

# 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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**Keywords:** Transport Strategic Appraisal, Mass Transport Policy and Decision Making

**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 [1], 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 [2]. According [3] decision is a reaction to some alternative solutions conscious by analyzing the possibilities of such alternatives together with its consequences. Each decision will make the final choice, can be either actions or opinions. It all started when we need to do something but do not know what to do. For that decisions could be perceived rational or irrational, and can be based on the assumption of strong or weak assumptions.

Furthermore, [3] 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. Many parties acknowledged that the decision-making need not be a rational process, but the information from the assessment is still a key factor in the decision stand. Often considered decision making as a complex interaction of information, interests and opinions and of groups in society on the one hand, and democratic action and political skills on the other side. In transport policy decisions are usually quite distinctive has broad implications because it involves many parties and affects many sectors of the decisions taken.

Development of transport infrastructure is often become a stimulant and directions for development of a region. Even the impact of the transport infrastructure investment in an area especially for socio-economic growth, usually not only for the region itself, but also have an impact on the surrounding area even in a broader spectrum. One of the transport policy that has broad enough implications in development policies are urban mass transit systems development policy. It is undeniable that the development of mass transportation infrastructure could boost production in economic activity, improve social welfare and stimulate spatial development on one side. But, it cannot be ignored that there are also many negative effects caused by the plan on the other. In the context of decision-making, non-technical factors such as interest and political factors often dominate decision-making process in the developing countries. According to [4] 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, [5] 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 countries - 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, however, because decisions taken will affect the condition of one or even many regions, various conditions of the people and it will certainly affect the interests of the actors involved in the construction and operation of the mass transit system.

## **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. Initially, the aspects that were studied only purely in financial aspect, so that the feasibility study is only done on projects involving individual investors or institutions, such as whiskers: articulated bus operation projects as a means of public transport. But with the increasing awareness of the technical, environmental and equity, the aspects examined in a feasibility study, the more comprehensively. In addition, projects that do the appraisal even more diverse, not only projects involving individual investors or institutions, but further, that general infrastructure projects,

with funding provided by the government or the people. In the context of this public infrastructure projects, his review not only the financial aspect, but the other aspects.

In recent periods, being recognized by many researchers as presented by [6] 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 [5], some steps to address the problems of urban transport (increase accessibility and mobility) and to overcome traffic congestion can be done with the scheme:

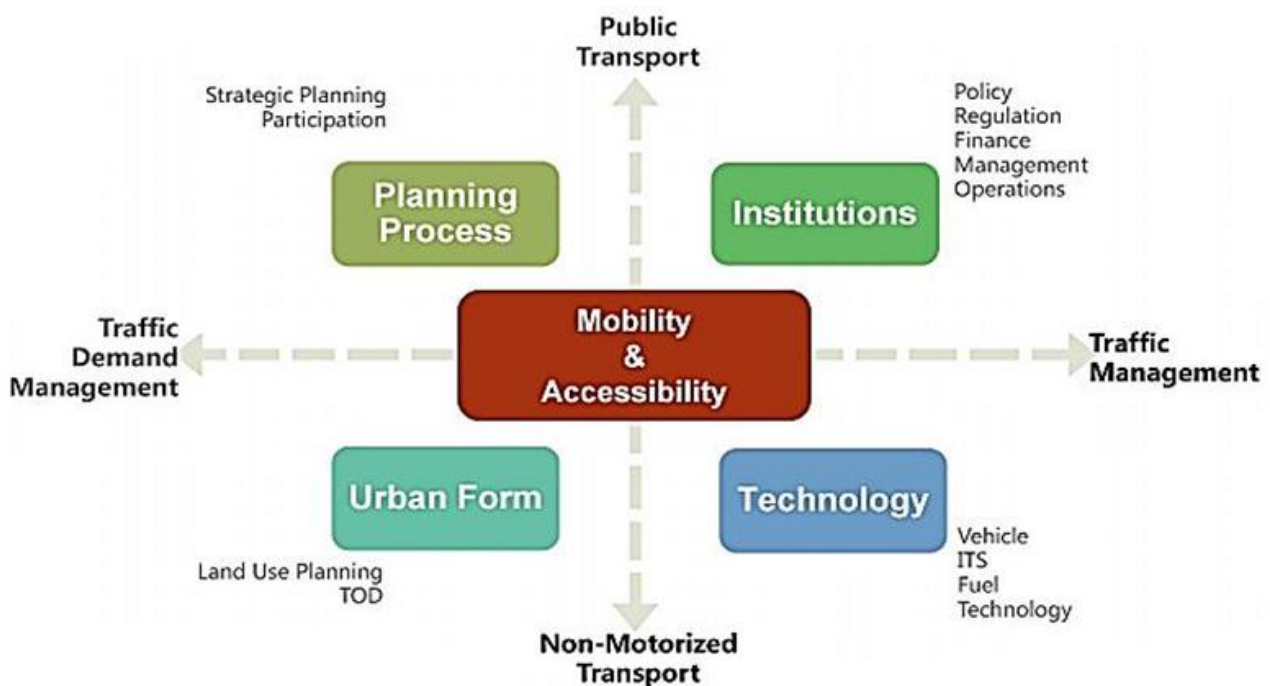


Fig. 1. The position of the mass transit system planning studies  
Source: ref. [5]

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

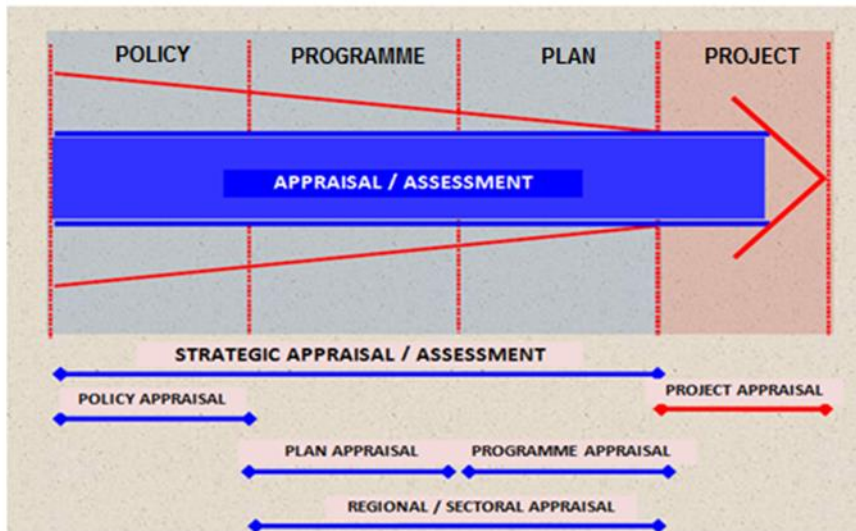


Fig. 2. Position appraisal mass transportation systems in strategic appraisal  
Source: ref. [6]

According to [7] 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 [7] above, it seems clear that the "role" policy is very large in influencing the planning, the program got to the stage of project implementation. For the determination of the policy must be reckoned with, both in order not to cause problems behind a long day. However, in countries - developing countries, the policy assessment at the strategic level, there is no or not yet well developed. This condition is associated with the shortage of funds, resources and desire an effort to generate value greater benefit to the community but do not have the "objective" and "comprehensive".

The impact of the strategic assessment was not carried out another appraisal is that there is difficulty in determining the choice of plans and policy development priorities. Plan package that very many in number and variety "as if" has the same importance in an effort to accelerate the progress of public welfare, ultimately used is subjective and partial considerations, and influenced by special interests (read: politics). Under these conditions, the lack of objective and transparent assessment tool in strategic levels can produce negative impact on society and the environment in the long term.

Besides strategic appraisal on a wider scale aim is to streamline and make efficient use of resources optimally. With limited resources available choosing between a wide ranges of policies to do, so that only infrastructure development plan that is absolutely necessary and appropriate / accommodate the interests of various parties are elected. Or, in other words, the allocation of resources can be done only on a program or a plan that has a high ethical level.

In the process of strategic planning, appraisal processes play a key role as the feasibility of selection and implementation of the next stage. Through the process of appraisal well, the possibilities are related to the implementation of the action plan can be identified early. With a very strategic position, strategic appraisal process can recommend whether the infrastructure development

plan with a very large amount of costs that can be implemented or not. Mistake or un-optimal analysis of the appraisal process will result in errors in decision-making processes that have implications for the implementation of the proposed investment.

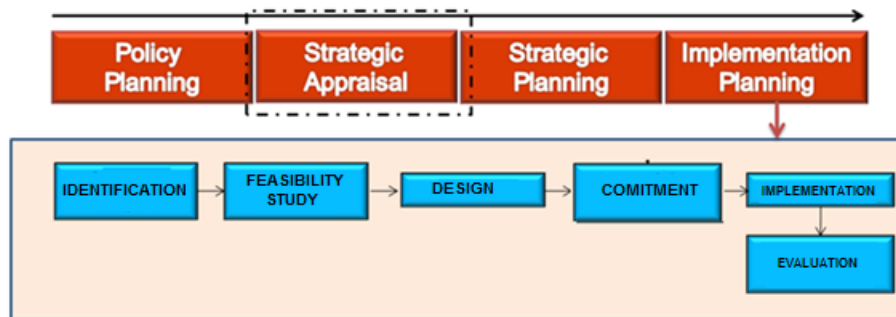


Fig. 3. Position in the appraisal process of strategic planning

According to [8] 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:

1. Selection Modes;
2. Distribution / equity;
3. The environmental assessment;
4. Environmental policy related to the type of vehicle;
5. Regional Analysis;
6. Forecasting Transport (Transport Forecasting);
7. Forecasting Traffic / network;
8. A dynamic analysis;
9. The economic impact of macro;
10. The new transport technology;
11. Analysis of the life cycle;
12. Inter-modality;
13. Inter-operability;
14. Logistics;
15. Separation (decoupling);
16. The quality indicator, and
17. Cost / rate / quality.

### 3. Strategic Appraisal in Mass Transportation Development Policy Evaluation

The relationship between stakeholders in an urban public transport system is very complicated and intertwined with the very basic needs for planning and implementation in the urban public transport system to keep all the "players" on the right track through good regulation. Some of the conditions involved in the organization of mass transport a metropolitan area include among others:

#### 3.1 Multi-Actor (Multi-Stakeholder)

Which is the number of components involved and / or interested in the operation of the transportation system. Associated with its implementation, especially in the Greater Jakarta Metropolitan Region, can be seen in Figure 4 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.

Figure 4 also describes the condition of the delivery of public transport in the Greater Jakarta Metropolitan area (Jakarta, Bogor, Depok, Tangerang and Bekasi) involves many parties. In the case relevant regulator in this case includes the central government (Ministry of Transportation, Ministry of Public Works, Ministry of National Development Planning Agency ), the provincial government (DKI Jakarta Provincial Government, Provincial Government of Banten and West Java Provincial Government) and the district / city government (Government of Bekasi City, Bekasi District Government, the Mayor and the District of Bogor, Tangerang City and Tangerang District Government). In addition there are other components involved, that the operators (Organda, PT. KAI and other freight carriers), as well as users and the public.

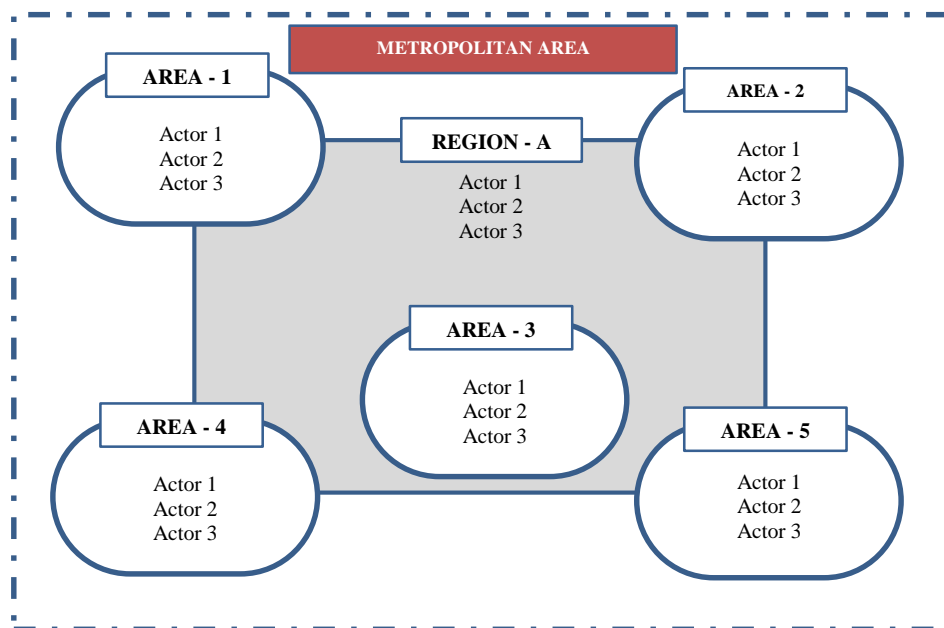


Fig. 4. Integration of multi actors - institutions in the management and delivery of public transport in the metropolitan area

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. Thus, the need for criteria and / or indicator ratings wherever possible to consider the interests of each stakeholder group. According Vuchic (2005) there are several requirements related requirements of the public transportation system in relation to the three main groups (user / users, operators and regulators / government) is:

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. 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.

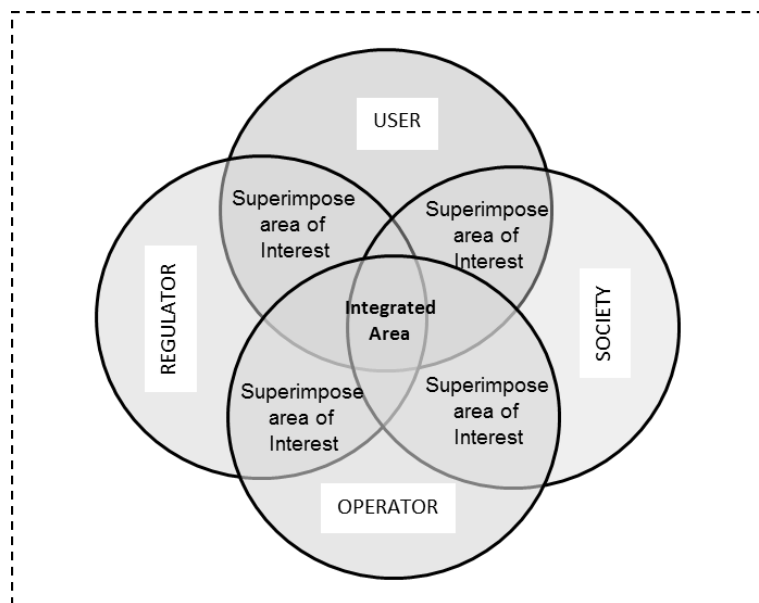


Fig. 5. Description multi-aspect of properties in various interest / purpose operational actors in urban mass transit

### 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 up, the mindset of the study prepared as the basis of the conduct of the study, as can be seen in Figure 6. 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.

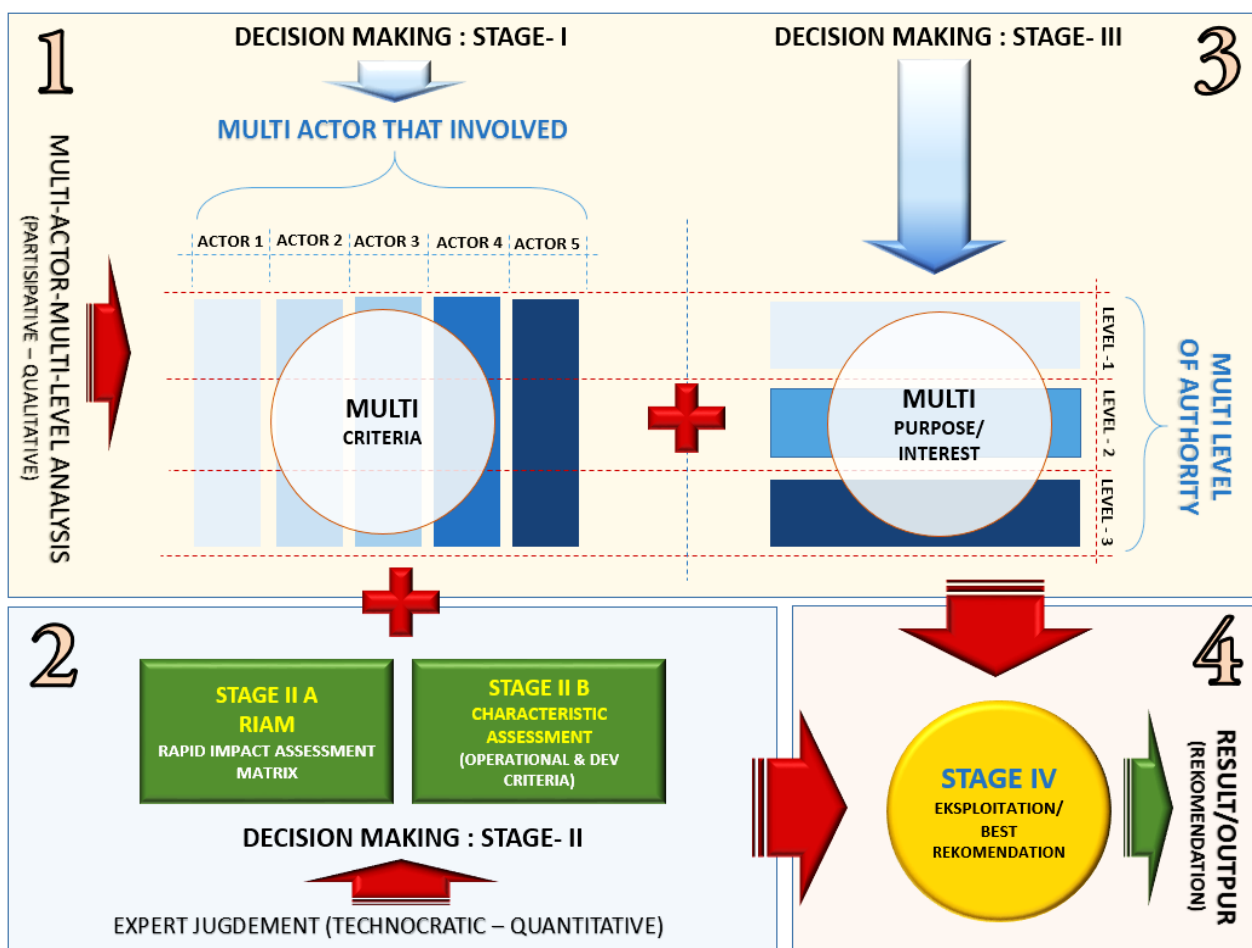


Fig. 6. Conceptual Framework of the strategic appraisal system proposed



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.

The relationship between the stakeholders in urban public transport system is very complex and interdependent, and to keep all the "players" on the right track has been successfully demonstrated by results of this research that has a high validity and in accordance with the needs of development in urban transportation policy in developing countries particularly in the area of this study (The Greater Jakarta).

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.

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