SP 2004-50 - ABSTRACT
MANUAL FOR SOCIAL IMPACT ASSESSMENT (SIA) OF FUT-PROJECTS

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ABSTRACT

Transport is a critical link between economic and social development. Effective transport systems allow people to get to their jobs, take care of their health, pursue education, and obtain the necessary food and goods to support their daily existence. Likewise, poorly planned transport systems can perpetuate existing inequities, increase air and noise pollution, and add to the complexity of solving urban and planning dilemmas.

In the past decade, transport planning has begun to focus on an integrated approach to address social development issues. Since transport strategies result from the complex interrelationships existing between the physical environment and social, economic, and political activity, transport planning has become an important tool to address the needs of the community it serves.

The benefits of improving transport infrastructure have traditionally been measured by performance criteria, like improved connectivity, travel time, speeds and fuel savings. The costs of improvements in transport infrastructure are classically defined as construction cost, ongoing operations and maintenance cost. The benefits expected from a new project are increased connectivity, increased speed and reduced congestion. These criteria form the basis of the cost-benefit analyses, which judge the feasibility of these projects.

However, transport is a derived demand, i.e. transport is used only when the need to move exists, and the need to move is dictated by socio-economic requirements of the users. This implies that the necessity for movement, hence the use of transport infrastructure, is need/goal based; i.e. people do not move for the sake of moving, they move to get to work, education, recreation, health etc. which will finally enable them to improve their social and economic well being. At the same time, the "users" of the transport system are a heterogeneous mix of people of different socio-economic classes, with different needs and desires and differing needs of movement. These differential concerns make the task of assessing the feasibility of a project more complex – some users may benefit, some may not, and some may not be affected at all. Also, there may be a category of non-users of the project – people who are not the target group or the stakeholders – who may experience an indirect impact of the project. The classical cost-benefit analysis, then, needs to be replaced by a socio-economic impact assessment methodology (SEIA) to get a measure of expected benefits to different groups.

The objective of this Manual is to understand the impact of large transport projects on the urban poor and to propose a socio-economic impact assessment methodology (SEIA) which can be integrated in the impact assessment studies of such projects. The focus of this work is to understand how accessibility and mobility affect the socio-economic well-being (SEWB) of the urban poor and how indices of accessibility and mobility can be integrated in SEIA methods. The hypotheses of the study are (a) Introduction of the Metro rail system in Delhi has changed the accessibility for the urban poor, and (b) This change in accessibility has changed the mobility profile and the socio-economic well-being of the urban poor.

The methodology delineated in this manual is based on assessing the impact of the Delhi metro rail on the urban poor living in the vicinity of the metro line and those relocated due to the metro construction by collecting household survey based primary data. This dataset is used to derive indicators of accessibility, mobility and SEWB. The indicators are then aggregated into indices of accessibility, mobility and SEWB by using the Principal Component Analysis technique. The change in indicators and indices in the before and after metro scenarios is used to assess the significance of the impact of the metro project on the urban poor. The correlation between accessibility, mobility and SEWB is modeled using linear regression to illustrate that the change in accessibility and mobility due to a transport project changes the SEWB of the community.

The results of the case-study show that for the poor households in the vicinity of the metro line there is no significant impact on the indicators of SEWB and mobility. With regard to the accessibility of the households, while the landuse accessibility remains unchanged, the transport accessibility has changed as distance to the bus stops has increased for 19% of the households and bus services have become non-existent for 33% of the households. On the other hand, for poor households relocated due to the Metro there has been a significant negative impact on the indicators of accessibility, mobility and SEWB. The land-use accessibility has deteriorated as distance to education, health services and other urban services have increased for 52%, 63% and 52% of the households respectively. The transport accessibility has deteriorated even more as distance to bus stop has increased for 72% of the households and the bus frequency has seen an average decrease from 5 min to 63 min (almost 13 times). The mobility of the households has increased significantly. The PCTR for work has increased for 49% of the households and decreased for 30%, implying change in the number of trips made for work in the households. The share of NMVs amongst the mode used has decreased for 59% of the households. The mobility indicators for travel to work – distance, time and cost – have increased for 83%, 82% and 61% of the households respectively. The SEWB indicators most affected are female literacy (21% decrease), residency (100% decrease), Household income per person (66% decrease), Infrastructure rank score (33% decrease and 61% increase), and employment (8% decrease and 14% increase). The indicators of adult literacy and vehicle ownership show least change with 82% and 94% respectively in the no change category.

The results of the linear regression method used for thesis modeling indicate that SEWB is affected by indicators of both accessibility and mobility. The model indicates that SEWB is negatively correlated to spatial distance to education health and other urban services; it is positively correlated to PCTR for work, education and other purposes and it is negatively correlated to travel distance, time and cost. The significance of indicators changes with change in situation like the new metro line or relocation due to it. Analyzing the coefficients of the indicators to understand the significance of the contribution of the indicators of accessibility and mobility in explaining the SEWB of the households, the study shows that the PCTR for work is positively correlated with SEWB and has the highest coefficient in all datasets, indicating the mobility for work is important in ensuring their SEWB, whatever is their situation. Also, the cost of travel has no significance in explaining SEWB of the urban poor but it becomes significant when they are relocated and now have to pay heavily for the travel.

The study concludes that relocation due to the metro has had a significant negative impact on the SEWB of the poor households. It illustrates that though the urban poor are not expected users of the metro, their accessibility and mobility and hence their socio-economic well-being is affected by its introduction in the urban transport system. The study constructs a methodology to assess the impact of urban transport project on the urban poor which can be integrated in the traditional cost-benefit analysis to generate a holistic understanding of the impact of the project on society.