

Jakarta Low Carbon Scenarios in Transport and Residential Sectors: An Exercise with AIM/Enduse Model

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The Capital City of Jakarta is the largest and the most populous city in Indonesia and in Southeast Asia, and is the thirteenth most populous city in the world. The population has risen from 6.5 million in 1980 to 9.6 million in 2010, counting only its legal residents. Number of households in 2010 is about 2.5 million with 3.8 household members in average. From economic point of view, Jakarta depends heavily on financial service, trade, and manufacturing. Gross Regional Domestic Product (GRDP) in 2010 based on constant price was IDR 396 trillion (around USD 41.3 billion), which is equivalent with economic growth of 6.5%. This fact, however, poses an escalation on energy consumption and associated environmental emissions in the coming decades.

Jakarta is facing an increasing pressure for a significant contribution in national and global efforts for GHGs emission reduction. This effort will affect energy cost, energy system, and technology mix in both supply and demand sides. In this preliminary work, we provide a scenario analysis toward Jakarta Low Carbon Development in transport and residential sectors based on AIM/Enduse framework.

Transport Sector

Jakarta suffers a lack of urban public transport services due to prioritized development of road networks, which were mostly designed to accommodate private vehicles. Based on 2004 survey, most trips are undertaken by non-motorized transportation (particularly walking by 37.7%) and numerous modes of transport such as small bus (20.9%), 2-wheeler (13.1%), car (7.5%), medium bus (5.4%), large bus (3.3%), or demand-responsive transportation services. In this exercise level work, we consider modal and technology shifts in transport by proposing three scenarios namely business as usual (BAU) and sustainable transport mechanism with and without carbon tax as countermeasures. The later scenario may consist of introducing of efficient vehicles including LNG/CNG based vehicles, investment in MRT and BRT systems, and supporting policy for electric vehicles.

Residential Sector

According to Indonesian Power, residential sector is the highest consumer of electricity which is more than 60% in 2011. Study by consortium of five universities (ITB, UGM, UNDIP, ITS, and UI) states that urban society consumes more energy than rural society; especially electricity, and it is hypothesized that urban society contributes more carbon. Furthermore, it is suggested to research urban residential sector which related to household equipments choice and their behavior. In this preliminary study we aim to analyze the pattern of Indonesia household in consuming energy in the framework of AIM/Enduse model. In particular we investigate the effect of replacement of kerosene stoves by LPG stoves and the trend of using saving energy lights. The outcome of this study is hopefully can be benefited to review electricity base tariff and subsidy.