The American Chamber of Commerce in Hong Kong
Submission in response to the Legislative Council's Panel on Environmental Affairs on Measures to Promote the Use of Electric Vehicles

January 13, 2020

The American Chamber of Commerce in Hong Kong (AmCham) appreciates the opportunity to provide its recommendations to the Legislative Council and HKSAR Government on promoting the use of electric vehicles (EVs).

Below are the **10 reasons** why the government should do more to support electric vehicles. AmCham's views with supporting details are outlined in the Appendix.

1. Air Pollution is a major problem in Hong Kong
2. Internal Combustion Engine (ICE) vehicles are being banned elsewhere
3. We need to decarbonise our City
4. Hong Kong is being left behind other cities
5. Government incentives aren't enough
6. Some organizations are leading the way
7. New models are coming
8. Charging infrastructure is lacking
9. EVs can provide an early start for a much better transport policy
10. Planning for a Healthier, Lower Carbon and More Efficient City

AmCham recommends **10 policy suggestions** which the Government should consider:

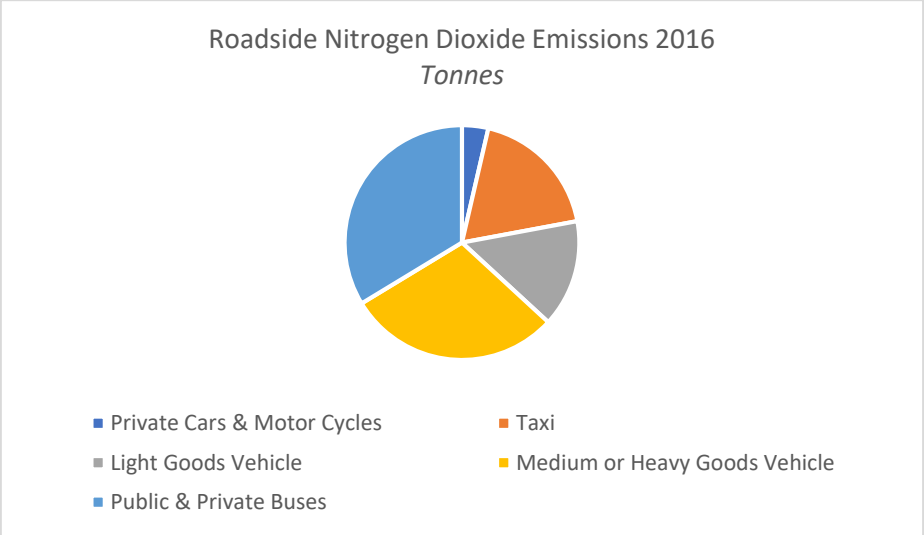
1. Set a clear timeline to phase out diesel, petrol and LPG vehicles in Hong Kong no later than 2040 to allow suppliers and consumers alike time to plan for transition
2. Set and publish a target by 2021 phasing out fossil fuel vehicles, as suggested in the recent public engagement by the Council for Sustainable Development
3. Move easier segments to EVs first to achieve quick wins, with an earlier deadline of 2030
4. Review the current incentives and replace with an enhanced scheme for introduction in the 2020 Budget
5. Provide enhanced tax deductions to encourage more companies to make the same commitment through a more visible government recognition programme.
6. Government should set out an early timetable to convert its own fleet to EVs
7. Make a clear and public commitment by the government to support the introduction of a wider range of EVs with right-hand drive models in the city
8. Strengthen and broaden the subsidy scheme for charging points to match best practice overseas
9. Invest substantially in increasing the number of public EV chargers at the car parks managed by public institutions, in addition to the $300m recently allocated
10. Immediately devise a clear and holistic policy framework for a healthier, lower carbon and more efficient city,

Appendix

1. Air Pollution is a major problem in Hong Kong

- Air pollution is a major problem in Hong Kong. Leaving aside the local impact from regional air pollution, one of the most serious problems is roadside air pollution, which can have significant health effects in Hong Kong's canyon-like streets.

- Annual roadside Nitrogen Dioxide concentration in 2016 was twice that in Government's Air Quality Objectives. Nitrogen dioxide irritates the mucosa of the eyes, nose, throat and the lower respiratory tract. Exposure to low levels of nitrogen dioxide may cause increased bronchial reactivity and in those with asthma increased response to allergens. Nitrogen dioxide also aggravates existing chronic respiratory diseases. Long-term exposure to nitrogen dioxide can lower a person's lung function and resistance to respiratory infections[1].



Source: https://www.legco.gov.hk/yr18-19/english/panels/ea/papers/ea20181219cb1-319-4-e.pdf

- Although buses and medium/heavy goods vehicles are responsible for the bulk of such emissions and immediate conversion to electric vehicles (EV) may not yet be feasible, there are a number of vehicle types which are directly addressable now with EV. With an increasing number of patients sent to hospital with respiratory disease each year[2], even modest reductions made now will have a real impact. Cars, light vans, shuttle and school bus routes (and some shorter franchised bus routes) as well as taxi (and in future shared ownership vehicles) can all be considered now.

- Policy suggestions

    - ✓ A range of policy interventions should be supported. These are highlighted under succeeding sections

[1] https://www.chp.gov.hk/en/healthtopics/content/460/3557.html
[2] https://www.legco.gov.hk/research-publications/english/1819issh06-air-pollution-in-hong-kong-20181121-e.pdf

2. Internal Combustion Engine (ICE) vehicles are being banned elsewhere

- An increasing number of governments are setting objectives for EV deployment, providing signals to manufacturers and consumers, building confidence based on policy frameworks and mobilising investment. Governments in other parts of the world are putting in goals for ICE vehicle restrictions over the coming 5-20 years.

- To date, ten countries, which together represent around two-thirds of the global electric car stock, have endorsed the EV30@30 Campaign by pledging to actively pursue the collective objective of 30% EV sales by 2030 (the target applies to the average of buses, trucks and cars) (CEM-EVI, 2018).2 The Zero Emission Vehicle (ZEV) Alliance, including a number of US states, Canadian provinces and European regions and countries, (some of which overlap with EVI membership countries), have set a common vision to strive to make all passenger vehicle sales electric by 2050 (ZEV Alliance, 2015). Worldwide, many governments have set targets for the deployment of electric vehicles.

- A smaller, yet significant, number of governments have taken a further step and announced bans on the sales of ICE cars[3] or sales targets for 100% zero-emissions vehicle (ZEV), laying the groundwork for achieving a zero-emissions car fleet. The most recent declarations are from Costa Rica, Denmark, Iceland, Israel, Portugal and Spain. Norway has the most ambitious objectives that aim to have only ZEV sales in the light-duty vehicle and public bus segments by 2025.

- Registration-related interventions tied to ZEV promotion have been successfully implemented in China. For example, eight major cities—including Beijing, Shanghai, Shenzhen, and Guangzhou — limit the sale of conventional vehicles through registration restrictions. Such mechanisms typically fix a quota for the maximum number of vehicle registrations allowed in a year, and these registrations are granted either through monthly/bimonthly lotteries or auction mechanisms. ZEVs, on the other hand, are either exempt from such restrictions altogether or treated preferentially. As a result, ZEVs are significantly cheaper and/or faster to register than conventional vehicles. For perspective, six out of the eight Chinese cities with such measures in place accounted for 40% of ZEV sales in China in 2017, and 22% of global ZEV sales that same year.

- Several municipal level administrations have pledged to restrict and/or prohibit access to certain areas for ICE vehicles [4].

- Policy suggestions

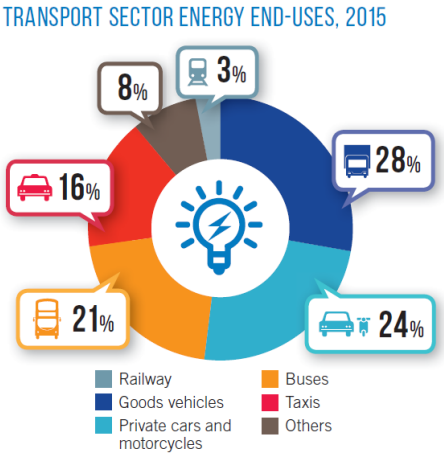
    - ✓ Government to set a clear timeline to phase out diesel, petrol and LPG vehicles in Hong Kong by not later than, say, 2040 to allow suppliers and consumers alike time to plan for transition
    - ✓ Take early quick wins by moving easier segments to EVs first, with an earlier deadline of 2030
    - ✓ Consider restricting high emission vehicles from the most high-density population urban corridors
    - ✓ Significantly enhance the budget (and take-up) for the Pilot Green transport Fund, which in more than 8 years has not used up the $300m budget allocation to better target hard to tackle sectors

[3] Page 60 Global EV Outlook 2019 (IEA)

[4] A review of announced access restriction mandates in local jurisdictions is in Table 2.4 in the Global EV Outlook 2018

3. We need to decarbonise our City

- The land transport sector accounts for around 18% of Hong Kong's carbon emissions according to the latest available figures[5]. This is likely to increase significantly as a proportion of the total as electricity supply is decarbonised (for example with the switch to around 50% gas in the fuel mix in 2020). Government says "transport sector energy end-use is aligned with their respective carbon emissions"[6]. If so, private cars, taxis etc already account for ~40% of energy use and hence ~40% carbon emissions. Put simply, if so, this sector is readily addressable through the introduction of EVs now, with reductions available in around 7% of our city's total carbon footprint assuming that the bulk of transport emissions recorded in the HK inventory are land transport emissions. Even with a 2020 electricity fuel mix, EVs are lower carbon (see Annex for comparison) than the best ICE vehicles.



- Policy suggestions

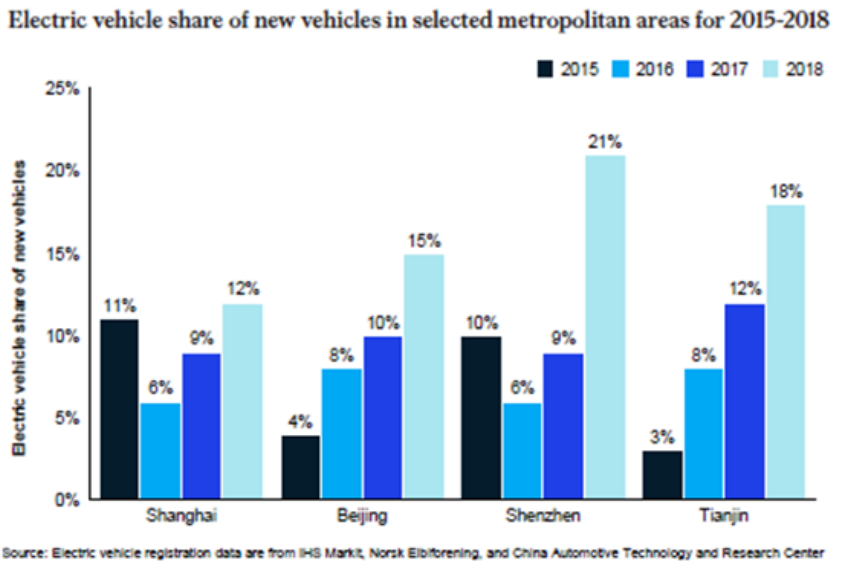
  - ✓ Government to make available to LegCo more detailed estimates of the carbon emissions by vehicle categories in Hong Kong and their contribution towards carbon emissions in the published GHG inventory
  - ✓ Government to set and publish before the end of 2021 a target phasing out fossil fuel vehicles, as suggested in the recent public engagement by the Council for Sustainable Development[7]

[5] https://www.climateready.gov.hk/files/pdf/2017_GHG_by_sector.pdf
[6] https://www.climateready.gov.hk/files/report/en/6.pdf
[7] Page 21 https://www.susdev.org.hk/download/pe_document_e.pdf

4. Hong Kong is being left behind other cities

- National progress is very much faster than in Hong Kong. Recent data from a McKinsey study[8] shows the registration rates for EVs in key metropolitan areas across the Mainland. By comparison, the 2018 rate for EV registration as a % of all new vehicle registrations in 2018 is estimated to be not more than 2%. On the contrary, Hong Kong has lower % EV registration and lower numbers of EV buses than many other cities.

- In Hong Kong, buses are estimated to account for around 20% of transport carbon emissions [9] and around 50% of the harmful RSP (Respirable Suspended Particulate) emissions [10] are from roadside transport. Many cities have made commitments to reduce air pollution and GHG emissions and are pushing hard for electric buses. Examples include the C40 Fossil Fuel Free Streets Declaration when more than 20 cities around the world committed to procure more than 40, 000 electric public buses by 2020 (C40, 2015). In this context, Paris, London, Los Angeles, Copenhagen, Barcelona, Mexico City, Tokyo and Rome together with 19 other cities have committed to only purchase zero-emissions buses as from 2025, indicating that they will reach an all-electric fleet (battery electric or hydrogen fuel cell electric) fleet in the first-half of the 2030s (C40, 2019). Today these cities have combined bus fleets of 80,000 vehicles and will drive market growth for electric buses in the coming years (C40, 2019).



- Hong Kong has a handful and yet Shenzhen has more than 16,000 [11]. Although the current technology makes some routes difficult, there are opportunities to convert a significant number of routes with existing technology.

- Policy suggestions

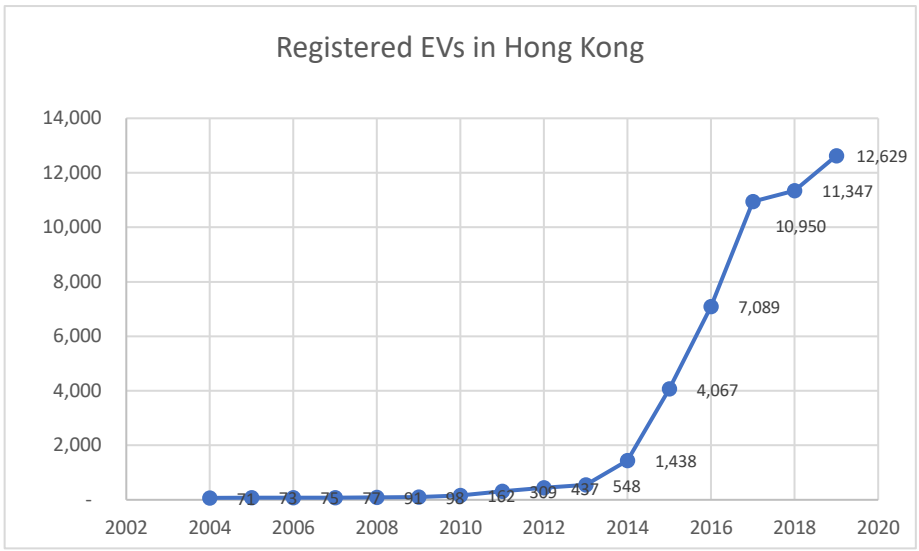
  - ✓ Set time limits or quotas for the first registration of ICE vehicles in Hong Kong
  - ✓ Speed up pilot studies to convert bus routes to electric vehicles, with a view to progressive introduction through the 2020s

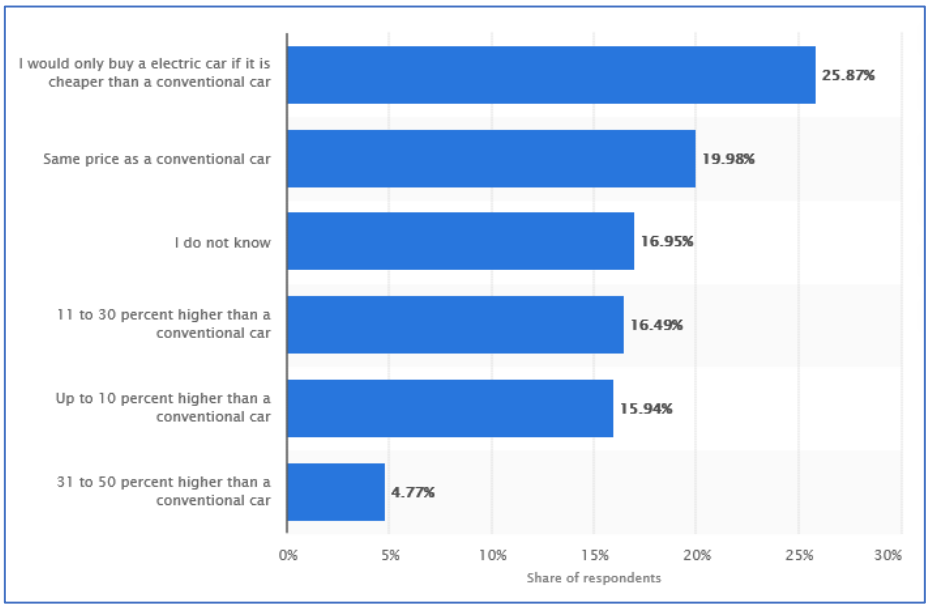
[8] https://www.mckinsey.com/featured-insights/china/what-can-we-expect-in-china-in-2020
[9] https://www.climateready.gov.hk/files/report/en/6.pdf
[10] https://www.legco.gov.hk/yr18-19/english/panels/ea/papers/ea20181219cb1-319-4-e.pdf
[11] https://www.theguardian.com/cities/2018/dec/12/silence-shenzhen-world-first-electric-bus-fleet

5. Sensible government incentives to increase EVs uptake

- EV numbers grew rapidly with the introduction of the FRT waiver since government promotion 20 years ago but sales collapsed with the sudden withdrawal of the scheme early in 2017 without a clear way forward on green transportation in Hong Kong thereafter. The introduction of a replacement scheme in 2018, which has not recovered early growth, sent a very mixed signal to the industry and the public on policy directions

- AmCham does not wish to see more cars on the road, but cleaner cars on the road. The government should make explicit its ultimate policy goal of encouraging car owners to switch to EVs with matching incentives and disincentives to achieve such a goal. EVs are still relatively expensive in the minds of consumers as the following research shows[12]. Apart from policy incentives, the government should work closely with the industry on the latest technology and products available and acceptable in the market to ensure Hong Kong reaches the common use of EVs at the highest standard and affordability.





- Policy suggestions

  - ✓ Combined 'stick' and 'carrot' approach, with limitations on future registration of ICE vehicle with stronger incentives for early transition. The Global EV Outlook

[12] https://www.statista.com/statistics/1028666/hong-kong-willingness-to-spend-on-electric-cars/

2019 (IEA) highlights the incentives and regulations applying in selected regions [13], which would form a good template for Hong Kong

- ✓ Review and replace the current incentives with an enhanced scheme. Introduce new arrangements in the 2020 Budget. For the longer term, recognise that enduring and less discriminate subsidies may not be necessary and can even distort the market in a way that limits customer choice and market evolution.

6. Some organisations are leading the way

- Companies joining EV100[14] make an individual commitment to transitioning their fleets to electric vehicles and/or installing charging infrastructure at their relevant premises by 2030. They can choose to make the commitment in one or more of four influence areas: directly controlled fleets (owned/leased), service provider contracts, workplace charging, and customer charging. The Hong Kong Airport Authority and the CLP Group are two organisations who have joined already.

- In 2016, recognizing the importance of reducing carbon emission in the transportation sector, eight major nations – Canada, China, France, Japan, Norway, Sweden, the United Kingdom and the United States of America signed a declaration pledging to increase the share of electric vehicles in their government fleets and calling for other governments to join them.

- Policy suggestions

  - ✓ More companies should be encouraged to make the same commitment, with enhanced tax deductions for doing so now in a new and more visible government recognition programme, to help pump-prime the market
  - ✓ Review Hire Car permitting system and make a % of EV in the fleet a Permit condition
  - ✓ Government should set out a commitment and early timetable to convert its own fleet to EVs

7. New models are coming

- A whole range of new EVs are on the way from major auto makers as they pivot away from gasoline/diesel models. The Wall Street Journal has called 2020 the turning point for electric cars[15], broadening consumer choice and enhancing the number of price points and product features available.

- Bloomberg expects EVs to outsell conventional fossil fuel vehicles by 2040 (see chart). Hong Kong needs to be on the radar for new product launches, with government making it clear to vendors that right-hand drive models should not be left behind in early production runs.

- Biodiesel (if from sustainable sources) may help with carbon reduction but it still produces air emissions. The Internal Combustion Engine is seen as old technology in some quarters and so a move to newer technology EVs (or Green Hydrogen fuelled larger vehicles in the longer term) makes more sense.

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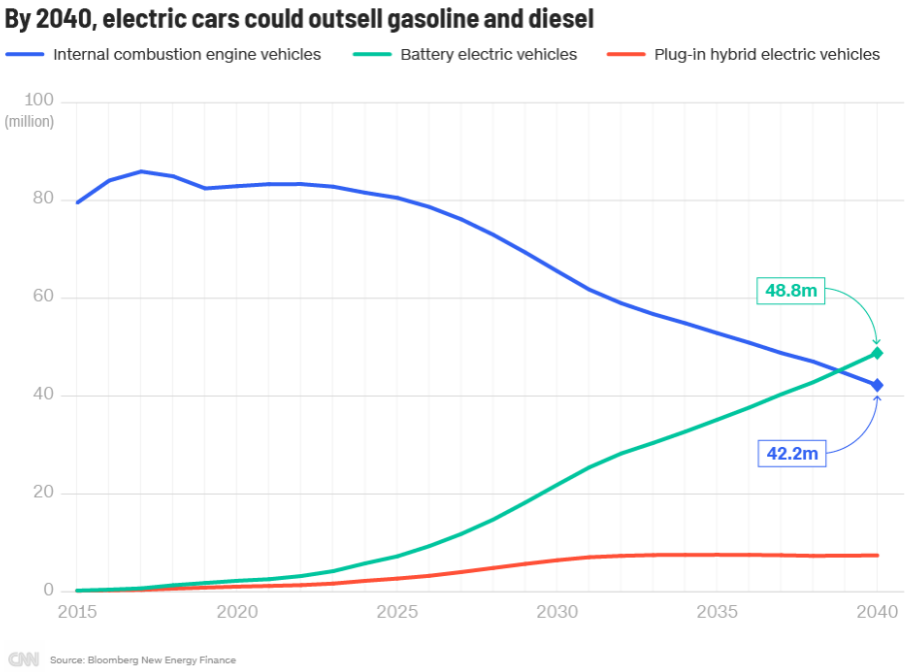
[13] Global EV Outlook 2019 (IEA) page 11

[14] http://climateinitiativesplatform.org/index.php/EV100

[15] https://www.wsj.com/articles/power-shift-why-2020-is-the-turning-point-for-electric-cars-11577458791



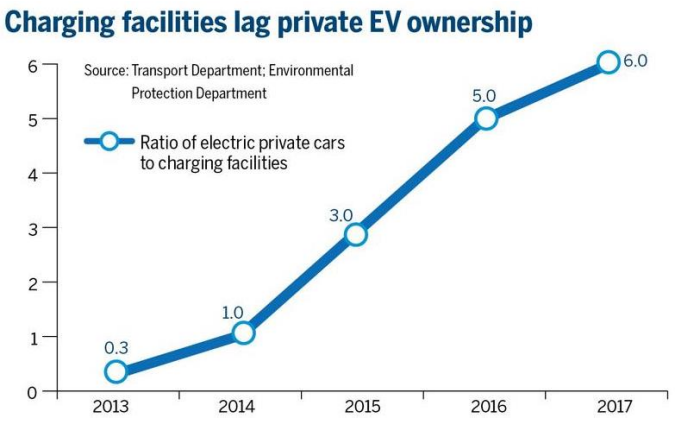
- Policy suggestions

  - ✓ A clear and public commitment by government to support the introduction of a wider range of EVs, to encourage dealers to programme the launch of right-hand drive models in the city
  - ✓ A commitment to ban ICE vehicles in the medium-longer term would crystallise the opportunity for a greater commitment by auto makers to import a wider range of models into Hong Kong

8. Charging infrastructure is lacking

- The ratio of EVs to charging points is still growing according to the latest figures quoted in China Daily[16].

- The Chamber welcomes the recent HK$2bn Government funding initiative to help support the initial roll-out phase of more EV charging places in residential buildings. It will be important to get the scheme successfully up and running quickly. Other jurisdictions have more comprehensive schemes covering a range of applications and locations [17]. Government should expand and extend the scheme in a similar manner, until the market itself has established a better level of performance.



- Even with the scheme, it is likely that some building IOs will offer limited support – only when a future ban on ICE vehicles is clearly set out, will they see the need to move. Government should offer financial support for early adopters and taper funding

[16] https://www.chinadailyhk.com/articles/164/60/64/1529896990076.html
[17] https://www.edfenergy.com/electric-cars/government-grants

downwards for those who do not change until the last minute. The power companies should be encouraged to invest to ensure adequate supplies are available to support EV charging in buildings and to develop an approach to manage the potential impact on the grid of widespread future EV charging.

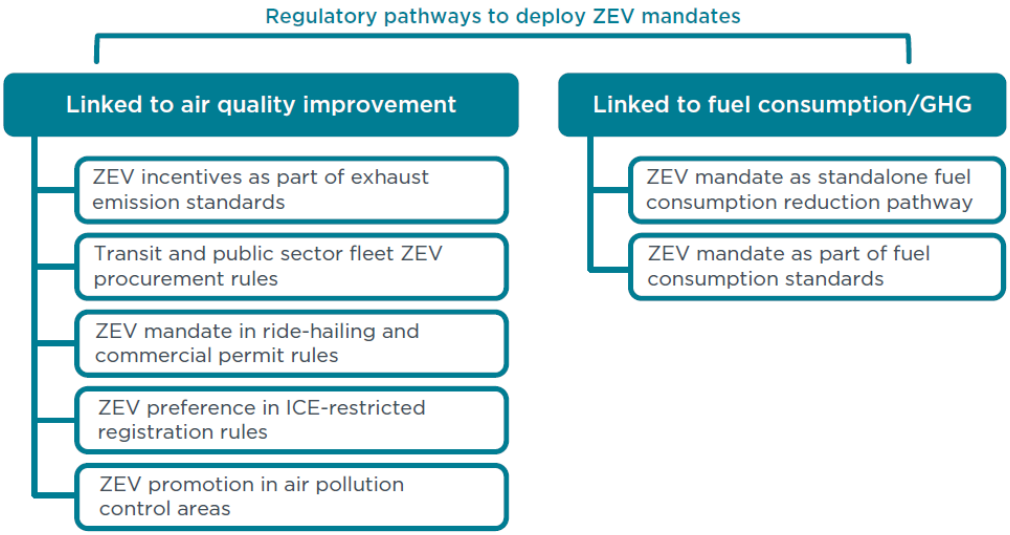
- According to the LegCo Q and A on 29 May 2019[18], the administration has not fully utilized the parking spaces managed by public institutions to provide EV chargers, such as the MTR Corporation Limited, Hospital Authority etc.

- Policy suggestions

  - ✓ Strengthen and broaden the subsidy scheme for charging points to match best practice overseas. Commercial vehicle charging stations will be important and land availability/usage will need strong support from government
  - ✓ Invest substantially in increasing the number of public EV chargers at the car parks managed by public institutions, in addition to the $300m recently allocated[19]
  - ✓ Newly installed chargers should all be medium chargers; upgrade all the public standard chargers to medium or quick chargers

9. EVs form an essential part of a green transportation policy

- Seven interlinked policy pathways identified as best practice to achieve better air quality and a lower carbon city[20]



- Whilst these feature rules, controls and standards, they need to be matched by incentives and disincentives, as described in section 5.

- Other technologies may in future (such as Green Hydrogen) can also provide zero emissions vehicles but for now Electric Vehicles are the best way to get early wins.

[18] https://www.info.gov.hk/gia/general/201905/29/P2019052900463.htm?fontSize=1
[19] https://www.info.gov.hk/gia/general/201911/20/P2019112000574.htm
[20] International Council on Clean Transportation – Regulatory Pathways for zero emission vehicle mandates – July 2019

- EV adoption should focus on public transportation – the heavier contributor to emissions – with a targeted strategy for private cars adoption that aims to support switching instead of unintendedly increasing more cars on the road.

- Policy suggestions

    - ✓ Government to develop and publish for public consultation by the end of 2021 a proposed regulatory roadmap for Hong Kong to deploy ZEV mandates
    - ✓ Finalise and publish the confirmed roadmap before the end of 2022

10. Planning for a Healthier, Lower Carbon and More Efficient City

- Integrated land-use and transport planning to reduce the need for travel

- More extensive rail network and promoting trunk and feeder services to maximise rail usage

- Better co-ordination of different transport modes; 'Park and Ride' facilities

- Application of new technologies in traffic management to relieve congestion

- Pedestrianisation, possibly along with cycling facilities; if necessary, consider more drastic measures such as restraining the growth and usage of vehicles

- Policy suggestions

    - ✓ Come up with a clear policy framework
    - ✓ Taking a holistic approach
    - ✓ Segmented approach – don't wait until all vehicle types are available for conversion – start now on the addressable segments
    - ✓ BEGIN NOW!

References & Data

Estimated Carbon Performance of EVs vs. Gasoline Cars in Hong Kong considering the carbon intensity of electricity supply using typical vehicle comparisons

- CO_2 emissions on a per km basis compared for Nissan LEAF (reference for EV performance) and the Honda Civic (reference for a gasoline vehicle)
- CLP Power supplies around 80% of the population of HK with electricity, so it is taken as the reference grid supplier. CLP's 2019 carbon intensity was ~0.51 kg CO_2/kWh[21], reducing to ~0.4 kg CO_2/kWh this year[22]
- Vehicle Efficiency / Mileage for both the LEAF and the Civic are as follows:

	Efficiency / Performance	Notes
Nissan Leaf	180 km / 40kWh = 4.5 km / kWh (EPA combined city & driving)	https://www.motortrend.com/cars/nissan/leaf/2019/
Honda Civic 1.8	152 g / km	There are 2 engine sizes available for the Civic. The 1.8L engine version was selected since it has 138 hp and is the closest to the Nissan LEAF's 147 hp rating. The 1.4L engine version is rated at a much lower ~90 hp and so isn't comparable. http://www.zeperfs.com/en/fiche1453-honda-civic-1-8.htm. Carbon emissions rating for Honda Civic 1.8L is at https://www.energy.eu/car-co2-emissions/honda.php

- The estimated carbon emissions performance of the Nissan LEAF based on the grid intensity is as follows:

	Grid Intensity (kg CO_2/kWh)	Nissan LEAF (g CO_2/km)	Honda Civic (g CO_2/km)
2019	0.51	**113**	152
2020	0.4	**89**	

[21] https://www.clp.com.hk/en/about-clp-site/media-site/resources-site/publications-site/Documents/CLP%20Response%20to%20Long-term%20Decarbonisation%20Strategy%20Public%20Engagement%20Sep%202019%20(English).pdf

[22] https://www.clp.com.hk/en/about-clp-site/media-site/resources-site/publications-site/Documents/CLP%20Response%20to%20Long-term%20Decarbonisation%20Strategy%20Public%20Engagement%20Sep%202019%20(English).pdf