

**For information
on 15 June 2017**

WG Paper 1/2017

**AQO REVIEW WORKING GROUP
PROGRESS REPORT**

PURPOSE

This paper reports to Members on the progress of the Air Quality Objectives (AQOs) Review (“Review”).

THE PROGRESS

2. The three sub-groups on road transportation, marine transportation, and energy and power generation have convened 19 meetings to identify possible new air quality improvement measures and deliberated on the practicability of their implementation within the timeframe up to 2025 with a view to further improving the air quality. The timeframe was chosen mainly in consideration of the target of broadly attaining the current AQOs by 2020 and the need to review the AQOs once every five years.

3. A total of 66 new air quality improvement measures were identified for discussion and thoroughly deliberated in the three sub-groups. The measures covered a wide spectrum encompassing the use of clean fuel (e.g. marine vessels to use Liquefied Natural Gas (LNG)), transport planning/management (e.g. measures to alleviate road traffic congestion); urban planning and design (e.g. fostering a “pedestrian-friendly” and “bicycle-friendly” environment); energy demand management and pursuit of renewable energy in increasing the use of wind and solar energy in electricity generation.

4. Amongst the measures discussed, some (24 measures) are either on-going or ready under consideration by the relevant bureaus or departments which are likely to produce results by 2025 or earlier (*short-term*), some (4 measures) may be ready for consideration in the next AQO review period (*medium-term*).

There are also some (13 measures) which require detailed planning or further study to ascertain the practicability for implementation beyond the next review period (*long-term*). The remaining measures (25 measures) are considered as not practicable, short of air quality benefits or not suitable to be considered under the current scope of the review. The gist of the discussions in the sub-groups are provided in the ensuing paragraphs.

Road Transportation

5. The Road Transportation Sub-group has deliberated 35 measures under the following categories—

- (a) tunnel toll policy and toll collection method,
- (b) maintenance and repair of vehicles exhaust system,
- (c) fostering a “pedestrian-friendly” and “bicycle-friendly” environment,
- (d) promotion of low-emission transport mode,
- (e) utilisation of Intelligent Transport Systems (ITS),
- (f) land use and transport infrastructure planning,
- (g) managing road space, and
- (h) others.

6. 12¹ of the measures have been identified as short-term measures covering the areas of raising the awareness on the importance of vehicle maintenance and repair; fostering a “pedestrian-friendly” and “bicycle-friendly” environment in existing new towns and urban areas; utilisation of Intelligent Transport Systems (ITS); land use and transport infrastructure planning; and managing road space (e.g. review on-street metered parking fees).

7. Deliberations of individual measures in the Road Transportation Sub-group are shown in Annex A.

¹ 2 out of the 12 measures are being reviewed as whether their implementation could be advanced from medium-term to short-term. Another three measures are considered as short-, medium- to long-term depending on the extent of implementation.

Marine Transportation

8. The Marine Transportation Sub-group has deliberated 16 measures under the following categories–

- (a) use of clean fuel,
- (b) technical measures,
- (c) fuel economy, energy efficiency and port management, and
- (d) others.

9. Two short term-measures have been identified. To highlight is that it was suggested that the sulphur cap of marine fuel for ocean-going vessels when berthing in Hong Kong should be tightened to 0.1% (from the present limit at 0.5%). Taking into account the Domestic Marine Emission Control Area (DECA) that will be set up progressively by January 2019 in the Pearl River Delta waters and the Ministry of Transport plans to determine by end 2019 whether to further cut down the sulphur cap in the DECA, the sub-group agreed that this measure be pursued on a Pearl River Delta (PRD) regional basis to avoid jeopardising the competitiveness of local ports. In the meantime, the Administration would proceed to ascertain the availability of the 0.1% sulphur fuel in Asia and assess the implications to the trade before taking this measure forward. Deliberations of individual measures in the Marine Transportation Sub-group are shown in Annex B.

Energy and Power Generation

10. The Energy and Power Generation Sub-group has deliberated on 15 proposed measures under the following categories:

- (a) building energy efficiency measures,
- (b) use of renewable energy,
- (c) fuel mix for electricity generation,
- (d) operation of power generation plants,
- (e) new solar energy technology,
- (f) use of biomass as fuel, and

(g) energy storage.

11. Of the 15 measures deliberated, 10 have been identified as short-term ones grouped under four aspects (namely, building energy efficiency measures, use of renewable energy, fuel mix for electricity generation and operation of power generation plants). Most of the proposed measures tally well with the Government's continuous efforts and align with the recently published Government policies such as the *Energy Saving Plan for Hong Kong's Built Environment 2015~2025+* and *Hong Kong's Climate Action Plan 2030+*. With regard to enhancing renewable energy consumption, EPD has been developing waste-to-energy facilities to tap the energy generated from the wastes disposed such as the sludge treatment facilities and the organic resources recovery centre that will be commissioned shortly. Deliberations of individual measures in the Energy and Power Generation Sub-group are shown in Annex C.

Other pollution sources

12. Meanwhile, we have tasked the Consultant commissioned for the AQO review to look into measures that are in areas not covered by the three key measures subgroups. They include VOC content of architectural paints, non-road mobile machinery, cooking fume emissions, and the emission from civil aviation industry is under review, and where necessary, the consultant will engage relevant stakeholders to help assess the technical and financial feasibility, cost effectiveness, and trades' reaction, etc. and to assess the practicability for implementing the measures.

AIR SCIENCE AND HEALTH IMPACT ASSESSMENTS

13. The Air Science and Health Sub-group has completed the deliberations on the general approach and methodology for the health and economic impact assessment as well as air quality modelling assessments. In the past six months, meetings of the two task groups on Emission Reduction Estimation and Air Quality Modelling and Health and Economic Impact Assessment have

been convened to deliberate the relevant technical details. The two task groups have been providing steer to the AQO consultant in the assessments.

ACTION AHEAD

14. The Working Group, in particular the Air Science and Health Sub-group will continue the remaining tasks such as the assessment of future air quality, health and economic impact assessment as well the potential scope for tightening the AQOs arising from the implementation of new air quality control measures and the anticipated development of regional air quality. The Environment Bureau/Environmental Protection Department will brief the Panel of Environmental Affairs of the Legislative Council on 26 June 2017 about the latest Review progress. An engagement briefing will be prepared and held in the 3rd quarter of 2017 to solicit views from the general public on their aspirations for the AQO as part of the review process. We shall update Members on the progress tentatively in November 2017.

ADVICE SOUGHT

15. Members are invited to note the content of this paper.

**Environment Bureau /
Environmental Protection Department
June 2017**

**PROPOSED NEW AIR QUALITY IMPROVEMENT MEASURES -
ROAD TRANSPORTATION**

New Air Quality Improvement Measures	Deliberations
A. Tunnel toll policy and toll collection method	
A1. Review the tunnel toll policy and level to alleviate traffic congestion, thereby reducing the emission caused by congestion at the tunnels.	The Transport and Housing Bureau (THB) commissioned a consultancy study on the overall strategy and feasible options for the rationalisation of traffic distribution among the three road harbour crossings (RHCs) and the three land tunnels connecting for the New Territories and Kowloon. The Government will submit toll adjustment proposals covering the six tunnels to the Panel on Transport of Legislative Council for discussion in the year 2017-18 legislative year. (Long-term measure)
A2. Consider replacing the existing system with complete automatic toll collection system.	The THB believed the reason for traffic congestion was due to the saturation of traffic capacity at the RHCs and there was no direct relation between traffic congestion and the toll collection systems. (Others*)
B. Maintenance and repair of vehicle exhaust system	
B1. Propose to use chassis dynamometer for testing vehicle tailpipe emissions.	This measure is cost-ineffective and unjustified. The programmes targeting excessive emission problems of various types of vehicles have reduced considerably the number of their gross emitters and resulted in discernible air quality improvements. Gross emitters now account for only a small part of the vehicle fleet. It would be difficult to seek sufficient support from the

New Air Quality Improvement Measures	Deliberations
	community to make passing the dynamometer test mandatory for vehicles undertaking roadworthiness examination, as taking such a test could cause a significant increase in vehicle examination fee and time. (Others*)
B2. Tighten the annual vehicle examination for private cars from over six years old to over three years old (or consider adopting vehicle kilometres travelled as the vehicle examination criterion).	There are no strong justifications to tighten the annual vehicle examination for private cars from over six years old to over three years old. Nevertheless, the Government will continue to promote the importance of vehicle maintenance and repair. (Others*)
B3. Provide vehicle tailpipe emission testing equipment for rent by small and medium-sized vehicle repair workshops.	This measure is considered ineffective and unjustified. There are already on the market specialist diagnostic services for vehicles of advanced engine design, particularly diesel ones. Such services are far better than the proposed initiative, which is not common elsewhere. (Others*)
B4. Establish a maintenance information database of vehicle tailpipe emission system.	When Euro VI vehicle emission standards are introduced, vehicle manufacturers will have to provide access to vehicle maintenance information for new vehicle models at reasonable fees. Besides, EPD will upkeep the cooperation with the Vocational Training Council (VTC), repair trade and vehicle manufacturers in organizing trainings and workshops for the trade to share experience/information on vehicle maintenance, which the vehicle repair trade considers useful. (Short-term measure)

New Air Quality Improvement Measures	Deliberations
B5. Raise awareness on the importance of vehicle maintenance and repair.	This is an on-going initiative. The Government will keep up the effort on promoting the importance of vehicle maintenance and repair so that the vehicle repair trade and vehicle owners could understand the benefits of proper vehicle maintenance for reducing vehicle emissions. (Short-term measure)
C. Fostering a “pedestrian-friendly” and bicycle-friendly” environment	
C1a. Foster "pedestrian-friendly" environment (such as widening of footpaths, construction of covered walkways and enhancing the pedestrian connections) to encourage people to walk for existing new towns and urban areas.	Members noted the Government’s work on this front, and have offered some suggestions. The Government will continue to foster a pedestrian-friendly environment to reduce the need of the public using mechanised transport mode for short distance commuting. (Short to medium-term measure)
C1b. Foster "pedestrian-friendly" environment (such as widening of footpaths, construction of covered walkways and enhancing the pedestrian connections) to encourage people to walk for new towns and new development areas (NDAs).	As part of the Smart City initiatives, measures for improving pedestrian connectivity will be considered to promote walking in Hong Kong. Generally, there should not have insurmountable problems rendering the provision of pedestrian connectivity not technical feasible. Nonetheless, technical feasibility and environmental impact have to be investigated in details at planning and detailed design stage. (Long-term measure)
C2a. Foster “bicycle-friendly” environment and study into the provision of ancillary facilities for cycling (such as provision of cycling track network and bicycle parking spaces, park-and-ride facilities at public transport	Members noted the Government’s work on this front, and have offered some suggestions. The Government will continue to foster “bicycle-friendly” environment in new towns and NDAs. (Short to medium-term measure)

New Air Quality Improvement Measures	Deliberations
interchanges and bike-friendly policies to facilitate carriage of bicycles on public transport) for existing new towns and urban areas.	
C2b. Foster “bicycle-friendly” environment and study into the provision of ancillary facilities for cycling (such as provision of cycling track network and bicycle parking spaces, park-and-ride facilities at public transport interchanges and bike-friendly policies to facilitate carriage of bicycles on public transport) for new towns and NDAs.	The proposed measures are in fact part of the Smart City initiatives being pursued in the new towns and NDAs Technical feasibility and environmental impact have to be investigated in details at planning and detailed design stage. (Long-term measure)
C3. Set up cycling and walking shared space at harbourfront areas.	Note: The assessment has been updated and re-circulated for Sub-group members’ agreement. (Long-term measure.)
C4. Establish lower vehicle speed limits zones (e.g. 30km/h) in community roads, school zone and areas with elderly centres, to foster pedestrian environment.	Note: This measure is assessed together with “Foster "pedestrian-friendly" environment” (Measure C1) as it carries the same spirit. (Others*)
D. Promotion of low-emission transport mode	
D1. Tram or electric bus interchange schemes at busy road sections (e.g. Nathan Road) to replace the franchised bus services so as to reduce the number of buses and boarding/alighting passengers on the road section.	This measure is not practicable yet. Due to the technical constraints of the current single-deck electric buses available in the market, electric buses are not able to fully support franchised bus operation and therefore could not replace most of the existing franchised buses at this stage. Furthermore, franchised bus companies and passengers will not welcome the proposal on tram or electric bus interchange schemes. The bus route

New Air Quality Improvement Measures	Deliberations
	<p>rationalisation and Bus-Bus Interchange (BBI) concessionary schemes implemented by franchised bus companies in recent years have already achieved the effect of alleviating traffic congestion and roadside emissions in busy road sections. In terms of technical performance and ancillary facilities, this measure is not practicable yet. (Others*)</p>
<p>D2. Electric vehicles pilot schemes - switching the existing vehicle fleet of selected routes to electric vehicles.</p>	<p>The sub-group recommended that the Government should take more proactive and positive measures to support the installation of ancillary facilities, while at the same time looking into an approach to actively promote the use of electric buses so as to facilitate the introduction in our local market suitable electric bus models that meet local operational requirements. The sub-group suggested that the Government should establish a task force with bus operators to identify suitable electric vehicles and relevant ancillary facilities for conducting trials with an aim to replace the current franchised buses. While the electric buses/minibuses have potential to be adopted more widely in future, the proposal to launch a large scale pilot scheme for electric buses/minibuses should be considered after suitable models of these electric vehicles are identified through trials. (Long-term measure)</p>
<p>D3. Promotion of hybrid private cars.</p>	<p>This measure is considered unjustified. With the advances in the technology of electric cars which have no tailpipe</p>

New Air Quality Improvement Measures	Deliberations
	emissions, it is considered more beneficial to promote the use of electric cars instead of hybrid cars in terms of air quality benefits. Our priority is to promote the use of electric cars instead of hybrid cars. (Others*)
D4. Exploring the use of new-energy vehicles.	Natural gas (NG) or hydrogen vehicles are not viable in Hong Kong as it is not practicable to find enough suitable locations for setting up NG/hydrogen filling stations and their storage facilities due to our high development density as well as the explosive nature of NG/hydrogen. The Government will continue to keep in view the development of new energy vehicles in the market. (Others*)
E. Utilisation of intelligent transport systems (ITS)	
E1. Launch one-stop mobile app for the public to choose the most time-saving, economical and low-emission transportation mode.	(Short-term measure - <i>Tentative</i>) (Note: The assessment has been updated and re-circulated for Sub-group members' agreement.)
E2. Launch one-stop mobile app for the public to access real-time information on car parking vacancies which helps them choose the best parking location and shortening the driving distance.	The Government has taken forward this measure. Transport Department will continue to disseminate the real-time parking vacancy information through the "Hong Kong eRouting" mobile application. (Short-term measure)
E3. Implement electronic road pricing (ERP) scheme to tackle road traffic congestion at busy roads.	The sub-group in principle agreed that reaching a consensus within the community is crucial to successful implementation of the ERP Pilot Scheme. Members acknowledged that the Government would conduct an in-depth

New Air Quality Improvement Measures	Deliberations
	feasibility study to formulate detailed options for the next stage of public discussion. (Long-term measure)
E4. Introduce intelligent transport systems (ITS) (e.g. manage traffic flow by traffic signal control, install smart sensors and surveillance cameras for illegal parking enforcement).	The Government has been developing ITS under a three-pronged approach, <i>viz</i> dissemination of traffic information to the public, traffic control and supporting traffic enforcement. Regarding the further use of ITS, further studies will be required for specific measures. (Short-, medium-, to long-term measure)
F. Land use and Transport Infrastructure Planning	
F1. Through proper land use planning to redress the current imbalance in home-job distribution and bring jobs closer to home so as to reduce commuting time and private car usage.	The Sub-group considered that this would in long term improve traffic and air quality, and provided some recommendations. (Long-term measure)
F2. Use urban planning and design solutions together with transport management to improve air ventilation in high density development.	Members acknowledged the works to improve air ventilation in district and site levels by the Government, and provided some recommendations. The Government will continue to work on these aspects to improve the air ventilation. (Short-term measure)
F3. Conduct comprehensive review on the development of road transportation infrastructure and networks (such as construction of new tunnels and roads) to cope with population growth and to tackle road traffic congestion.	The sub-group noted the Hong Kong 2030+ is being conducted by the Government, and hope the Government will promote strategic study on railways and highways after Hong Kong 2030+ has been completed. (Medium-term measure)
F4. Provide low-emission transport mode to the residents of NDAs.	It should be feasible to construct a low-emission mode of transport in the development of new towns and NDAs.

New Air Quality Improvement Measures	Deliberations
	In fact, the Government has actively considered the suitable environmentally-friendly transport systems in projects such as Hung Shui Kiu and Kai Tak Developments. (Long-term measure)
F5. Enhance district-based publicity on bus route rationalisation.	Bus route rationalisation can enhance the efficiency of bus network for more cost-effective usage of bus resources, and improve air quality. However, the bus route rationalisation will cause inconvenience to some passengers, or lead to changes to passenger's travelling pattern. The Government considers the extensive publicity is worth to continue pursuing as it would benefit the consultation of bus routes rationalisation and the implementation of the proposals. (Short-term measure)
G. Managing road space	
G1. Raise the first registration tax (FRT) of highly polluting vehicles and impose higher licence fees for more polluting vehicles to manage the growth of vehicles.	(Others* - <i>Tentative</i>) (Note: The assessment is being circulated for Sub-group's agreement.)
G2. Enhance enforcement against illegal parking.	The Police had been focusing on the problem of illegal parking as well as other traffic problems on a district level, and often conducted territory-wide enforcement programme to tackle illegal parking. (Short-term measure)
G3. Review on-street metered parking fees.	Members of the Road Transportation Sub-group in general agreed that the parking meter charges at present are very low, and there is room for increasing the charges to disincentise drivers circling

New Air Quality Improvement Measures	Deliberations
	<p>around streets waiting for parking spaces, thus worsening traffic congestion at some of the roads. However, members acknowledged that the proposed measure may induce increase of pricing in some private carparks. (Short-term measure)</p> <p>(Note: The practicability of implementation has been advanced from medium-term to short-term and circulated for Sub-group members' agreement.)</p>
H. Other suggestions	
<p>H1. Provide information on the energy efficiency, emission performance and noise level of vehicles, etc. to facilitate the public to make a more environmentally-friendly choice.</p>	<p>(Others* - <i>Tentative</i>)</p> <p>(Note: The assessment is being circulated for Sub-group's agreement.)</p>
<p>H2. Set out objectives/policies to support the use of cleaner vehicle fuels.</p>	<p>The Government will continue with its multipronged approach in reducing tailpipe emissions from motor vehicles, and to continue monitoring relevant international developments so as to adopt the most stringent motor vehicle fuel standards and introduce cleaner fuels when they become practicable for Hong Kong. (Others*)</p>
<p>H3. Extend the coverage areas of the existing low emission zones and its restriction to other vehicle types.</p>	<p>The Government will continue the multipronged approach and consider the latest technological developments as well as the effectiveness of current measures when formulating policies for further improvement of roadside air quality. (Others*)</p>
<p>H4. Address the personal and operational needs of heavy vehicle</p>	<p>Members of the Road Transportation acknowledged the work by the</p>

New Air Quality Improvement Measures	Deliberations
drivers, such as provision of parking space and arrangement of meal and rest breaks at the Kwai Chung Container Terminals area, so as to reduce air pollution arising from idling engines.	Government on increasing commercial vehicle parking space, and recommended the Government to step up the work on the issues and provide more commercial parking space for long term / short term parking. (Medium-term measure)
H5. Set up a continuous and effective priority road network for public vehicles.	(Others* - <i>Tentative</i>) (Note: The assessment is being circulated for Sub-group's agreement.)
H6. Review the policy on replacement of franchised buses.	(Others* - <i>Tentative</i>) (Note: The assessment is being circulated for Sub-group's agreement.)
H7. Provide funding to support District Councils for implementing air quality improvement projects	There is no strong justification to set up the proposed funding. Public members who would like to conduct innovative projects that can help improve air quality can apply for funding from existing resources such as the Environment and Conservation Fund. (Others*)
H8. Raise public awareness on environmental protection, promote green living and encourage the public to use public transport systems as well as low emission transportation options.	This is an on-going initiative. The Government will make efforts to promote walking and cycling, and the use of public transport services. (Short-term measure*)

Note: *These measures are considered not-practicable, short of air quality benefits or not suitable to be considered under the current scope of the Review.

**PROPOSED NEW AIR QUALITY IMPROVEMENT MEASURES -
MARINE TRANSPORTATION**

New Air Quality Improvement Measures	Deliberations
A. Use of Clean Fuel	
A1. Explore the use of Liquefied Natural Gas (LNG) for marine vessels.	The Government should develop the technical requirements and associated safety regulations for using LNG in marine vessels while keeping a close watch on all relevant developments for planning ahead the development of LNG bunkering facilities in Hong Kong; and explore collaboration within the PRD region on LNG bunkering. (Long-term measure)
A2. Explore the use of biofuel (e.g. B5), fuel cell, Liquefied Petroleum Gas (LPG), compressed natural gas (CNG), methanol, nuclear and renewable energy, etc. for marine vessels.	These alternative fuels are unlikely to become a mainstream marine fuel in the foreseeable future but the Government should keep a close watch on this development. (Long-term measure)
A3. Explore the use of hybrid, diesel electric and electric vessels	These technologies are unlikely to replace conventional powering technologies of vessels in the foreseeable future. The Government should keep close monitoring of the technology development. (Long-term measure)
A4. Ocean-going vessels (OGVs) at berth to use marine diesel with lower fuel sulphur content, e.g. not exceeding 0.1%.	A Domestic Marine Emission Control Area (DECA) will be set up in the Pearl River Delta (PRD) requiring vessels to use low sulphur fuel (sulphur content not exceeding 0.5%). The Ministry of Transport plans to determine by end 2019 whether to further tighten the sulphur limit in the PRD DECA to 0.1%. (Short-term

New Air Quality Improvement Measures	Deliberations
	measure)
A5. Local vessels to use electricity from the power grid while at berth	Operators of local vessels can approach the power companies for the setting up of power supply installations at the piers for their use, provided that the conditions such as space, safety and operation requirements could be satisfied by the power companies and the relevant authorities. The proposed initiative has already been adopted by local vessel operators. (Short-term measure)
A6. River trade vessels to use on-shore power supply (OPS) while at berth at terminals	This measure is considered not practicable given the quick turnaround time of river trade vessels and the lack of space at terminals for the installation of the OPS. (Others*)
A7a. OGVs to use OPS while at berth for Cruise Terminal.	For Kai Tak Cruise Terminal, the Government should continue to keep close monitoring of the international and regional development in the use of OPS for cruise ships, so that timely action could be taken to pursue the use of OPS for cruise ships. (Long-term measure)
A7b. OGVs to use OPS while at berth for container terminals.	The proposed initiative at container terminals is not practicable to implement given the lack of space for the installation of the OPS and a unified standard for OPS, in addition to other factors. (Others*)
B. Technical Measures	
B1. Impose emission standards on outboard engines of local vessels.	A detailed consultation with the shipping trade is required to ascertain its implementation. The Government would thoroughly consult the relevant trade to address its concerns before pursuing the proposed measure. (Medium-term

New Air Quality Improvement Measures	Deliberations
	measure)
B2. Install emission reduction device (e.g. particulate filters) to reduce particulate matters (PM) emitted from local vessels.	This measure is not practicable for implementation. The scope for applying the proposed measure on local vessels is expected to be very limited given the technical constraints and cost implications. (Others*)
B3. Impose control on nitrogen oxides (NOx) emissions from engines of local vessels.	This measure is not practicable for implementation. The scope for applying the proposed measure on local vessels is very limited given the technical constraints and cost implications. (Others*)
C. Fuel economy, energy efficiency and port management	
C1. Explore financial incentive and disincentive schemes to encourage liners to use less polluting OGVs calling Hong Kong ports.	The trade prefers the provision of financial incentive schemes. The sub-group considers that financial incentive schemes should be pursued in the Pearl River Delta (PRD) regional basis to increase its attractiveness and effectiveness. The government will maintain dialogues with the trade and seek opportunities of collaboration with other ports in the PRD region. (Medium-term measure)
C2. Optimise port efficiency to shorten waiting and turnaround time of OGVs, river trade vessels at container terminals, river trade terminals and public cargo working areas (PCWA)	The Sub-group noted measures to optimize port efficiency have been extensively discussed in the Hong Kong Maritime and Port Board (HKMPB). While the optimization of port efficiency may involve long term planning, the Government would keep in view the discussions in the HKMPB, and would take on board the outcome of the discussions to study the associated emission reduction potential. (Others*)

New Air Quality Improvement Measures	Deliberations
C3. Slow-steaming of OGVs in Hong Kong waters.	The proposed measure is considered not practicable given the constraints of busy marine traffic and navigation safety. (Others*)
C4. Encourage academia to carry out studies on fuel and energy efficient measures in terms of operation and maintenance for local vessels; and collaboration between academia and local marine trade for the development of best practice guidelines and award system to facilitate adoption of the measures.	The Government should explore opportunities to facilitate long-term collaboration between the local marine trade and academia in pursuing the proposed initiative. (Long-term*)
D. Other suggestions	
D1. Remove floating rubbish for smooth operation of small local vessels.	These two measures are considered not related to air quality improvement and not further discussed in the Sub-group. (Others*)
D2. Government to expedite the approval process of new local vessels.	

Note: *These measures are considered not-practicable, short of air quality benefits or not suitable to be considered under the current scope of the Review.

**PROPOSED NEW AIR QUALITY IMPROVEMENT MEASURES -
ENERGY AND POWER GENERATION**

New Air Quality Improvement Measures	Deliberations
A. Building energy efficiency	
A1. Encourage stakeholders in the commercial sector and the non-government sector, e.g. universities and hospital to adopt demand-side management (DSM) measures.	The Government has taken forward this measure under the <i>Energy Saving Plan for Hong Kong's Built Environment 2015 ~2025+</i> which sets a target of reducing Hong Kong's energy intensity by 40% by 2025 using 2005 as the base. Achieving this target requires actions by the whole community. To this end, the Government has established dialogue platforms with relevant stakeholders in the built environment under the "4Ts" framework (namely target, timeline, transparency and together) to discuss ways to promote green buildings and to explore energy saving targets and measures. (Short-term measure)
A2. Explore building energy efficiency measures for old existing buildings which are not covered by the Buildings Energy Efficiency Ordinance.	Ditto.
A3. Encourage major electricity users to reduce peak load demand so as to reduce the operation and emissions from coal-fired generating units for coping with peak load demand.	Comprehensive studies on feasibility of advanced metering infrastructure technologies have yet to be conducted in Hong Kong. The Government and the power companies would require more in-depth studies and tests on its application in Hong Kong. (Long-term measure)

New Air Quality Improvement Measures	Deliberations
	(Post-meeting update: Power companies will be incentivised to introduce demand response programmes to help reduce peak load demand under the post-2018 Scheme of Control Agreements (SCAs) which was signed on 25 April 2017.)
B. Use of renewable energy	
B1. Encourage or provide incentives for the private sector to develop distributed renewable energy (RE).	To help achieve the target of reducing carbon intensity by 65-70% by 2030 (using 2005 as the base year) as set out under the <i>Hong Kong's Climate Action Plan 2030+</i> , the Government will take the lead in applying RE on a wider and larger scale based on mature and commercially available technologies, and continue to create the conditions to promote the development of distributed RE by the private sector, including the introduction of feed-in-tariff and RE certificate schemes to encourage the private sector and the community to consider investing distributed RE under the post-2018 SCAs with the two power companies. (Short-term measure)
B2. Facilitate distributed RE systems to connect to the power grid.	The Government has already reached agreement with the power companies to facilitate and improve the distributed RE grid connection arrangements under the post-2018 SCAs with the two power companies. (Short-term measure)
B3. Encourage the development of more distributed waste-to-energy facilities, such as waste incinerators, organic resources recovery centres, etc. for waste	The Government is committed to applying RE in wider and larger scale in the immediate years ahead based on mature and commercially available technologies, including wind, solar and

New Air Quality Improvement Measures	Deliberations
disposal as well as recovering energy for local use.	waste-to-energy. The Government will identify whether Hong Kong would need additional waste-to-energy facilities to meet our future waste management needs. (Short-term measure)
B4. Increase the use of wind and solar energy in electricity generation.	The Government is committed to applying RE in wider and larger scale in the immediate years ahead based on mature and commercially available technologies, including wind, solar and waste-to-energy. (Short-term measure)
C. Fuel mix for electricity generation	
C1. Replacement of coal-fired generating units by gas-fired units.	The Government has already secured the agreement from the power companies to phase down coal for electricity generation and use more natural gas and non-fossil fuel sources. (Short-term measure)
C2. Consider importing more nuclear electricity from the Mainland.	This measure would not be pursued in this AQO Review. The present arrangement of maintaining the current nuclear import at around 25% of our fuel mix in 2020 has already struck a balance among different opinions. (Others*)
D. Operation of power generation plant	
D1. Upgrade burners of gas-fired generating units to improve fuel efficiency and emission performance.	The Government has already been working with the power companies to explore potential upgrading of existing gas-fired generating units with a view to enhancing fuel efficiency and emission performance. (Short-term measure)
D2. Review operations of gas-fired power generating units with a view to identifying further emission	Power companies have already been required to maximise the operation of their existing gas-fired generating units

New Air Quality Improvement Measures	Deliberations
reduction potential.	to meet the emission caps as stipulated in the Technical Memorandum as well as other environmental targets. (Short-term measure)
E. New solar energy technology	
E1. Explore the idea of “SolarRoad” for promoting the use of solar energy.	The proposed measure is considered not practicable given the technical constraints and immaturity. (Others*)
F. Use of biomass as fuel	
F1. Explore the use of waste materials such as corncobs, waste wooden pallets (i.e. biomass) as fuel.	The proposed initiative is on-going and there are a number of completed and planned waste-to-energy facilities to capture the biomass energy from our municipal solid wastes and transform them to electricity. (Short-term measure)
G. Energy storage	
G1. Explore the feasibility of using electric vehicles (EV) as electrical energy storage for power grid.	The proposed measure is considered not practicable given the technical constraints and immaturity. (Others*)
G2. Explore the use of old EV batteries as an electrical energy storage system for the power grid.	The proposed measure is considered not practicable given the technical constraints. (Long-term measure)

Note: *These measures are considered not-practicable, short of air quality benefits or not suitable to be considered under the current scope of the Review.