



Energy, Safety and Environment and Transport Services In Ethiopia

Introduction

This is a report of the salient findings of a study titled “Energy, Safety, Environment and Transport Services in Ethiopia”. The full report can be found from EEA, Report on the Ethiopian economy, 2012.

Transport and Energy

Summary of key findings

Human activities have become highly dependent on the availability of several forms and sources of energy. There is an enormous reserve of energy which is able to meet the future needs of mankind.

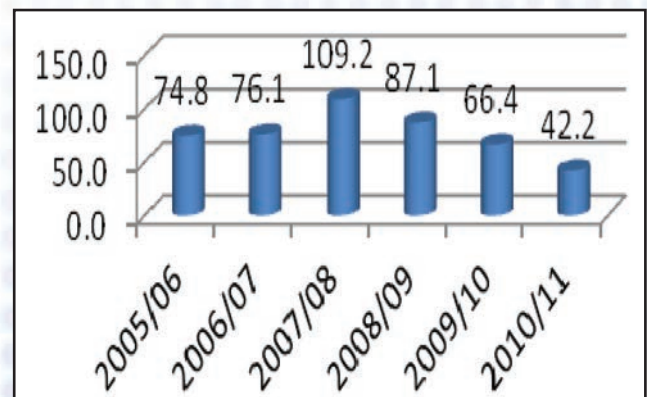
Industrial development has placed an enormous demand on fossil fuels due to the introduction of power driven machines and means of transport. Transportation almost completely relies (95%) upon petroleum products with the exception of some railway transport that uses electrical power. While the use of petroleum for other economic sectors, such as industrial activities and electricity generation has remained relatively stable, the growth in the demand for petroleum is mainly attributed to the growth in transportation networks.

In the case of Ethiopia, out of the total energy consumption, the share of fossil fuel (coal, oil, petroleum and natural gas) was 6.3, 6.7 and 7.1 percent in 2007, 2008 and 2009, respectively¹, indicating a slight increase in the share of fossil fuel consumption of the country.

Ethiopia’s consumption of fuel has been increasing from time to time. The share of the consumption of the transport sector from the total fuel import which was 91.2 percent in 1997/98 increased to 95.6 percent in 2010/11. Road transport took about two thirds of the share while the balance went to air transport. The fact that less than 5 percent of the total imported fuel went to other sectors shows the high dependence of the non-transport sectors on non-fuel sources of energy, such as hydro electric power.

Ethiopia spends substantial amounts of foreign exchange to import petroleum. In 2007/08, for instance, the foreign exchange receipt from the total merchandize exports falls short of covering fuel import bill. Since then, however, the share of fuel import bill to the total merchandize export earnings has started to decline rapidly, mainly due to increased export earnings (Figure 1).

Figure1: Fuel cost in the total merchandize export receipts, (share in %)



Source: NBE and Ethiopian Petroleum Enterprise

¹ <http://data.worldbank.org/indicator/EG.USE.COMM.FO.ZS>. Fossil fuel energy consumption (% of total),



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In order to minimize the transport sector's dependence on fossil fuel, efforts have been made to mix Ethanol fuel with benzene. Currently, the benzene sold by fuel stations in Addis Ababa is mixed with 5 % ethanol. The plan is to implement this procedure in all fuel stations throughout the country starting from 2011/12.

Policy Recommendations

Despite the ambition to move towards greener sources of energy, the dependency of the country on imported fossil fuel has been increasing from time to time. Hence, the blending of fuel with ethanol should continue and the use of green energy using vehicles should be encouraged by designing and implementing various tax and non-tax incentive schemes.

Transport and Safety

Summary of key findings

Safety is critical in any transport system. The degree of safety that one will enjoy differs from one mode of transport to the other. Evidently, air transport is considered as the safest mode of transport while road transport the least safe.

According to the World Bank², every year more than 1.17 million people die in road accidents around the world, of which about 70 percent occur in developing countries. Sixty-five percent of the deaths involve pedestrians, out of which 35 percent are children. Over 10 million are also crippled or injured each year. It has been estimated that at least 6 million more will die and 60 million will be injured in developing countries during the next 10 years unless urgent actions are taken.

The majority of road accident victims (injuries and fatalities) in developing countries are not motorized vehicle occupants, but pedestrians, motorcyclists, bicyclists and Non-Motorized Vehicles (NMV) occupants. The Global Burden of Disease study undertaken by the World Health Organization (WHO), Harvard University and the World Bank showed that in 1990 traffic crashes were assessed to be the world's ninth most important health problem, and by the year 2020 this would move up to third place in the table of leading causes of death and disability.

According to World Bank³, Ethiopia had 3 vehicles per 1000 population just next to Bangladesh, Togo and Sao Tome and Principe each of which had 2 vehicles per 1000 population. Despite the low per capita vehicle ownership, the country's accident record is very high.

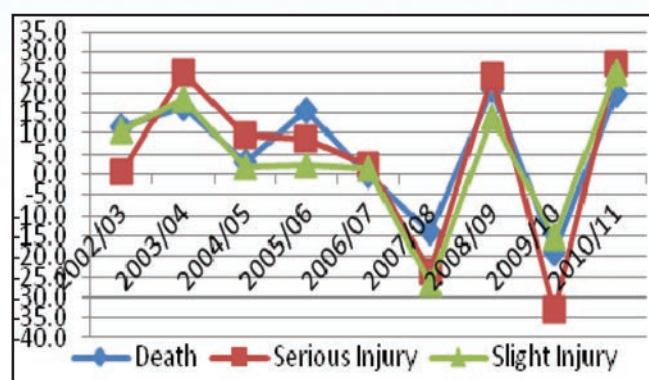
Road traffic accidents have been growing in Ethiopia overtime, with the exception of the two recent years of 2007/08 and 2009/10⁴. The registered growth is presumed to be significantly under-stated due to the challenge of getting the exact number of accidents occurring throughout the country. This could be due to under-reporting, sheer absence of information, negligence, informal negotiations between victims and drivers, or absence of traffic police at accident sites at the time of the occurrence. The number of deaths, serious, and slight injuries increased, on average, by 6, 4.5 and 3.6 percent, respectively, in the period 2002/03-2010/11. All the three effects of traffic accidents have been trending together due to their joint occurrence (Figure 2).

² World Bank. Road Safety, <http://www.worldbank.org/transport/roads/safety.htm> accessed June 20, 2012

³ World Bank database

³ World Bank database

Figure 2: Traffic Accidents, growth in percent



Source: Federal Police Commission

The data seems to show that accidents are proportional to the number of vehicles operating in each region. Of the total vehicles registered in the country, over half are estimated to be registered in Addis Ababa. As a result, a greater share (about 53.7 percent) of the total traffic accidents happened in the city in 2008/09. Of the total traffic accident- caused deaths in the country for the year 2008/09, Amhara, Oromia and Addis Ababa have accounted for 27.3, 22.7 and 21.2 percent, respectively. This shows that Amhara has taken a disproportionately high share of the fatalities relative to its low number of vehicles. This entails the need to examine the causes of accidents in the region.

Another concern for Ethiopia is the accident-caused property damages. The property damage due to traffic accidents increased from Birr 56.96 million in 2001/02 to Birr 325.71 million in 2009/10 but reduced to Birr 108.5 million in 2010/11. In terms of the percentage of GDP, it declined from 0.09 percent in 2001/02 to 0.03 percent in 2007/08, but rose again to 0.09 percent in 2009/10 and declined abruptly to 0.02 in 2010. This is due to the relatively higher growth of nominal GDP to the growth in the value of damaged property.

The available literature indicates that the likely causes of road transport accidents in Ethiopia include: poor driving-skills, disregard for the “priority to pedestrian” rules on the road, driving above the speed-limits, utilization of freight vehicles for passengers, overloading in terms of both passengers and luggage, disregard of the traffic rules and, poor technical/mechanical conditions and handling of vehicles; crowding of roadways by Non-Motorized Vehicles (NMV) such as animals as well as pedestrians; low awareness of pedestrians about traffic rules and signs; weak traffic law enforcement; road quality and road engineering design problems, absence or lack of terminals, and parking problems.

Traffic accidents have a number of adverse effects on the socioeconomic development of the country. Since most of the victims are those in the productive age group, families lose their bread winners and the country its productive manpower. According to G. Jacobs, A. Aeron-Thomas and A. Astrop (2000)⁵ hospitals in Ethiopia are stretched with the growing problems of traffic accidents in the country.

Policy Recommendations

Improving road safety needs to be an important area of policy intervention. Installing a camera based control system along main streets especially in high traffic accident areas, could be a better way of reducing the violation of traffic laws and penalizing those breaching them. In addition, a national Road Safety Plan might be prepared and implemented.

⁵ G. Jacobs, A. Aeron-Thomas and A. Astrop. 2000. Estimating Global Road Fatalities, Transport Research Laboratory, Report 445.

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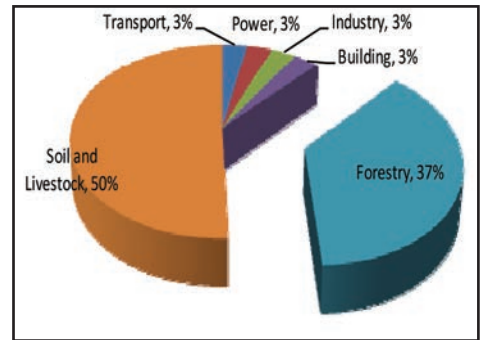
Summary of Key Findings

Urbanization has an adverse effect on the environment. The main impact has been the expansion of urban land use, claiming a significant size of the land from rural agricultural use and forestry. Expanding cities cannot be convenient for working and living without a complex transport system.

The spatial locations of activities like residence, shopping centers, and production give some indications on the required travel demand and average distances between activities. The relationships between transportation, land use and the environment can be succinctly expressed by density. The higher the level of density, the lower the level of energy consumption per capita and the lesser the environmental impacts will be.

The literature on the subject shows that no significant work has been conducted regarding the environmental impacts of transportation sector in Ethiopia. According to the Climate Resilient Green Economy (CRGE) report, of the total Green House Gas (GHGs) emissions of about 150 MT in 2010, Soil and Livestock account for 50%, Forestry fro 37, Transport, Power, Industry, and Building each for 3%. This shows that transport plays meager role in emitting GHGs into the atmosphere. However, compared with the low vehicle population, the registered percentage is disproportionately higher mainly due to the poor vehicle quality operating in the streets of the country (Fig.3).

Figure 3: Total GHG emissions⁶ by Sector, for 2010



Source: Ethiopia’s Climate Resilient Green Economy (CRGE)

According to the World Bank, the CO₂ emissions from transport as a percentage of total fuel combustion in Ethiopia in 2007 and 2008 were 58.4 and 56.7, respectively. Carbon dioxide emissions from transport contain emissions from the combustion of fuel for all transport activities, regardless of the sector, except for international marine bunkers and international aviation.

Policy Recommendations

Though little, the transport sector of Ethiopia has a contribution to damaging the environment. As the number of vehicles increase, the environmental damage inflicted by the sector will also increase. Thus, it is important to mainstream environmental issues in the overall transport sector development policies and strategies.

⁶For the year 2010, according to the Climate Resilient Green Economy strategy document, the total GHG emission is estimated at 150 MT CO₂e.