Training Needs Assessment for Electric Buses in India

Round Table Discussion

Urban Mobility India, Lucknow | 17th Nov, 2019
India has 250+ existing e-Buses and another 7,000+ in pipeline. With focus on PT and need to almost double its bus fleet size, it has OPPORTUNITY to leapfrog and become 2nd largest global player in e-Buses.

- FAME II good demand catalyst: INR 3,545 cr. for 7,090 e-Buses by 2022 (5,595 e-buses sanctioned in 64 cities)

- Local supply chain gradually building up. 100% localization target by Apr 2021.

- Gradual improving price performance will make e-Buses also better economic option over diesel

- Big Opportunity for India to leapfrog and transition from diesel to electric buses:
  - Make ongoing spent on e-Buses successful through efficient integration in STUs/ SPVs/ Cities (How?)
  - Target 100% e-Bus mix of annual bus fleet addition (from when?)

![Year-wise Electric Bus Stock in India](image)
Multiple challenges are being faced with current e-Buses deployment, some originating from New Technology risk at OEM side and more due to LACK of Planning and Execution CAPACITY in STUs/ SPVs/ Cities

- **Cities unable to rate the OEMs/ suppliers** (high variation in costs; e-Bus performance challenges; delayed delivery from order; post supply services; non availability of historical data of e-bus performance)

- **Cities unable to do proper route planning and scheduling/ dispatch** (range uncertainty of e-Buses)

- **Route and scheduling have to be curtailed against planning** (due to battery under performance; Kolkata, Lucknow)

- **Hassles with Depot and Charging infrastructure setup and operations** (Load shedding hampering e-bus operations; Land allocation for Depot and en-route charging)

- **Unawareness of safety aspects** (Fire incidence in battery; Kolkata)

1 Diesel Bus

= ? E-Buses
e-Bus value chain has multiple Players and they all interact with STUs legacy systems, processes and people. STUs/SPVs are DEPENDENT on them for 1) Funds 2) robust e-Buses 3) reliable Infra 4) healthy Contract 5) quality Services

**e-Bus related Touch-points of STUs with different Players**

- **Government (Central/State):**
  - Policy & Guidelines
  - Fund allocation
  - Timely disbursement

- **Battery OEM:**
  - Battery reliability
  - End-of-life
  - Safety

- **e-Bus OEM:**
  - Cost
  - Performance
  - Safety
  - Timely delivery
  - Post sales support

- **Private Bus Operator:**
  - Fleet Mgmt.
  - Depot Mgmt.
  - Contracting
  - Services
  - Integration

- **Charger OEM:**
  - Grid Safety
  - Depot Safety
  - Cost

- **Discom:**
  - Supply connectivity + continuity
  - Tariff

- **Charging Infra Provider:**
  - Charging infra location
  - Services
  - Contracting

**STU**

- **Battery reliability**
- **End-of-life**
- **Safety**

- **Grid Safety**
- **Depot Safety**
- **Cost**

- **Supply connectivity + continuity**
- **Tariff**

- **Cost**
- **Performance**
- **Safety**
- **Timely delivery**
- **Post sales support**

- **Fleet Mgmt.**
- **Depot Mgmt.**
- **Contracting**
- **Services**
- **Integration**

- **Charging infra location**
- **Services**
- **Contracting**

- **Upskilling STUs for improved e-Buses adoption and integration**

17 Nov 2019
Different LIFE CYCLE stages of e-Buses will need to be looked into deeply and appropriate strong processes for different roles of people will need to be developed. TRAINING for all stages and processes will be important.

- **Planning**

- **Procurement**

- **Scrap/ Recycle**
  - What end-of-life for battery/ e-bus/ charger? When to scrap ICE buses? How to reuse/ recycle e-Bus & LIBs?

- **Operations**

- **Maintenance**
Strong Need for a Comprehensive Program to UPSKILL STUs/Operators for improved e-Buses Adoption and Integration
This GIZ supported Program’s objective will be to build sustainable ecosystem for e-Buses in India with TRAINING as important component. It will have 3 Components, starting with Training Need Assessment (TNA) study.

Objectives

- Reduce Transition costs for STUs from fossil to low carbon economy
- Promote comprehensive green Mobility in PT in Cities
- Successfully assist STUs with e-Bus adoption and integration with existing fleet
- Drive best practices of e-Bus Life cycle Management in STUs

Components

1. Training Needs Assessment (TNA)
2. Training Material Development (TMD)
3. e-Bus Capacity Building of STUs

First focus for the study and also for this Round Table
Key OUTCOMES

Gap Assessment Report and suggestive TNA for STUs as seen by Supply side stakeholders

Gap Assessment Report with TNA for STUs as seen by STUs across Departments and Hierarchies

Development of Training Program for strengthening e-Bus learning and deployment by STUs in India

10. Compilation of Toolkit to allow STU to assess their skills on e-Bus Management, and overall Readiness
JOIN Hands to make e-Buses successful in India

Share experiences, data points, references for e-Buses deployment & use

Support with knowledge & experts to co-develop required Training Modules

Facilitate with Trainers & on-site hosting to deliver Training & upscale

1. Govt. Departments
2. e-Bus OEMs
3. Battery & Charger OEMs
4. Fleet & Infra Service Providers
5. Industry Associations
6. Skills/ Training Institutions
7. STUs/ SPVs/ Cities
8. R&D / Testing Institutions

Upskilling STUs for improved e-Buses adoption and integration
Round Table discussion on
Training Needs Assessment for Electric Buses
Urban Mobility India (UMI) 2019 Conference & Expo
Indira Gandhi Pratishthan, Lucknow, Hall: Moon II

17 Nov 2019 | Time 11:30 – 13:00

The focus of Round table is to identify Training Needs Areas across e-Bus Life cycle Management by STUs to Improve Overall Adoption & Integration.

Key discussion by experts

- Experience with e-Buses - Tendering, Delivery, Operations and Maintenance
- Operational and Financial Performance of e-Buses - Expectations vs. Actuals
- e-Bus Charging Infrastructure Setup and Management
- Skills and Training Requirements for e-Bus Management
- Battery Reliability and e-Bus Performance: Best Practices

Chairperson
Mr. Roland Haas, Senior Technical Advisor - GIZ

Moderators
Mr. Laghu Parashar, Senior Technical Advisor - GIZ
Mr. Rahul Bagdia, MD - pManifold
THANK YOU
Deep on-ground consultation with Industry and STUs to build a framework of e-Bus Responsibility Matrix for different roles at STU; assessing multiple STUs (on different adoption curve) for skill gaps; identification of Training Areas

**Steering Group Setup**
- On-board industry experts to keep the outcome practical and useful

**STUs TNA Consultation**
- 7 select STUs* detailed consultations
- Field visit and interviews across Departments and touch-points

**Workshops**
- Workshops with 1) Providers 2) STUs and 3) National Dissemination

**Stakeholder Consultations**
- e-Bus/ battery/ charger OEMs, Policy makers, Associations, Institutions, R&D, Testing & Training Centres

**Global Best Practices Benchmarking**
- China visit to benchmark global best practices in e-Bus LCM & Trainings

* 4 STUs to be selected from >6 months maturity in e-Buses; 3 STUs from progressive new adoption and entry.