

Electric 2-3 Wheelers

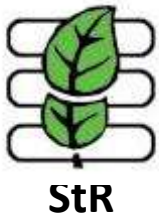


***Bert Fabian, Programme Officer,
Air Quality and Mobility Unit, UN Environment
27 November, Manila, Philippines***

UN Environment

Promoting Sustainable Low Emissions Transport

- **Africa Sustainable Transport Forum** – develop and adopt action plans in Africa for sustainable and low emissions transport
- **Share the Road (StR)** – promote and develop non-motorized transport policies
- **Global Fuel Economy Initiative (GFEI)** – double vehicle fuel efficiency by 2050
- **E-Mob** – supporting electrification of transport
- **Partnership for Clean Fuels and Vehicles (PCFV)** – reduce emissions from light-duty vehicles
- **Climate and Clean Air Coalition**
 - Reducing Emissions from Heavy-Duty Diesel Vehicles including Soot-Free Buses Initiative
 - Clean Ports



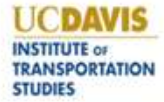
Supporting the development of national policies for electric light duty vehicles (LDVs)

Doubling the efficiency of the global LDV fleet by 2050 with the Global Fuel Economy Initiative (GFEI)

		2005	2008	2011	2013	2030
OECD average	average fuel economy (Lge/100km)	8.6	7.9	7.3	6.9	
	annual improvement rate (% per year)	-2.7%		-2.6%	-2.6%	
		-2.6%				
Non-OECD average	average fuel economy (Lge/100km)	7.3	7.4	7.3	7.2	
	annual improvement rate (% per year)	0.5%		-0.4%	-0.9%	
		-0.2%				
Global average	average fuel economy (Lge/100km)	8.3	7.7	7.3	7.1	
	annual improvement rate (% per year)	-2.3%		-1.9%	-1.8%	
		-2.0%				
GFEI target	average fuel economy (Lge/100km)	8.3				4.2
	required annual improvement rate (% per year)	2005 base year	-2.7%			
		2014 base year	-3.1%			



✓ 27 ongoing country projects
 ✓ over 50 by end 2017



Supporting the introduction of electric and other soot free buses

Initiative Overview:

- **Funded by CCAC, co-implemented with ICCT**
 - Supporting 20 major cities in Africa, Asia, Latin America & the Caribbean
- **Green Climate Fund project in development to introduce electric buses in Chile**
 - Working with Centro Mario Molina, Chile & Chile ministries of Environment, Energy, Transport and Finance



Clean bus commitments for 20 megacities

Global Industry Partnership on Soot-Free Clean Bus Fleets

Voluntary agreement from 4 global bus and engine manufacturers

“Soot-Free” to be made available in 20 megacities by 2018



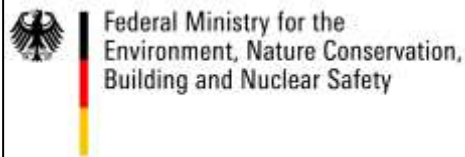
- Commit to make available soot-free engine technology in all 20 targeted cities by 2018
- Agree to provide a list of soot-free bus models available to each city
- Announce this commitment publicly
- Publicly report the number of soot-free buses sold
- Agree to provide the name and point of contact designated to each city
- Agree to update this information on an annual basis

Transitioning from Internal Combustion Engine to Electric 2&3 Wheelers in Developing and Transitional Countries

Initiative Overview:

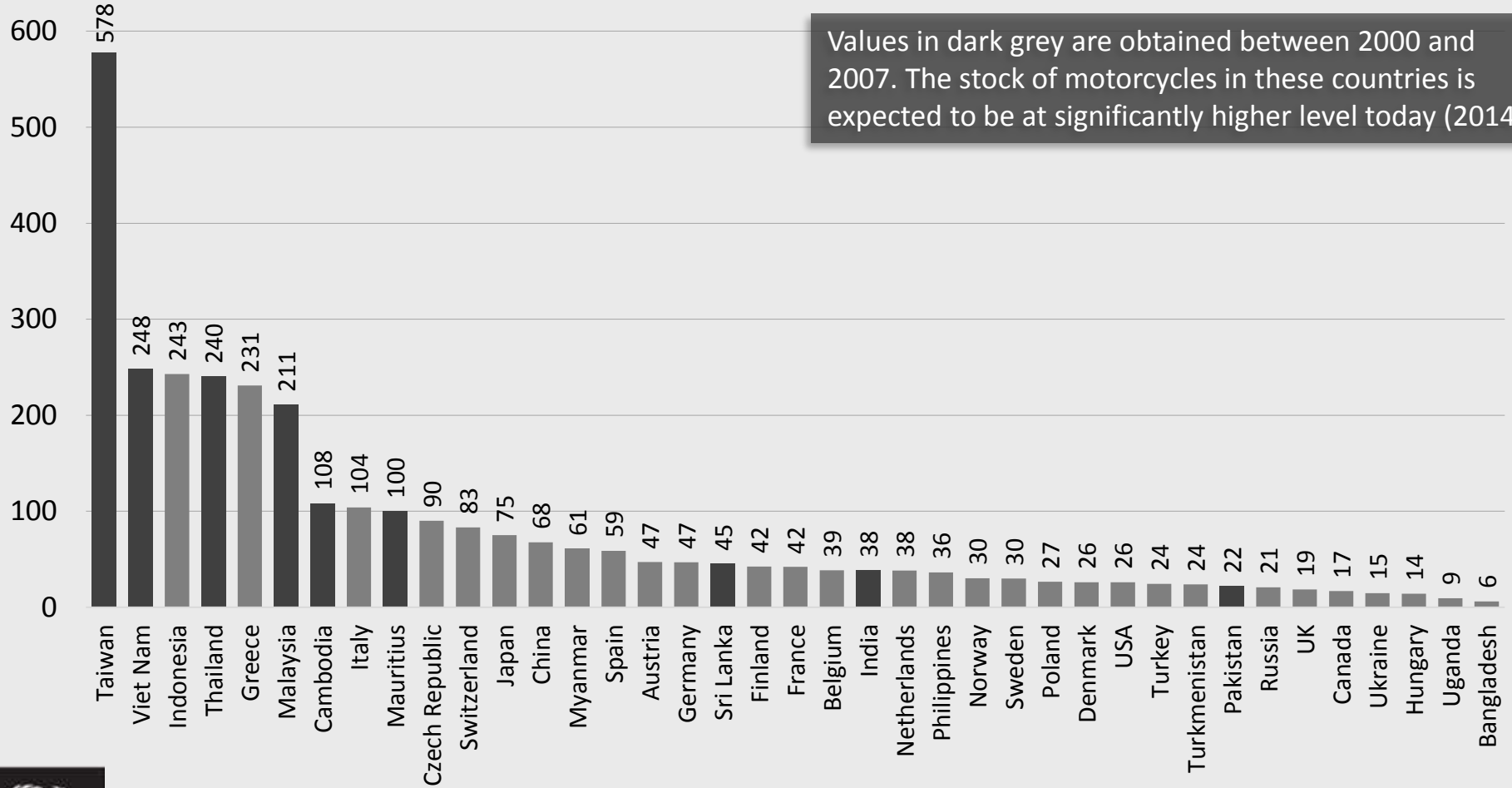
- ***7 country projects in Southeast Asia (Thailand, Viet Nam & Philippines) and in Eastern Africa (Kenya, Uganda, Rwanda & Ethiopia)***
 - ✓ *Project business-as-usual/baseline setting*
 - ✓ *Piloting and policy development*
 - ✓ *Knowledge management, outreach and replication*
- ***1 city project in North Africa (Marrakech, Morocco)***
- ***Project preparation activities underway for Green Climate Fund financing project***

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Motorized Two-wheelers Density

Two-wheelers Density Across the Globe [units / 1000 people]



Graphics based on data from: Beijing Traffic Management Bureau, Financial Express, GIZ, Helgi Library, ITF Workshop on Motorcycling Safety (Trends in Motorcycle Fleet Worldwide, OECD 2008), ICCT, Ipsos Business Consulting, UNEP PCFV, Indonesia's Automotive Industry: Navigating 2014, KPMG

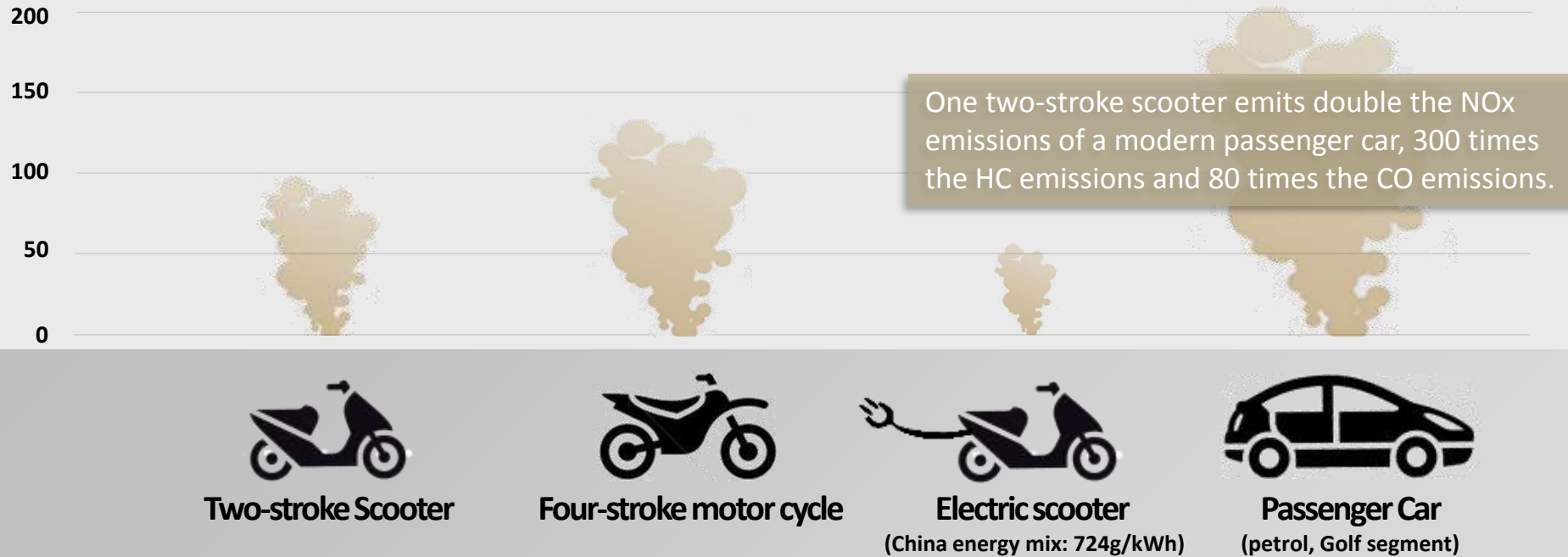
Motorcycle fleets pose several issues

- Emissions – climate and air pollution, safety
- Rapid growth – affordability, lack of public transport, and chronic traffic congestion



Motorcycles emissions are significant

Two-wheelers Emissions Comparison – Total Emissions [g CO₂ –equivalents / km]



Particle Emissions [g PM/ km]

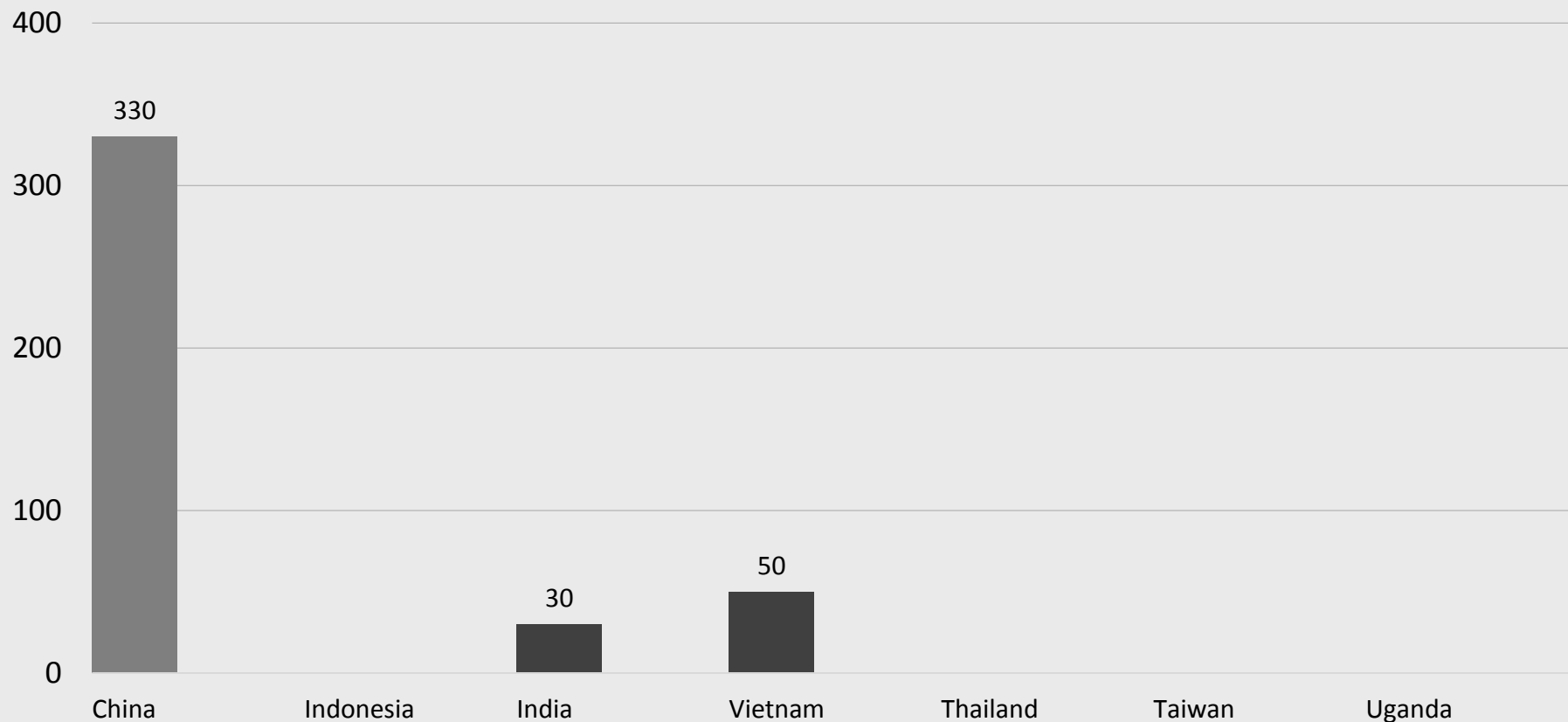


Substantially less CO2 emissions for E-bikes

- A European Cyclist Federation study concluded that after factoring in CO2 emissions produced during electricity generation, an e-bike's carbon footprint is just 2.6-5 grams of CO2 per mile (depending on the source of the electricity), compared to 150 grams for most electric cars and 136 grams for scooters.

Electric Two-wheelers Fleet

Extrapolated **Electric** Two-wheelers Fleet in 2020 [million units]



Graphics based on data from: Asia Development Bank, International Council of Clean Transport (Meszler, 2007), International Nickel Study Group, United Nations Environment Programme-Department of Management Engineering

There are many kinds of electric 2-wheelers – bicycles, scooters, motorcycles



Growth of Electric Bicycles

- Navigant Research estimates annual global sales of e-bikes to reach 40 million by 2023
- China accounts for about 80 percent of all e-bikes sold
- In 2016, e-bikes accounted for nearly 6 out of every 10 bikes manufactured nationwide, according to the Japan Bicycle Promotion Unit, which tracks bicycle production in the country

Potential to encourage more cycling

- Brighton, UK Survey - 70% of participants said they would cycle more if they could access an ebike
- Car mileage dropped by 20% by the group (sample > 100)
- 59% of group reported an increase in their physical activity
- E-bikes were popular with groups less likely to be cyclists –eg women and older people
- Majority of people would like to use an e-bike but that price is a major barrier leading for the need to provide better access.

Use for bike-sharing

- Velib in France will incorporate e-bikes in their system in 2018.
- Includes an electronic V-box that enhances connectivity, with RFID and NFC reader inside, the Vélib 2018 is fully connected and will be recharged by a dynamo.
- This V-Box allows the rider to activate and lock the bike on the padlock and includes information like the rental time, riding distance, navigation indications and so on.



Source: Bike Europe

Summary

- Motorcycles/ Scooters will continue to increase in many or most of the countries – in some countries/ regions motorcycle taxis are increasing and becoming more popular
- There is an opportunity to transform the motorized 2-wheeler fleet into electric
- Electric bicycles have the potential to increase people cycling and reduce motorized travel
- Develop policies to favor electric 2-wheelers instead of ICE and integrate with renewable energy
- Develop policies to properly integrate 2-wheelers into transport systems