As part of our work on metropolitan planning capacity building, CSUD identified the need for a sophisticated land-use/transportation model of the Nairobi metropolitan area. On the transport side, CSUD believed it was important to carefully model and understand both the dynamics of private vehicle and public transit behavior, which could bring strong results for development advising in the Metropolitan planning process. Moreover, such an integrated plan currently does not exist for Nairobi and transport decisions need to consider land-use current patterns and future implications.

Context

In recent years, a transportation study on Nairobi was led by the Japanese International Cooperation Agency’s (JICA) from 2004 – 2006; however this study focused on aspects of congestion without taking into consideration a land-use component. CSUD’s transport focus work is critical in terms of timing for two reasons. On one hand, there is constant pressure from foreign investors – Chinese, Japanese and German, when related to transport to help resolve Nairobi’s congestion issue which has greatly increased with the good economic situation in Kenya and lower car prices. The problem with this pressure is that it may seem like an easy investment at first, but it raises a major concern: it approaches transport from a private car only perspective and disregards public transit, the urban environment and social equity. On the other hand, the existence of the Ministry of Nairobi Metropolitan development provides a good window of opportunity to push a public transport agenda. To help boost interest in public transport as metropolitan planning came on the local agenda, CSUD has employed a number of approaches to illustrate the possibilities. We assisted in the creation of a workshop with Enrique Penalosa, and followed that with an article in the national press on his presentation. We have held meetings with Ministers of Transport, Local Government and Finance to show transport cases in other places in the world, development of transport and traffic modeling tools, preparation of a Transport Policy Matrix, etc.

Transport Model

The traffic congestion model is the first step of a broader strategy to introduce systematic transport planning analysis into the ongoing planning deliberations in metropolitan Nairobi. As the second component of the transport project, CSUD is working to ensure inclusion of long-term transport planning and policy analysis as an integral part of the Nairobi metropolitan planning process. In the furtherance of that goal, CSUD expects to have a transport model that aims to add two more modeling approaches to the traffic congestion model. These are a traditional four-step transport demand model, and a discrete choice model of Nairobi residents’ choices of neighborhood and transport mode. When taken together, these models will help Nairobi’s decision makers decide which transport-related policies and investments to make in order to begin to better align transport supply with demand.

Air Quality Pilot

The main goal of this pilot study is to develop a new way of approaching Air Quality as an important public health/environmental aspect of urban transport. This Air Quality Pilot Project would be done in partnership with WHO who can bring expertise and legitimacy in future interventions. It will be based on two main components:

1. Basic AQ Monitoring

This first component has to be investigated with WHO as they already have developed models for this purpose. The idea is to be able to put in place quickly with few data a monitoring system that would first give an idea of the existing situation and second would allow a public health/environmental assessment when an urban transport project is implemented and monitor the impact of such projects.

2. African City Road Design

From our experience in Nairobi, the road design by itself has been shown to be very important. The identity of the African city is very linked to the road and everything that is happening around it: market activity, matatus stops etc. The problem of this arrangement is that it creates traffic because of the matatus stopping to load and unload passengers, but also it creates a serious public health hazard (see figure 1). The population along the roads is particularly vulnerable to traffic accidents and bad air quality not only by breathing it but also by eating fruits and vegetables that have been exposed to a very intense pollution (concentration of PM2.5 is 550% above US standard according to a sample done by CSUD in 2006).

The problem is that we don’t want to lose the essence of this African city identity that is defined within this activity set up along the road. Moreover, all the Government’s initiatives to push away the street commercial activity have failed and when it has been a success is only because of the large quantity of barb wires used, but it comes with the inability to use of existing sidewalk for pedestrians. It is quite obvious that the use of the space along the streets/roads in Africa remains associated to market activity.

This project would look at design alternatives to reduce public health hazards for the population along the roads, while maintaining the activity. Items to be looked at would be the distance between the market areas and the road to prevent a too high air pollution exposition and a study of the impact of a vegetal barrier on this distance (see figure 2).

Design options will be key as they will have to keep the attractiveness of the location along the street to customers, and the easy “stop and shop” practice.

Traffic Model

In 2006 CSUD entered a collaborative effort with the Berkeley CoE to investigate traffic congestion issues in Nairobi with a modeling approach. Leveraging work from the CoE grant and a VREF Smaller Project Grant, CSUD has contracted a Berkeley CoE team, along with KIPPRA, for data analysis and modeling work on the Nairobi metropolitan area. A signed Letter of Intent (LOI) between CSUD and KIPPRA in December 2006 created a formal partnership and the framework for cooperation on the transport modeling project. KIPPRA is taking the lead on data collection in the Nairobi Metropolitan area and working closely with the Berkeley team on the ensuing traffic model development. Work is currently focused on the necessary data acquisition for the traffic model. Once the data has been collected, the ensuing model will allow for an initial assessment of three categories of strategies to improve the Nairobi transportation system: a) strategies that improve the vehicle-carrying capacity of the existing road and street system, b) strategies that improve the passenger-carrying capacity of the existing system, and c) demand management strategies for the existing system. Synergies between strategies will also be explored.