# Chapter 5

# Policy Implications

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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. Decarbonise the Power Generation

If the increase in power demand accompanying the spread of xEVs is covered by thermal power such as coal-fired sources, there is little effect on $CO_2$ reduction. ASEAN countries will tend to be more dependent on thermal power generation, which involves large-scale power generation facilities, as demand for electricity is expected to increase rapidly for residential, commercial and industrial use. Especially in Indonesia, where coal-fired power accounts for more than 50% of the power generation mix, substantial $CO_2$ reduction cannot be expected via BEV penetration.

It is important to decarbonise the power supply along with the penetration of xEVs. However, there is no need to give up using coal, which is relatively inexpensive and abundant in the region, and economies should introduce more efficient coal-fired power generation facilities. Meanwhile, one of the options is to promote HEVs, which can reduce $CO_2$ emissions without depending on the power supply mix, until it becomes clean.

## 2. Consider the Cost Required for Penetration

Currently, the vehicle prices of xEVs are high, and the difference from the ICEVs should be regarded as an additional cost. In general, it is unlikely that individual consumers will bear this cost, and it requires economic incentives such as subsidies and tax cuts. Although the battery cost, a major factor of the pricey vehicle, have been falling, xEVs are still far from popular without subsidies. In the current situations, promoting vehicle electrification would require substantial subsidies.

The battery cost is expected to continue to fall in the future, but the outlook, including the international mineral prices, is still uncertain. If the cost does not drop as expected, more subsidies would be necessary for promoting xEVs. This should be done carefully, along with the fiscal situation.

In addition, fuel price policy would be important for the spread of xEVs. There is little incentive for consumers to purchase more fuel-efficient xEVs if fuel prices are low. Therefore, it is necessary to provide incentives by subsidy. Conversely, if the fuel price is relatively high, daily fuel cost savings by xEVs increase, and the initial vehicle cost can be recovered earlier. In other words, subsidies can be reduced. To spread xEVs, it is necessary to consider the consistency of various policies.

## 3. Pay Attention to Ripple Effects by xEVs

It is necessary to pay attention to other economic activities affected by xEV penetration. The production of BEVs with a small number of material parts might reduce automotive industry

employment compared with the production of ICEVs and HEVs. Furthermore, as xEVs become more widespread, the negative economic ripple effects increase through the petroleum industry, due to a massive decrease in the fuel demand.

However, xEV penetration may create additional production and employment in the whole economy, that is, if the savings in daily fuel expenditure can be diverted into other goods and services. In general, the service industries have higher employment intensities (required number of employees per production value) than the fuel supply industry. Especially in Indonesia and Viet Nam, where many motorcycles are on road, promoting e-motorcycles may stimulate job creation in the service industries (Figure 5-1). On the other hand, in the case of PLDVs, employment creation effects are small or even negative, because other consumption is sacrificed to purchase the expensive xEVs.

**Figure 5-1. Ripple Effects on Employment during Outlook Period vs. Today's Level (Budget constraint)**
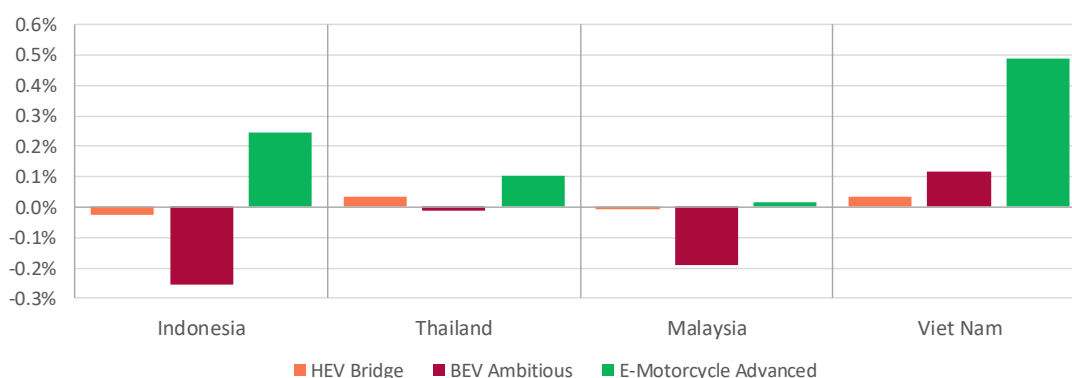


BEV = battery electric vehicle, HEV = hybrid electric vehicle.
Note: Effects comparing with the reference scenario.
Source: Authors' analysis.

### 4. Consider Appropriate Country-specific Pathways

Appropriate pathways to vehicle electrification vary by country and region.

**Indonesia**

The main objective of developing BEVs in Indonesia is to reduce $CO_2$ emissions and the amount of fuel imports as outlined in the release of the 2019 Presidential Decree. However, none of the xEV scenarios contributes significantly to $CO_2$ reduction due to the power generation mix. Decarbonising the power supply is one of the essential and urgent issues. On the other hand, the BEV Ambitious scenario brings in the largest savings of the fuel import bills. In views of subsidy cost and economic/employment ripple effect, the HEV Bridge scenario should be adopted for PLDVs rather than the BEV Ambitious scenario. In addition, it is desirable to promote the electrification of motorcycles at the same time in the countries where motorcycles are popular.

**Thailand**

In Thailand, the BEV Ambitious scenario has a greater $CO_2$ reduction effect than other scenarios. The total amount of subsidies is also large, but it is slightly higher than the HEV Bridge in terms of cost-

effectiveness (Figure 5-2). The BEV Ambitious scenario brings better effects in 2040; however, it needs to cope with the large subsidy expenditures and the negative effects on employment around 2025–30. It is desirable to promote the electrification of motorcycles at the same time due to higher cost-effectiveness.

**Malaysia**

In Malaysia, the BEV Ambitious scenario has a greater $CO_2$ reduction effect than other scenarios. Unlike in Thailand, however, the cost-effectiveness of subsidies is significantly higher than in the HEV Bridge scenario because the total subsidy amounts are larger due to the relatively low gasoline price (Figure 5-2). Furthermore, the BEV Ambitious scenario brings a big negative effect on employment, so the HEV Bridge scenario should be adopted. On the other hand, the E-Motorcycle Advanced scenario has a small effect on both $CO_2$ reduction and employment since the number of motorcycles on road is not large.

**Viet Nam**

In Viet Nam, where many motorcycles are on road, the E-Motorcycle Advanced scenario should be promoted in terms of $CO_2$ reduction effects and cost-effectiveness (Figure 5-2). Furthermore, positive effects on employment are much larger the other PLDV scenarios. Given the current situation of CKD producing and importing most PLDVs, production effects are not great in the BEV Ambitious scenario, but positive employment effects can be seen by diverting fuel cost savings into consumption on other goods and services. However, achieving this scenario requires large subsidy expenditures.

**Figure 5-2. Subsidy vs. CO₂ Reductions**
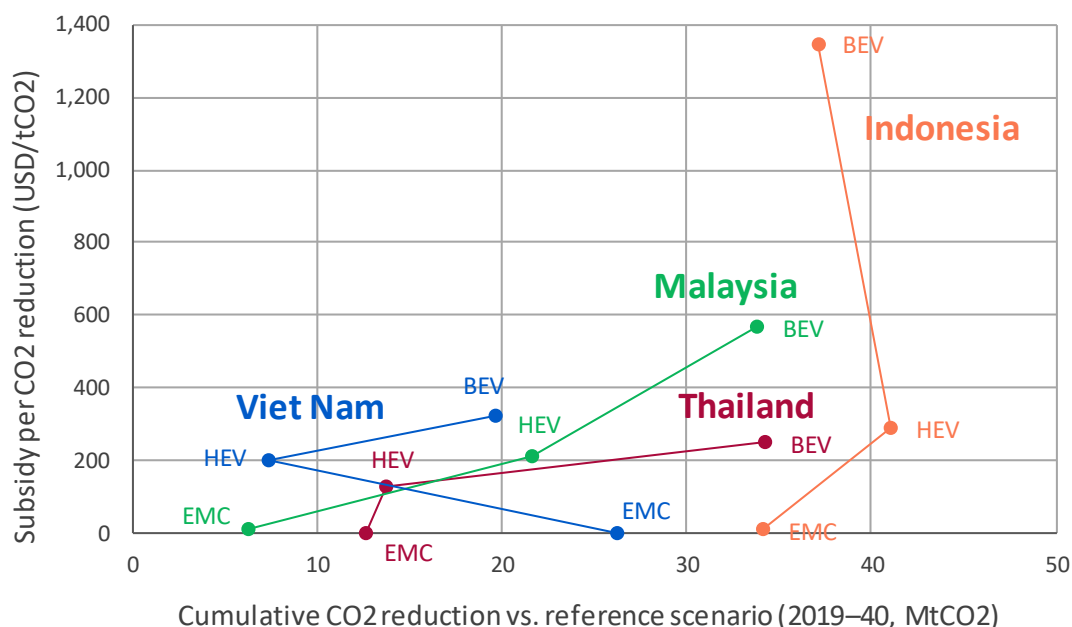


CO2 = carbon dioxide, MtCO2 = million tonnes of carbon dioxide, HEV= HEV Bridge, BEV= BEV Ambitious, EMC= E-Motorcycle Advanced.
Source: Authors' analysis.

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