Transport Strategic Appraisal: A Comprehensive Decision Making Approach to Collaborate Participatory and Technocratic Processes in Strategic Planning Level for Determining Priority of Mass Transport Development Policy

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Abstract. Development of mass transportation policy in a metropolitan area has a fairly extensive complexity (multi-aspect and multi-dimensional), hence, it is within the scope of strategic planning. Thus, to assess, evaluate a mass transport policy should also be placed on a strategic level. The problems are, devices and system that can be used for this study is still very limited, especially in countries - developing countries. The number of parties (actors), interest (criteria) and different levels of authority requires a good system, and be able to elaborate on the multi-dimensional condition. This study took Jakarta Metropolitan Area as a study case; a large agglomeration area consisting of the main cities, namely Jakarta with some buffer cities such as Bogor, Tangerang, Depok and Bekasi. In this research, a participatory approach developed by combining Multi Actor Multi Criteria Analysis (MAMCA) which has been well developed with fuzzy approach. While the technocratic approach through the analysis procedure expert judgment using the Modification of Rapid Impact Assessment Matrix and analysis of the characteristics of mass transportation on any policy alternatives. This research successfully developed a transport strategic appraisal decision making system that can use to determining the selection of policy priorities in the development of mass transport in an agglomeration metropolitan area especially in developing country.

1. Background

In a process of policy appraisal, end point often comes down to a stage of decision-making to determine or choose the best recommendations from many alternatives. There are many factors that influence and affect each other in such a way to form a comprehensive system. According to [2], the system has defined as a unified procedure or components that are interrelated each other to work together in accordance with the rules that applied to form a common purpose. In a system if there is one part is not working properly or damaged, then the goal can be an error in its output.

On the other hand, the decision making is the study of identifying and choosing alternatives based on the values and preferences of the decision maker. Making a decision implies that there are some alternatives or options to be considered, and in such cases is not only to identify as many possible alternative but to choose the one that best suits the goals, desires, values, and so on [3]. According [4] decision is a reaction to some alternative solutions conscious by analyzing the possibilities of such alternatives together with its consequences.

Furthermore, [4] concluded that the decision-making is a process of selection of alternative actions to achieve specific goals or objectives. Decision-making is done by a systematic approach to the problem through the process of collecting data into information, and coupled with the factors that need to be considered in decision making.

According to [7] the construction of the mass transit system is basically a matter that is quite complex, because it is not only related to how the system was planned and built, but because it involves many parties and interdependent in the process of operational sustainability and the impact that may result. Within the framework of this complexity, [8] stated that planning mass transit system is within the scope of strategic planning. Thus, to assess and to evaluate a mass transport policy should also be placed on a strategic level (not on project level). The problem is, devices that can be used for this study (strategic appraisal) is still very limited, especially in developing countries.

This study seeks to bridge the associated need a decision-making system that can accommodate a variety of parties, interests and authority over the selection of priority development of mass transport in a metropolitan area of developing countries. In this study attempted to increase the participation of many parties on the one hand in the decision making (especially at the level of strategic planning) and combined with technical approaches technocratic on the other hand.

2. Strategic Appraisal and Usefulness

Appraisal process is one stage of activity is important from a series of activities the development of infrastructure. Appraisal process is increasingly perceived importance these days in which resources, both time, human resources and funds, increasingly scarce. At first, the appraisal process carried out at the request of donors, both parties to lend funds for project activities or parties acting as an investor. The purpose of an appraisal phase is to assess the extent of the feasibility of an infrastructure development plan that will be implemented, so that limited resources can be allocated appropriately, efficiently and effectively.

In recent periods, being recognized by many researchers as presented by [1] that the fundamental problem in the assessment process not only at the project level, but further upstream that's requirements for the assessment process at the strategic level, namely strategic decision making (strategic decision), which is the decision-making at the level of programs, plans and policies (program, plan and policy). At this level appears difficult to "measure and assess" the decision-making, especially at the policy level. This is very important because of the "failure" and the error of analysis will impact policy decisions domino on errors in the process of implementation (project level) and ultimately negatively impact a very large and long-term are borne by society. According to the World Bank cited [8], some steps to address the problems of urban transport (increase accessibility and mobility) and to overcome traffic congestion can be done with the scheme:

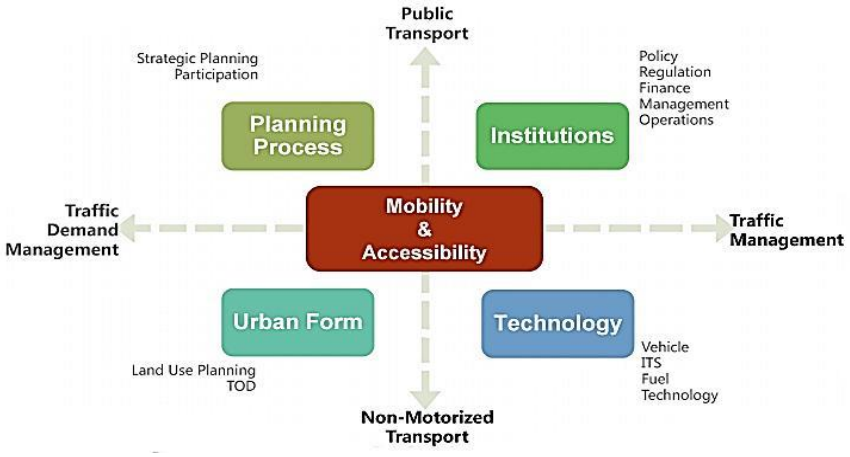

Figure 1. The position of the mass transit system planning studies
Source: Ref. [8]

Thus, the appraisal to a development plan mass transportation systems can be positioned as follows:

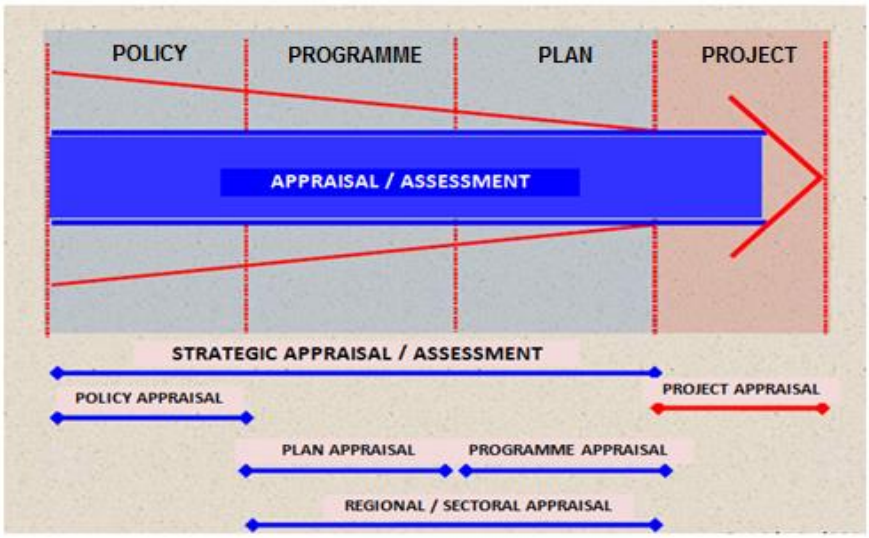

Figure 2. Position appraisal mass transportation systems in strategic appraisal
Source: Ref. [1]

According to [5] definition of policy, plan and program:

- Policy : a general course of action or proposed overall direction that a government is or will be pursuing and that guides ongoing decision-making.
- Plan : a purposeful, forward-looking strategy or design, often with co-ordinated priorities, options and measures that elaborate and implement the policy.
- Programme : a coherent organised agenda or schedule of commitments, proposals, instruments and/or activities that elaborates and implements the policy.

From the definition put forward by [5] above, it seems clear that the "role" policy is very large in influencing the planning, the program got to the stage of project implementation. According to [6] the strategic significance itself there are three main meanings, namely:

• First : The assessment process in a long period of time horizon;
• Secondly : There is a perspective that is integrated or systemic applied and include transportation systems and their interrelationships with other systems such as the environment or the economy,
• Third : spatial scope of our strategic review of policies and programs aimed at transport not on the assessment of the project.

Thus it is quite a lot of coverage in the policy of mass transportation. There are several studies related transport policy appraisal in some countries that have been reviewed in this study. Based on these results, the range of policy issues related to transportation, especially mass transit construction there are at least 17 (seventeen) transport policy research issues by using available tools, whether applied independently or in combination such as selection modes, transport forecasting, a dynamic analysis, the economic impact of macro and others.

3. Strategic Appraisal in Mass Transportation Development Policy Evaluation

Some of the conditions involved in the organization of mass transport a metropolitan area include among others:

3.1. Multi-Actor (Multi-Stakeholder)

The number of components involved and / or interested in the operation of the transportation system and associated with its implementation, especially in the Greater Jakarta Metropolitan Region, can be seen in Figure 3 that shows the complexity of relationships that occur in the construction and operation of mass transportation in Indonesia in The Greater Jakarta Metropolitan area cases that occur at this time.

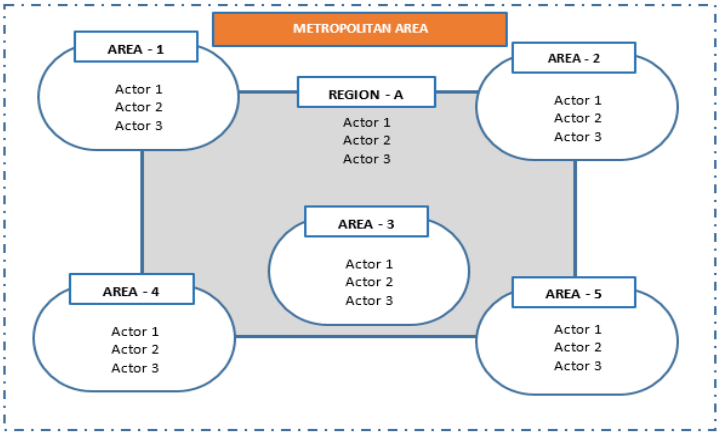

Fig 3. Integration of multi actors - institutions in the management and delivery of public transport in the metropolitan area

3.2. Multi-Purpose / Criteria

Every component involved in the implementation of public transit systems have the criteria and objectives are different, so often collide. According [9] there are several requirements related requirements of the public transportation system in relation to the three main groups (user / users, operators and regulators / government) are:

Table 1. Public transit system requirements

Public Transit System Requirements		
User	**Operator**	**Society/ Government**
Availability	Area Coverage	Capabilities Attractive Passengers
Frequency / Headway	Reliability	Cost System
Punctuality	Speed Of Cycle	Reliability In Emergencies
Speed / Travel Time	Capacity	Social Interest
Comfort	Flexibility	The Environmental Impact
Availability Of Facilities	Security And Safety	Energy Consumption
Security And Safety	Costs And Benefits	Long-Term Impact
user cost	Capabilities Attractive Passengers	
	Minimize the Side Effects	

Source: Ref. [9]

"Multi" conditions here reflects the conflict of interest. These multi-aspect happened because there is a need of integration of the area into one service area. For example, the interests/purposes of "user" area 1 is different from the user area 2. If region 1 and region 2 integrated then conflict will arise. This is called MULTI PURPOSE.

3.3. Multi-Level Authority Decision Makers

In the implementation of the policy of mass transportation in a metropolitan region will basically involve some autonomous regions with different levels of authority, also have goals and interests in looking at a problem. Thus there are several components level decision makers who have the role and each interests whether from the standpoint of regional autonomy or from the perspective of the movement performed.

In simple way, in the case of Indonesia, the authority level decision makers include: central/national level, provincial level and the level of district / city. Many large cities that build stakeholder forum that is responsible for overseeing the government's policy in the development of transportation. However, until now, forums like this does not work well for synergy development between regions. The levels of these powers in turn affects the interests of the different also.

4. Developing Strategic Appraisal System in Mass Transportation Development Policy Evaluation

Based on the conceptual framework is drawn below, the mindset of the study prepared as the basis of the conduct of the study, as can be seen in Figure 4. This line of thought in the research model can be classified on the definition of improvement (improvement methods). Components of the model framework of this research is the criterion, the proposed system, objectives, and performance measurement. In this study, the data used is derived from a questionnaire survey data from various actors and relevant stakeholders, while at the stage of expert judgment from among experts in the field of urban transport. While the method (Proposed System) is using the development of multi-actor analysis, the study of expert judgment, multi-level analysis and aggregation processes and the exploitation to which developed into a unified system of decision-making at the stage of coherent (sequential stages).

Criteria used in the study was the criteria concerning the selection of the best on the policy development of mass transportation at the strategic level are synthesized from some of the accomplishments that the sustainability criteria, the criteria MDGs, the problem of mass transport urban conditions metropolitan areas in the developing countries, in this case especially in Greater Jakarta (Indonesia). Objectives at the completion of the research is the development of decision-making system, especially for the evaluation and selection policy of mass transportation in the metropolitan area of developing countries that have the ease of implementation and capable of elaborating the interests of many parties. Proof result of the system being developed this form of Measurements using a sensitivity analysis, validation of qualitative and quantitative validation using non-parametric statistical analysis.

5. Conclusion

Based on the result of the development system of decision making at strategic appraisal policy of mass transportation in the metropolitan areas of developing countries with case studies The Greater Jakarta Metropolitan Area, can be summed up some of the findings of excellence this study compared the results of similar studies or existing ones is that this research has succeeded in developing a systematic stages of decision-making system on strategic appraisal of mass transportation development policy in the metropolitan area in developing countries (Indonesia) and can accommodate the consensus and achievement of common goals in mass transportation stakeholder.

More comprehensive research is needed for this type of broader policies in the region - the region in developing countries, in order to obtain better robust system.

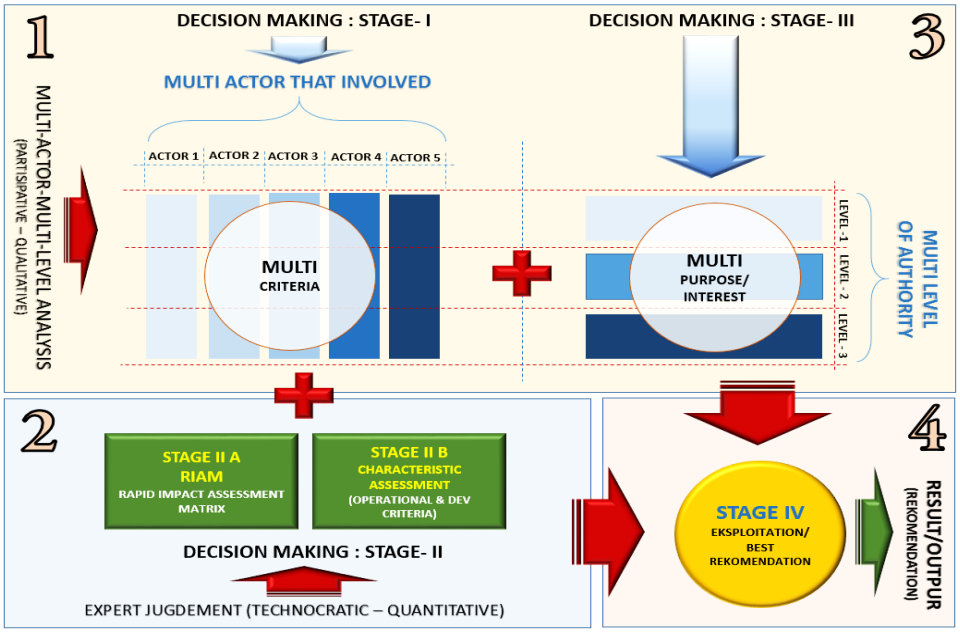

Figure 4. Conceptual Framework of the strategic appraisal system proposed

References

[1] Adelle C. and Weiland S, " Policy Assessment: the state of the art ", ***Impact Assessment and Project Appraisal Journal***, 30:1, 25-33, 2012

[2] Kadir A., "Information System: Introduction", ***ANDI Publisher ,*** Yogyakarta, 2003

[3] Harris, R., "Introduction to Decision Making", ***VirtualSalt.***, http://www.virtualsalt.com/crebook5.htm, 1998

[4] Herlambang S. and Tanuwijaya H., "Information System", ***Graha Ilmu Publisher***, Yogyakarta, 2005

[5] Sadler B. and Verheem R. "Strategic Environmental Assessment: Status, Challenges and Future Directions". Ministry of Housing, ***Spatial Planning and the Environment, The Netherlands, and The International Study of Effectiveness of Environmental Assessment***, 1996

[6] Schade, W and Rothengatter, "Strategic Sustainability Analysis (SSA) Broadening Existing Assessment Approaches for Transport Policies ", ***Paper Presented in the 3rd Biennial Conference of the European Society for Ecological Economics Entitled Transitions Towards a Sustainable Europe: Ecology - Economy - Policy Vienna***, 2000

[7] Susilo et.at, "A Reflection of Motorization and Public Transport In Jakarta Metropolitan Area", ***Journal of IATSS Research*** Vol.31 No.1, 2007

[8] Suzuki, Hiroaki, Cervero, Robert, Iuchi, Kanako., "Transforming Cities with Transit : Transit and Land-Use Integration for Sustainable Urban Development ", Urban development;. Washington, DC: ***World Bank***, 2013 https://openknowledge.worldbank.org/handle/10986/12233 License: CC BY 3.0 IGO.", 2013, download at 6 March 2016,

[9] Vuchic, Vukan R, "Urban Transit : Operations, Planning and Economics", ***John Willey and Sons, Inc***, New Jersey, 2005