EV Forum: National Workshop on Transitioning to Electric Mobility in Lao People’s Democratic Republic
Vientiane, 3 June 2022

Formulation of EV policy and roadmap to promote sustainable public transport

Fadiah Achmadi
Associate Economic Affairs Officer, Transport Division, UNESCAP
Energy consumption of transport sector in Lao PDR

Total final energy consumption by sector in 2018
Source: ESCAP (2021)

Energy demand outlook
Source: ESCAP (2021)
Energy consumption of transport sector in Lao PDR

Gasoline and diesel energy consumed by road transport
(Forecast data by ERIA)

Total CO₂ emissions road transport sector
Source: EDGAR v6.0 Global Greenhouse Gas Emissions
Electrifying the transport sector

- **Increase energy security** through the reduction of reliance on imported fuels
- **Abundant renewable energy sources** to power the transport sector → EVs maintain and increase the demand for electricity

<table>
<thead>
<tr>
<th>Year</th>
<th>Gasoline</th>
<th>Diesel</th>
<th>Gasoline</th>
<th>Diesel</th>
<th>Gasoline</th>
<th>Diesel</th>
<th>Gasoline</th>
<th>Diesel</th>
<th>Gasoline</th>
<th>Diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>200</td>
<td>150</td>
<td>100</td>
<td>50</td>
<td>150</td>
<td>100</td>
<td>200</td>
<td>150</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>2025</td>
<td>250</td>
<td>200</td>
<td>150</td>
<td>100</td>
<td>250</td>
<td>200</td>
<td>250</td>
<td>200</td>
<td>250</td>
<td>200</td>
</tr>
<tr>
<td>2030</td>
<td>300</td>
<td>250</td>
<td>200</td>
<td>150</td>
<td>300</td>
<td>250</td>
<td>300</td>
<td>250</td>
<td>300</td>
<td>250</td>
</tr>
<tr>
<td>2035</td>
<td>350</td>
<td>300</td>
<td>250</td>
<td>200</td>
<td>350</td>
<td>300</td>
<td>350</td>
<td>300</td>
<td>350</td>
<td>300</td>
</tr>
<tr>
<td>2040</td>
<td>400</td>
<td>350</td>
<td>300</td>
<td>250</td>
<td>400</td>
<td>350</td>
<td>400</td>
<td>350</td>
<td>400</td>
<td>350</td>
</tr>
</tbody>
</table>

**Future consumption of gasoline and diesel**

*Source: ERIA (2022)*

**Grid carbon factors (kgCO\(_2\)/kWh) of ADB developing members**

*Source: Grütter and Kim (2019)*

- **Lowest value**: 0.00, Bhutan, Lao PDR, Nepal
- **Lower 20 percentile**: 0.35
- **Median**: 0.66
- **Upper 20 percentile**: 0.79
- **Highest value**: 1.05, Turkmenistan
Decarbonizing urban passenger transport in Lao PDR

- **Demand for urban passenger transport** is poised to more than double between 2015 and 2050 (ITF, 2021), responsible for 40% of GHG emissions from passenger transport and low air quality in cities.

- Urban passenger transport is also responsible for the **highest demand** of the total final energy consumption in Lao PDR.

- Ridership and yearly mileage of bus service in the capital have been declining → negatively affected the level of service (vicious circle).

---

Population living in urban areas in southeast Asia countries

*Source: ITF (2022)*
Ongoing efforts on electrifying public transport

- BRT plan in Vientiane Capital featuring 55 new e-buses
- Various EV programs with mixed success:
  - Electric minibuses and carts in Vientiane in 2009 (project terminated)
  - Electric minibuses in Savannakhet
  - E-buses and e-taxis in Luang Prabang
  - E-buses and e-trucks for Saysettha Low-Carbon Demonstration Zone in Vientianne (2021)

→ A systemic approach is needed
Policy landscape on sustainable transport

- Rapid, deep and sustained reductions in global GHG emissions
- Phasedown of unabated coal power
- Phase-out of inefficient fossil fuel subsidies
- Speeding up the switch to EVs
Policy landscape on sustainable transport

- **National Energy Efficiency and Conservation Policy Towards 2030**: reduction of TFEC by 10% (2030) and 20% (2040), reduction of energy consumption by 1% p.y. compared to BAU

- **National Green growth Strategy**: a pollution-free Laos by 2050, decrease dependency on fossil fuel import in transport

- **Draft National Power Development Plan 2020-2030**: reduce fuel import by increasing EVs

- **9th Five-Year National Socio-Economic Development Plan**: develop legislation and policies to promote clean energy vehicles

- **2020 updated NDC**: electric 2-wheelers and passenger cars
Regional initiatives on EV transition

UNESCAP Technical Cooperation Project
“Accelerating the transition to electric-mobility for public transport in Asia and the Pacific”
- Pilot countries: Georgia, Laos, Nepal, Fiji, Thailand
- Review of current policies and opportunities
- National stakeholders’ consultation workshops - 2022

Collaboration and partnerships
- UNEP, GGGI, Research Institute of Highways (China)
- GIZ-SMMR Sustainable Mobility in Metropolitan Region in ASEAN project
- King Mongkut University of Technology (Thailand)

Regional EV initiatives
- Regional policy guidelines and case studies
- Regional and Subregional Meetings on EV in 2022-23
- “Asia-Pacific Initiative on Electric Mobility”
Challenges of operating electric public transport

For Government
- Absence of institutional system for EVs
- Lower revenue from excise tax collection and the Road Fund
- Battery waste management
- Standardized and interoperable charging infrastructure

For public transport operators
- High up-front costs
- New operational model
- New tender and procurement model
- Reinforcing cooperation between energy and PT sectors
- Human resources capacity
Opportunities for operating electric public transport

• **Previous and ongoing interventions on EVs**
  - EVs are available in Lao PDR (motorcycles, cars, minibuses, Tuktuk, trucks)
  - Vientiane Sustainable Urban Transport Project by the ADB since 2015
  - Technical cooperation on low-emission transport system by JICA (2014)
  - Basic data collection study in low-emission public transport by JICA (2012)

• **100% electrification of public bus transit** due to ‘monopoly’ operation model in cities

• **High fossil fuel prices** as energy usage is the largest saving of EVs

• **Existing regulations** can be updated to cover EVs
2030 Road Map to Public Transport Electrification

- Current performance of urban public transit and paratransit: supply & demand, level of service, vehicle milage, routes, ridership
- Analyses on required fleet size → optimum investment for electrification
- Technical and operational requirements
- Market uptake targets
- Phase out plan of ICE vehicles
- The role of grid operator
- TCO and financing models
- Regulatory and institutional framework
- Integration of fixed-route transit and paratransit systems
- Users’ perspective on electric public transport → community engagement and gender issues
2030 Road Map to Public Transport Electrification

• **Financial measures to promote market uptake**
  - Business models and funding models
  - Direct subsidy for public transport operators purchasing EVs
  - Provide guarantee to increase the confidence of financial institutions
    - Bus loan instrument
    - Tripartite financing agreement

• **Fiscal measures to maintain government revenue**
  - Maintain excise tax rates until the desired number of electric fleet is reached
  - Impose road usage charge to replenish Road Fund
  - Impose public benefit surcharge

• **Internal capacity building**

• **Promoting pilots in cities**
ESCAP project on sustainable urban transport

- Asia-Pacific Sustainable Urban Transport Systems to support the region’s achievement of the 2030 Agenda
- **Objective:** To equip member States with a set of sustainable urban transport recommendations to facilitate the implementation of sustainable transport policies and programmes and strengthen regional cooperation in this region.
- A study was conducted for China, India, Russian Federation and Viet Nam
- Three pillars: Green transport, Smart transport, Safe transport
- Seven **recommendations** (Political leadership and vision; Socially inclusive urban transport; Decarbonized (micro-)mobility; ...)
- **Outcome:** Bangkok Declaration 2021 on “City and Transport: Safety, Efficiency, and Sustainability”
Thank you