Health and economic impacts of transport interventions in Accra, Ghana

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PREFACE

Globally, in 2010, the transport sector accounted for 14% of the greenhouse gases (GHG) budget *(1)*. In developing countries, the rapid pace of motorization and limited investment in sustainable mass transportation and energy efficient mobility systems have led to widespread traffic congestion and degradation of urban air quality levels, with consequential negative impacts to the environment and human health.

The WHO Urban Health Initiative (UHI) has rolled out a programme to support national- and city-level government officials in the use of health impact assessment tools that can be used to assess the environmental, health and economic co-benefits of future sustainable urban transportation action plans that can lead to reduced environmental emissions, improved air quality levels, and, thus, contribute to positive changes in the quality of life of citizens. Gains in health and well-being involve avoided pain and suffering from illnesses and reduced risk of premature death, while economic benefits consist of averted private and public health care costs, and gains in productivity output.

This report includes discussions on transport and health data availability, and analysis for specific transport scenarios for the Greater Accra Metropolitan Area (GAMA), using the Integrated Sustainable Transport Health Assessment Tool (iSThAT). The tool provides a framework for rapid assessment of health and economic benefits. Three mitigation scenarios have been modelled to compare the effects of different policy interventions with regard to land use, transport mode, energy efficiency and demand, and their relative impacts on public health and associated costs.

Over 2015–2050, in the Business-As-Usual (BAU) Scenario, the demand for transport is predicted to increase three-fold, personal car ownership is expected to double, and there will be greater utilization of the public transport system (higher ridership of urban buses, for example). The fleet of private vehicles consists mainly of conventional petrol cars, which account for 60% to 67% of the transport modal share. Compared with 2015, car fuel economy improves around 20% by 2050; meanwhile exhaust emissions decrease as a result of stock turnover favouring vehicles with enhanced pollution control technologies and a shift to low sulfur content fuels. Over time, walking and cycling combined contribute approximately 1 in 3 of total passenger-kilometres (pkm) travelled.

In Alternative Scenario #1, future transport demand is the same as in the BAU Scenario, though a slight decrease in passenger car use is expected due to measures outlined in the revised national transport policy (2020). The demand for conventional buses is expected to be steady, but there is a slight shift to electrified mass transport. In Alternative Scenario #2, a 31% decrease in transport activity is forecast due to land-use and spatial planning reforms that focus on creating secondary "hub centres" of economic and social activity closer to where people live. Finally, in Alternative Scenario #3, a significant shift from the use of passenger cars to electrified public transport (up to 10% of transport demand by 2050) is envisaged. Further, there will be an increase in walking and cycling (up to 45% of total pkm in 2050), and a switch to the purchasing of hybrid cars and battery electric vehicles (BEV). These assumptions are based on current discussions around national- and city-level policies.

Alternative Scenario #3 is the most ambitious intervention plan among the three urban transportation development pathways. Compared with BAU, the number of postponed premature deaths over the entire period (2015–2050) ranges between 1800 and 5500 deaths related to reduced air pollution (improvements in air quality) plus an additional health benefit of 33 000 avoided deaths attributable to increased physical activity (active travel). In addition to health gains, Alternative Scenario #3 reduced carbon emissions by 159 million tonnes of CO_2 compared with BAU. In economic terms, the combined benefit from reduced mortality and morbidity ranges between US$ 14 and 16 billion (2011 prices at a 5% discount rate). By comparison, the economic value of the health gains under Alternative Scenario #1, the least ambitious transport action plan, is about 15% of those calculated for Alternative Scenario #3. It is worth noting that the economic benefit is very sensitive to the discount rate. In fact, the health benefit under Alternative Scenario #3 would increase by 80% if the discount rate was changed to 3% versus a reduction of 50% if the discount rate choice was 7.5%.

The estimates of the health and economic impacts of transport scenarios for GAMA allow policy-makers to make science-based decisions regarding whether planned transport programmes and projects are likely to prevent diseases and deliver health gains while achieving sustainability goals over the medium- to long-term time horizon.

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The report was reviewed by and received inputs from Gordon Dakuu (National Professional Officer, WHO Ghana); Pierpaolo Mudu (Technical Officer, WHO Department of Environment, Climate Change and Health); and Andreia Santos (Health Economist, London School of Hygiene and Tropical Medicine). A further review was provided by Michael Hinsch and Abraham Mwaura (WHO Department of Environment, Climate Change and Health).

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