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
• 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
Dakar, Senegal Connection

Libreville, Gabon Connection

Djibouti Connection

Ethiopian national railway network and African Connection

Legend:
- Towns
- Route 1: Addis Ababa (Sebeta) - Mojo - Awash - Dire Dawa - Djibouti
- Route 2: Mojo - Shashemene - Awasa - Korrora - Woyto, Including Konso - Moyale
- Route 3: Addis Ababa - E키 - Damoa - Garshegera - Dima - Dire Dawa - Railway 657 Km
- Route 4: E키 - Kekemer - Aseco - Kummel - Railway 460 Km
- Route 5: Awash - Kombolcha - Mekele - Shire - Railway 757 Km
- Route 6: Feniques - Bahar Dar - Werta - Weldia - Mile - Djibouti - Railway 750 Km
- Route 7: Werta - Asossa - Metema - Railway 366 Km
- Route 8: Adama - Indet - Gasera - 288 Km
- Extention to Sudan Via Dom (not part of the project) - 115 Km
- Regional Boundary

Djibouti Connection
Addis Ababa Light Rail Transit (LRT)
Addis Ababa’s Transport problems are diverse
- Aged Fleet,
- Chaotic movement of mini-bus taxis
- Environmentally unacceptable emission
- Unsafe, Hazardous to life and property
Criteria

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

Key:
- LRT (PHASE-I)
- LRT Extension (PHASE-II)
- NRNE
• 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 (CONT'D.)

• 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 = 41 with 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
**Project Financing**

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

- **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**
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!