

Matrix Sustainable Strategies Compatibility Analysis of Malaysia's Sustainable Development Strategies in Three-Tier Development Plan System

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Abstract: Sustainable development is widely explained throughout the planning world as a very important approach in balancing the use of limited resources for future needs. One of the best endeavours to implement the theory and concept of sustainability is through the adoption in the development plan system. However, standard and precise sustainable assessment method is needed to evaluate the sustainability of strategies, policies, plans, programs and projects of development plan. Thus, in this study Matrix Sustainable Strategies Compatibility Analysis is developed and used to evaluate the integration of sustainable strategies formulated in Malaysia's three-tier development plan system. National Physical Plan was selected as core reference in evaluating its compatibility with other national, state and local plan sustainable strategies. The result of assessment is significant to figure out the integration of development plan system and the importance of clear interpretation of sustainable strategies.

Key words: Matrix Compatibility Analysis • Matrix Sustainable Strategies Compatibility Analysis • Sustainable Development • Development Plan • Local Plan

INTRODUCTION

Sustainable development is one of Malaysia's development strategies focuses to become a fully developed nation by the year 2020 through the effective strategic planning. Strategic planning is a driven force of development that relates to scarce resource of land and sustainability goal measurement which is importance in planning and development process [9]. However, there is an issue on how the sustainable strategies formulated from national and state is integrate to the local level. The compatibleness strategies to each level are necessary in achieving the aim of sustainable development [2].

The result from sustainability assessment will useful to set a benchmark for policy enhancement and the key information for further action of planning approach [1]. The systematic evaluation significantly will contribute towards the future direction of sustainable development approach in the development plan system through the enhancement, acceptance or rejection of strategies

formulated [7]. For the purpose of the study, Matrix Sustainable Strategies Compatibility Analysis for sustainable strategies was developed. It is an initial process to evaluate the appropriateness and compatibleness of sustainable strategies formulated in Malaysia's development plan system. The result will useful for the decision making process in accepting, correcting and enhancing the sustainable objectives formulated.

Matrix Sustainable Strategies Compatibility Analysis:

In order to ensure the assessment process is relevant and practical to the local environment, the values of goals and objectives should be represented in clear [2]. For the purpose of assessing the regional and national scale of sustainable strategies, the Matrix Sustainable Strategies Compatibility Analysis was used in assessing goals integration. This method is an adaptation of Goals Achievement Matrix with the modification on scale of strategies assessment and the objectives of assessment.

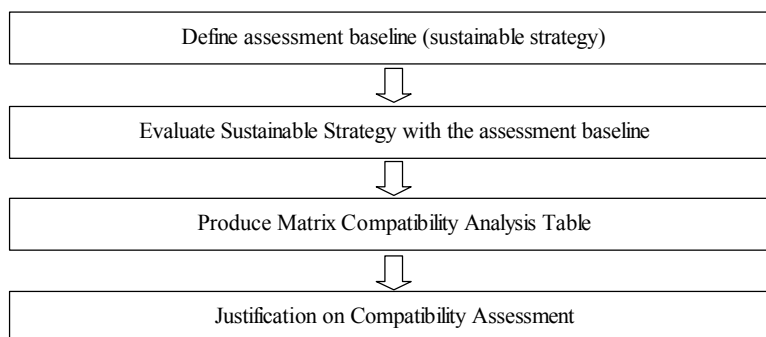


Fig. 1: The simple step of Matrix Compatibility Analysis

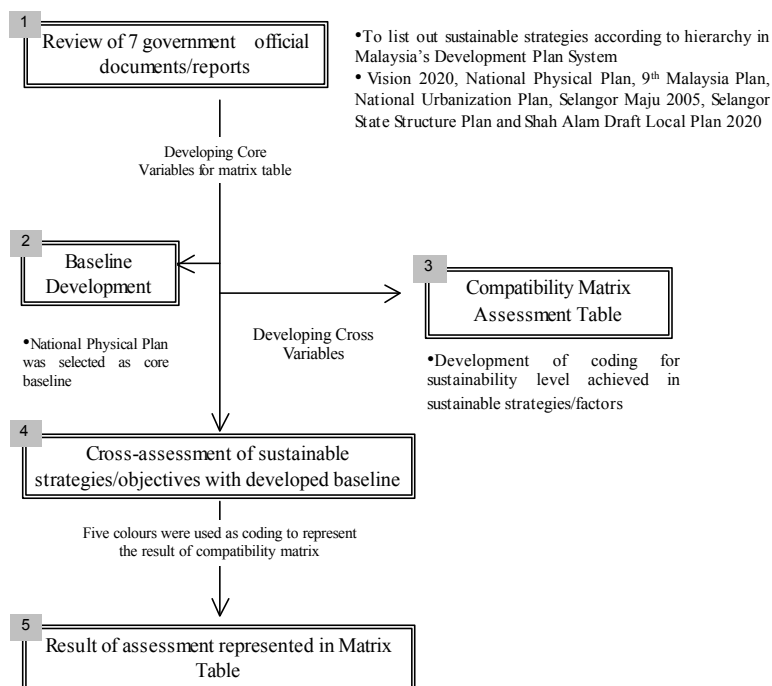


Fig. 2: Sustainability Strategies Compatibility Matrix Assessment Methodology






An assessment steps directly translated from the manual of Sustainable Assessment but the baseline strategies were developed based on main development strategies reference of national level.

A set of National Physical Plan goals, objectives and principles were studied and referred for development of Matrix Sustainable Strategies Compatibility Analysis. The scoping of baseline strategies was ascertained with the legal bound of Act 172 under the subsection of Part III (Development Plans) and Act 1129 subsection of Part IIA (Regional Planning Committee) and Part IIB (National Physical Plan) (Refer to Figure 1) [5, 6]. In addition, the result of sustainability assessment will set the benchmark for policy enhancement and become key information for further action of planning approach [1]. Measurement to a set objectives and

goals will determine the direction of planning and development [7].









































































To conduct the assessment on sustainable strategy using the Matrix Sustainable Strategies Compatibility Analysis, the selected baseline was placed in a column table and the strategy to be assessed is placed in the row table. The strategy in row table was compared to the baseline. In this stage of assessment process, the verification and measurement referred to the categories that specified by the colour coding (Refer to Table 1). The findings of this compatibility were represented in the matrix table. This technique was adapted with modification from the Manual of Sustainability Assessment 2010 from Federal Town and Country Planning Department of Malaysia. The steps of compatibility matrix assessment are shown in Figure 2 [4].

Table 1: Detail Description of Assessment Score [4].




| Coding | Assessment | Detail Evaluation (Characteristic) |
|---|--|--|
|  | Compatible: Ideas, principles suited or that can exist together without problems or conflict. | <ul style="list-style-type: none"> The strategy is directly and clear on the development and suit to the baseline strategy (scoping) The strategy is create a positive impact on future development |
|  | Incompatible: Something not able to live or work with, not consistent or in logical agreement with something | <ul style="list-style-type: none"> The strategy is direct and clear contradict to the baseline strategy (scoping) The strategy is create negative impact on future development |
|  | Indirectly Compatible: Not direct or immediate, not obviously aimed at, caused by not resulting from ideas, principles that suited or can exist together without problems or conflict | <ul style="list-style-type: none"> The strategy is not direct or obviously aimed at specific development but many contributes, suited or cause further impact to the baseline strategy The strategy is create indirect positive impact on future development |
|  | Indirectly Incompatible: Not direct or immediate, not obviously aimed at, caused by or resulting from ideas, principles that not able to live or work with, not consistent or in logical agreement with something | <ul style="list-style-type: none"> The strategy is not direct or obviously aimed at specific development but may contributes, not able or not consistent in logical to the baseline strategy The strategy is create indirect negative impact on future development |
|  | Not related at all: It is something out of context or not valid or affect the ideas or principles | <ul style="list-style-type: none"> The strategy is no direct or indirect and not relevant to the baseline strategy The strategy is not give any impact or significant to the baseline strategy |

Source: Adaptation Manual Sustainable Assessment Dalam Penyediaan Rancangan Tempatan, TCPD (2009)

Table 2: Matrix Compatibility Analysis Vision 2020 with National Physical Plan

| National Physical Plan Vision 2020 | Physical (Land Use) | Economic | Modern Agriculture | Tourism | Residential Hub | Natural Resource and Environment | Transportation | Infrastructure |
|--|---|---|---|---|---|--|---|---|
| 1. Establishing a united Malaysia nation |  |  |  |  |  |  |  |  |
| 2. Creating a psychologically liberated, secure, and developed Malaysian Society |  |  |  |  |  |  |  |  |
| 3. Fostering and developing a mature democratic society |  |  |  |  |  |  |  |  |
| 4. Establishing a fully moral and ethical society |  |  |  |  |  |  |  |  |
| 5. Establishing a matured, liberal and tolerant society |  |  |  |  |  |  |  |  |
| 6. Establishing a scientific and progressive society |  |  |  |  |  |  |  |  |
| 7. Establishing a fully caring society and caring culture |  |  |  |  |  |  |  |  |
| 8. Ensuring economically justice with fair and equitable distribution of nation wealth |  |  |  |  |  |  |  |  |
| 9. Establishing a prosperous society with competitive, dynamic, robust and resilient economy |  |  |  |  |  |  |  |  |

Legend:

 Compatible
 Incompatible
 Indirectly Compatible



 Indirectly incompatible
 Not related at all

Table 3: Matrix compatibility analysis 9th Malaysia Plan with National Physical Plan

| 9 th Malaysia Plan \ National Physical Plan | Physical (Land Use) | Economic | Modern Agriculture | Tourism | Residential Hub | Natural Resource and Environment | Transportation | Infrastructure |
|--|---------------------|----------|--------------------|---------|-----------------|----------------------------------|----------------|----------------|
| 1. To move the economy up the value chain | | | | | | | | |
| 2. To raise the capacity for knowledge and innovation and to nurture a 'first class mentality' | | | | | | | | |
| 3. To address socio-economic inequalities constructively and productively | | | | | | | | |
| 4. To improve the standard and sustainability of quality life | | | | | | | | |
| 5. To strengthen institutional and implementation capacity | | | | | | | | |

Legend:











 Compatible
 Incompatible
 Indirectly Compatible
 Indirectly incompatible
 Not related at all

Table 4: Matrix compatibility analysis National Urbanization Policy with National Physical Plan

| National Urbanization Policy \ National Physical Plan | Physical (Land Use) | Economic | Modern Agriculture | Tourism | Residential Hub | Natural Resource and Environment | Transportation | Infrastructure |
|--|---------------------|----------|--------------------|---------|-----------------|----------------------------------|----------------|----------------|
| 1. To develop a planned, quality, progressive and sustainable city; | | | | | | | | |
| 2. To develop and strengthen a competitive urban economy; | | | | | | | | |
| 3. To create a conducive environment in order to encourage social development; | | | | | | | | |
| 4. To eradicate urban poverty; | | | | | | | | |
| 5. To strengthen the planning, implementation and monitoring system; | | | | | | | | |
| 6. To strengthen urban management and administrative institutions. | | | | | | | | |

Legend:

 Compatible
 Incompatible
 Indirectly Compatible
 Indirectly incompatible
 Not related at all




Strategy baseline is selected as core for assessing the compatibility of other national, state and local sustainability strategies. The National Physical Plan (NPP) 2005-2020 is a long term national level plan that spells out the policies on physical development direction and is the best baseline sustainability strategies determination for the period of 2005 to 2020 [9]. The main aim of NPP is to be the main reference for state and local level development plan. NPP is the establishment of an

efficient, equitable and sustainable National Spatial Framework to guide the overall development of the country towards achieving developed nation status by 2020 [8]. In defining the baseline of NPP for Matrix Sustainable Strategies Compatibility Analysis, the overall objectives and principles are summarized into 8 development strategies sectoral; physical, economic, modern agriculture, tourism, residential, natural resources and environment, transportation and infrastructure.

Table 5: Matrix compatibility analysis Selangor Maju 2005 with National Physical Plan

| National Physical Plan Selangor Maju 2005 | Physical (Land Use) | Economic | Modern Agriculture | Tourism | Residential Hub | Natural Resource and Environment | Transportation | Infrastructure |
|--|---------------------|----------|--------------------|---------|-----------------|----------------------------------|----------------|----------------|
| 1. Building intellectual community | | | | | | | | |
| 2. Preserving ecosystem | | | | | | | | |
| 3. Developing Economic Base | | | | | | | | |
| 4. Ensuring state natural resource used wisely | | | | | | | | |
| 5. Developing agricultural productivity | | | | | | | | |
| 6. Ensuring comfortable residential | | | | | | | | |
| 7. Providing adequate infrastructure | | | | | | | | |
| 8. Nurturing human resource | | | | | | | | |
| 9. Promoting public participation in planning | | | | | | | | |
| 10. Implementing sustainable development principle | | | | | | | | |

Legend:

 Compatible
 Incompatible
 Indirectly Compatible






 Indirectly incompatible
 Not related at all

Table 6: Matrix compatibility analysis Selangor Structure Plan 2020 with National Physical Plan

| National Physical Plan Selangor Structure Plan 2020 | Physical (Land Use) | Economic | Modern Agriculture | Tourism | Residential Hub | Natural Resource and Environment | Transportation | Infrastructure |
|---|---------------------|----------|--------------------|---------|-----------------|----------------------------------|----------------|----------------|
| 1. diversify economic activity, use present and natural economic resource in sustainability and introduce new innovative and sustainable economic | | | | | | | | |
| 2. support environmental friendly economic development and business growth | | | | | | | | |
| 3. enhance socio-economic quality and eradicating poverty | | | | | | | | |
| 4. ensure sustainable usage of resource based on needs | | | | | | | | |
| 5. conserve sensitive area of nature and increase quality of environment | | | | | | | | |
| 6. create balance distribution and city's hierarchy and inter districts | | | | | | | | |
| 7. increase facility and infrastructure provision with utility that efficient, comprehensive, enough and integrate with the technological development | | | | | | | | |
| 8. increase housing allocation to cater levels of population needs, increase home ownership and avoid squatters growth | | | | | | | | |
| 9. providing public facilities in fair, balance and adequate, in quality and high technology | | | | | | | | |
| 10. increase community development quality that harmony with environment | | | | | | | | |

Legend:

 Compatible
 Incompatible
 Indirectly Compatible



 Indirectly incompatible
 Not related at all

Table 7: Matrix compatibility analysis of Shah Alam Draft Local Plan 2020 Development Strategy with National Physical Plan

| National Physical Plan Shah Alam Draft Local Plan 2020 Development Strategy | Physical (Land Use) | Economic | Modern Agriculture | Tourism | Residential Hub | Natural Resource and Environment | Transportation | Infrastructure |
|---|---------------------|----------|--------------------|---------|-----------------|----------------------------------|----------------|----------------|
| 1. To achieve 1 902 900 population in 2020 with 2.6% yearly average of projection | | | | | | | | |
| 2. To balance current market demand and growth pole with legal enforcement, guidelines and standard of planning | | | | | | | | |
| 3. To conserve the Environmental Sensitive Area (ESA) | | | | | | | | |
| 4. To strengthen the city as research centre and premier higher institutional centre | | | | | | | | |
| 5. To develop the potential area and abandon land and avoiding high risk zone | | | | | | | | |
| 6. To reduce the industrial activity that create environmental hazards | | | | | | | | |
| 7. To promote brownfield, infill and Greenfield development that meet the carrying capacity | | | | | | | | |
| 8. To control the neighbourhood expansion with establishment of residential nodes and nucleus | | | | | | | | |

Legend:

| | | | |
|--|-----------------------|--|-------------------------|
| | Compatible | | Indirectly incompatible |
| | Incompatible | | Not related at all |
| | Indirectly Compatible | | |

Table 8: Summary of overall findings in Matrix Analysis on Sustainable Development Strategies of Three-tier Malaysia Development System

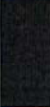

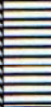


| Strategies Level | Findings (Compatibility of Strategies) |
|------------------------------|--|
| National | <ul style="list-style-type: none"> The strategies are in very broad context without identification on specific physical development except for National Physical Plan Most of the strategies are indirectly compatible with the core reference of National Physical Plan |
| Selangor State | <ul style="list-style-type: none"> National strategies clearly interpreted More physical plan approach to meet the needs of community in real development More direct compatibility with the core reference of National Physical Plan |
| Shah Alam City (Local Level) | <ul style="list-style-type: none"> The strategies fix into locality suitability. More physical approach in consideration Strong compatibility with the core reference of National Physical Plan |

Source: Research Study 2010

Matrix Compatibility Assessment of Vision 2020 and National Physical Plan: 9 challenges of Vision 2020 were assessed with the 8 development sectoral policies of NPP baseline. The results are shown in the compatibility matrix Table 2.

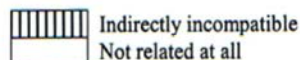
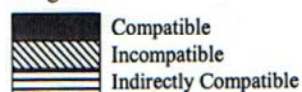
Matrix Compatibility Assessment of Ninth Malaysia Plan and National Physical Plan: The results on compatibility analysis of the five key thrusts Ninth Malaysia Plan 2005-2020 Thrusts are shown in the matrix Table 3.

Table 9: Summary of Matrix Sustainable Strategies Compatibility Analysis

| Sustainable Development Strategies | Number of Compatibility Strategies with National Physical Plan | | | | | % of compatibility and indirect compatibility | % of incompatibility and indirect incompatibility | % of not related at all |
|------------------------------------|---|---|---|---|---|---|---|-------------------------|
| |  |  |  |  |  | | | |
| Vision 2020 | 12 | 0 | 26 | 0 | 29 | (38/67) 56.7% | - | (29/67) 43.3% |
| 9 th Malaysia Plan | 8 | 0 | 32 | 0 | 0 | *(40/40) 100.00% | - | - |
| National Urbanization Policy | 15 | 1 | 32 | 0 | 0 | (47/48) 97.9% | *(1/48) 2.1% | - |
| Selangor Maju 2005 | 11 | 0 | 69 | 0 | 0 | *(80/80) 100.00% | - | - |
| Selangor State Structure Plan 2020 | 24 | 0 | 56 | 0 | 0 | *(80/80) 100.00% | - | - |
| Shah Alam Draft Local Plan 2020 | 7 | 0 | 28 | 0 | 29 | (35/64) 54.7% | - | (29/64) 45.3% |

* Significant finding

Legend:



Matrix Compatibility Assessment of National Urban Policy and National Physical Plan: The result show one contradiction objective between modern agriculture in the National Physical Plan with developing competitive urban economic of the National Urbanisation Policy. The results are shown in the compatibility matrix Table 4.

Matrix Compatibility Assessment of Selangor Maju 2005 and National Physical Plan: Compatibility analysis of ten objectives of the Selangor Maju 2005 ensures the sustainability approach is carried forward in the development plan process at state level. The results of the assessment are illustrated in the compatibility matrix Table 5.

Matrix Compatibility Assessment of Selangor Structure Plan 2002-2020 and National Physical Plan: The objectives formulated in the Selangor Structure Plan 2002-2020 were assessed to ensure that the sustainability approach is carried forward in the development plan process at local level. The results of the compatibility analysis are shown in the compatibility matrix Table 6.

Matrix Compatibility Assessment of Shah Alam Draft Local Plan 2020 and National Physical Plan: The assessment is carried out to study the compatibility of the national and state development strategies with the objectives of the Shah Alam Draft Local Plan 2020 development. The results of the compatibility analysis are illustrated in the compatibility matrix Table 7.

DISCUSSION

Sustainable measurement should be conducted from the beginning of a development plan formulation [2]. The sustainable assessment is a systematic evaluation for the purpose of evaluating the effectiveness of policy making [1]. It is to ensure that policy or development plan formulation has clearly interpreted the concept, theory and practice of sustainability to be implemented within the development period. One of the very common techniques to assess policy, objectives or strategies is using the matrix relationship. The objective of assessing using this technique is to figure out clear relations, compatibility,

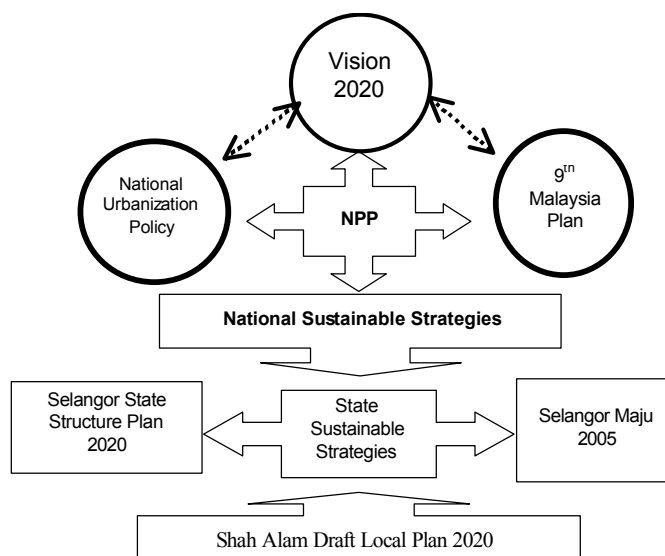


Fig. 3: Relationship of Matrix Compatibility Analysis result on Sustainable Development Strategies of Malaysia's Three-tier Development System

misinterpretation or contradiction of the objectives formulated with one another. The reference objective is the core reference or benchmark of the target achievement needed.

The overall result on matrix compatibility analysis on sustainable development strategies for Malaysia's three-tier development plan system is compatible to each other. It is suitable and can exist together without conflicts or issues. The overall relationship is illustrated in Figure 3 and summarized into Table 8. The overall compatible assessments show the positive relation in each strategy. This result is significance to validate the integration of three-tier development plan system in Malaysia. The results also explain on the importance of sustainable strategies formulation from the national level in ensuring its implementation on the state and local level [2].

CONCLUSION

The matrix compatibility analysis on sustainable strategies of three-tier Malaysia development plan system sought answers to the two specific objectives of the study; to evaluate the compatibility of sustainable strategies in three-tier Malaysia development plan system. Findings show the strategies formulation from top-bottom system is lead to clear interpretation on sustainable strategies carried out. From the results, it shows that matrix table can produce clear, systematic and practical analysis for sustainability strategies formulated in the development plan preparation.

The summary of findings of the overall matrix analysis is shown in Table 9. Therefore, the assessment on sustainable strategies in local plan using profound and systematic sustainability assessment is vital. A systematic evaluation will provide baseline for decision makers to manage resources in a sustainable way. In a nutshell, the development plan system such as local plan implementation will be more comprehensive and can be improved through the evaluation of sustainability strategies formulate. This study is just one step forward towards achieving sustainability in future.

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