

Low Carbon Development
Summary Sheets

Transport in a low carbon economy

Key message: Implementing climate change mitigation measures in the transport sector will contribute to the economic and social progress of developing nations by creating new jobs, healthier environments and enhanced mobility, and will reduce the vulnerability of poorer people to anthropogenic climate change impacts.



Introduction

Based on current projections, the amount of energy used for transport could double by 2050 and associated carbon dioxide (CO₂) emissions could grow even faster as the world moves to more carbon-intensive synthetic fuels¹. This scenario would contribute to extreme climate risk in many developing countries and calls for an urgent, accelerated transition to sustainable transportation in developed and developing countries.

- 1. To date, limited action has been taken to significantly reduce the growing emissions of greenhouse gases (GHGs) from the transport sector².** This is despite transport accounting for 23% of global CO₂ emissions and 30% of overall CO₂ emissions from fossil fuel consumption³. Under a business-as-usual (BAU) scenario, transport-related global CO₂ emissions are likely to increase by 57% between 2005 and 2030. A significant driver is the expected tripling of the world's car fleet by 2050, 80% of this growth will be in developing countries⁴. International aviation and maritime transport is growing even faster than land-based transport as it is an important driver of a globalised economy⁵.
- 2. The transition to a low carbon economy through transport interventions brings environmental, economic and social co-benefits.** According to the UNEP 'Global Green New Deal' report (2009), more than 3.8 million jobs could be created globally through the increased production of low emission vehicles. Up to 19 million additional ancillary jobs worldwide could be created in fuel refining and distribution, sales, repairs and services. Investment in clean and efficient public urban transit systems also contributes secondary employment effects, with a multiplier of 2.5 to 4.1 per direct job created⁶. However, there is significant embedded energy in the manufacture of vehicles, whether low carbon or not; the carbon footprint of a new car has been estimated to range from 6 tonnes CO₂ equivalent (CO₂e) for a small-sized, basic car to 35 tonnes CO₂e for a mid-sized sports utility vehicle (SUV). Despite common claims to the contrary, these embedded emissions have been estimated to rival the vehicle's total exhaust pipe emissions over its lifetime⁷.
- 3. Low carbon development measures could address living density and spatial organisation.** These are crucial factors influencing energy consumption, especially in the transportation and building sectors⁸. Improving vehicle fuel efficiency and minimising the need for transport in urban areas could reduce the growth of emissions from motorised transport in developing countries, estimated to account for around 80% of local air pollution². Such measures have been demonstrated through the Clean Development Mechanism (CDM) to also tackle chronic traffic congestion, which affects health and economic productivity in urban areas⁹.
- 4. In Bogotá, Colombia, the CicloRuta cycle path facilitates over 200,000 bicycle trips a day by about 83,000 people.** Investment returns are promising and the initial investment of USD50.25 million is translating to USD40 million annually on avoided fuel costs to the public⁴. The system is hailed by the C40 Cities Leadership Group as best practice. It has reduced car dependence and associated emissions (6,449 tonnes of CO₂e saved in 2007) and has fundamentally changed the behaviour of residents towards healthier, more environmentally sustainable lifestyles: between 2000 and 2007 the percentage of the population using bikes increased from 2% to 4%¹⁰.



Case study

The World Health Organisation estimates that 531,000 premature deaths occur annually in developing Asian countries due to air pollution¹¹. Since the 14th Association of Southeast Asian Nations (ASEAN) Summit in Singapore (2007), measures to reduce the impact of transport on global climate change in the ASEAN have been implemented and these have generated economic, social and environmental co-benefits¹².

For example in Jakarta, Indonesia, over 500 dated three-wheelers of 14,000 targeted in the city have been replaced by new compressed natural gas (CNG) three-wheelers. To ensure the phase-out of old three-wheelers, the Government only issues licences for new three-wheelers. For vehicle owners, the conversion gives benefits, including low fuel and maintenance costs. This increased financial capital has indirect positive impacts on education and household well-being, while reduced air pollution provides a cleaner and healthier living environment¹².

- 5. Addressing high-volume traffic could increase road safety and bring wider benefits for respiratory health.** This is particularly the case in developing countries where over 90% of the world's fatal road accidents occur, despite having less than 48% of the world's registered vehicles¹¹. The wider benefits of decarbonising transport are demonstrated in the case study in column 1.
- 6. There are incentives for developing countries to 'leap-frog' the costly, unsustainable motorisation seen in the developed world and pursue a new, low-carbon paradigm in the transport sector².** Non-motorised transport (NMT) is a relatively inexpensive investment for cities to make to reduce GHG emissions when used to complement mass transit projects such as energy efficient rail and bus systems¹³. In Mexico, Bus Rapid Transit (BRT) provides more efficient and faster transport connections. It has been estimated that standalone BRT projects can reduce CO₂ emissions at a cost of USD66 per ton, while BRT coupled with NMT improvements can achieve reductions in CO₂ at USD30 per ton¹³.
- 7. Rapidly developing countries such as China are investing heavily in low carbon transport.** China plans to invest around USD45 billion over the next five years in low-carbon vehicles¹⁴. The ongoing World Bank-supported Guiguang Railway Project in China will provide additional transport capacity and reduce transport time between the less-developed western region in southwest China and the relatively more-developed Pearl River delta region. In developing countries, it can be hard to control the political and economic demands that drive prioritisation, and the multi-agency coordination of spending on transport – globally, this is often around 15 – 25% of a city's budget².



8. Significant opportunities exist to decarbonise international transport

- The shipping industry could increase fuel efficiency from 25% to 75%¹⁵ and, if a proposed set of measures are implemented, the sector could reduce CO₂ emissions by between 135 million tonnes (Mt) and 255 Mt while enhancing profitability⁶.
- While estimations vary, the International Air Transport Association (IATA) claims that, theoretically, net carbon impact of aviation could be reduced by 100% if fossil-based fuels were entirely replaced by sustainable biofuels. However, this does not account for other life-cycle emissions related to the production of alternative fuels¹⁶.

- 9. Movements to a low carbon economy will present significant challenges for transport, particularly for international transport where responsibilities do not fall in the jurisdiction of any single country.** The type of regulations and measures used to regulate emissions will have important implications for developing countries, whether through increasing commodity prices due to higher transport costs or generating additional finance to support climate change adaptation⁵.

10. Further research could be channelled around developing goals and indicators for sustainable transport initiatives, access to finance and quantifying co-benefits of interventions.

Research must be used to transform the conceptual framework of low carbon transport into action by developing concrete goals and indicators². Technological, market, financial and behavioural barriers will need to be overcome. Implementing successful measures will require identification and prioritisation of finance. Improving the transparency and accountability of financial flows in and between developing country borders will facilitate fundraising, while documenting best-practice examples and co-benefits of interventions will support prioritisation of spending².

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Definitions

Low carbon climate resilient development combines key elements of mitigation, adaptation and development strategies. A 'triple win' is where low carbon development brings benefits in mitigation, adaptation and poverty reduction/economic development. A 'double win' is where benefits are seen in only two of these areas.

Climate resilience is used in this document to mean: The capacity of households and communities to manage change and maintain or transform their living standards in the face of climate induced stresses and shocks without compromising long term prospects.

USD is the US dollar

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