Chapter 5

Policy Implications

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CHAPTER 5

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xEVs will help ASEAN countries enhance energy security, save on energy import bills, mitigate climate change, and improve urban air quality. Massive xEV deployment, however, may have negative side effects. This chapter recommends policies for realistic and affordable xEV penetration.

1. Harmonise Automobile and Energy Policies

Dissemination of xEVs can reduce oil consumption but not always CO_2. BEVs emit no CO_2 (tank to wheel) but electricity generation (well to tank) emits a large amount of CO_2. Reducing CO_2 emissions will be limited unless the power generation mix is decarbonised. Many ASEAN countries rely heavily on cheap coal-fired thermal power, which is not always a low-carbon generation mix. Climate-change countermeasures that promote xEVs are important, but the overall effects of well to wheel must be considered.

Automobile and energy policies must be harmonised to make the most of vehicle electrification. If different government sections govern policies, as they do in many countries, they must coordinate closely.

Low-carbon power sources such as renewable energy are expensive, and if they are introduced too quickly, the result will be increasing electricity retail prices or total subsidies. Power generation must be decarbonised and side effects mitigated. The various policy goals must be coordinated to prepare for the substantial introduction of xEVs.

2. Take a 'Bridging' Pathway to Mitigate Negative Side Effects

xEVs are more expensive than ICEVs. xEVs need a huge amount of investment and economic incentives such as subsidies to disseminate them. Rather than promoting the spread of expensive BEVs early (BEV ambitious scenario), they should be gradually introduced as technology reduces their cost (HEV bridge scenario).

The same applies to introducing low-carbon power sources, which are essential to spread BEVs. Rushing to introduce expensive low-carbon power now would result in increasing electricity retail prices or total subsidies.

Vehicle electrification must be affordable for consumers, businesses, and governments. To mitigate negative side effects, vehicles should be electrified at a speed that fully anticipates cost reduction. Controlling cost is crucial for transition management.

3. Encourage Support by Local Governments

Central and local governments can promote xEV penetration. Some local support needs to comply with national authorities but other local support can be implemented alone. Local measures are less costly.

Local governments can use xEVs for to transport the public, the elderly, and municipal workers. Local governments can offer free parking for xEVs and free charging at public stations, permit xEV drivers to use lanes reserved for public transport, and offer road toll exemptions or discounts. If these measures are implemented by a group of neighbouring local governments, their effects may be greater than if implemented by a single local government.

4. Recommendations for Developing Charging Infrastructure to Facilitate PEV Deployment

- **Set targets for building charging infrastructure by a certain time**. Targets should be derived from PEV deployment targets described in a clear roadmap, based on national targets to reduce fossil-fuel use and imports, reduce greenhouse gases as defined in nationally determined contributions, and improve urban air quality. Governments should do the following:
    - Determine whether the development approach should be demand or coverage oriented.
    - Elaborate on guidelines to develop and distribute charging infrastructure. Define the main development axes to determine the focus of deployment between location and/or ownership patterns, e.g., privately owned (housing, residential areas, workplaces) or public (charging stations, urban and interurban stations, network of high-speed chargers along highways).
    - Define different types of charging speed and technology.
- **Define measures to facilitate infrastructure investment, especially to involve stakeholders in a clear, open, and transparent process whilst creating an open and competitive market for EV charging**. Installing chargers, especially DC fast chargers, is expensive. Making a business case for installing them is difficult as there are not yet enough EVs on the road. Recovering the capital cost of charging facilities, especially fast ones, is extremely slow. Rebates and other incentives for homeowners and businesses to install chargers are needed. Governments must enable private installers or owners to secure profit sooner by, for example, allowing utilities to rate-base at least the make-ready portion of charging infrastructure and providing installation wiring. An alternative is for public utilities to make significant short-term investments until owning and operating charging stations is sustainable. Finally, tax holidays for installing and operating charging infrastructure, especially fast chargers, can stimulate investment and reduce the cost of capital. Utilities can be allowed to take advantage of their low cost of capital to extend their distribution networks and create make-ready locations for charging stations, or to install and

operate charging stations. In all cases, utility investment should be based on smart-performance–based regulations to ensure that the public receives good value.

- **Define measures to encourage the use of facilities**. Government cannot only rely on measures to reduce the cost of acquiring EVs but also needs to reduce the operating costs borne by users. The first measure is ensuring that the EV charging price maximises benefit to users without jeopardising electricity load to the grid or the price paid by other electricity users for other purposes, and that low-income communities will not suffer due to electrification of mobility. The second measure concerns interoperability, including standardisation not only of the physical charging equipment but also of payment and communication. Charging development currently takes a bottom-up approach through the independent efforts of numerous companies and governments and is not planned for interoperability. All players should develop cooperative billing arrangements such as using a standardised communication system in the form of open protocol.

5. Recommendations to Ensure PEV Penetration Objectives

- **Prepare a strategy to implement different charging schemes.** The impacts of PEV charging on the grid and power generation are currently negligible. But battery costs are declining continuously, electricity is cheaper than gasoline and diesel, and urban mobility and car ownership are rising in ASEAN countries. All these factors might lead to a tipping point for EV market penetration. A strategy is needed to implement different charging schemes to avoid pressure on the electric grid and to maximise the use of low-carbon power generation.
- **Educate EV users on how to optimally use and charge PEVs**. EV drivers should learn to optimise the use of their vehicles, including by planning trips and charging to minimise costs, and being aware of the infrastructure network.
- **Build an open data platform to gather information on public charging stations, their locations, types, modes, real-time use, and operators**. The platform should help users optimise their mobility and use of the electric grid whilst meeting transport demand.

6. Have a Clear Vision for xEV Deployment

Developing a roadmap for vehicle electrification is essential as is harmonising automobile and energy and environmental policies. Prior coordination is desirable amongst stakeholders: ministries, central and local governments, automobile manufacturers, petroleum and electricity suppliers, public transport operators, charging equipment operators, and consumers. They should not be burdened by policy.

A clear long-term vision will encourage private investment; obscure and frequently changing policies will not. It is needed to show not only a mere penetration target but also

the necessary policies in a concrete manner to meet the target. Gasoline and diesel subsidies will advance electrification. Concrete and reasonable policies are important elements of a safe private investment environment.

7. Consider Appropriate Country-specific Pathways

Pathways to vehicle electrification vary by country and region.

Indonesia

The car penetration rate is low but the number of vehicles is large, and the cost of electrification is high. The ratio of total investment and total subsidy to economic and financial scale is high, and cost control is important. Motorcycles are about five times more numerous than other vehicles and changing from a motorcycle to a car has low electrification costs. BEVs do not greatly reduce CO_2 emissions, and the power generation mix must be decarbonised.

Malaysia

Malaysia has a high income level and a high car penetration rate. Whilst electrification investment is small, the xEV subsidies are large relative to the fiscal budget, and the degree of financial burden should be examined. The gasoline price under the managed float system is much lower than the electricity price, resulting in a longer payback period for BEVs, and then the huge amount of subsidy will be needed. Reviewing energy prices can be a policy tool for BEV diffusion.

Thailand

Thailand has a cleaner power generation mix than its neighbours and can more easily benefit from vehicle electrification. The ratio of amount of investment and subsidy to economic and financial scale is lower than in other countries. However, it is important to see Thailand, which has established its position as a car production base, from an industrial-policy perspective. Too-rapid vehicle electrification might damage production systems and it is necessary to proceed with caution.

Viet Nam

Viet Nam has about 20 times more motorbikes than cars. The motorbikes consume as much oil as cars, so if Viet Nam promotes electrification of relatively cheap motorbikes, it could reduce air pollution and oil consumption whilst keeping costs down. Because the investment and subsidy burden is large, EVs should be introduced after their cost becomes sufficiently low.

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