United Nations Framework Convention on Climate Change

Transport sector in the Caribbean

OPPORTUNITES FOR CLEAN TECHNOLOGIES UNDER THE CARBON MARKET

St. George's University, St. George's, Grenada, 19 March 2015

Alexandre Gellert Paris, Technical Officer, Regional Collaboration Centre (RCC)

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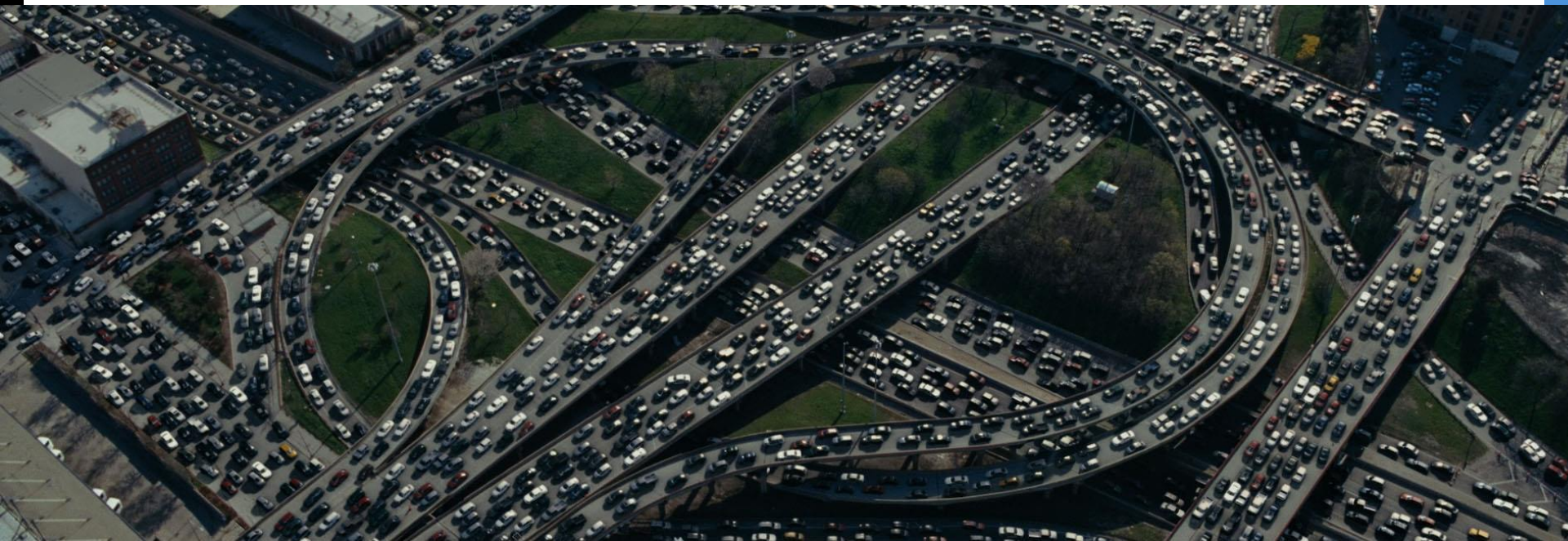
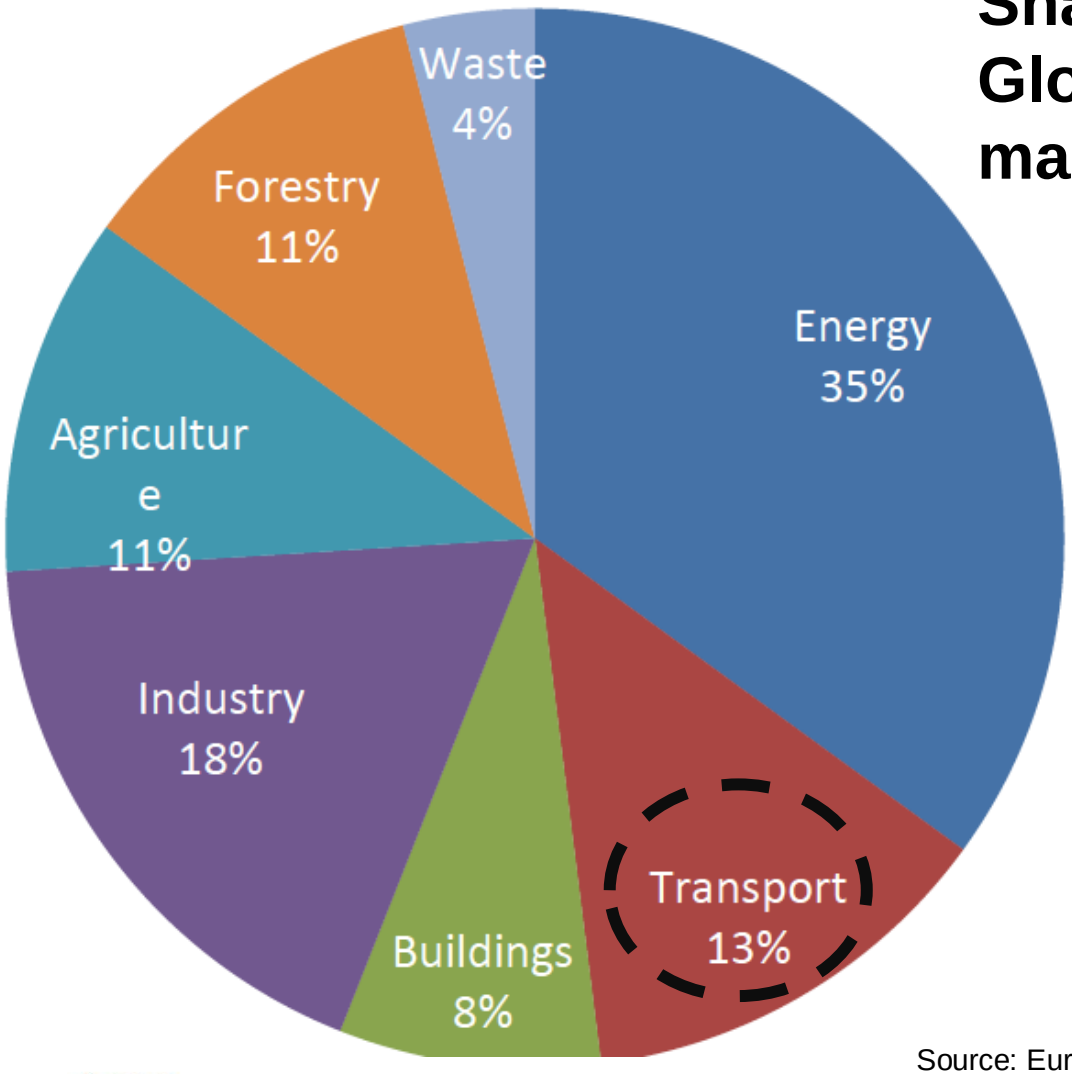


Share of Sources of Global GHG Emissions by main sectors



Source: European Commission Joint Research Centre (JRC), Netherlands Environmental Assessment Agency (PBL), Emission Database for Global Atmospheric Research (EDGAR), 2010

- ✓ The transport sector produced **7 $GtCO_{2e}$** of direct GHG emissions [2010]
- ✓ Reducing transport emissions will be challenging

[continuing growth in passenger and freight activity could outweigh all mitigation measures **unless transport emissions can be strongly decoupled from GDP growth**]

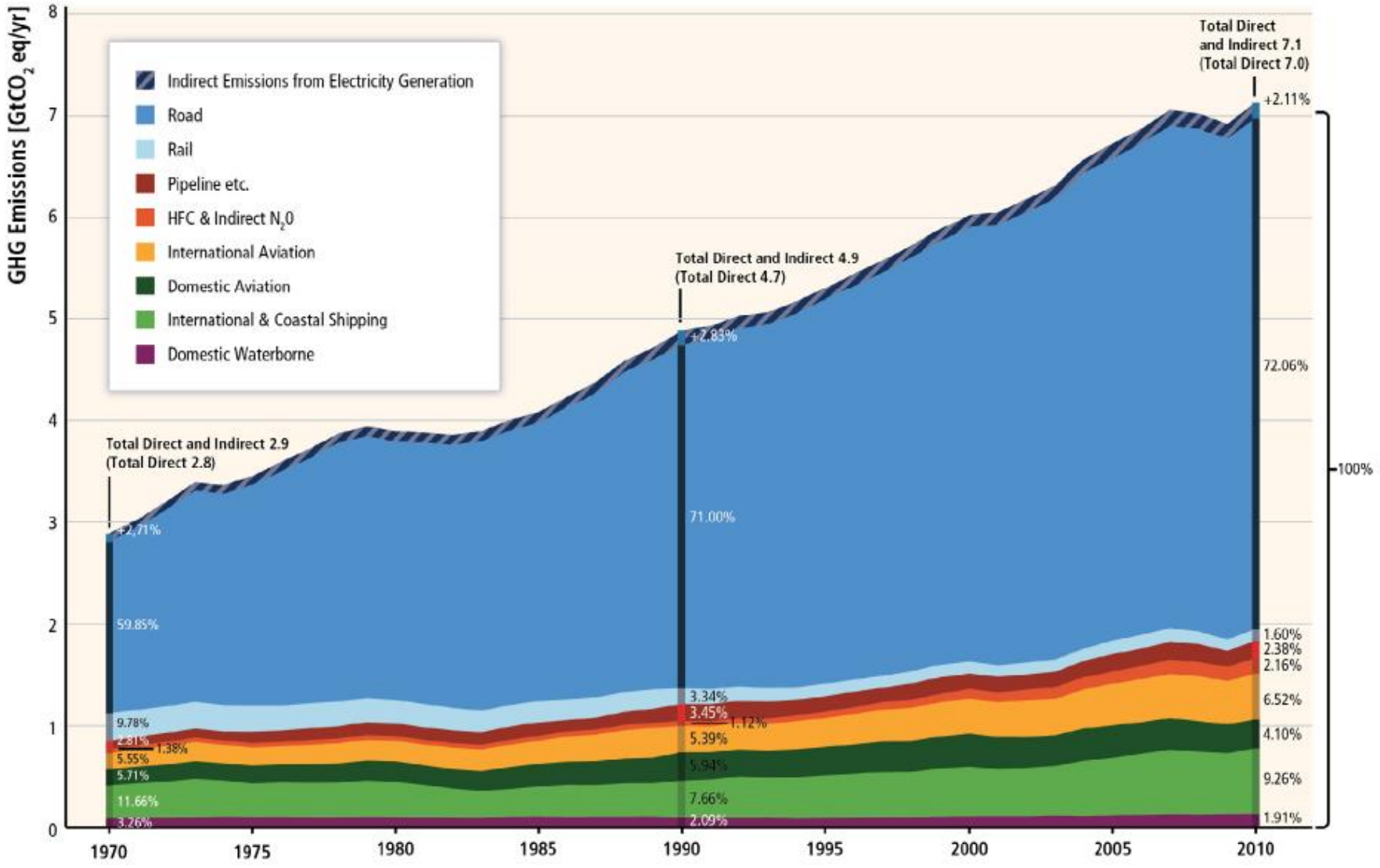
- ✓ **Around 10% of the global population account for 80% of total** motorized passenger-kilometres

[with much of the world's population hardly travelling at all]

- ✓ **Over 53% of global primary oil consumption in 2010** was used to meet 94% of the total transport energy demand

[biofuels 2%, electricity 1%, and natural gas and other fuels 3%]

Emissions by transport mode



Emissions from production of fuels, vehicle manufacturing, infrastructure construction are not include

Transport in the Caribbean

Country	% GHG Emissions (Source: Latest National Communication to UNFCCC)
Antigua and Barbuda	49%
Barbados	14%
Belize	51%
Dominica	44%
Dominican Republic	47%
Grenada	36%
Guyana	20%
Haiti	59%
Jamaica	24%
St. Kitts and Nevis	37%
St. Lucia	34%
St. Vincent and the Grenadines	34%

Transport in the Caribbean

Country	Policies and Incentives
Barbados	Introduction of Electric Vehicles and Hybrids
Dominica	Introduction of policies to encourage alternative fuelled (LPG) and/or hybrid Vehicles Development of policies and programmes designed to influence market behaviour towards adopting more efficient use in energy across all sectors
Dominican Republic	Metro system for collective transportation service in Santo Domingo City of Santiago light rail system
Guyana	Introduction of unleaded gasoline, import restrictions, energy saving tips for car transports, and others in progress such as National Vehicle Emission Standards and the National Transportation Strategy. The biofuel projects have also been developed at pilot and commercial scales

Transport in the Caribbean

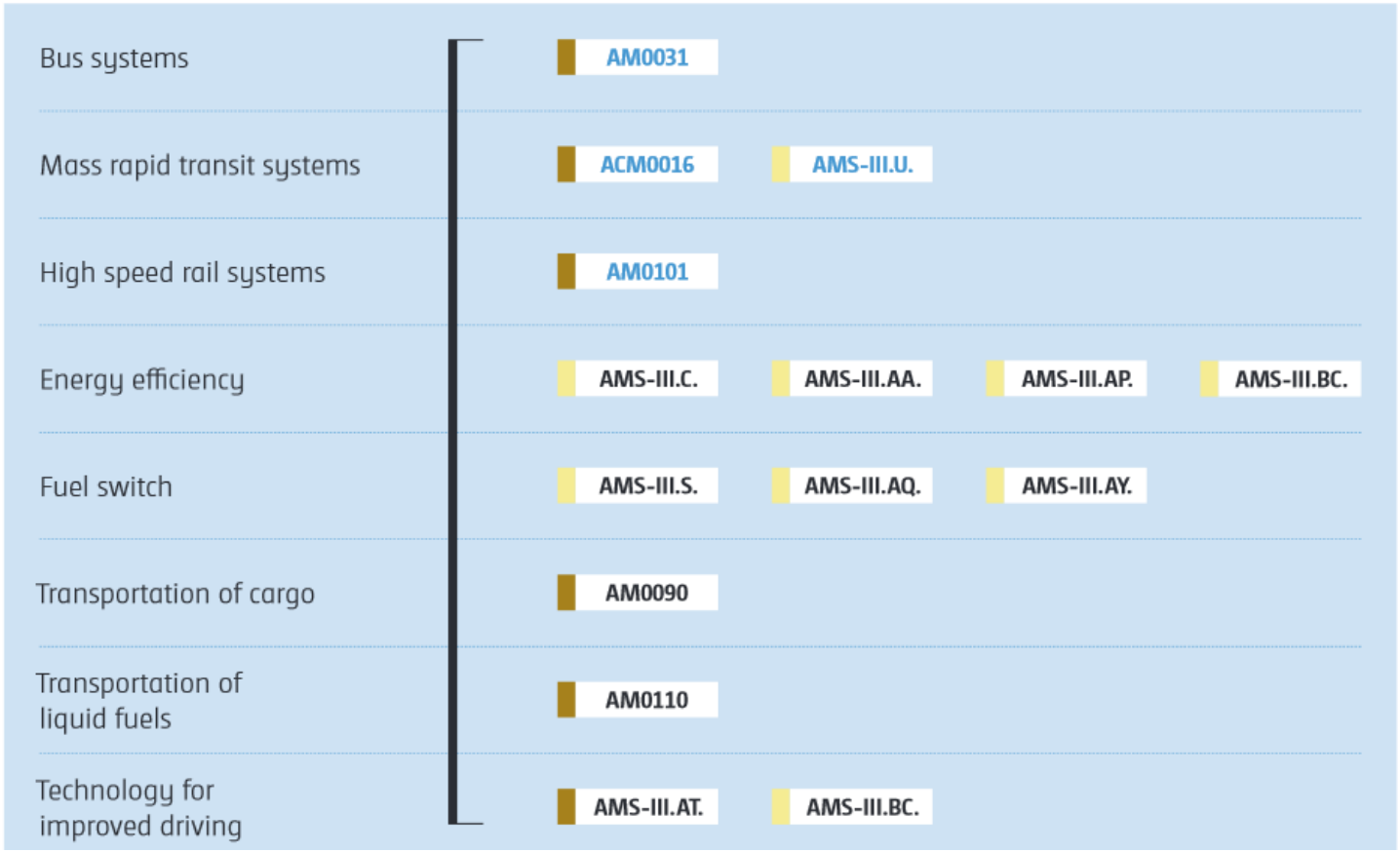
SWOT ANALYSIS OF THE TRANSPORTATION SECTOR IN GRENADA, SAINT LUCIA AND SAINT VINCENT AND THE GRENADINES WITH RESPECT TO ENERGY EFFICIENCY AND FUEL DIVERSIFICATION

STRENGTHS	WEAKNESSES
• Existence of National Energy Policy that includes transportation goals • Presence of renewable energy sources • Comparatively small distances to be covered within countries • Government taking a leading role in energy efficiency • Increasing collaboration among agencies with responsibility for finance, energy, transportation, and planning • Increasing collaboration between government and the private sector	• Lack of transportation policy that focuses on energy goals • Lack of spatial planning policies that link transport and energy • Inefficient public transportation system • Lack of fiscal/tax incentives to use energy efficient vehicles • Lack of standards for emissions and fuel efficiency • Inadequate data on transport and energy use • Inadequate capacity for research and validation of products • Insufficient /limited technical expertise in transport energy efficiency • Limited information on alternative vehicles – e.g. electric cars/hybrids
OPPORTUNITIES	**THREATS**
• High and fluctuating oil prices that provide an incentive to invest in energy efficiency • Increasing regional cooperation • Internationally-funded regional projects on energy efficiency • Increasing availability and affordability of energy efficient solutions for the transportation sector • Increasing public awareness of importance of energy efficiency • No-cost increases in efficiency through changes in behaviour	• Need for new infrastructure for alternative transport fuels • Fuel subsidies that reduce incentive for energy efficiency

Source: 2013, Economic Commission for Latin America and the Caribbean (ECLAC), An assessment of mechanisms to improve energy efficiency in the transport sector in Grenada, Saint Lucia and Saint Vincent and the Grenadines

Transport under the Clean Development Mechanism

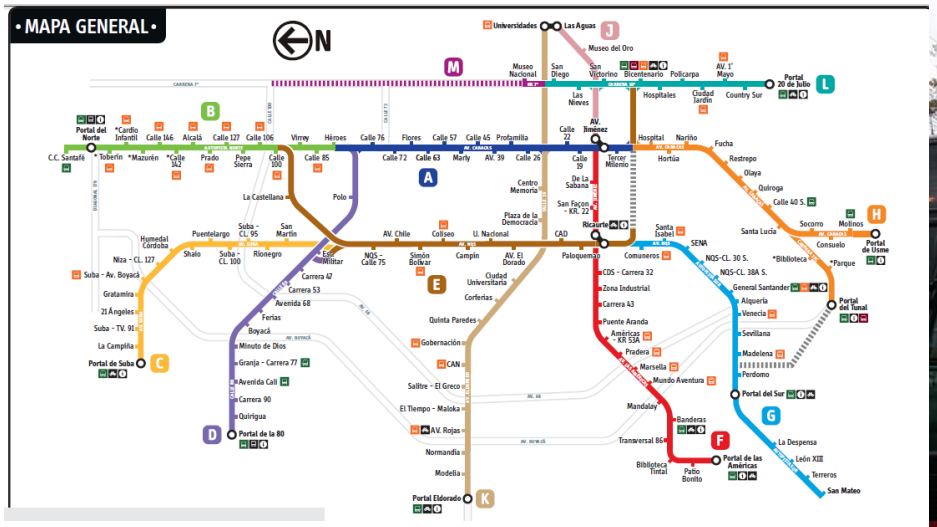
Figure VII-12. **Methodologies for transport**



There **29** registered CDM projects in the transport sector

Video: https://www.youtube.com/watch?v=W1RrBPIdHUU

Transport under the Clean Development Mechanism



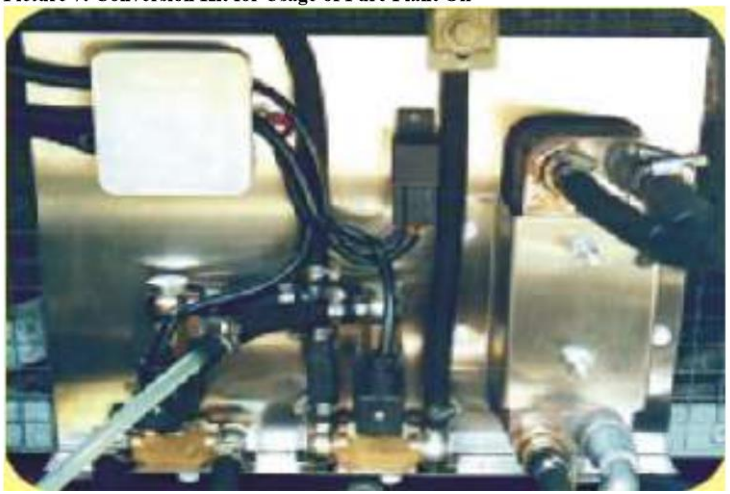
Annual average over the crediting period of estimated reductions:

578,918tCO_{2e}

CDM project: 0672: Transmilenio, Bogotá, Colombia

Methodology: **AM0031**

Picture 7: Conversion Kit for Usage of Pure Plant Oil



CDM project: 3291: Plant-Oil Production for Usage in Vehicles, Paraguay

Methodology: **AMS-III.T.**

Usage of plant oil with the option of either:

i) pure using in converted vehicles or,

ii) as blend with diesel using a blending relation of maximum 10%

Annual average over the crediting period of estimated reductions:

17,188tCO_{2e}

- ✓ Castor plant (*Ricinus communis*)
- ✓ Crambe (*Abyssinian mustard*)
- ✓ Oilseed Radish (*Raphanus sativus*)

Transport under the Clean Development Mechanism

Maxi

E-Sprint

The use of electric instead of fossil fuel powered scooters in various cities and regions of India.

Project emissions include carbon emissions due to electricity production in the Indian grid.

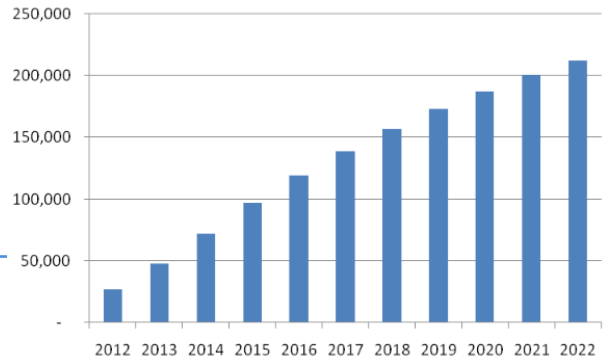
Annual average over the crediting period of estimated reductions:

37,647tCO_{2e}

Methodology: **AMS-III.C.**

CDM project: 6711: Hero Electric Vehicles, India

Projected Operational Amount of Electric 2-Wheelers from Hero Eco Tech Ltd (2012-2022)



Transport under the Clean Development Mechanism

Six cable cars are used as mass transit options in hilly areas of the city. The cable cars are an integrative part of the metro system of Medellin with a pre-pay fare system and seamless transfer to the metro

Using cable cars as a mass transit option is unique worldwide

Annual average over the crediting period of estimated reductions:

17,290tCO_{2e}

CDM Project: 3224 Cable Cars Metro Medellín, Colombia

Methodology: **AMS-III.U.**

Transport under the Clean Development Mechanism

Geneva, Switzerland, 20 February 2015

The CDM Executive Board launched the work the develop methodologies for the aviation sector

Case study: Trinidad and Tobago

Scenario: replacement of 100,000 private vehicles in Trinidad and Tobago by:

i) changing the fleet to hybrid/electric vehicles; and

ii) switching gasoline for biodiesel.

Gasoline represents the baseline emissions.

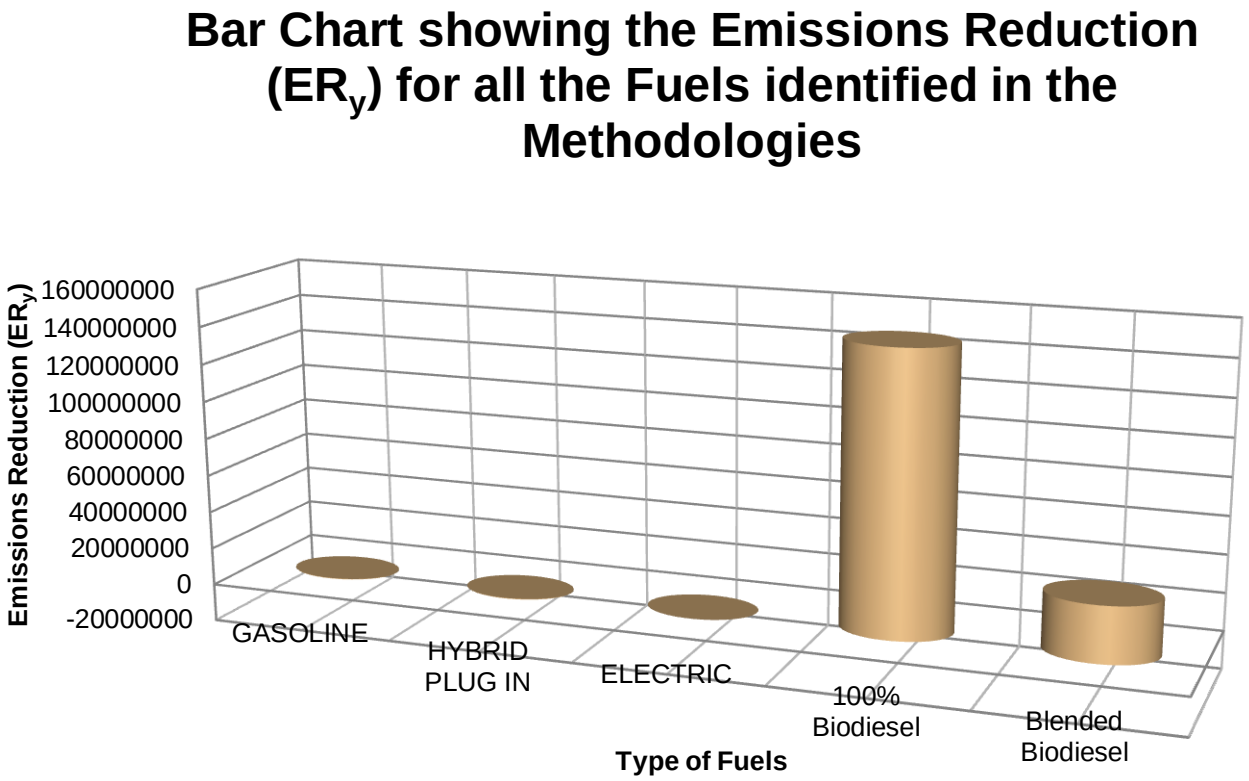
The CDM methodology (**ACM0002**) for electricity sector and CDM methodologies (**AM0047, AMS-III.C**) for transport sector were identified for this study

According to initial assessment:

Emission reductions the option of switching fuel from gasoline to biodiesel is the best alternative as a vehicle using biodiesel blended at 20% can obtain carbon reductions of 297 tCO_2/year/vehicle.

Source: Budhooram, D. MSc Student

Case study: Trinidad and Tobago



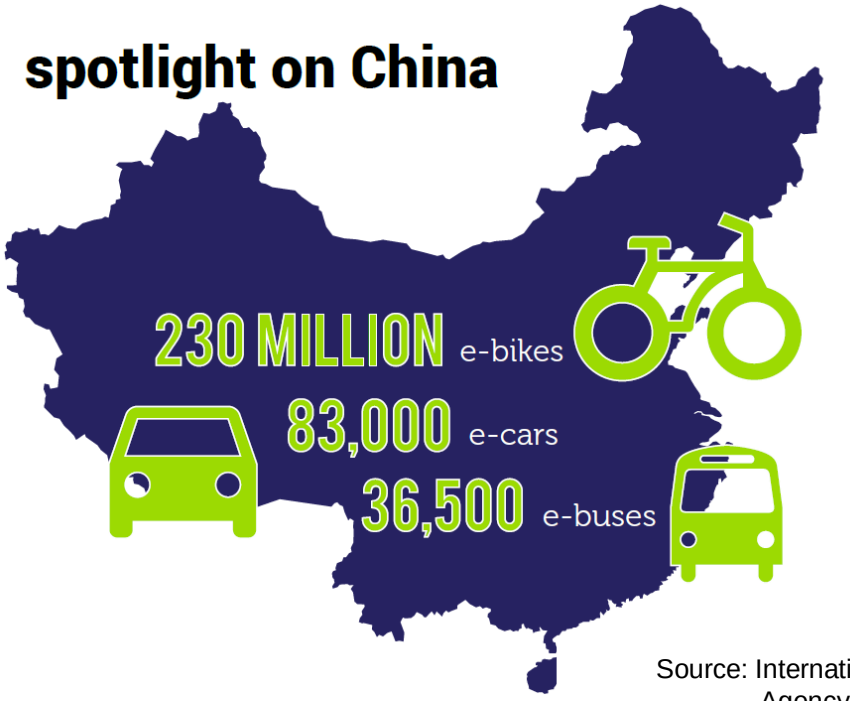
Source: Budhooram, D. MSc Student

Final Remarks

- ✓ The share of GHG emission from the transport sector in the Caribbean region is well above the global average
- ✓ **CDM Methodologies** can be used to calculate the emission reduction potential of a wide variety of projects in the transport sector
- ✓ **There is no single ideal mode of transportation**
- ✓ Electric vehicles (EV) **have a very significant emission reduction potential** if combined with a clean electricity grid [high penetration of renewable energy]

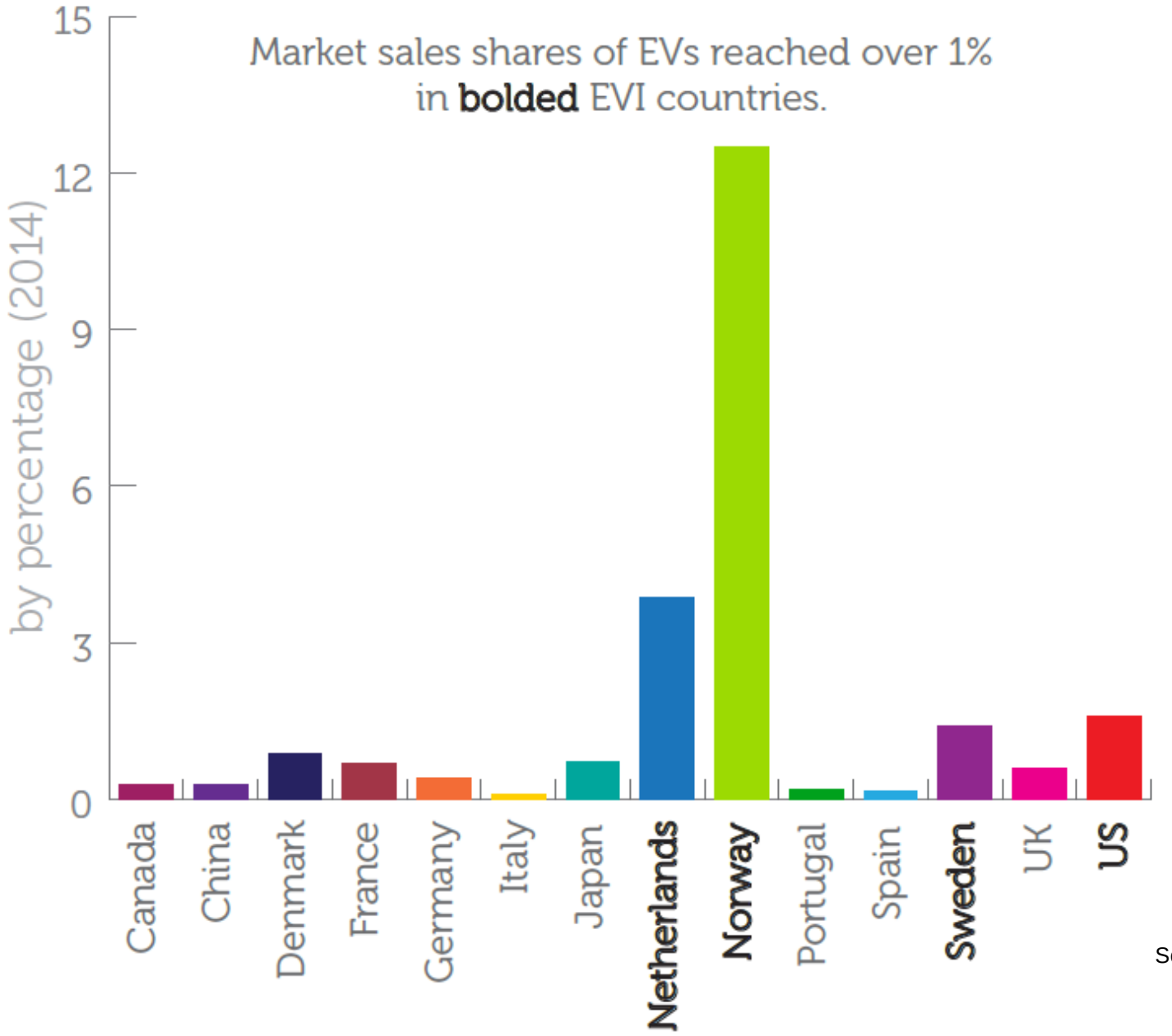
400,000

Electric passenger cars worldwide



Source: International Energy Agency (IEA), 2015

EV market share



Source: International Energy Agency (IEA), 2015

Final Remarks

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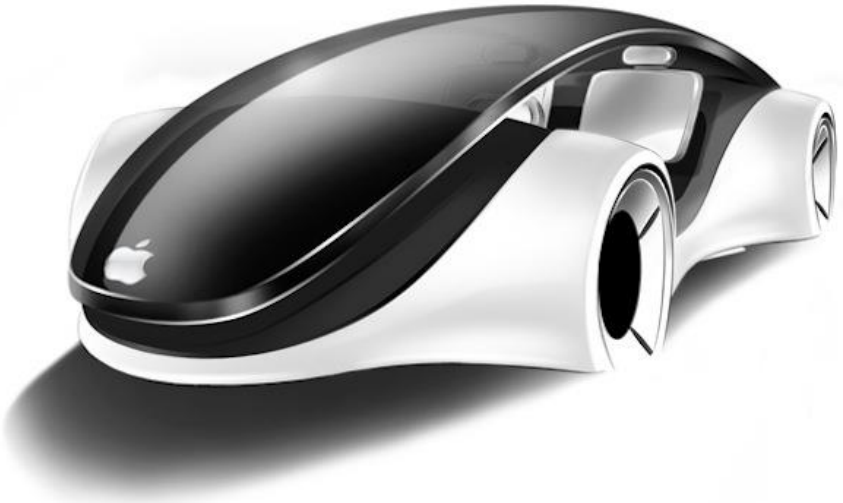
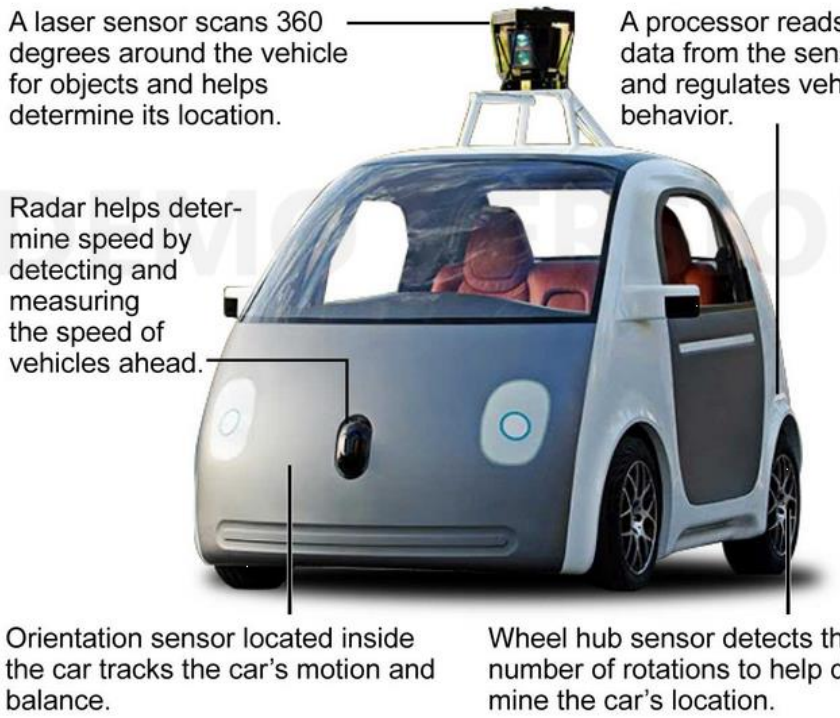


Los Angeles Times

Google's self-driving car

Would you take a ride in a car that has no steering wheel, pedals, brakes or accelerator? How Google's self-driving car works:



Final Remarks

- ✓ **Walking and public transport use are the predominant modes** of transportation in Latin America and the Caribbean

[yet conditions for walking as a main transport mode are deficient]

- ✓ Cycling has historically been a common mode of transport for many low-income groups, travelling short distances. Over the past few years, **increasingly** for higher-income groups as well as transport planners, cycling appears to be a **positive trend to be encouraged for urban travellers**

Source: 2013, Sustainable Urban Mobility in Latin America and the Caribbean, Global Report on Human Settlements 2013

Final Remarks

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Final Remarks

Non-Motorised - Eco-Taxis

Berlin

Nagoya

New York

Paris

Tokyo

Agra

Thank you!