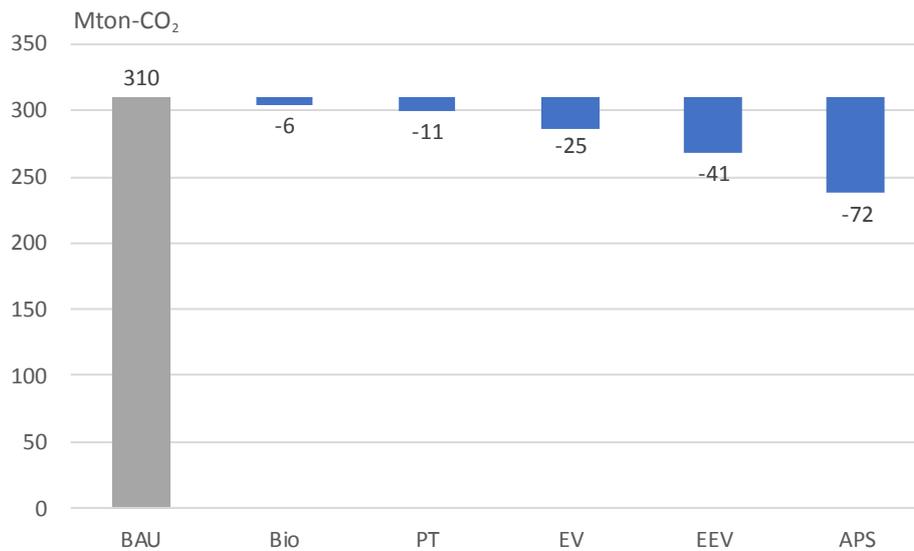


Executive Summary

Malaysia intends to reduce its greenhouse gas (GHG) emissions intensity of gross national product (GDP) by 35%, and an additional 10% under certain conditions by 2030 from 2005 figures. Since the transport sector is the second-largest CO₂ emitter in the country (28% of total), and since car ownership and thereby CO₂ emission due to gasoline/diesel combustion is expected to rise in a future, it is crucial to implement an appropriate policy to reduce CO₂ in this sector.

Referring to the result of scenario analysis, the deployment of energy-efficient vehicles (EEV scenario) has the largest potential to reduce CO₂ emissions, followed by electric vehicle (EV scenario), public transport (PT scenario), and biofuels (bio scenario).

Figure ES.1 Potential of Reducing CO₂, by Scenario (2040)



APS = combination of all the scenarios, BAU = business-as-usual scenario, bio = assumes more biofuel supply, EEV = assumes deployment of energy-efficient vehicles, EV = assume deployment of electric vehicles, Mt-CO₂eq = million tonnes of carbon dioxide equivalent, PT = assumes larger modal shift to public transport.

Source: Study team.

When classifying the options in two dimensions – reducing CO₂ and determining the time line of action – deployment of EEVs can be easily achieved. The next priority is public transport as it has a larger CO₂ reduction potential compared to biofuels, and lastly the EVs. Although Malaysia can expect large CO₂ reductions under the EV scenario, it needs to wait for reduced vehicle costs, spread of charging stations, and most importantly development of low-carbon electricity.

Table ES.1 Classification of CO₂ Reduction Scenarios in Two Dimensions

| | CO₂ Reduction | Timeline of Action |
|--------------------------|---------------------------------|---------------------------|
| Biofuel | Small | Short term |
| Public transport | Small | Short term |
| Electric vehicle | Medium | Long term |
| Energy efficient vehicle | Large | Immediate |

Source: Study team.

Following the above classification, the study discusses two parts to reduce CO₂ emission in the transport sector.

- Part 1 Maximise use of public transport
- Part 2 Deploy low-emission vehicles

The first part is concerned with maximising the use of public transport, such as high-speed railways, underground lines, light railways, and buses, which have higher energy efficiency than vehicles. It suits large-city and inter-city passengers and cargo transport. Considering that landmark railway projects are under way in Malaysia, the priority of recommendation is on how to increase ridership of, rather than suggest developing, public transport.

Recommendation 1. Boost connectivity amongst various kinds of transportation

- To make the greatest use of upcoming railway projects, transport hubs are a key component to encourage people to use and shift to public transport

Recommendation 2. Provide last 1-mile mobility using innovative technology, shared autonomous vehicles (SAVs)

- SAVs can provide people with an ultimate access to transport hubs, such as railway stations or bus depots, which would accelerate modal shift.

Other recommendations to increase ridership of public transport

- Strictly implement parking regulations and conduct police patrols (park at lots or be fined)
- Restrict car driving within a certain zone.
- Implement load pricing for a certain zone.
- Provide public transport with sufficient capacity.
- Construct comfortable (safe and clean) bicycle and pedestrian ways.

The second part is concerned with deploying low-emission vehicles. Although costlier than conventional ICE vehicles, new vehicle technologies are emerging and becoming commercially available. Considering that the policy promoting EEVs was implemented in Malaysia after the National Transportation Plan 2014 and had resulted in EEVs sharing 52% of new car sales in 2017, the priority of recommendation goes to the difficult option of promoting EVs.

Recommendation 3. Take an integrated approach to increase low-emission vehicles

- Since all stakeholders, government, businesses, and the public have roles to play, they need to do their share in reducing CO₂ emissions.
 - Fuel-efficient vehicle by auto industry
 - Efficient vehicle usage by driver
 - Improving traffic flow by government
 - Diversified fuel supply by fuel supplier

Recommendation 4. Support zero-emission vehicles (ZEVs) to penetrate the market

- More diffusion of renewables is unavoidable.
- In the early stage of the ZEVs market, government support is indispensable.
- A governmental pilot project might bring a new perspective to the ZEVs market.

Recommendation 5. Set up smart power grids

- EV's batteries can play an important role in power grids, considering a massive introduction of renewables. Simultaneous development and integration of EVs and smart power grids can increase the value of EVs, thus improving their economic viability.