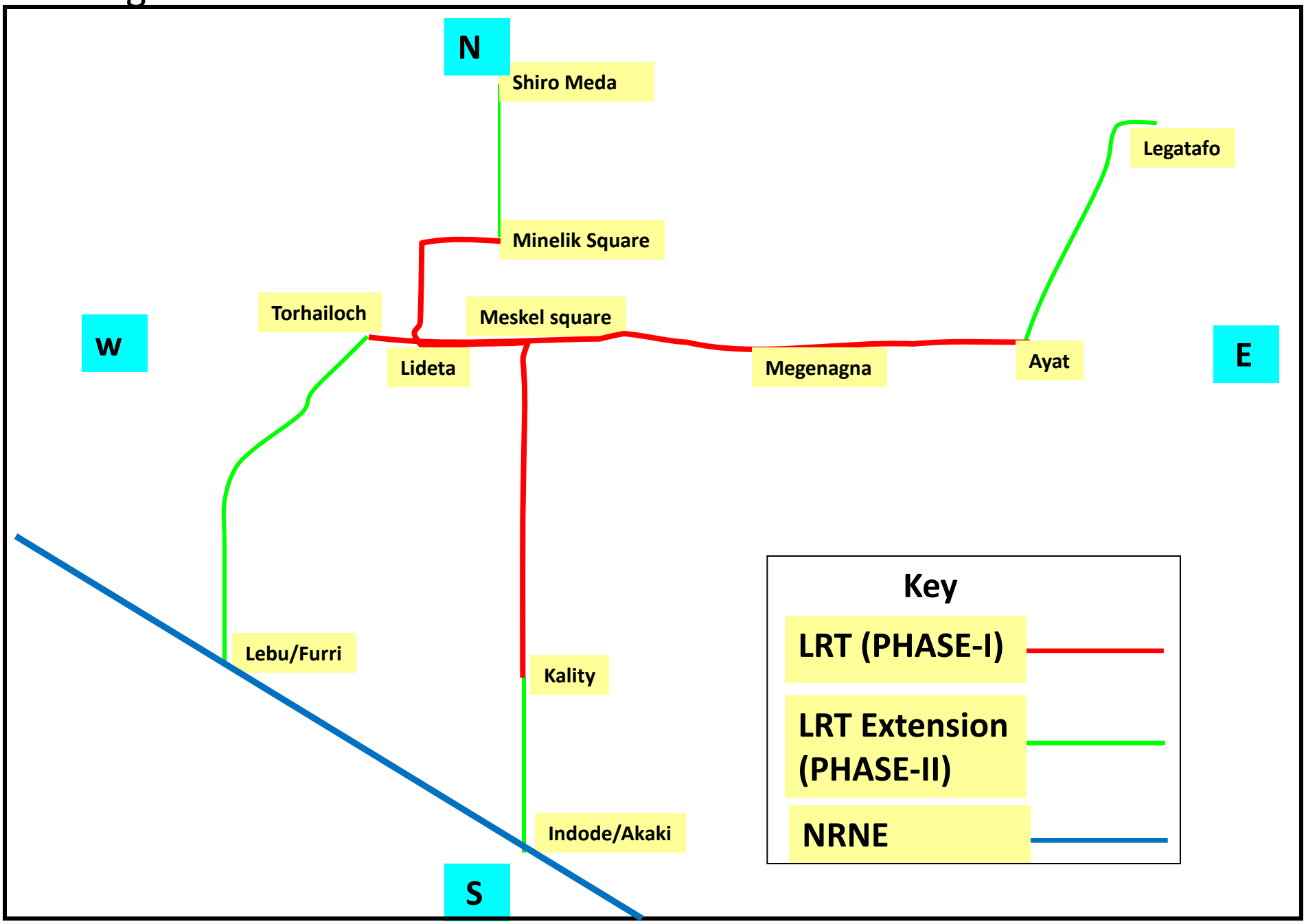
LRT SHORT HISTORY

- MoT----- Steering Committee
- AACRA LRT Desk…Dec. 2007
- RFP by AACRA-----January 2008
- ERC took charge of LRT---- March 2008
- First EPC Turnkey tender issued by ERC …. April 2008
- Three Tenderers submitted proposals
- Pre-contract Negotiations failed b/se of
  - High cost and failure to avail cost break down
  - Unconfirmed finance source
- Feasibility study by in-house personnel & expatriate
- MOU with CREC …. March 2009
- CREC presented conceptual design and cost estimate …. July 2009
- EPC Turnkey Contract signed --- Sept. 2009
- Loan Agreement Signed….June, 2011

Sept.3, 2009



LRT Alignment With Extension



FEATURES OF THE PROJECT (CONTD.)

- Metropolitan electric railway
- Has a total length of 34.25 km (North-South line 16.9 km and East-West line 17.35 km)
- The two lines (North-South and East-West lines) use common track of about 2.7 km
- Fit for elevated, at grade and below grade
- High capacity: 15,000pphpd

FEATURES OF THE PROJECT (CONTD.)

- Environmental friendliness
- Impact on city form and structure
- Negotiates steep gradients (5%) and sharp curves
- Low lifecycle costs
- Increased land value

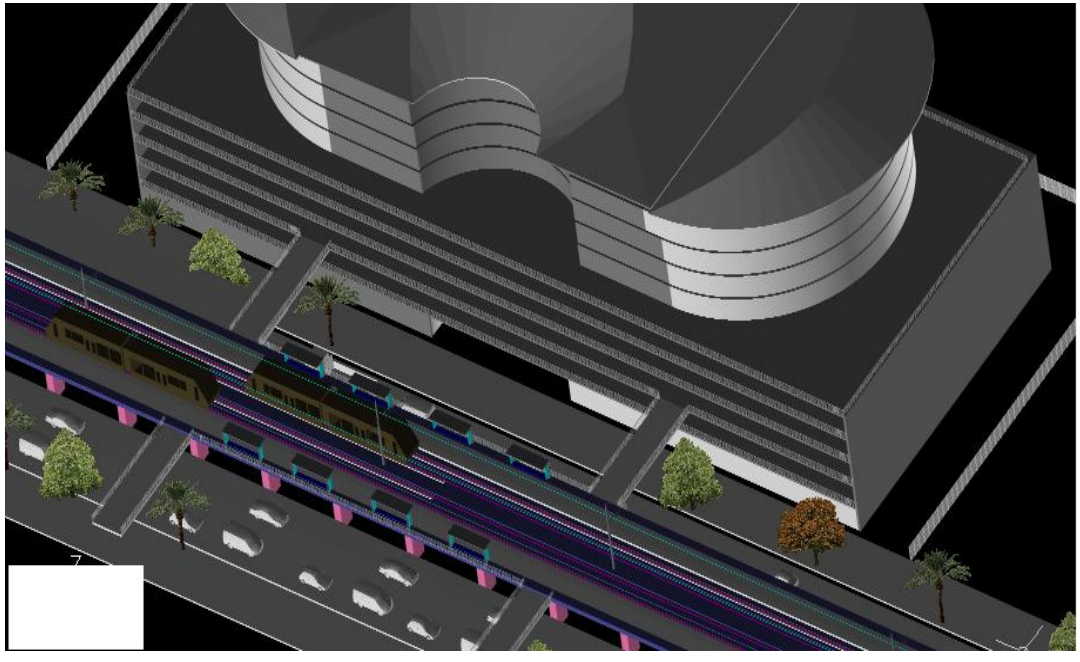
FEATURES OF THE PROJECT (CONTD.)

- Nominal Track Gauge: 1435mm
- Maximum Service Speed: 80 km/h
- Maximum Grade, typical: 5%
- **Capacity**
  - 15,000 pphpd, total 60,000pph
- **Reliability**
  - Initial injection of LRVs = 41with 286 passenger carrying capacity
  - Headway = 6min initially and can be reduced to 90 seconds at ultimate capacity
  - Over 98% reliability factor
  - Working hours, 16-18 hours per day
- **Affordability**
  - Fare based on passenger-km coverage
  - Considerate of paying capacity of residents
- **Comfort/environment**
  - Pleasant and attractive

FEATURES OF THE PROJECT (CONTD.)

Project Financing

- Equity----------15%
- Foreign Loan------85%
- Revenues
  - Tickets (Automatic)
  - Other side business from buildings at station
  - Advertisement
  - Carbon Credit



LRT PROJECT CURRENT STATUS

The following has been accomplished so far:

- **LiDAR Survey**
- **Conceptual design**
- Preliminary **site investigation**
- **Bankable feasibility** study and **Environmental & Social impact assessment** completed and approved
- Collections of **information and basic data** on the route
- Preliminary **route plan** and **profile** has been prepared

LRT PROJECT CURRENT STATUS (Contd.)

- Optimization of the design in accordance with the city Master plan
- Heavy mobilization by the contractor
- Quarry Site acquisition
- Camp site preparation work (at Ayat and Arategna Kifletor)
- Early Start section at the East end of the E-W line

CHALLENGES AND OPPORTUNITIES

Challenges

- **Lack of skilled human power in the sector**
- **High Investment Costs**
  - Planning costs: including the design cost
  - Construction costs: site preparation, infrastructure, supervision of work and contingencies
  - Land and property costs: compensation payments for land acquisition for the projects
  - Rolling stock
- **Time bound delivery under budgetary constraints**
- **Commercially sustainable yet affordable service**

CHALLENGES AND OPPORTUNITIES

Opportunities

- **Strong political will and commitment from the government**
- **Growing freight and passenger volumes in all the corridors**
- **Projects are technically feasible and economically viable**
- **Rapid growth of the economy (can shoulder part of the financing of the projects)**
- **Regional connectivity - enhancing trade**
- **The positive response from development partners regarding the financing of the projects**
- **Green development strategy (environmentally friendly)**

Thank you for your attention!