

E-Bus Procurement Challenges & Opportunities

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Sajha Yatayat – An Introduction



1962

- Sajha Yatayat established as a public transport cooperative



2013

- Relaunching of Sajha Yatayat with 16 new Euro III buses



2022

- Sajha Yatayat to start electric bus operations

साझा यातायात

Why E-bus in Kathmandu?



For our own Survival

- Financial sustainability



For the City's Survival

- Air pollution control



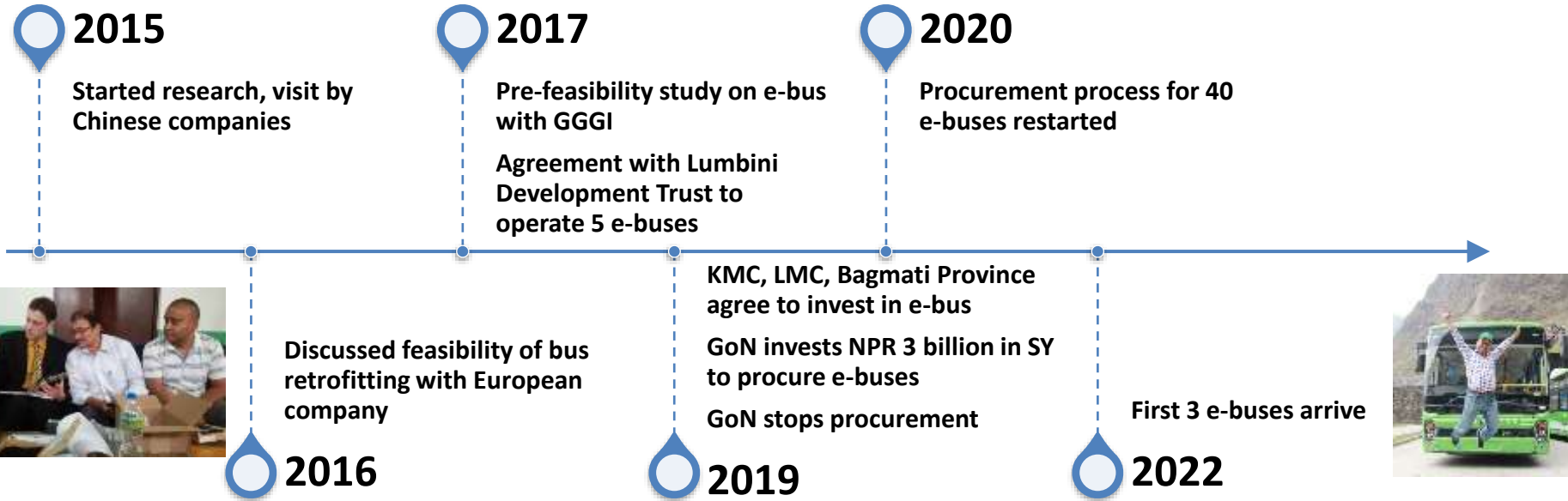
For the Planet's Survival

- Reduce carbon emission



साझा यातायात

Journey to Electrification of Sajha Yatayat's Bus Fleet



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Procurement Process

- Research on E-bus technology, O&M systems, financing and procurement models
 - Pre-feasibility study in partnership with GGGI
 - Literature review
 - Interaction with experts
 - Survey of manufacturers
 - Visit & interact with operators in Kolkata, Mumbai & Pune
- Formation of Procurement Committee with representatives from MOPIT, DOTM, NEA, KMC and experts
- Draft technical specifications based on
 - i. Sajha's needs
 - ii. Market assessment
 - iii. Analysis of draft specifications received from MoPIT



Procurement Process

- ICB Bidding document based on PMU's Standard document
 - Qualification criteria
 - Technical specifications
 - Certifications required
 - Evaluation criteria
- Bidding – 40 buses, chargers & 5 years AMC
- Evaluation of Bids
- Signing of agreement
- Delivery of first three buses for trial
- Delivery of remaining 37 buses



Challenges



Technical



Financial



Institutional



Legal

साक्षा यातायात

Challenges - Technical

- Technology is new and evolving. Lots of uncertainties.
- Lack of understanding about the technology within Nepal
- New variables to deal with – battery capacity, motor capacity, charging system, etc.
- Little experience of performance in Nepali conditions
- Logistical challenges – delivery, delivery time required, charging infrastructure etc.

Challenges - Financial

- High capital costs
- Cost varies significantly among different manufacturers, with different specifications and with time
- Low O&M costs but not clear how much lower
- Difficult to quantify economic, environmental and social benefits

Challenges – Institutional

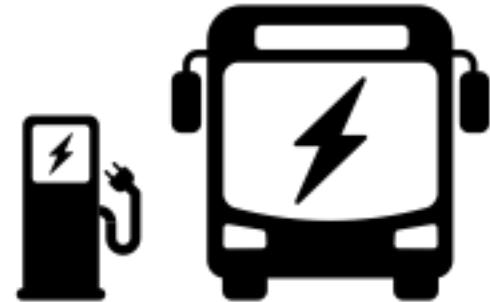
- Supply side – Lack of experience
 - Many of the OEMs are new with little experience in e-bus manufacturing, operations and supply
 - Few representatives of e-bus manufacturers in Nepal and even they do not have the necessary experience
- Demand side – Uncertainties
 - Who will purchase the bus?
 - Who will operate them and how will they be operated?

Challenges - Legal

- Public procurement Act & Standard Bid Document is often vague
 - Does not address annual maintenance contract (AMC)
 - Bid evaluation is not scientific and is only based on cost. Need provisions to evaluate based on cost and quality and life time costing
 - Difficult to do cost estimates for e-bus because of lack of experience and rapidly changing technology
 - No provision for procurement through Gross Cost Contract (GCC) or Net Cost Contract (NCC)
- Standards for e-buses, chargers are not available
- Testing protocols are not available
- Different standards and certifications from different countries and agencies

Opportunities

- Number of manufacturers and suppliers are increasing
- Increasing experiences in Nepal and abroad that we can learn from
- Costs may decrease in the future
- Possibility of converting ICE buses



Way Ahead

- Formulate standards for e-buses, charging stations and testing protocols
- Improve Public Procurement Act & Standard Bidding Document of PMU
- Provide technical & financial support to public transport operators
- Invest in entire ecosystem - supporting infrastructure (reliable electric supply, charging stations, smooth roads), training, research and development, and the improvement of the public transport system as a whole

Elements of e-Bus System

1. E-Bus

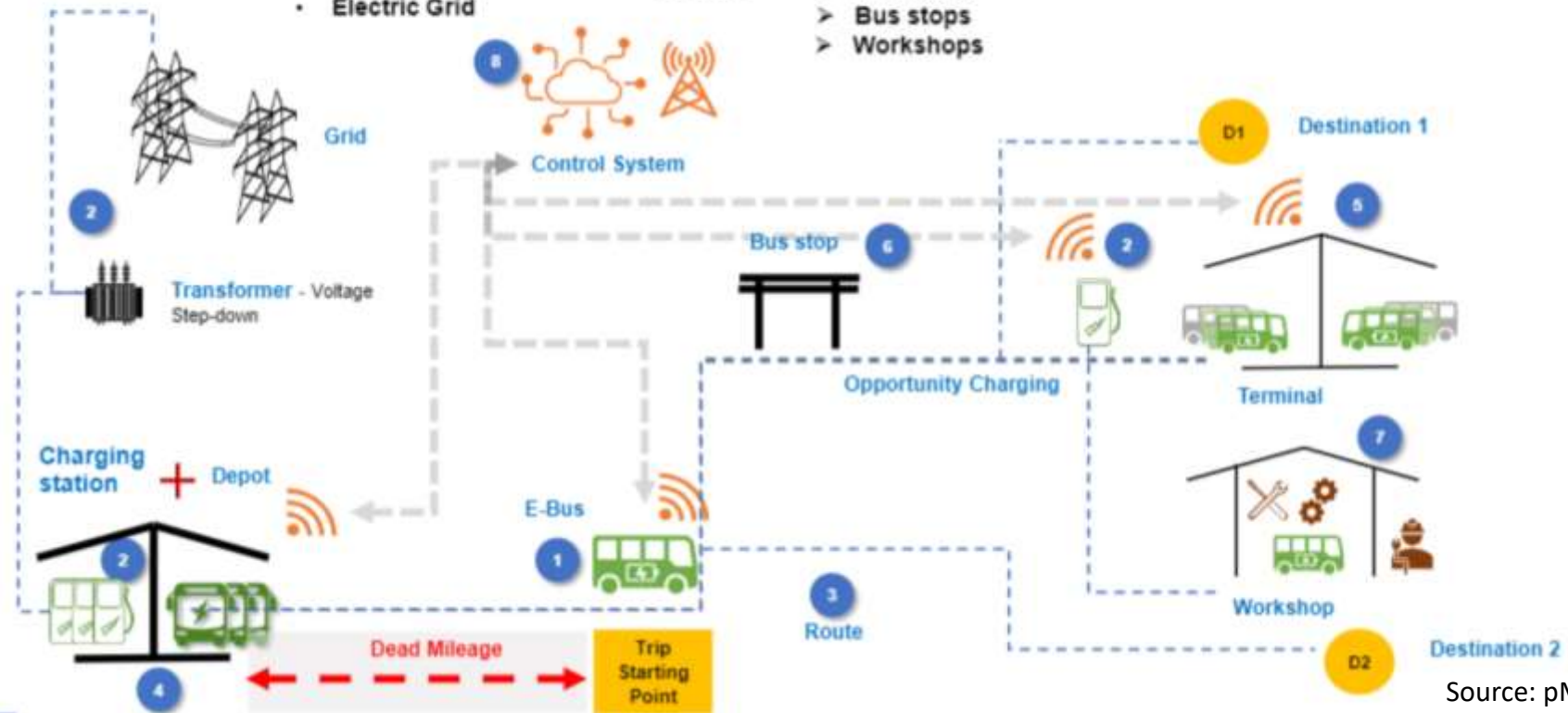
2. Charging Infrastructure

- Chargers
- Electric Grid

3. Route Network

- Depots
- Terminals
- Bus stops
- Workshops

8. Control System



Source: pManifold

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Thank You

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