

Environmentally Sustainable Transport (EST) In Singapore

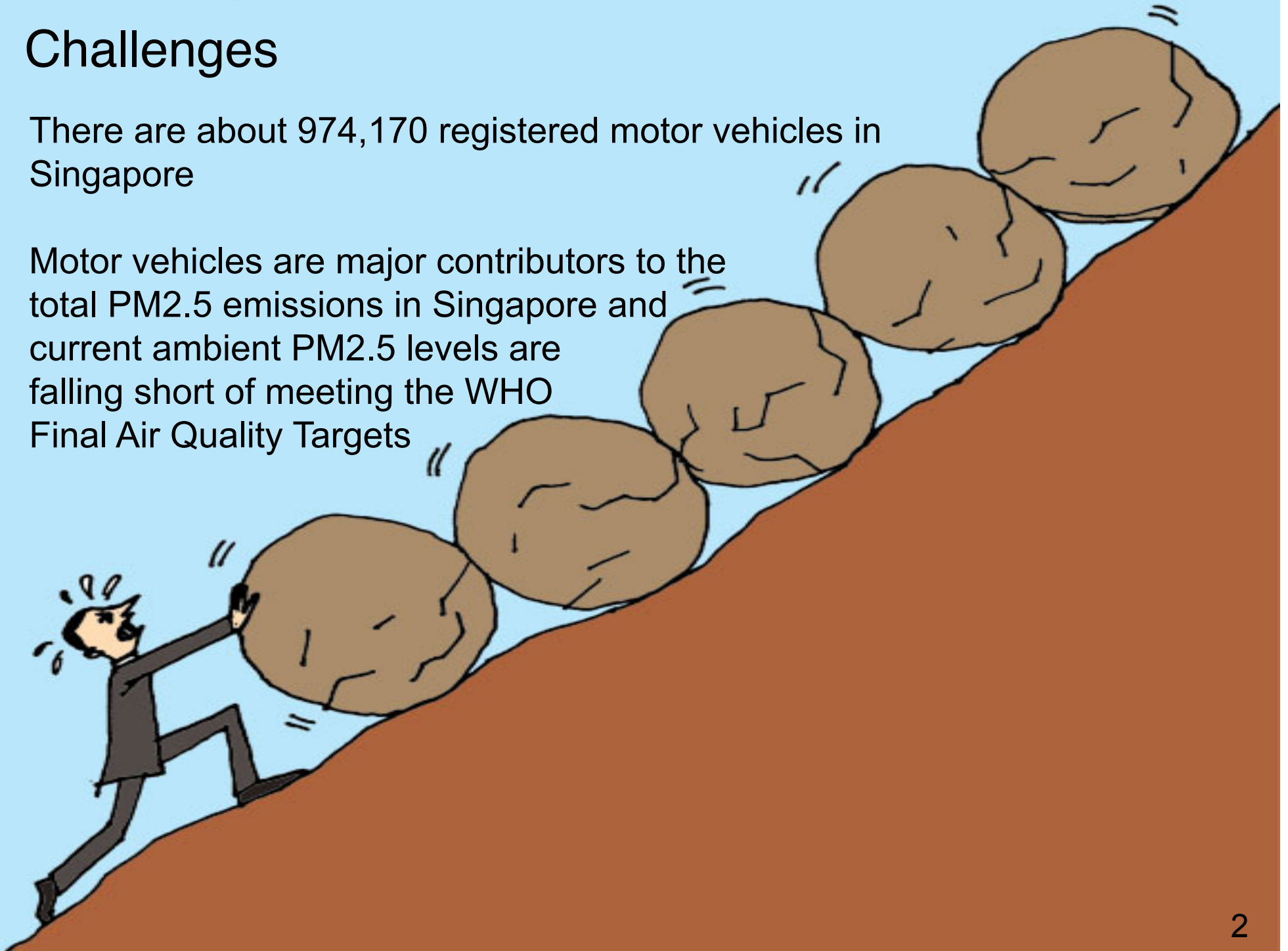
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Challenges

- There are about 974,170 registered motor vehicles in Singapore
- Motor vehicles are major contributors to the total PM2.5 emissions in Singapore and current ambient PM2.5 levels are falling short of meeting the WHO Final Air Quality Targets



Principles of EST in Singapore



EST initiatives in Singapore are guided by the following:-

- The Land Transport Master Plan 2013 published by the Land Transport Authority

<http://www.lta.gov.sg/content/ltaweb/en/about-lta/what-we-do/ltmp2013.html>

- The Sustainable Singapore Blueprint 2015 jointly published by the Ministry of the Environment and Water Resources (parent Ministry of National Environment Agency) and the Ministry of National Development

<http://app.mewr.gov.sg/web/ssb/index.html>

- Singapore Master Plan published by the Urban Redevelopment Authority (statutory board of the Ministry of National Development)

<http://www.ura.gov.sg/uol/master-plan.aspx?p1=View-Master-Plan&p2=master-plan-2014>

EST Initiatives in Singapore - Land Transport Masterplan 2013



EST initiatives are focussed on “Enhancing Your Travel Experience”, covering the following areas:-

- More connections
- Better public transport services
- Liveable and inclusive community
- Public transport as an attractive model of travel
- Reducing reliance on private transport

EST Initiatives in Singapore



Fuel Quality

	Petrol	Diesel
Current	<ul style="list-style-type: none">• Lead free since 1998• 50 ppm sulphur since 1 Oct 2013• Modified Euro V petrol from 1 Jul 2017	<ul style="list-style-type: none">• 10 ppm sulphur since 1 Jul 2013• Full Euro V diesel from 1 Jan 2018
Forward looking	<ul style="list-style-type: none">• Tighten fuel quality standards beyond lead and sulphur with further tightening post 2018	

EST Initiatives in Singapore



New Vehicles

	Petrol vehicles	Diesel vehicles	Motorcycles
Current	<ul style="list-style-type: none">• Euro IV emission standards since 1 Apr 2014	<ul style="list-style-type: none">• Euro V emission standards since 1 Jan 2014	<ul style="list-style-type: none">• Euro III emission standards from 1 Oct 2014
Forward looking	<ul style="list-style-type: none">• Consider Euro V/VI emission standards for both new petrol and diesel vehicles• Explore reviewing the emission standards mandated in 2012 for new Off-Road Diesel Engines (ORDEs)		

EST Initiatives in Singapore



In-use Vehicles

	Inspection regime	Smoky vehicle enforcement	Early Turnover Scheme (ETS)
Current	<ul style="list-style-type: none">• CO and visible smoke levels	<ul style="list-style-type: none">• Smoke opacity standard tightened from 50 to 40 HSU since 1 Jan 2014	<ul style="list-style-type: none">• Enhanced with higher financial rebates in Mar 2014 with extension till Apr 2016
Forward looking	<ul style="list-style-type: none">• Explore reviewing the in-use emission limits, statutory lifespan and frequency of mandatory inspection for in-use petrol, diesel vehicles and motorcycles	<ul style="list-style-type: none">• Tighten enforcement actions on smoky vehicles (i.e. review fines for such offences)	<ul style="list-style-type: none">• Review the Early Turnover Scheme (ETS) for possible inclusion of Euro II and III diesel vehicles• Consider a similar ETS for motorcycles

Thank You

State of Singapore's Ambient Air Quality

Pollutant	Singapore's 2013 Performance ($\mu\text{g}/\text{m}^3$) (mg/m^3 – CO only)	SSB Targets (Announced in Apr 2009 and to be reviewed)	Singapore 2020 Targets (Announced in Aug 2012)	Singapore Long Term Targets	State of Singapore's 2013 Performance
Sulphur Dioxide (SO_2)	75		24-hr mean: 50 (WHO IT-2)	24-hr mean: 20 (WHO Final)	
	14	Annual mean: 15	Annual mean: 15 (SSB)		
Particulate Matter ($\text{PM}_{2.5}$)	176		24-hr mean*: 37.5 (WHO IT-3)	24-hr mean*: 25 (WHO Final)	
	20	Annual mean: 12	Annual mean: 12 (SSB)	Annual mean: 10 (WHO Final)	
Particulate Matter (PM_{10})	31		Annual mean: 20 24-hr mean*: 50 (WHO Final)		
	215				
Ozone	139		8-hr mean: 100 (WHO Final)		
Nitrogen Dioxide (NO_2)	25		Annual mean: 40 1-hr mean: 200 (WHO Final)		
	132				
Carbon Monoxide (CO)	5.5		8-hr mean: 10 1-hr mean: 30 (WHO Final)		
	7.5				

* Values are referring to the 99th percentiles

2013's performance not meeting 2020 target

2013's performance meeting 2020 target