Asia LEDS Partnership Clean Mobility
Community of Practice

Summary report of Online Session 2 on 'Enabling a transition to electric mobility in Intermediate public transport fleets: Policies and Enabling Environment', September 11, 2018.

The primary aim of our Community of Practice is to enhance the understanding of the group members towards Clean Mobility options and ways to build Resilience in the Transport Systems. With this aim, the ALP has been conducting on-line sessions to share and exchange knowledge among the community members as well as external participants – creating a platform for sharing best and next practices.

The second virtual session of Clean Mobility Community of Practice (CoP) was held on September 11, 2018 and was attended by 25 participants from 7 countries.

The session focused on enabling transition in electric mobility in *Intermediate* Public transport (IPT). The discussion included topics such as, the integration of the informal transport with traditional public transport (i.e. buses), e-rickshaw deployment, policy and infrastructure required for IPT, challenges and probable solutions. The two expert panel discussion and presentations were supplemented with discussion with the representatives of participating countries along with the suggestions from experts.

Introduction to the Clean Mobility CoP – Ms. Avantika Arjuna

- Brief introduction to Mobility CoP and session explaining that CoP aims to address clean mobility and resilience in transport sector. The session was organised in continuation of the first online session held in June 2018 on 'Electric mobility in Public Transport' and focused on clean mobility through electrification. Intermediate public transport fleets are a major transport mode in our cities serving to fill the gaps between the connections.
- This session aimed to understand the challenges faced by the participating countries related to electrification of IPT and address the issues by providing expert assistance and customized solutions for the participants.

The session was deliberated on the following:

- The need to restructure and reform the Intermediate Public Transport Sector?
- What are the safer, healthier and financially secure business options?
- What are the ways to build capacity and educate the operators?
- Regulatory options - Stricter Emission standards- solutions & challenges
- Financial options - Micro Financing – solutions & challenges

The session included the following two expert speakers:

- Ms. Anumita Roy Chowdhury – Executive Director Research and Advocacy, Centre for Science and Environment. She is the head of air pollution and clean transportation programme in CSE.
- Mr Madhav Pai – Director for WRI Ross Center for Sustainable Cities and continues to be the Director for EMBARQ India program. He holds an experience of more than 15 years in transport sector with projects in Asia and United States.

Ms. Anumita Roy Chowdhury presented on Intermediate Public Transportation Fleets: Bus Electrification. The speaker addressed the critical issues around "Why intermediate public transport (IPT) or paratransit – taxis, three-wheelers, vans etc. – are needed to address pollution and mobility crisis in developing country/ cities of Asia?

She focused on IPT description, its dominance and need in Asian cities, ability to meet high travel demand, provide last mile connectivity, policy status, e-rickshaws operation and regulation challenges and solutions, electric taxi deployment example by Ola in Nagpur and lessons learnt. She discussed the significance of IPT in densely, closely built compact cities in India and Asia with an example of Kolkata. During the presentation she discussed upon the following:

- Need of guiding principles of IPT management, key players in electric mobility and steps forward.
- The existing transport system created in cities considers public transport, focusing more on formal system (bus/metro etc.) but not on informal system. The perspective of crisis of public health and climate risk from rapid motorization should be considered. If we want to take this challenge and provide core benefits and reducing risks controlling energy then a massive transformation is required.
- IPT is an informal solution to provide reliable, efficient, and affordable public transport service to different income classes and there is a need for understanding the significance of IPT sector by all the policy makers. It is important to understand that IPT mode caters low volume, provides high frequency and covers short trip length (3-4km so larger transport system like metro is not required) and hence is extremely important for last mile connectivity. It meets high travel demand, i.e. about 40-70% in smaller cities, 16-17% in metropolitan cities and 4-5% in mega cities in a year.
- Although IPT contributes majorly to satisfy the transportation demands, there is still lack of policy regulation. Major problems related to IPT operation can be summarized as follows:
    - *Policy muddle on IPT*: Only the routes fixation and penalty is detailed but deployment strategy lacks clarity.
    - *Pollution contributor*: IPT vehicles are targeted as big part of pollution problems. It has become one of the contributors to pollution as they lack technology and use dirty fuels because these are owned by small level owners. These contribute 15%-21% to high particulate pollution (depending on the city). We end up destroying the system instead of building it.
    - *Conflict with formal public transport services*: introduction of formal transport system (bus, rail, metro, etc.) without consideration of IPT leads to conflict between the two systems.
    - *Disorganized but important livelihood source:* IPT is a source of mobility services and an important source of livelihood for poor and lower middle class of society. Government is making efforts to build the two together to address the issue. any info on what segment of the population earns a living out of this and how much is it? Etc. I think she had some slides on this topic
- Many cities have taken initiatives for moving towards cleaner fuel for some IPTs. For eg. In Delhi, auto rickshaws now use CNG, cycle rickshaws policy is being developed, GPS connectivity is being envisaged to improve meters and compliance. Also removal of cap on the number of IPTs is being done.

Many cities including Bengaluru, Chennai, Hyderabad, Kolkata, etc. have LPG programme for IPT 3-W vehicles.

- Cities like Alwar are giving incentives to move towards electric vehicles from taxi.
- The informal innovation towards e-rickshaws is the first move towards zero emissions in IPT. Thus it is important to understand the challenges and solutions for electrifying IPTs –
    - *Regulation:* Almost 80% vehicles are rented and most of them are not registered. Thus a regulatory framework is required for informal innovation.
    - *Providing a mechanism for charging and ensuring efficiency of charging*: low downtime & longer life of batteries
    - *Ensuring safety norms*: as well as certain vehicle design regulations are adhered to
    - *Lack of financial support:* Being in informal market they fail to leverage existing financial support mechanisms like bank loans and leases.
- *Current status in cities in India:* Central motor vehicle Rules were updated including e-rickshaws. Adoption of e-rickshaw policy and state governments have amended their rules applicable to drivers and operators.
- *Electric taxis and shared mobility*- Taxi aggregators like OLA and Uber are incorporating electric taxi in their fleets in Hyderabad, Delhi and Nagpur in India. OLA has already deployed 200 electric vehicles in Nagpur in 2017. The learnings from deployment included large waiting time to charge and limited range of 100 km for vehicles leading to multiple charging.
- **Solutions**
    - Recognise IPT as a legitimate public transport system;
    - Provide realistic IPT fleet based on route rationalisation to meet commuting demand;
    - Ensure street design to provide for IPT parking, drop off and pick up;
    - Link with zero emissions mandate of the city and build strategy to link electric mobility with IPT system;
    - Improve service quality, monitoring and enforcement;
    - Provide a fiscal strategy for creating infrastructure for electric paratransit, such as the following
        - Incentives and subsidies: The government has to play the role in regulations, incentives and subsidies.
        - Charging infrastructure companies: leasing of batteries, swapping infrastructure, deploying fast chargers, providing stable power supply and grid stability
        - Set up a manufacturing consortium on batteries and EV components, and begin building a battery pack assembly industry immediately, with favourable policies and fiscal incentives
        - Mobilize a mix of plug-in charging and battery swapping models to be carefully deployed based on the dynamics of various vehicle segments
- **Steps forward**- Electric two wheelers (2W) and three wheelers (3W) require regulatory framework, identification of viable routes for strengthening last mile connectivity, safety, standardised and efficient models to maintain lower Total Cost of Ownership (TCO), incentives and subsidies for 2W and 3W, cleaner battery alternatives, battery manufacturing and EV charging infrastructure should also be considered.

Mr. Madhav Pai presented on Paratransit and electrification

The presentation focused mainly on detailing '*How electrification is an opportunity which needs to be leveraged to drive paratransit reform*' and approach of using accelerators and challenges to solve specific problems. The case study of e-rickshaw in Delhi, description of EV market scenario and detailed case study of Jaipur related to para transit was also detailed during the session.

- **Paratransit & Electrification –** The key issues learnt from the case-study of Delhi e-rickshaw are detailed below:
    - Large number of e-rickshaws are un-registered
    - Large number of drivers without licenses
    - Government permits do not allow them on arterial roads, limited to a few routes
    - E-rickshaw drivers face police harassment. Clarity of policy may help in this issue resolution.
    - Insufficient infrastructure - Lack of public charging stations, parking spaces
    - Overcrowding is an issue as the drivers carry more people than those specified.
    - Battery disposal especially lead acid is not organised.
- Initiatives like 'Rickshaw rising challenge' (additional support for e-rickshaw operators for innovative solutions), better bus 2018 (technology in minibus for door to door connectivity), STAMP challenge (was focused on last mile connectivity), new mobility accelerator 2016, smart streets lab, make Telangana SAFE (to improve safety) are some examples which were used as accelerator by WRI to address.
- Some successful case-studies addressing the issues stated above discussed during the session are:
    - SHUTTL and COMMUT (in Hyderabad) bus aggregator. It is shared bus service.
    - BOUNCE is a high end relatively low cost bike rental service.
    - MObYcY provide electric cycles for last mile connectivity.
- **Jaipur case study**: Mini bus, TATA Magic and other informal system cover about 80% of the total transport mode in the city.
  How to evaluate options for addressing the issues-
- Framework for evaluation- A city can regulate paratransit operations on six parameters – *vehicles, routes, permit, fares, drivers and quality of service*. Each parameter carries 1 mark. This can be used to develop paratransit regulation and strategy for evaluation. High quality systems like TransMilenio in Bogota have regulations for all 6 parameters and are able to enforce all 6 parameters. The framework states:
    - A system that scores 6:6 is the best.
    - A system that scores 5:1 have poor quality of service.
    - A system that scores 4:3 or 3:2 has usually better user satisfaction than a system that scores 5:1 or 4:1.
- The proposed 'framework for evaluation' can be used to structure a systematic incremental change program.
- Incremental change *vs*. Big bang change: Big bang is possible in case of major system reform when funds can be provided through loans or other sources. Incremental reform can be incorporated by making small changes like introducing routes or schedules, organising a driver training program, etc.
- Preparing for change requires following:

- *Data collection*: Understanding the current system including cost of operation, routes, deficiencies, etc.
- *Political economy*: History, current and incumbent operators, etc.
- *Building a vision for future*: understanding of future projected population growth and transport demand and identifies the infrastructure requirement.

- **Key aspects**
  - Life and quality of bus has to be monitored. There should be a mechanism for maintenance and operations.
  - Capture by private operator and losing the power to negotiation: The services are profitable if multiple operators are not competing and these services deteriorate when there is non-profitable market leading to misbalance between the fare and cost of operation.

After the presentations by experts, following questions were asked by the attendees in the session:

1. What strategies should be kept in mind in case of power deficient countries for ensuring sufficient electricity for vehicle electrification?
   - *Response by Mr Madhav*: It is a policy decision. We can consider **renewable energy** source for electricity generation and micro-grid solutions using renewable energy and battery storage options. Business models to **partner** with organisation which produces energy using solar or other renewable sources and provide parking and charging infrastructure at minimal fee should be explored. Costs of larger infrastructure can also be catered after discussion with various stakeholders.
   - *Response by Ms. Anumita*: The power generating organisations have to be the major stakeholder to develop the infrastructure for electric mobility. There has to be a management strategy to use off peak demand electricity for charging of vehicles. The local charging points also have to be provided by these organisations in **partnership** with DISCOMS. The **strategy for deployment** should also detailed.

2. In case of small and medium sized cities, IPT plays the role of public transport and provide the source of livelihood to poor and marginalised people. The infrastructure is still not sufficient for their operation. What strategies may be adopted to overcome these challenges especially due to the lack of institutional support or how municipal corporations can help to overcome the challenges?
   - *Response by Ms. Anumita*: The efficient deployment becomes a major role of these stakeholders. The parameters to move towards efficient service levels have already been detailed in the discussion. The **service level quality** reorganisation and reform of sector is essential. The government in Africa is indulging in service contracts with service providers addressing service monitoring, route rationalisation, upgradation of fleet and a range of other service parameters are being laid down. The government in India can also indulge in such systems. The municipal agency and transport department officials should come on-board to understand the system reforms required and approach the paratransit sector from service improvement perspective and mobilisation of resources. A **clear roadmap** and service requirement have to be developed to initiate the process will be very critical.

- *Response by Mr Madhav*: Clear **demarcated space** for infrastructure for usage of IPT is a good starting point. India and cities in south-east Asia should think of reimagining the transportation infrastructure including redesigning of roads to incorporate 3W's also as the trip lengths are short and electrification is an opportunity. The following **5 things** have to be considered for road redesigning:
    - At present the roads are designed for high design speed of 70-80 km/hr for 4W's when it is empty. Redesigning the roads for low design speed of about 25 km/hr where 2W's, 3W's and 4W's coexist is essential to create safe infrastructure.
    - The curb/footpath designing is also important. These should consider innovative future vehicle options like dock-less scooters, etc.
    - Charging infrastructure in partnership with commercial stakeholders.
    - Multimodal terminals
    - Parking- All parking should be public, paid, and off-street and include charging infrastructure.
- The digital type of services should also be considered along with electric vehicles including creating apps, accessing database assets and vehicles, rolling stock and creating physical infrastructure in cities.

3. The idea of 3W's is not possible in Vietnam because of excessive traffic congestion. Smart bicycles can be used to connect between the public transports to origin/destination. We can also consider the electric car deployment but we don't have the investment opportunity for it and also the way to see through it. Please suggest an idea to improve the smart bicycle or electric car deployment. Is there any investment opportunity/ example in any similar Asian country?
    - *Response by Ms. Anumita*: While scaling up the system of formal and informal transport, we have to ensure clear plan for physical integration and also need urban design solutions. At present formal and informal system is dealt separately so interchange is needed in PT system which increases the overall cost of journey for the commuters leading to the easiest shift to 2W's. Thus a **holistic approach** is required and para transit has to be deployed along with routes. The congestion increases due to personal vehicles so the ownership has to be curbed along with the incentives for public transport.
      Financing system should be designed in such a way that the electric vehicles get the incentives and the cost including the battery replacement cost is reduced.
    - *Response by Mr Madhav*: The last mile connectivity to sky trains by smart bicycles should be tackled by **challenge process**. A detailed analysis should be done based on which 3-6 month pilot can be done followed by scaling up of the same.

4. Dhaka is very populated, and traffic is high leading to a switch from fossil fuel to CNG but this has results in rise in number of transport vehicles within limited space. There is a mixture of various transport modes leading to a complicated issue. A long term strategy is required for the same.
    - *Response by Mr Madhav*: A **long term strategy** is required.
    - *Response by Ms. Anumita*: The personal cars meet less than 10% of the travel demand so there is a huge opportunity to incentivise public transport /para transit. Levying higher taxes and high parking charges to restrain the private vehicle usage are equally

important.

Longer term solutions are required for scaling up but at the same time **intelligent deployment of paratransit and restraining private vehicles** can help in providing solutions to the problem in Dhaka as well as in other similar cities.

There was a survey at the end of the webinar for the audience to give the feedback to h2elp design the next sessions. The audiences were requested to post any additional questions which will be forwarded and answered by the experts.

Access further details and materials from the session:

Presentation

For any feedback or queries please contact:

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