

Breathing in Bengaluru: Building a greener city with eMaaS

By Vivek V Gavimath

Bengaluru is witnessing alarmingly high pollution levels, with particulate matter (PM) levels reaching at least 5 times over the permissible limits by the World Health Organisation (WHO). Particularly, vehicular traffic, which contributes to more than 65% of PM emissions, is a major concern requiring immediate attention.

The previous articles in our series 'Breathing in Bengaluru' delved into the health problems due to vehicular emissions and the scope for tackling the issue through sustainable mobility measures. In this regard, Electric Mobility as a Service (eMaaS) is a relatively low-cost (compared with new transport infrastructure) and feasible solution. This final article in the series delineates the potential of this state-of-the-art mobility system in reducing vehicular emissions and discusses the challenges for its implementation in Bengaluru.

What is eMaaS and how can it help curb emissions?

Mobility-as-a-Service (MaaS), a real-time, dynamic, demand-responsive system, is an emerging city/regional transport system across the globe. It brings together various transport modes and mobility services under a single umbrella for enhanced commuter experience and ease of access, i.e. all services offered under one application or a smart/radio frequency identification (RFID) card. eMaaS is the electrified version of MaaS, offering green mobility options (zero tailpipe emissions). Public transit modes, such as bus, metro-rail, and shared mobility (car/bike/ride-sharing), and active transport modes, such as walking and cycling, form the core of MaaS and reduce the need for personal/private car commute.

With fewer vehicles on road, MaaS helps alleviate traffic congestion and improve air quality. Sufficient literature exists to show that MaaS has the potential to reduce vehicular emissions up to 54%. eMaaS, with its relatively clean vehicle fleet, has the added potential to mitigate transport-led air pollution in Bengaluru. Further, MaaS ensures pocket-friendly travel at cheaper costs for the average commuter with competitive travel times. Thus, it has the potential to nudge a change in commuters' travel preferences from personal vehicles to public transport. By incorporating EVs, eMaaS also ensures the transition of the existing vehicle fleet to cleaner technologies.

Opportunities and challenges

Recently, commuters in Bengaluru experienced one of the worst traffic congestions on the tech corridor at Outer Ring Road, with average vehicle speeds going as low as 2 km per hour. The primary reason for these frequent traffic bottlenecks is that 7 out of 10 citizens commute to their workplaces using their private vehicles. This provides a potential opportunity for eMaaS to reduce congestion and the associated emissions in the city.

Few services required for eMaaS implementation in the city are already in place, namely, bus and metro services and last-mile connectivity (auto-rickshaws and ride-hailing services). The integration of all available mobility services to be offered to end users on a single platform is a key component of eMaaS. Government (e-bus and metro-rail) and private players (e-auto rickshaw and ride hailing) need to come together to promote the ease of an average commuter; this integration and coordination among players is a major challenge. In this context, the common mobility card launched in March 2023 is a relevant example. The card has not yet

been integrated into the Bengaluru Metropolitan Transport Corporation (BMTC)-run bus ticketing system and can only be used on Namma Metro operated by the Bangalore Metro Rail Corporation Limited (BMRCL), although both BMTC and BMRCL are government entities.

In terms of digital platforms, citizens can currently avail auto-rickshaw and cab services through privately run online services, bus service info on the Namma BMTC App, metro station-based last-mile connectivity info on the Metro Mitra App, and refer to Google Maps for Metro timings. To restructure this disorganised system that discourages public transport use, eMaaS can be implemented by integrating all services including transit, booking, and payment information for the convenience of commuters.

In addition to easier commute experience, eMaaS can offer new business opportunities for service providers, auto and electric vehicle original equipment makers (OEMs), and charge point operators. eMaaS has the potential to not only increase the earnings of auto-rickshaw drivers by tapping into the unmet and new demand but also ensure steady earnings.

Push and pull for eMaaS

For eMaaS to be successfully implemented, a policy framework should be developed after due consultations with all stakeholders. Further, eMaaS implementation (*pull*) needs to be integrated with the Personal2Public campaign and supported by measures (*push*) like congestion pricing, car-free zones, low-emission zones, and parking regulations to alleviate traffic congestion in the city.

Considering the grave impacts of vehicular emissions on citizen health, implementation of sustainable mobility measures like active transport, eMaaS, and integrated planning can pave the way forward to realise the dream of a green, congestion-free, and breathable Bengaluru for the current and future generations.

The author works in the area of Green Mobility at the Center for Study of Science, Technology and Policy (CSTEP), a research-based think tank.