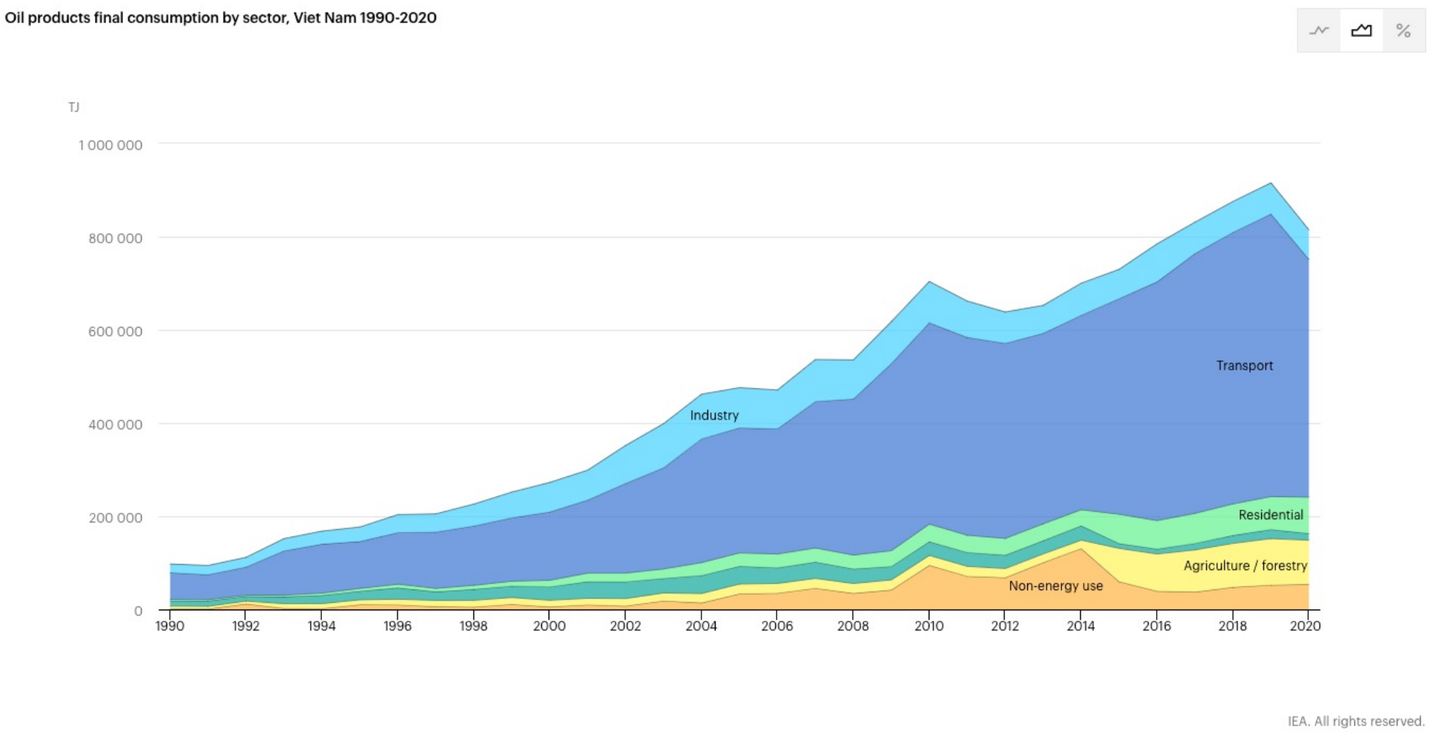
Decarbonising Vietnam's Transportation Sector

Background

Transport is responsible for 18% of Vietnam's total national greenhouse gas (GHG) emissions. Though not the largest emission contributing sector, it is the sector that consumes the most oil products as shown in the figure on the right. Oil, particularly motor gasoline produces 156 pound CO2 per million BTU (source: US Energy Information Administration), significantly more than alternatives like electricity of refined fuels.



Source: World Energy Balances 2022

In the Transportation sector, two wheelers account for 93.3% of all national motorised vehicles, while car ownership is extremely low. Furthermore, due to Vietnam's rising urban population, the majority of this two wheelers are found in major cities, making them the major culprit of carbon monoxide and volatile organic carbon emissions in these area. This also brings direct pollution right to masses, which is a contributing factor to health problems.

The Vietnam Opportunity – 2 Wheelers

2 Whelers in Vietnam uses mostly gasoline, as it is a cheap and highly energy efficient fuel. Internal combustion engine (ICE) two-wheelers accounted for 91% of sales in 2020, according to The International Council on Clean Transportation (ICCT), a U.S.-based independent nonprofit organisation (NGO).

There is a significant opportunity to electrify or introduce alternative fuels to this fleet with the urban population rising by 3% per year and the middle class becoming increasingly affluent and aware of their personal choices. This makes it a good time for the introduction of cleaner forms of 2 wheelers to help Vietnam reach their Nationally Determined Contributions target of 9% GHG emissions reduction.

Current Progress and Challenges

The average fuel consumption in 2020 fell by 4.3% compared to 2019 (from 1.84 l/100 km in 2019 to 1.76 l/100 km in 2020) mainly because of the increasing penetration of Electric 2 Wheelers (e2Ws) in 2020. (source: Global Fuel Economy Initiative). This change however lack clear government regulations and are mostly a result of private companies coming into Vietnam to tap on the fast growing 2-wheelers market. The change is minimal likely due to the following challenges:

1. Lack of Incentives to Switch away from ICE 2 Wheelers

For Consumers
There is no penalty for existing vehicles to meet emission standards. Furthermore, it is not mandatory for newly registered 2 wheelers in Vietnam to comply to the Euro VI standards which many other countries of similar middle class demographics like India have done so. Owners of e2Ws also currently pay the same taxes and fees as owners of ICE two-wheelers.

For Manufacturers
Cost wise, it is still cheaper to manufacture ICE vehicles compared to the components of cleaner 2 wheelers e.g batteries or alternative fuels components.

2. Lack of Technical Standards for Battery Swapping and Charging Infrastructure

Batteries have lower fuel efficiency than gasoline so charging infrastructure and battery swapping services are important to ensure e2Ws can be adopted seamlessly. However, there is not much system in place to develop such infrastructure with common standards.

Author: Woh Jing Ru

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What can be done to speed up progress?

As we can see, solely relying on private sector actions is not enough. The Vietnamese Government has to step in to mandate changes, work with professional organisations to set standards and lay out concrete action-oriented policies. Below are are some considerations:

1. Need for Explicit Policies and Incentives for the Electric 2 Wheeler (e2W) Industry

More pressure on the government to implement tax incentives for environmental friendly vehicles powered by electric, hybrid (gas and batteries), biofuel vehicles and compressed natural gas (CNG) vehicles is needed as there has long been discussions but no concrete action. Vehicle purchase subsidies, tax exemption or tax reduction and lower electricity prices can be considered as potential options to boost e2W adoption. At the same time, strict limits on ICE vehicles can also be imposed to drive demand away from these high carbon emitting sources.

2. Standardise Technical Standards for Batteries and Charging Services

Develop comprehensive regulations and technical standards for e2Ws concerning charging infrastructure, battery swapping systems, vehicle disposal and recycling of spent batteries. All these will make it easier for consumers to access charging or battery swapping services no matter what model of e2Ws they are using. This also makes it easier for manufacturers or suppliers coming into Vietnam to acquire a larger customer base, accelerating the growth of the e2W industry.

3. Support for Adoption of Other Alternative Fuels

Incentives can be put in place for early adoption of low sulphur fuel vehicles (maximum sulphur content of 50 parts-per-million) in certain cities to test the new technology. This can potentially speed up the adoption of advanced emission control technologies in new vehicles and drive improvements in the efficiency of vehicles currently on the road.

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