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INDCs and Transport Mitigation Potential

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matching transport with climate finance

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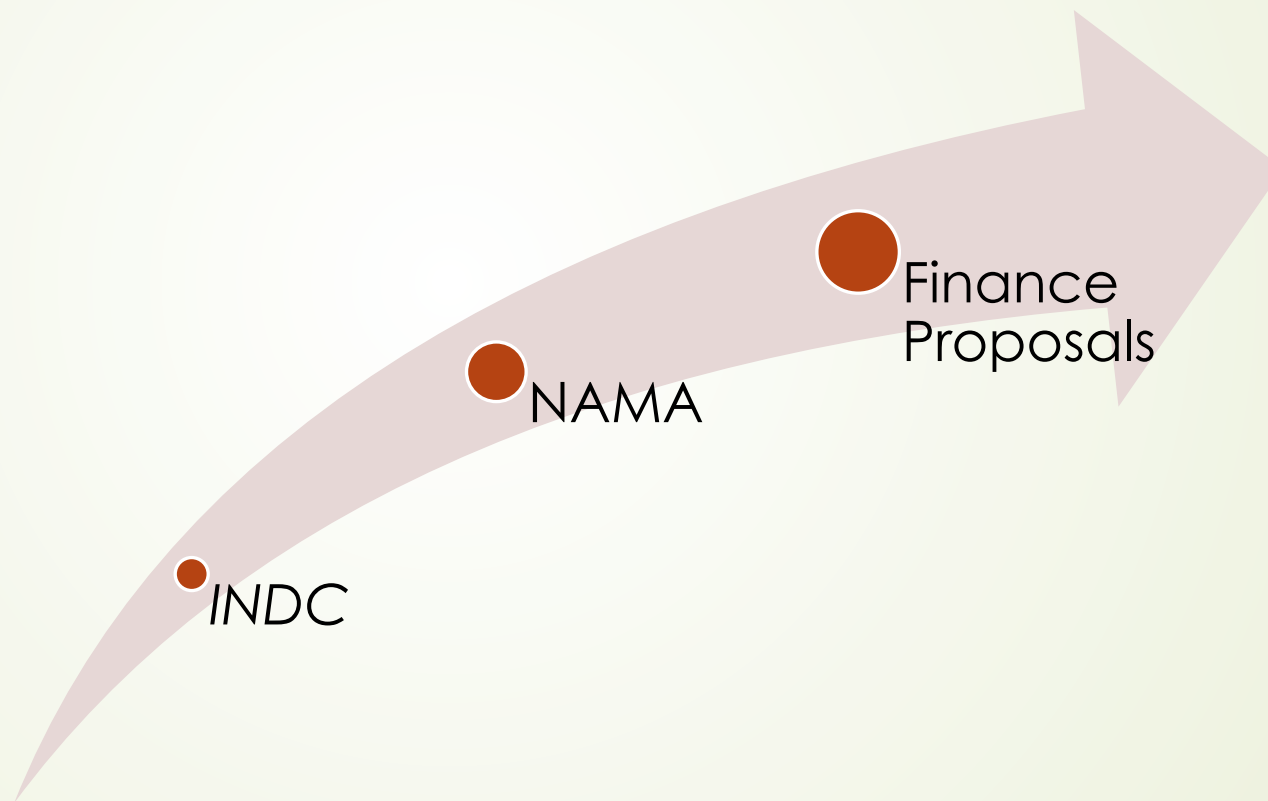
Paris Agreement

- ▶ Core elements Paris Agreement:
 - ▶ 2°C target global warming target
 - ▶ All countries contribute towards GHG reduction
 - ▶ Binding commitment to prepare and report Nationally Determined Contribution (NDC): Baseline, mitigation targets, monitoring
 - ▶ Voluntary reductions
 - ▶ Financial support
- ▶ INDC → NDC with ratification of Paris Agreement

NAMAs

- Nationally Appropriate Mitigation Actions
- Voluntary instrument for developing countries to achieve GHG emission reductions, while contributing to national sustainable development
- NAMAs can vary a lot in scope, content and detail

Implementation



from national climate priorities to sector/program concepts to concrete proposals

INDCs Developing Countries Asia

- GHG targets and Transport
- Transport mitigation actions
- Concrete Examples

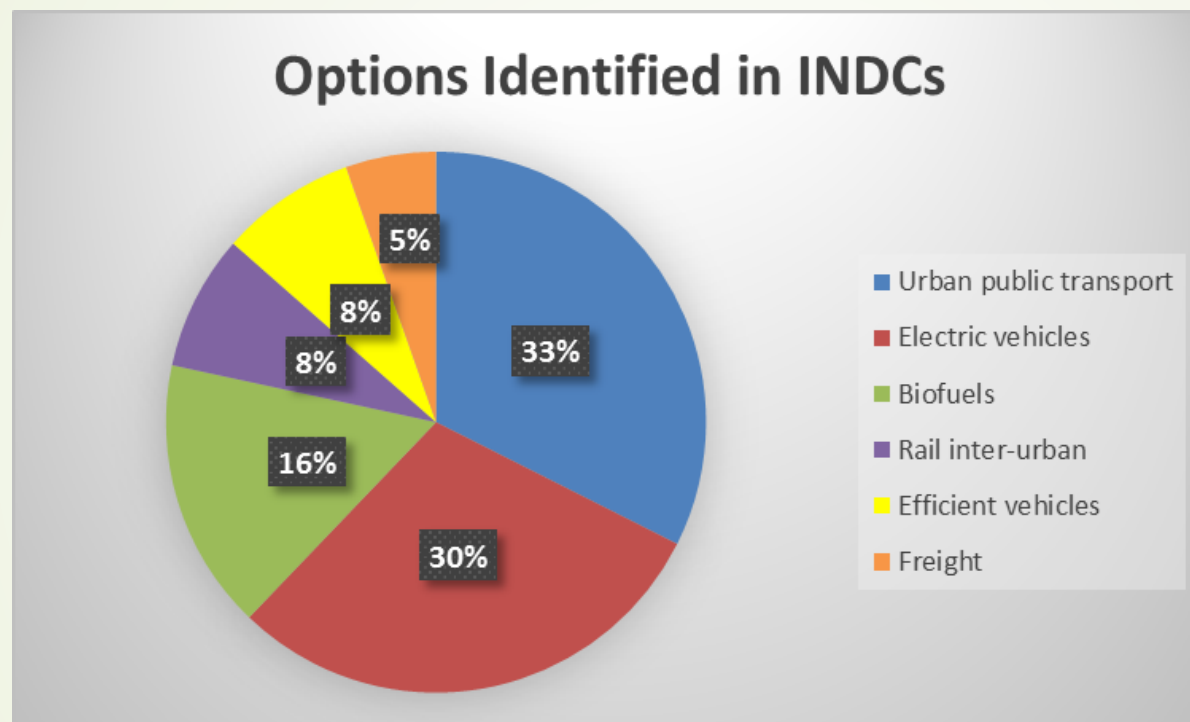
GHG Targets and Transport

- ▶ Around 50% of targets formulated as relative to BAU; other INDC relative to 1990 (or 2000, 2010); relative to GDP; concrete targets e.g. renewable energy target
- ▶ 20% of INDCs have specific transport targets e.g. Cambodia 7% GHG reduction of transport sector relative to BAU by 2030
- ▶ Transport actions have been included in 60% of the INDCs

Examples

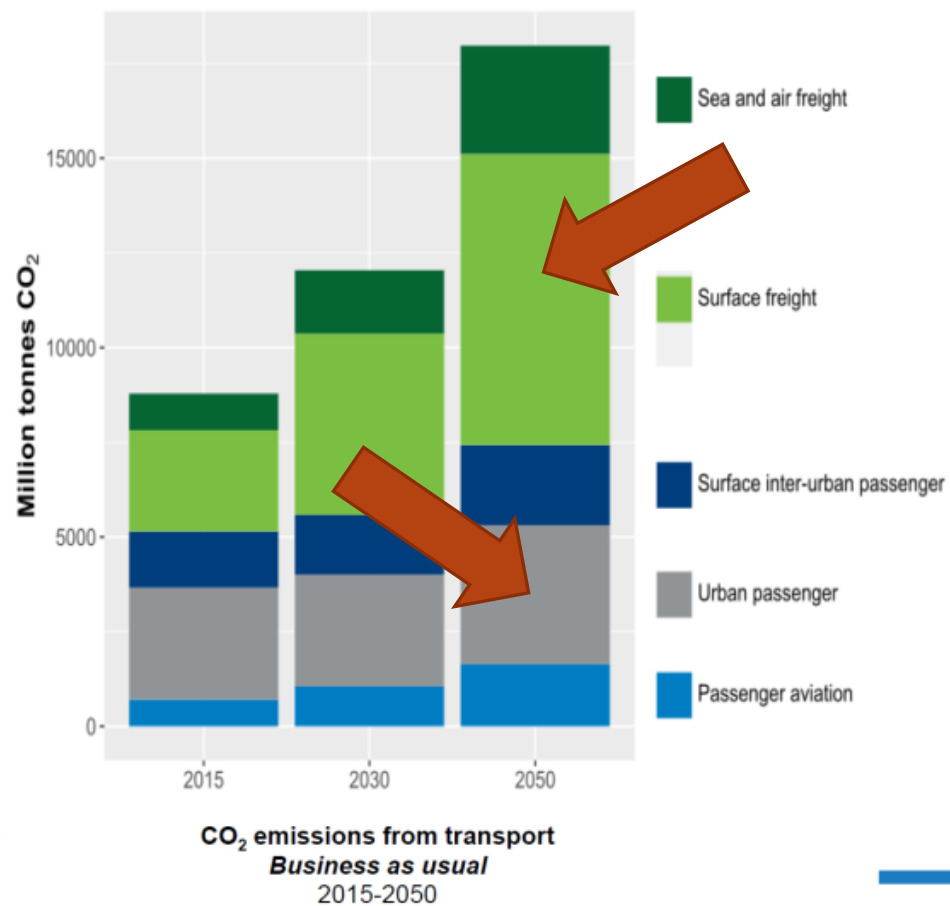
- ▶ Marshall Island or Vanuatu: Usage of coconut oil
- ▶ Thailand: construct BRT and MRT lines
- ▶ Azerbaijan: use electric vehicles for public transport
- ▶ Vietnam: Develop public passenger transport in large urban centres

Transport Mitigation Actions in INDCs



- Urban Public Transport and Electric Vehicles top options
- Biofuels frequent
- All others only singular

Issue



Source: International Transport Forum

Transport Mitigation Options

- ASIF
- Policies
- Urban Transport
- Non-Urban Transport
- Low Carbon Vehicles
- Low Carbon Fuels
- Freight

ASIF

Avoid

Actions which reduce the number of trips or the trip distance

Indicators: transport GHG per inhabitant or per GDP

Examples:

- Telecommuting
- Road pricing

Shift

Actions which result in a shift from high to low-carbon modes of transport

Indicators: GHG emissions per pkm and per tkm

Examples:

- Public transport
- Rail and shipping

Improve

Actions which result in lower GHG emissions per unit of transport or per unit of distance

Indicators: GHG emissions per pkm, tkm and per km

Examples:

- Hybrid vehicles
- Fuel consumption standards

Fuels

Actions which result in low-carbon fuels

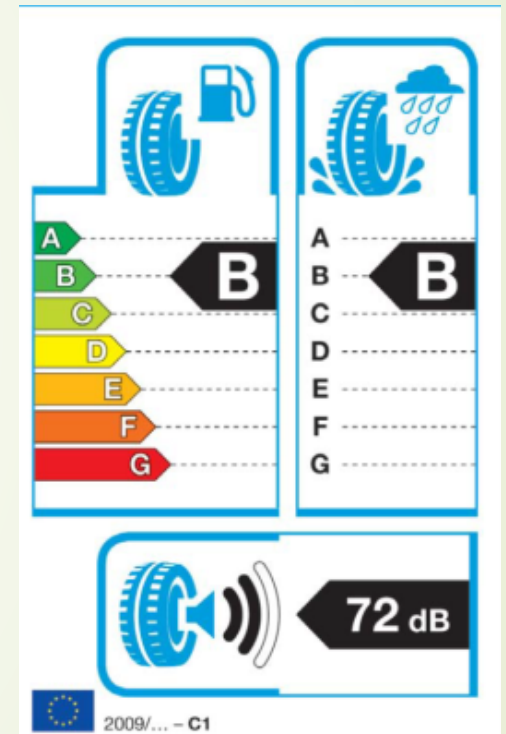
Indicators: GHG emissions per km or per MJ

Examples:

- Electrification
- Biofuels

Policies

- ▶ Typical policies:
 - ▶ Fuel consumption standards
 - ▶ Fuel price policies
 - ▶ Normative policies e.g. ban gasoline motorcycles
 - ▶ Regulations concerning efficiency of inputs e.g. tire COR norms
 - ▶ Road/zone charges
 - ▶ Freight road charges
- ▶ Reduce/avoid trips or mode switch or efficiency improvement or fuel switch



Example Fuel Subsidy

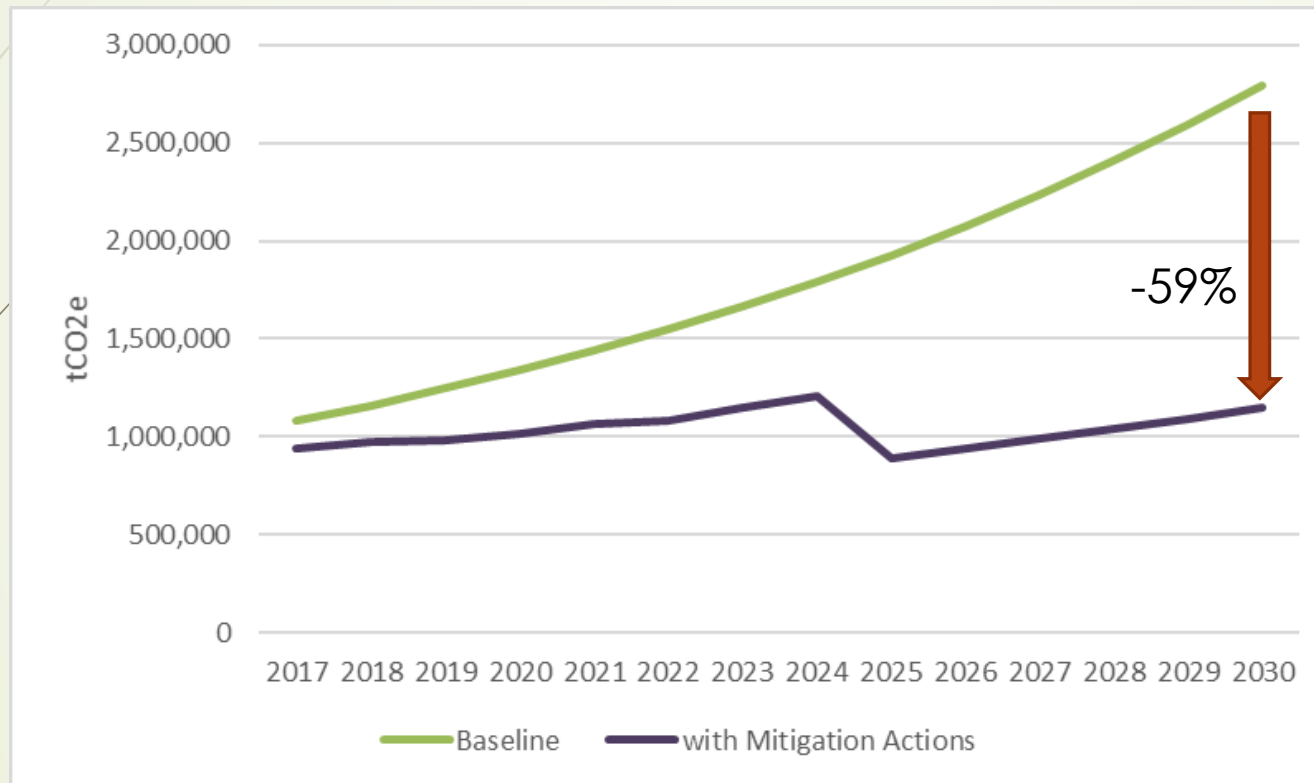
- Policy: Eliminate fuel subsidy
- Fuel subsidy includes external costs (accidents, health, pollution)
- Impact based on fuel elasticity
- Consumer reaction: reduce distance/trips and buy fuel efficient vehicles
- Example of impact: Sri Lanka could reduce GHG transport emissions by 9% (0.7 MtCO₂ as of 2012); price increase 15% gasoline and 60% diesel
- Larger GHG impact if tied usage of funds for GHG mitigation
- Limited positive sustainable development impact

Urban Transport

- Typical Policies:
 - public transport supply: BRT, urban rail
 - Transit Demand Management
 - Urban planning / TOD
 - Non-Motorized Transit
 - Mode integration, smart ticketing
 - ITS and ICT
 - Low emission zones
- Basic impact: mode shift and efficiency improvement



Example: Ulaanbaatar, Mongolia



Main Actions:

1. BRT lines (60%)
2. Metro (30%)
3. LPG taxis (5%)
4. LCBs (5%)

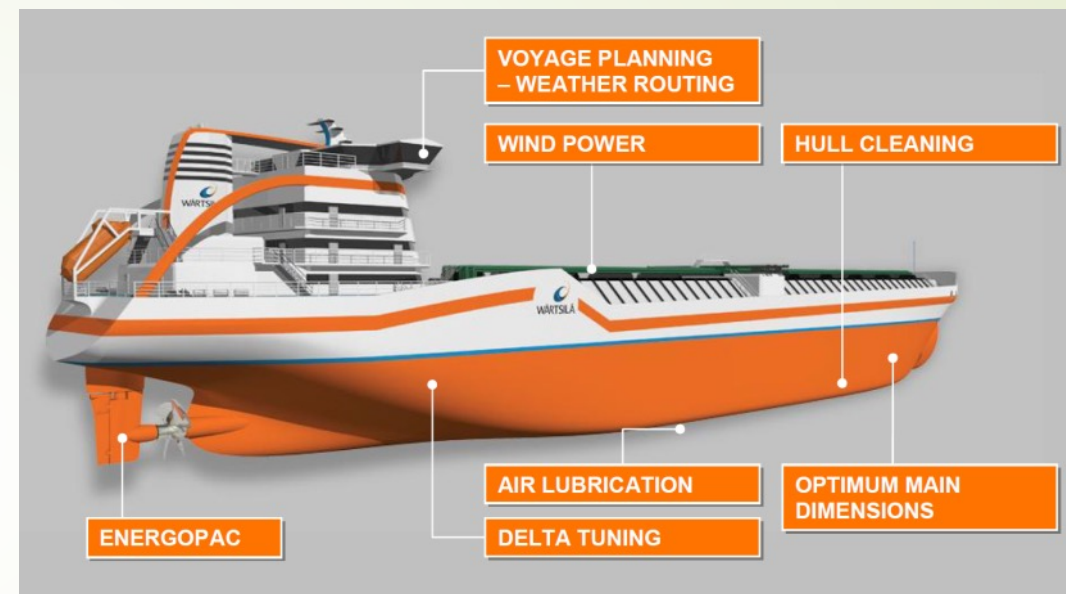
Metro includes TDM measures.

GHG reduction based on mode shift and increased vehicle speed due to reduced congestion.

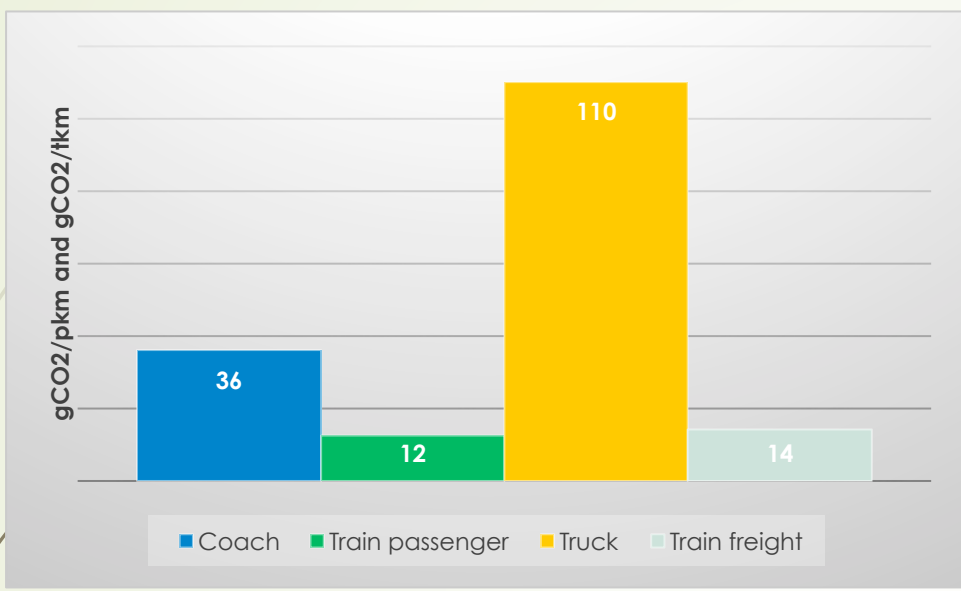
Large SD impact on accident, air pollution and economics (time, fuel, accident savings)

Non-Urban Transport

- Typical Policies:
 - Rail, shipping, pipeline
 - High-speed rail
 - Efficient shipping (ISO, Gold Standard methodology)
 - Mobile machinery e.g. DPFs
 - Logistics chain
- Impact basically mode-shift and efficiency improvement



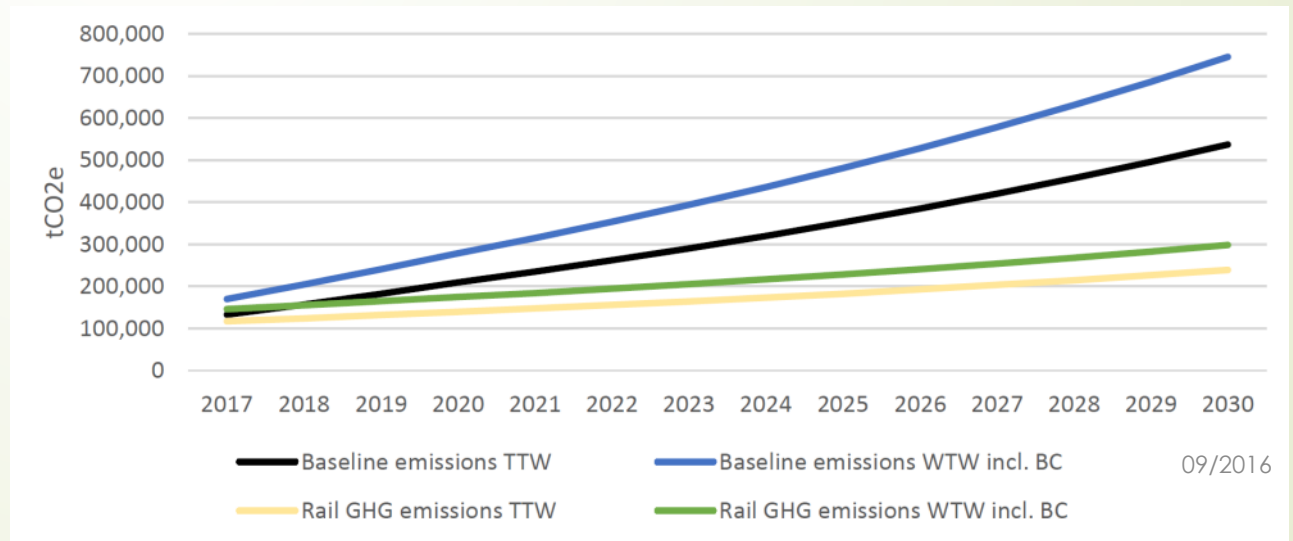
Example: Rail Bangladesh



Actions: New rail tracks and double tracking

GHG reduction 0.5MtCO₂ by 2030 idem to 1% of transport emissions relative to BAU 2030

SD impact medium: basically reduced accident rate



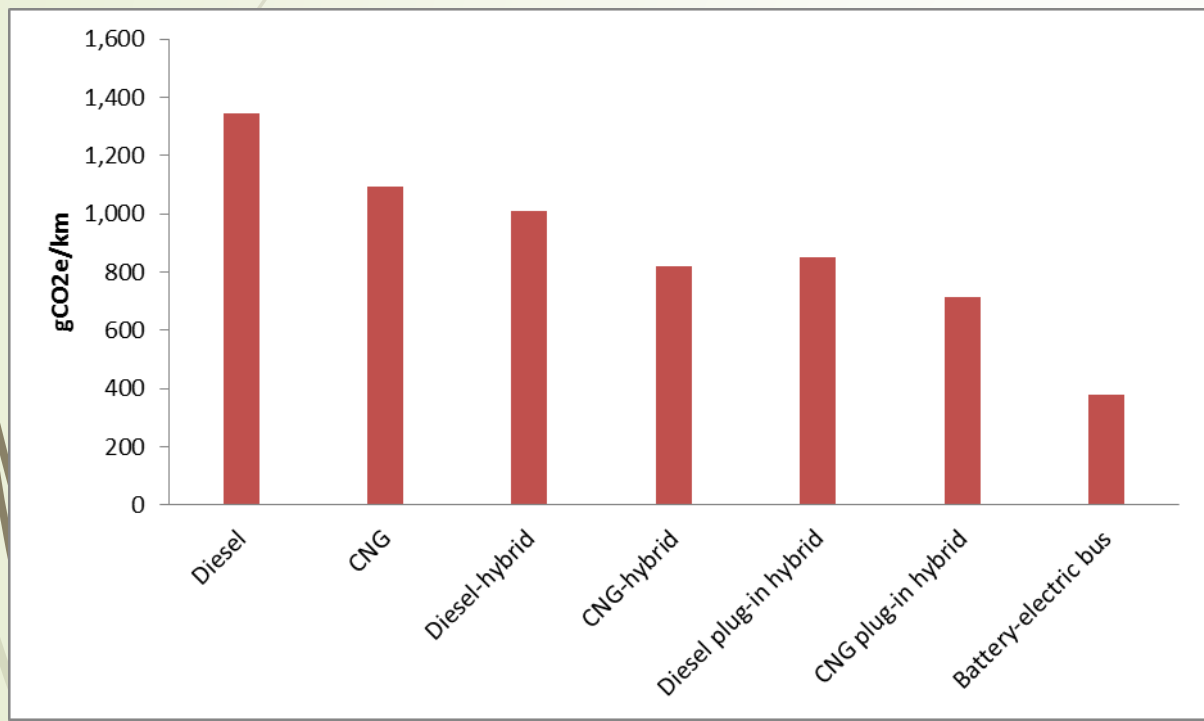
Low Carbon Vehicles and Fuels

- ▶ Typical Policies:
 - ▶ Hybrids
 - ▶ Electric vehicles
 - ▶ Gaseous fuels (LNG, LPG, CNG)
 - ▶ Vehicle renovation policies
 - ▶ Operational efficiency improvements e.g. retrofit technologies, Eco Drive
 - ▶ Biofuels e.g. 1st/ 2nd generation; Methanol (e.g. from waste CO₂)
- ▶ Impact basically increased GHG efficiency
- ▶ Beware of methane slip and upstream biofuels



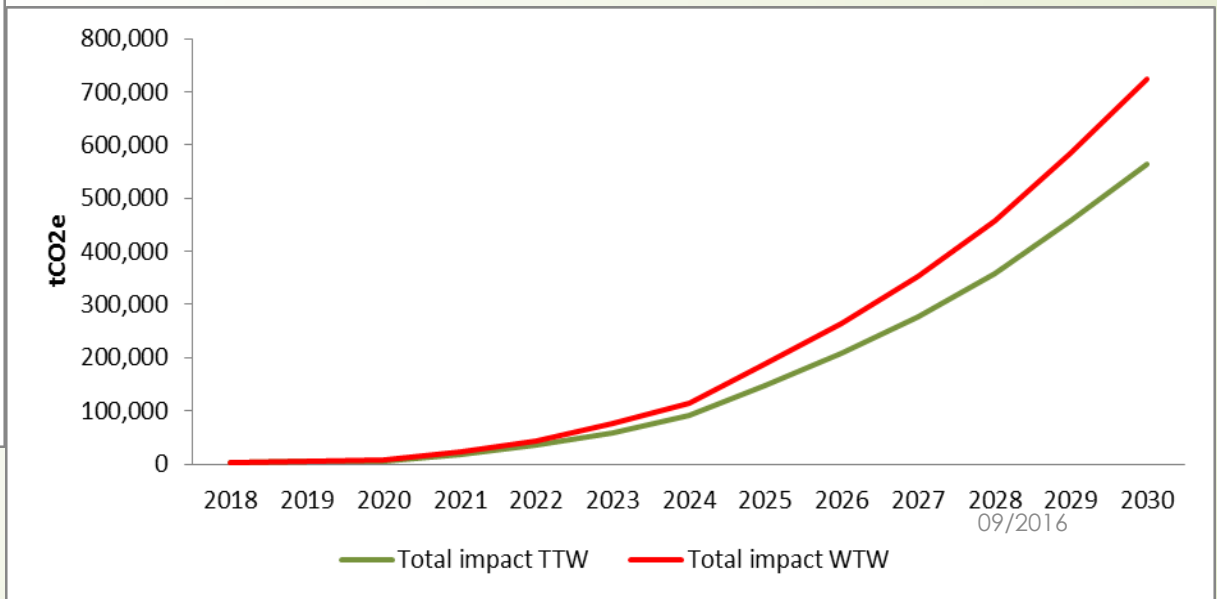
Example: LCBs Vietnam

Action: Hybrid → Plug-In Hybrid → Electrified



SD impact: better air quality

GHG impact by 2030: 0.6 MtCO₂ idem to around 0.7% of GHG transport emissions BAU

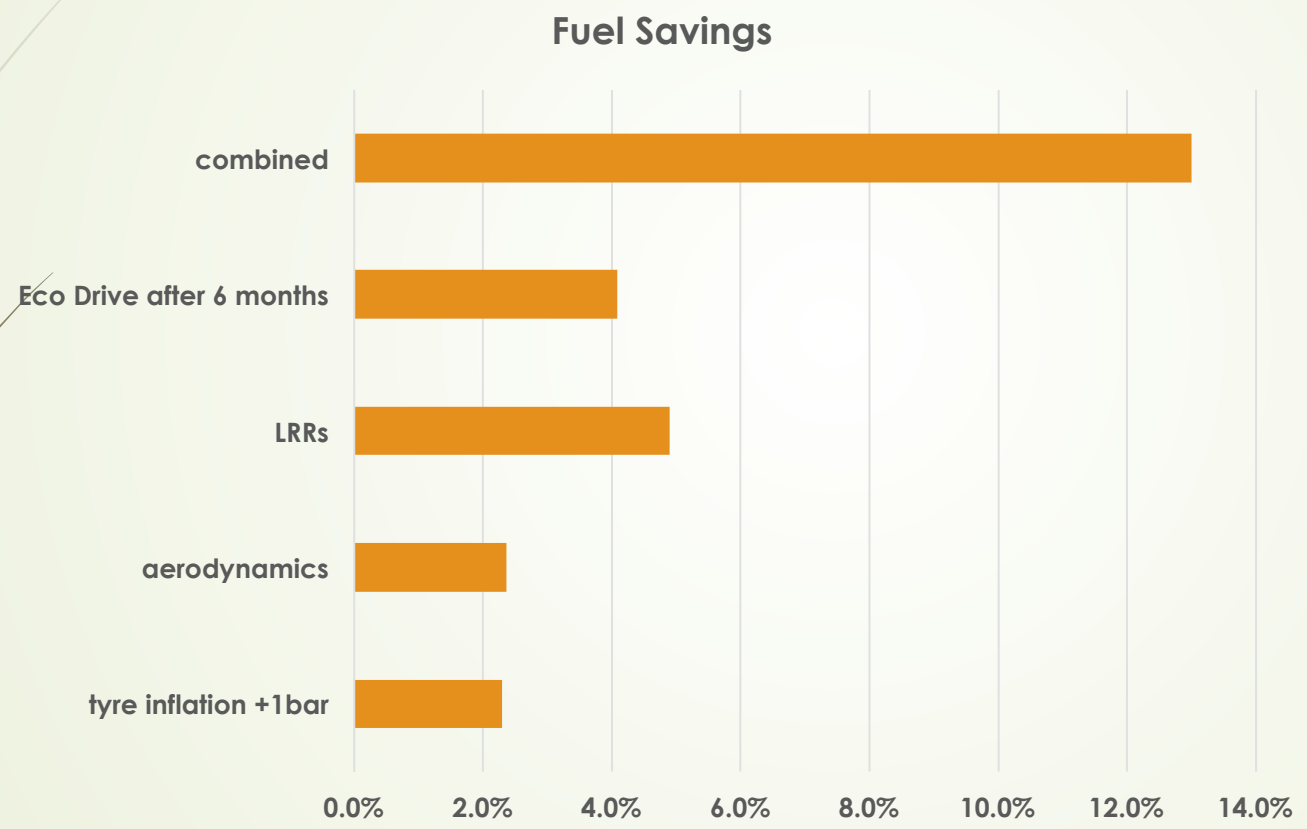


Freight

- ▶ Typical Policies
 - ▶ Mode switch road to rail and less shipping/pipeline
 - ▶ Truck replacement incl. alternative fuels/technologies
 - ▶ Operational improvement (technologies, load factor, Eco Drive)
 - ▶ Logistics chain
 - ▶ Larger trucks
- ▶ Impact mode shift and improved efficiency



Example GFP Vietnam/Laos



GHG reduction of combined
7-11tCO₂ per truck per
annum

Gaps INDCs and Potentials

- Urban passenger transport is included in most: however, TDM is just as important as supply of public transport
- Rail (inter-urban) and shipping (efficiency improvement) have a good potential not sufficiently considered
- Electric vehicles OK but due to cost long-term: focus of alternative vehicles on buses, urban trucks and taxis lacks and hybrids as well as plug-in hybrids have a high and cost-effective potential
- Freight is not treated sufficiently
- Policies e.g. fuel consumption standards, tire norms, Eco Drive in curricula or low emission zones lack

Steps Forward

- Cities: Bottom-up GHG transport inventories plus mitigation models to identify options, plan better and monitor impacts
- Assess and quantify GHG mitigation potential of main options
- Realize urban transport NAMAs
- Assess freight potential road, rail and shipping
- Vehicles: go for hybrids and opportunity charging
- Policies can be transformational and sustainable
- Biofuels: go for waste (vegetable oils, CO₂ for methanol)