

Determination of Sustainability Criteria in Strategic Appraisal of Mass Transit Development Policy Evaluation in the Greater Jakarta Metropolitan Area

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Abstract: A Criterion is something that we use to assess in evaluating progress toward goals and objectives. The determination of the criteria is very important and crucial. This study has developed sustainability criteria by a method of election and appointment criteria based on sustainable transportation for strategic appraisal of mass transportation in the metropolitan areas of developing countries. This study has used Superimpose and Questionnaire Methods. There are 4 (four) issues on which to base that issues related principles of sustainable development, issue of the root causes of mass transportation in developing countries, problems of public transport system in developing countries which are unique and different from those in developed countries, then issues related to the consideration of multi interests of actors involved, and last but not least, issues that considerations of global development strategic objectives in the Millennium Development Goals (MDGs).

1. Background

Criteria is something that we use to assess in evaluating progress toward goals and objectives. Those criteria have many uses: they can help identify trends, predict problems, assessing options, setting performance targets, and evaluate the jurisdiction or organization. Mass transport infrastructure development in developing countries is not easy. Its impact is not limited to this time but is long-term.

Besides that, the organizing and operating of mass transportation engage many stakeholders with different interests which sometimes even contradict each other. With these consequences, it is necessary to consider a variety components, actors and stakeholders that involved in the implementation and operation of mass transit itself in a comprehensive assessment tools. The determination of the criteria is very important and crucial. It is important to carefully select criteria that reflect the overall goal. It is also important to be realistic when choosing criteria, data availability, ease to be understood and its use in decision making. This study has developed sustainability criteria by a method of election and appointment criteria based on sustainable transportation for strategic appraisal of mass transportation in the metropolitan areas of developing countries.

2. Methodology

Selection of an evaluation criteria based on the identification of stakeholder objectives and goals of the alternatives considered. In the methodology, analysis and assessment of the impact of multi-actor, the criteria for evaluation are the goals and objectives of the stakeholders, and not the effect or

impact of the action as is usually done in a multi-criteria analysis. In a natural way, this impact will be reflected in the objectives of the stakeholders (if all parties are in it).

This research attempts to develop criteria to be used in the Strategic Transport Appraisal for evaluation Mass Transportation Development Policy in a metropolitan area of developing countries by using the approach of Multi Actor Multi Criteria Analysis (MAMCA). MAMCA originally developed by [3]. In this method, each actor allowed to develop criteria in accordance with the objectives to be achieved by each of the actors. In this study, which evaluated the criteria developed in the conceptual framework as shown in the following diagram:

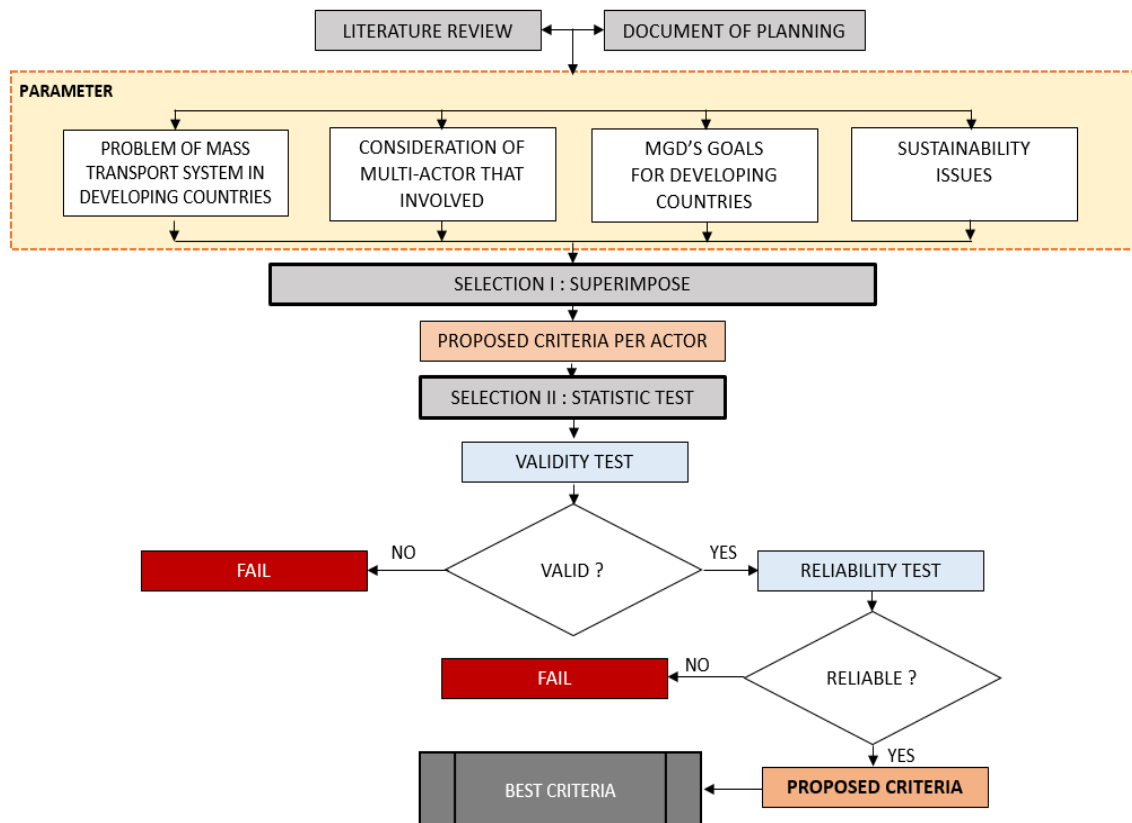


Fig 1. Process of determining the criteria for the analysis of multi-actor and impact assessments

3. Candidate of Criteria (Long List Option)

Selection and definition of evaluation criteria based primarily on the identification of stakeholder objectives and goals of the alternatives considered. With this information, hierarchical decision tree (hierarchical decision tree) can be made. In MAMCA methodology, criteria for evaluation are the goals and objectives of the stakeholders, and not the effect or impact of the action as is usually done in a multi-criteria analysis. In a natural way, this impact will be reflected in the objectives of the stakeholders (if all parties are in it).

3.1.Objective criteria for Sustainability

Criteria is something that we use to assess in evaluating progress toward goals and objectives. Those criteria have many uses: they can help identify trends, predict problems, assessing options,

setting performance targets, and evaluate the jurisdiction or organization. It is important to carefully select criteria that reflect the overall goal. It is also important to be realistic when choosing criteria, data availability, ease to be understood and its use in decision making [2]. The criteria for sustainability assessment study include:

- Economic Criteria
- Social Criteria
- Environmental Criteria

Selection of public transport modes is an important decision in a new planning or development plans public transit systems that already exist. Decision making is very important. This selection not only determines the type of technology, operating systems and network characteristics planned, because through the elements - these elements will affect the pattern of physical development of urban, economic activity as well as social and environmental conditions of the region. Characteristic modes - public transport modes vary widely, there are some parts are quite interesting, and there are varying impacts that should be considered in the planning. Both were good analysis of absolute and comparative analysis of intermodal is a fairly complex.

3.2.Root Problems of Mass Transportation in Developing Countries

Problem of mass transport system in developing countries are unique and different from those happen in developed countries [4]. The identification results conducted by researchers from several related literature managed to identify some of the root problems in the operational of mass transit system in developing countries (included the Greater Jakarta Area) can be mapped 7 (seven) the root causes of the principal problems related to mass transportation in a metropolitan area in developing countries, namely:

1. The problem of coordination among agencies and stakeholders / actors involved
2. The problem of the balance between demand and supply
3. The problem of inadequate financing and subsidy system that is not appropriate
4. Problems that are not participatory and comprehensive planning among the autonomy region in the metropolitan area.
5. Problem of minimum service standards that are not accountable (coverage area system, feeder systems (integration between modes), inadequate transport supply and problem of service
6. Problems of urban development and transport policy between regions (core and buffer region) that have not been well integrated.
7. The problem has not noticed linkages with economic, social and environmental (sustainability) adequately (social and environmental problems that are still marginalized)

3.3.Consideration of Multi Interests Actors Involved

Organization of mass transport systems involves many interests of the various actors involved. Every component involved in the implementation of public transit systems have different criteria and objectives, so often collide.

Thus, criteria and / or indicator ratings wherever possible to consider the interests of each stakeholder group are needed. Of course, since the relationship between stakeholders in urban public transport system is very complicated and interdependent, a very basic need for planning and implementation in the urban public transport system is the regulation, to keep all the "players" on the right track.

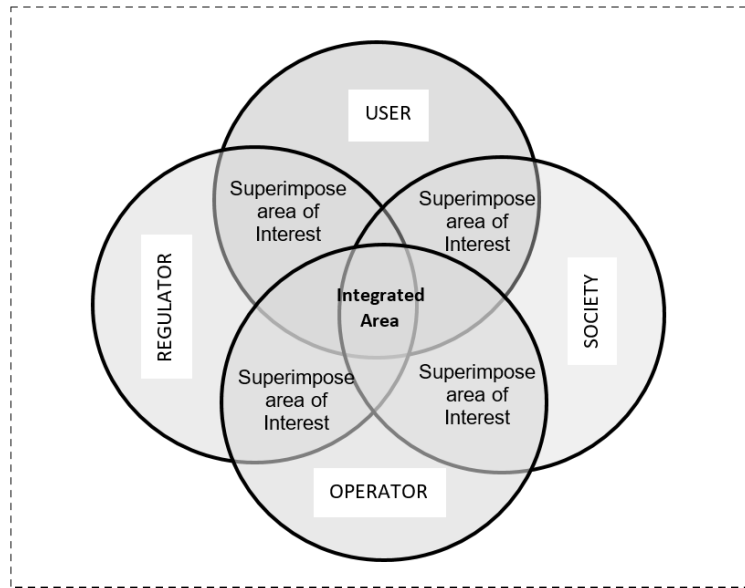


Fig 2. Description multi-aspect of properties in various interest / purpose operational actors in urban mass transit

3.4.Consideration Achievement In the Millennium Development Goals (MDGs)

As an instrument of decision makers who are at a strategic level, it is one of the strategic objectives of development achievement refers to the Global MDGs. MDGs are the result of an agreement the Millennium Declaration heads of state and representatives from 189 countries of the United Nations (UN), which starts in September 2000, in the form of an eight-point goal to be achieved by the state of the world [1]. The target is reached welfare and community development. Although the initial target of the MDGs is 2015, but many countries remain committed to make the post target of 2015 as a reference target achievement of development (otherwise known as the Post-2015 MDGs).

Achievement of the MDGs in Indonesia will be the basis for a cooperation agreement and its implementation in the future. This includes campaigns for debt swap agreement for developing countries in line with the Jakarta Declaration on MDGs in Asia and the Pacific region.

4. Analysis (Short List Option)

4.1. Selection Phase I (Superimpose between parameter of criteria)

In the first stage selection is done super impose on various basis of decision criteria that have been mentioned above. The process of this super-impose most of this can be seen in figure 2.

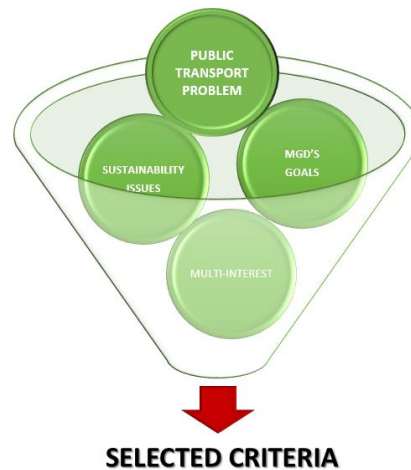


Fig 3. Process of Superimpose Criteria

4.2. Selection Phase II (Results of Short List Option)

In this stage will test each item of criteria that produce by superimpose method by questionnaire instrument. Result of questionnaire survey then test using statistical tests such as validity and reliability testing on each criterion for each actor in each level of authority. These test results can be eliminated the invalid and unreliable criteria.

Furthermore, based on the analysis above, then by considering fairness factors and the achievement of sustainability goals are the same from all actors / stakeholders, it can researchers synthesize and then formulated the assessment criteria for the assessment of mass transportation, especially in developing countries prior specifically in the area of Indonesia (The Jakarta Greater Metropolitan Area) are as follows:

Table 1. Results (short list) of chosen criteria
(E.g. Economic Parameter)

STAKEHOLDER	USER			OPERATOR		
OBJECTIVE OF SUSTAINABILITY	CHOSEN CRITERIA	TARGET	BENCHMARK	CHOSEN CRITERIA	TARGET	BENCHMARK
Economic Productivity	1 Allocation of expenses for transport (Transport Efficiency in Use)	Efficient of Financing and Incentives / Efficiency of Funding	Efficient financing (street, parking, insurance, fuel, etc.).	1 Investment Cost Efficient	Operating efficiency	Development of Low Cost
Economic Efficiency and Energy	2 Rates Transportation (Transportation Cost Offers)	Maximize cost efficiency and affordability Cost	Transport rates Inexpensive and Affordable	2 Low Operating Costs and Care Easier	Energy efficiency	Low Operating Costs and Care Easier
Efficiency of Transport Operational	3 Affordability and Availability	The entire population can be affordable in accessing basic services and activities (essential).	Walk distance (distance between stations) adequate availability of transportation all the time	3 Capacity and Reliability Services	Community development	The ability to pack, a carrying capacity in peak time and excellent service
Productivity, operation and Transport system service	4 Travel Time, Frequency and Headway	Transportation System Efficiency	Schedule adequate, high travel speed, high frequency	4 Cycle Speed	Transportation System Efficiency	Schedule adequate, high travel speed, high frequency
Economic Development	5 Flexibility (Easily Accessible and Switching Modes)	Transport System Integration	Availability of facilities Transfers between Moda, Moda Ease Synergy with Other Modes	5 Advantages Provided by (Rapid Return on Investment)	Economic productivity	Rapid Payback Period, Facility Expansion

Table 3 (continued)

STAKEHOLDER OBJECTIVE OF SUSTAINABILITY	REGULATOR			SOCIETY		
	CHOSEN CRITERIA	TARGET	BENCHMARK	CHOSEN CRITERIA	TARGET	BENCHMARK
Economic Productivity	1 GDP per capita per Capacity Mode	Transportation System Efficiency	Estimates Increased GDP per capita as a result of development of transport infrastructure	1 Allocation of expenses for transport (efficiency in the Use of Transport)	Financing and incentives Efficient / Efficiency Funding	Efficient financing (street, parking, insurance, fuel, etc.).
Economic Efficiency and Energy	2 Efficient Implementation System and Funding	The efficient operation and management of assets	The use of government resources and the community are minimal	2 Minimizing Fuel Consumption Per Capita Imports	Congestion Cost Reduction and Energy Wastage	Reduce the use of road space and the use of fossil fuel
Efficiency of Transport Operational	3 Supporting the Local Industry	Business and economic development	Use of local content in the process of development and operation	3 Affordability and Availability	The entire population can be affordable in accessing basic services and activities (essential).	Distance Walk (distance between station) adequate availability of transportation all the time
Productivity, operation and Transport system service	4 Congestion Cost reduction per capita	Congestion Cost Reduction and Energy Wastage	Reduce the use of road space and the use of fossil fuel	4 Congestion Cost reduction per capita	Congestion Cost Reduction and Energy Wastage	Reduce the use of road space and the use of fossil fuel
Economic Development	5 Supports Regional Economic Improvement	Community Development, business and economics	Acceleration of regional development	5 Ease of Access (Easily Accessed By Users Nor Not Good)	Transport System Integration	Availability of facilities Transfers between Moda, Moda Ease Synergy with Other Modes

This analysis was performed for all parameters include parameter economic, social, environmental and operational technical also all the actors involved (users, operators, regulators and society)

5. Conclusion

Based on these results, the use of criteria is limited to only one type of criteria for all stakeholders (with different interests) less able to describe and interpret the desire of each of the actors involved. Through a process conducted in this study were carried out gradually and systematically, it can produce criteria that meet the goals and objectives to be achieved by each actor.

Determination of criteria for becoming a crucial thing, because making mistakes parameters, criteria and indicators will have an impact on the results of studies conducted.

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