

Towards Soot-Free Heavy Duty Vehicles (HDV) in ASEAN

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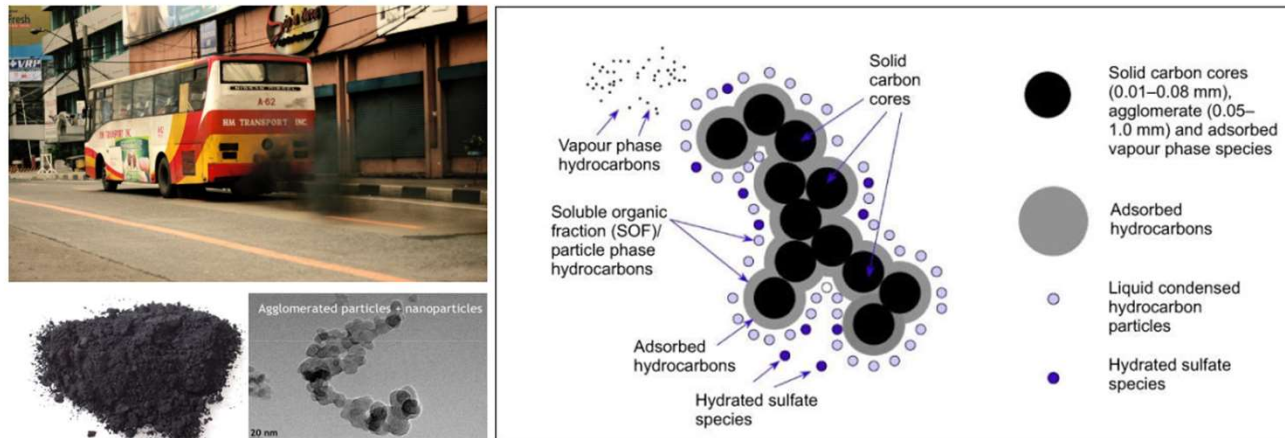


Outline

- Soot-free heavy duty vehicles
- Status and challenges
- Opportunities



Soot-free HDV – What is black carbon?

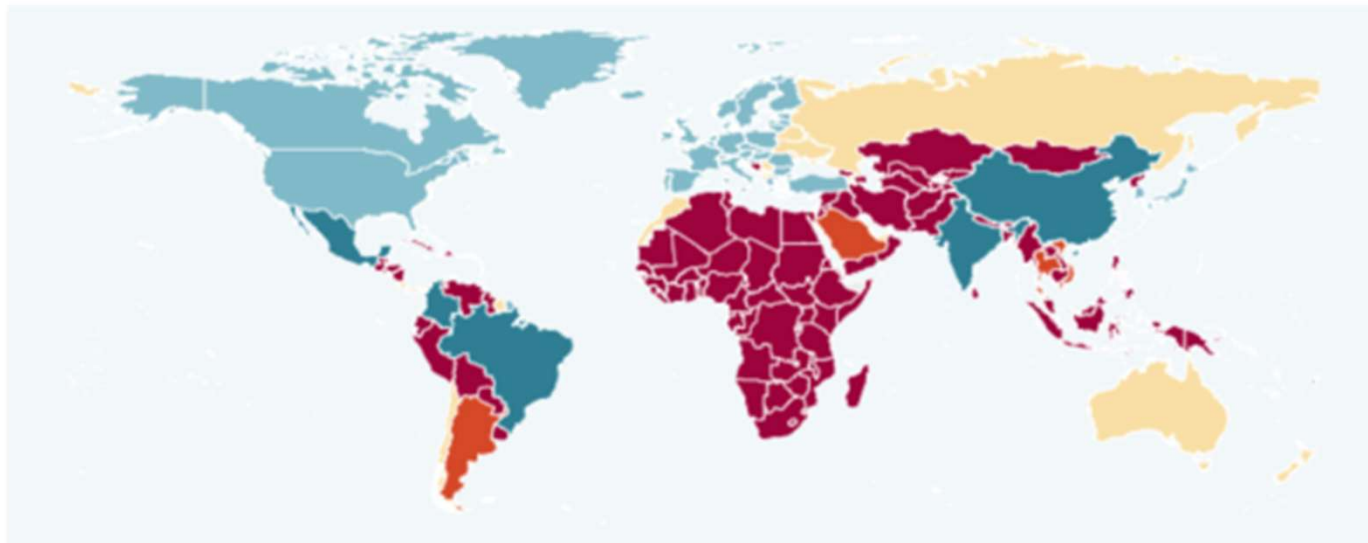


Black carbon (BC) from diesel engine exhaust severely affects the climate as the particles produce significant near-term climate warming

Removing sulfur from fuel supply - crucial first step to controlling air pollution from HDVs

Status

- Implemented
- Adopted
- Fuels available
- Fuels planned
- Fuels needed



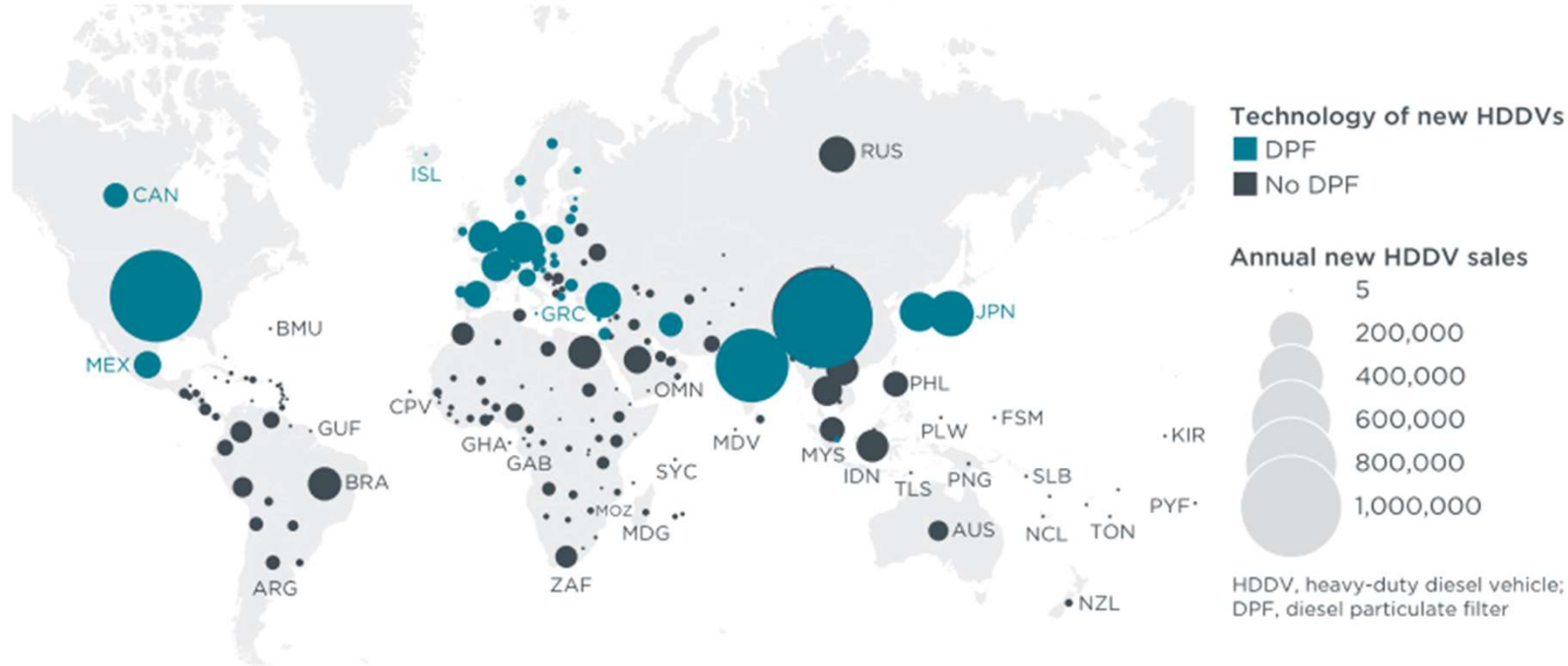
Implementation status of soot-free heavy-duty engine standards and ultralow-sulfur diesel by country as of July 2019. Recently adopted standards will take effect between 2020 and 2023, depending on the country. Fuels available or planned means soot-free engine standards are not yet adopted. Fuels needed means fuel sulfur reductions are needed to enable implementation of soot-free engine standards.

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Opportunities for soot-free standards

Implementation of filter-forcing standards for new HDDVs: Adopted policies, 2021



Source: Miller, J., and Jin, L. (2018). Global Progress Toward Soot-Free Diesel Vehicles.
<https://www.theicct.org/publications/global-progress-toward-soot-free-diesel-vehicles-2018>
 Figure is modified to illustrate effects of China VI adoption. DPF, diesel particulate filter.

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What does it mean for the countries?

Adopt policies that drive soot-free & zero emission technologies

Adopting and implementing stringent standards for vehicle emissions and fuels.

Having a roadmap for soot-free vehicles and fuels can be a key first step to push the ASEAN region to help reduce health and climate impacts from heavy-duty vehicles.



Diesel vehicle emission standards

ASEAN Member-State	Year															
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Brunei Darussalam	Euro IV															
Cambodia	Euro I				Euro III		Euro IV				Euro V					
Indonesia	Euro II						Euro IV									
Lao PDR	Euro IV										Euro IV					
Malaysia	Euro II		Euro IV								Euro V					
Myanmar	Pre-Euro							Euro IV								
Philippines	Euro IV															
Singapore	Euro V		Euro VI													
Thailand	Euro IV									Euro V				Euro VI		
Viet Nam	Euro II	Euro IV					Euro V		Euro VI							

As of October 2022

Note:

	Under consideration or phase-in
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Diesel vehicle emission standards - opportunities

ASEAN Member-State	Year															
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Brunei Darussalam	Euro IV											Yet to implement Euro IV: - Cambodia - Lao PDR - Myanmar				
Cambodia	Euro I				Euro III		Euro IV					Euro V				
Indonesia	Euro II						Euro IV					Have plans to implement Euro V: - Cambodia				
Lao PDR	Euro IV									Euro IV		- Malaysia - Thailand				
Malaysia	Euro II		Euro IV							Euro V						
Myanmar	Pre-Euro							Euro IV					Have plans to implement Euro VI: - Thailand* - Viet Nam**			
Philippines	Euro IV															
Singapore	Euro V		Euro VI													
Thailand	Euro IV								Euro V				*Thailand originally had 1H 2020's phase-in of Euro VI but was delayed due to COVID-19.			
Viet Nam	Euro II	Euro IV					Euro V		Euro VI **Viet Nam has been reported to have planned implementation of Euro VI in 2024.							

Note:

	Under consideration or phase-in
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Local HDV manufacturers and used HDV import policies

ASEAN Member-State	Local HDV Manufacturers	Used HDV Import	Age restrictions
Brunei Darussalam	Present	With restrictions	Not more than 5 years
Cambodia	Banned	Present	
Indonesia	Present	Banned	
Lao PDR	Banned	Present	
Malaysia	Present	Present	
Myanmar	Banned	With restrictions	Not more than 5 years
The Philippines	Present	Present	
Singapore	Banned	With restrictions	Not more than 3 years
Thailand	Present	Banned	
Viet Nam	Present	With restrictions	Not more than 5 years from manufacture

Legend:

Present	Allowed
N/A	With restrictions
None	Banned



Local HDV manufacturers and used HDV import policies - opportunities

ASEAN Member-State	Local HDV Manufacturers	Used HDV Import	Age restrictions
Brunei Darussalam	Present	With restrictions	Not more than 5 years
Cambodia	Banned	Present	
Indonesia	Present	Banned	
Lao PDR	Banned	Present	
Malaysia	Present	Present	
Myanmar	Banned	With restrictions	Not more than 5 years
The Philippines	Present	Present	
Singapore	Banned	With restrictions	Not more than 3 years
Thailand	Present	Banned	
Viet Nam	Present	With restrictions	Not more than 5 years from manufacture

Legend:

Present	Allowed
N/A	With restrictions
None	Banned

Note: **Thailand** and **Indonesia** are automobile exporters and are restricting used HDV imports to protect local manufacturing industry. Hence, these countries will be primary exporters in ASEAN of HDVs that will have to meet soot-free standards.

Only **Indonesia** and **Thailand** restrict the import of used HDVs. Such restriction prevents their countries from being flooded with low emission standards or end-of-life HDVs.

In contrast, **Cambodia, Lao PDR, Malaysia, and the Philippines** are yet to implement age restrictions in the import of secondhand HDVs.



Sulfur content in diesel (ppm)

ASEAN Member-State	Year															
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Brunei Darussalam	50															
Cambodia	1500			350		50			10							
Indonesia	3500	2500				500		50								
Lao PDR	500			50												
Malaysia	50					10										
Myanmar*	Pre-Euro								50							
Philippines	50															
Singapore	10															
Thailand	50							10								
Viet Nam	50					10										



Sulfur content in diesel - opportunities

ASEAN Member-State	Year															
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Brunei Darussalam	50															
Cambodia	1500			350		50			10							
Indonesia	3500	2500				500	50									
Lao PDR	500			50												
Malaysia	50					10										
Myanmar*	Pre-Euro								50							
Philippines	50															
Singapore	10															
Thailand	50							10								
Viet Nam	50					10										

Myanmar remains the country that is yet to implement a local production mandate of 50 ppm or lower sulfur in diesel. However, its consumption is much higher than its production, which allows it to utilize imported Euro IV diesel for Euro IV HDVs.



Opportunities and support needed by stakeholders

- Removing sulfur content from the fuel supply is a crucial first step to reduce HDV pollution.
- Adoption of HDV Euro VI-equivalent standards as a priority in 2023-2025 timeframe.

ASEAN Transport Strategic Plan 2016-2025

Sustainable transport actions 1.3: Initiate and support to the development and implementation of fuel economy policies and standards as well as policies towards cleaner fuels and vehicles and vessels

Milestones: 1.3.3 Support to the development and adoption of nationally appropriate policies for cleaner fuels and vehicles (2016-2025)

Source: <https://asean.org/book/kuala-lumpur-transport-strategic-plan-asean-transport-strategic-plan-2016-2025/>

- Restricting used HDV imports to reduce the entry of polluting HDVs that have been banned from service in other countries (such as Japan).
- Establishing in-service testing policies ensure that HDVs remain soot-free until these are decommissioned.
- Adoption of Euro VI in HDV and diesel exporting countries can enable other member states to leapfrog to Euro VI from Euro IV.
- Scrappage programme for end-of-life HDVs.



Thank you!

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