Sustainable City Indicators for Greater Mekong Sub-Region: Cases from Thailand and Lao PDR

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Abstract

Countries in the Greater Mekong Sub-region (GMS) agreed in 1992 to develop international cooperation aiming for economic development, which will in turn improve the quality of life of local citizens. However, economic development, if unplanned, may cause adverse impacts to local society. New cities in this region have arisen at a rapid rate as so-called informal settlements, as a result of poor city planning and low cooperation between local government and citizens. This study has aimed to analyze factors contributing to the development of sustainable cities from the viewpoint of local citizens. In this study, two cities were chosen from Thailand and Lao PDR based on the result of primary data collection. The cities selected were Chiang Khan and Nan for Thailand and Vientiane and Luang Phrabang for Laos PDR. Data collection was done as in-depth interviews with stakeholders as well as questionnaire surveys with local population. Questionnaires include eight groups of indicators; economic aspects, agricultural situation, environmental characteristics, public health conditions, social conditions, physical conditions, architectural aspects and art and cultural aspects. Results from all cities have shown some similarities. All interviews and questionnaire surveys have shown that cultural indicators play a crucial role for sustainable cities. The second most important indicator varies following cities characteristics. The environmental indicator ranks second for Nan and Luang Phrabang, while ranking third for Chiang Khan and Vientiane. Vientiane, the capital city of Lao PDR, has been faced with rapid growth; therefore the development of physical structure was considered important.

Keywords: livable cities, sustainable city, sustainable indicators, Greater Mekong Region Cities

I.   Introduction

New cities have emerged all over the world and have contributed to global environmental conditions. Over the last few decades, cities have expanded into sub-urban areas at a fast rate, resulting in the development of physical structure to support growth. A proper development must balance social, economic, and environmental needs. Local government should offer investors security, infrastructure, and efficiency, and should also put the needs of its citizens at the forefront of all its planning activities. However, it is estimated that 95% of new cities will be located in developing countries (The Cities Alliance, 2007). It is unlikely that their local governments can appropriately implement urban planning and management. Consequently, the expansion of cities has devastating results on the urban economy, the environment, and society. Poorly managed urban settlements will be unable to keep pace with urban expansion bringing with them poor health, poverty, social instability, and economic inefficiency.

However, there is no single formula for managing the change that can be applied to all cities. Cities are affected by many factors: location, climate, and natural features, for instance.   Experiences from cities are essential for the formulation of development policies; therefore, the assessment of development status is crucial. Many forms of assessment, auditing and indicator systems for guiding and better evaluating the effect of city development, are now available. However, as cities have specific characteristics, the utility of each evaluation tool may not be fully applicable.

This article aims to develop and discuss sets of indicators used in measuring factors contributing to livable city characteristics for countries in the GMS. Sets of indicators were developed and tested with two countries in this region: Thailand and Lao PDR. Data collected were seen as mechanisms for citizen participation in local governments and to be used in city planning. As cities in the region share certain characteristics, the results of this study can be applied to other cities as well.

II.   Data Collection and Analysis

2.1 City selection

Countries in the Greater Mekong Sub-Region include Cambodia, Lao PDR, Myanmar, Vietnam, Thailand, and Yunnan Province in the People's Republic of China (Figure 1). For the first phase, data collections were done in Thailand and Lao PDR. Two cities were chosen for each country based on the result of primary data collection. The cities selected were Chiang Khan and Nan for Thailand and Vientiane and Luang Phrabang for Laos PDR. All cities selected are growing rapidly with a strong relationship to local culture. Once the cities were selected, stakeholder meetings were organized to identify the factors that local people believe have an impact on their livelihood. Basic information for each city was collected from secondary sources.

Figure 1 Map of GMS countries.
Source: http://mekongtourism.org/website/about-mtco/what-is-the-gms/gms-map/

2.2 Development of new indicators: SWOT analysis and stakeholder consultation methods

During a stakeholder consultation meeting, the project team compiled data on two aspects: SWOT data and opinions based on the question "What is a sustainable city?", then, established a list of factors mentioned by each stakeholder to be used in indicator development. Stakeholders included in this study were local citizens, government offices, and Non-Governmental Organizations in the area. After stakeholder consultations, Strength, Weakness, Opportunity, and Threat of each area were identified. In addition, factors that stakeholders considered important for sustainable living were identified and grouped. In general, there are three main categories of factors: human wellbeing, environmental wellbeing, and economic wellbeing. These three major factors were further broken down into 8 aspects of indicators (Figure 2). In total, there were 96 indicators used in this study.

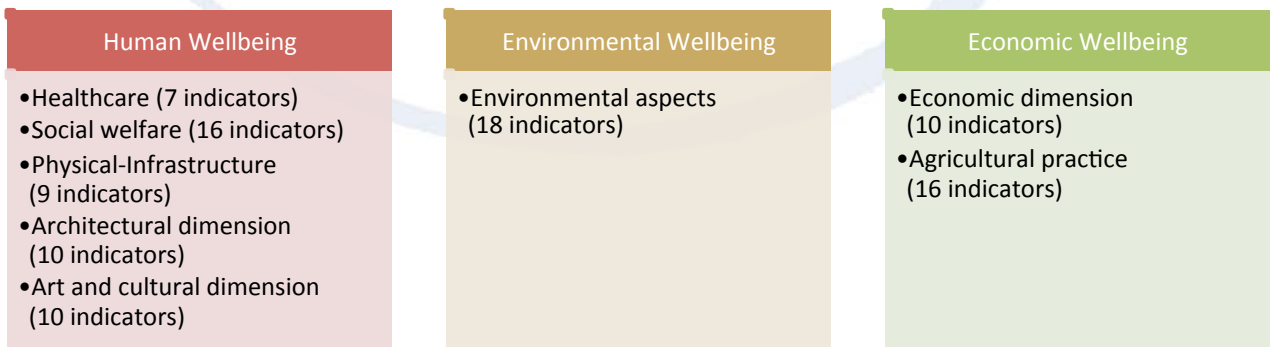| Human Wellbeing	Environmental Wellbeing	Economic Wellbeing
•Healthcare (7 indicators) •Social welfare (16 indicators) •Physical-Infrastructure (9 indicators) •Architectural dimension (10 indicators) •Art and cultural dimension (10 indicators)	•Environmental aspects (18 indicators)	•Economic dimension (10 indicators) •Agricultural practice (16 indicators)

Figure 2 Eight groups of indicators developed for sustainable city evaluation.

2.3 Data collection and analysis

For each city, data collections were done with in-depth interviews with stakeholders as well as questionnaire surveys with local population. In each city, the city area was divided into 16 grids and 400 questionnaires were distributed within these grids. Questionnaires include eight groups of indicators that will contribute to the quality of life of people in the city. Results from both SWOT analysis and questionnaire surveys were used in city planning.

III.   Result and Discussion

General information related to socio-economic conditions of each city were compiled in order to understand the situation in the study area. Basic information is shown in Table 1. Cities like Vientiane, where population density is high, focus more on the physical environment (ranked no. 2 in terms of importance for sustainable city).

Table 1 General Socio-economic data for study area.

General Information	Thailand		Laos	
	Loei (Chiang Khan)	Nan	Vientiane	Luang Phrabang
1. Area (km^2)	11,424.6	11,472.1	3,920	818
2. Population (2010)	607,100	458,000	524,100	364,800
3. Population density (person/km^2)	53.1	39.9	133.7	21.6
4. Population growth rate (%)	1.2	0.9	3.0	3.1
5. Population in rural area (%)	83.0	86.4	36.9	89.1
7. Minority ethnic population (%)	0.5	11.5	7.4	71.4
8. Labor force participation rate (%)	71.0	N/A	59.6	69.6
9. Unemployment rate (%)	4.7	N/A	7.2	1.7
10. GDP of country ($)	6,000		1,471	
11. GDP per capita ($)	2,073	2,232	N/A	N/A
12. Poverty rate (%)	36.8	19.3	13.5	40.8
13. Access to clean water (%)	97.4	71.9	89.0	37.0
14. Access to electricity (%)	87.0	90.3	100	19.0

SWOT Analysis

After consultation with stakeholders, a SWOT matrix was drafted (Figure 3). Information from SWOT analysis was used to develop a TWOS matrix or management strategies for cities (Table 2).

Questionnaire Survey

Questionnaire survey results from all cities show some similarities (Table 3). All interviews and questionnaire surveys show that cultural indicator plays a crucial role for a livable city (Figure 4). The second most important indicator varies following cities characteristics. The environmental indicator (Figure 5) ranks second for Nan and Luang Phrabang, while ranking third for Chiang Khan and Vientiane. Vientiane is the capital city of Lao PDR and has been faced with rapid growth. Therefore, the development of physical structure was considered. It should be noted that, due to the increasing number of tourists in all four cities, the local people admitted that tourism activities have impacts on their livelihood and the surrounding environment. Local government should take this into their action plan and manage the tourism industry in a sustainable manner.
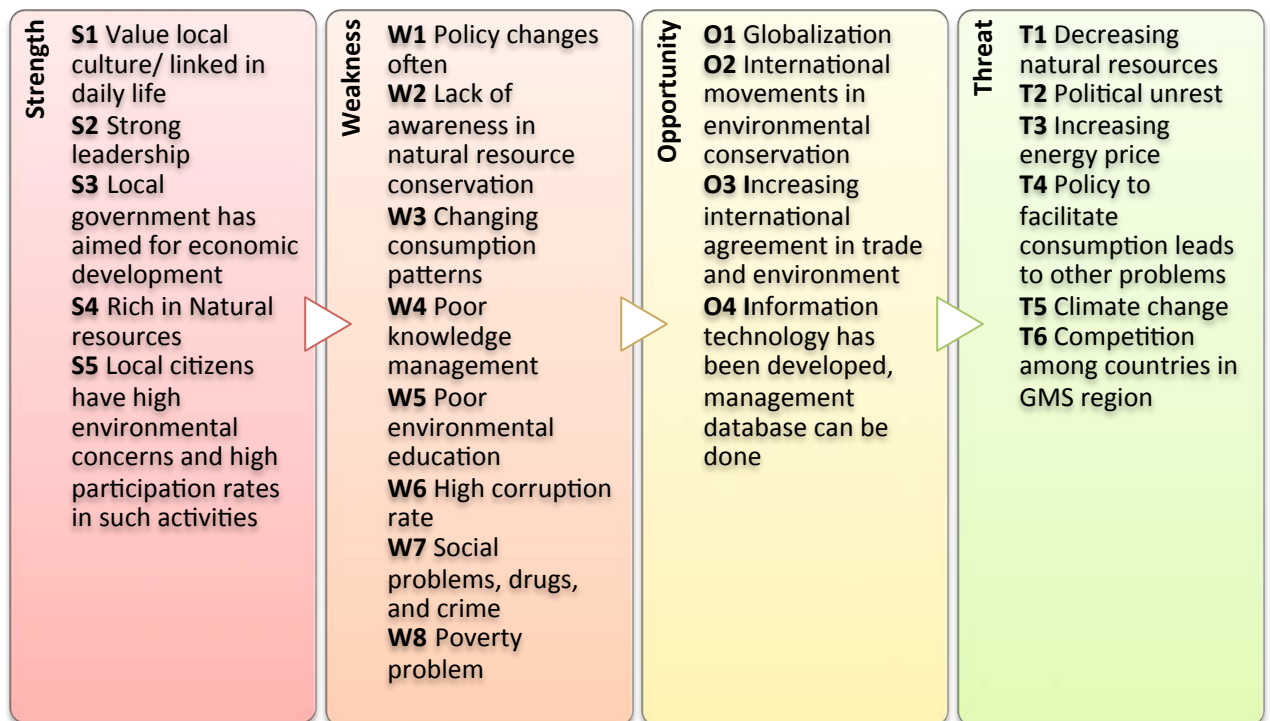
Strength	Weakness	Opportunity	Threat
S1 Value local culture/ linked in daily life **S2** Strong leadership **S3** Local government has aimed for economic development **S4** Rich in Natural resources **S5** Local citizens have high environmental concerns and high participation rates in such activities	**W1** Policy changes often **W2** Lack of awareness in natural resource conservation **W3** Changing consumption patterns **W4** Poor knowledge management **W5** Poor environmental education **W6** High corruption rate **W7** Social problems, drugs, and crime **W8** Poverty problem	**O1** Globalization **O2** International movements in environmental conservation **O3** Increasing international agreement in trade and environment **O4** Information technology has been developed, management database can be done	**T1** Decreasing natural resources **T2** Political unrest **T3** Increasing energy price **T4** Policy to facilitate consumption leads to other problems **T5** Climate change **T6** Competition among countries in GMS region

Figure 3 Results from SWOT analysis.

Table 2 TWOS matrix to develop strategic action plan for cities.

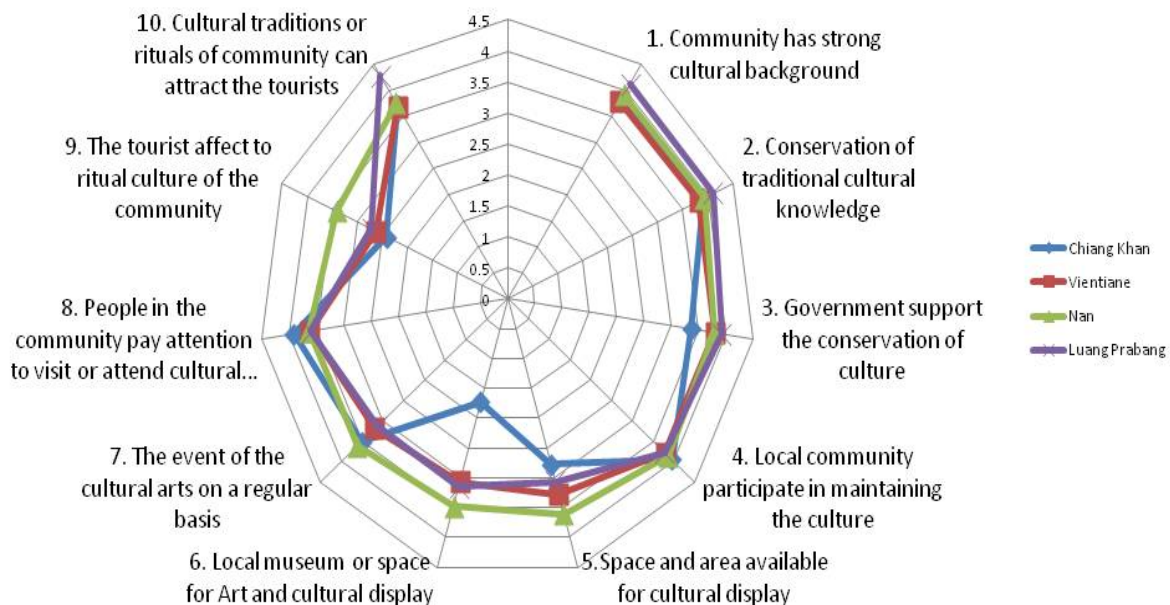| TOWS Matrix		External			
		Opportunities		**Threats**	
Internal	Strengths	**S-O(maxi-maxi) Strategies**		**S-T(maxi-mini) Strategies**	
		SO1	Support Eco-tourism in the area and conserve the traditional culture of each ethnic group.	ST1	Support the customary laws in the area also improve and implement the wildlife management
		SO2	Support indigenous knowledge on handicraft to create one village one product or one district one product	ST2	Promote and educate local people about the benefits of ecotourism as well teach people about environmental protection
		SO3	Promote the use of traditional knowledge in production process and use information technology in public relations	ST3	Ensure successful policy implementation and good governance
	Weaknesses	**W-O(mini-maxi) Strategies**		**W-T(mini-mini) Strategies**	
		WO1	Use information technology in city management to reduce cost and increase effectiveness, good governance should be practiced	WT1	Prepare environmental protection plan
		WO2	Improve education and public health services in the city	WT2	Poverty reduction via policy on sustainable consumption

Figure 4 Indicators of cultural aspects that contribute to a sustainable city.
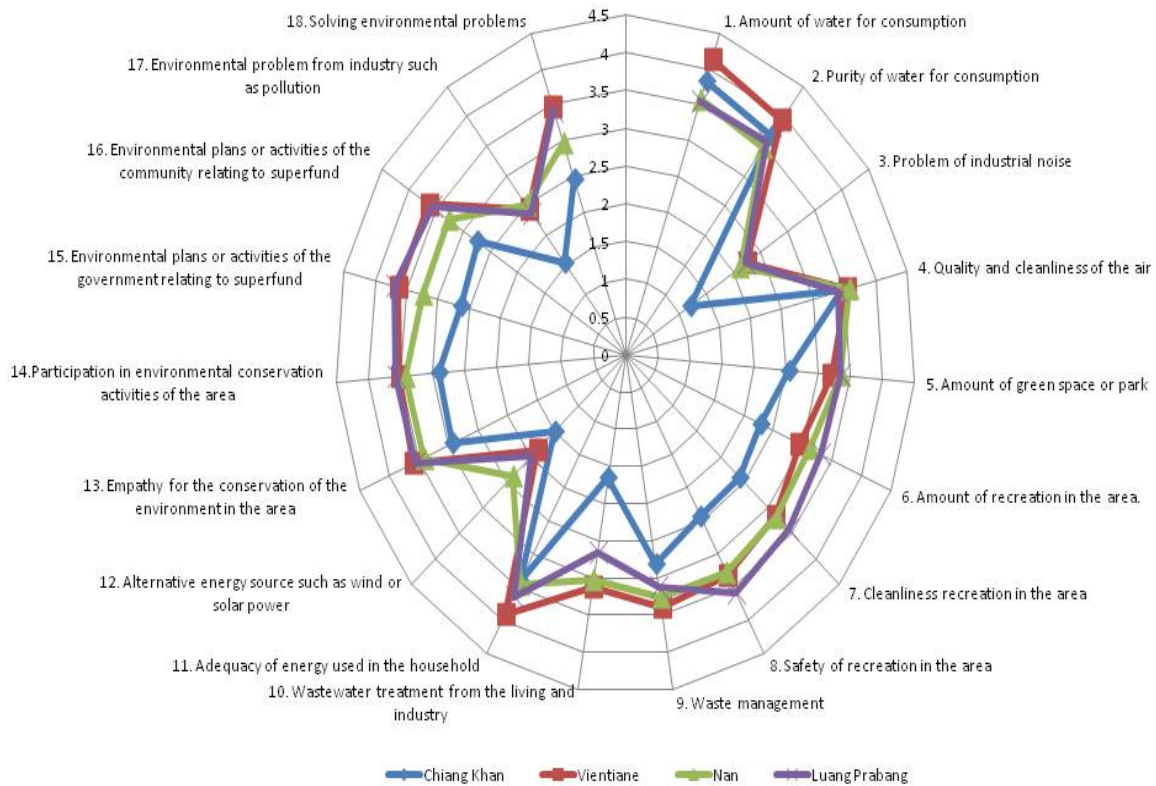
Figure 5 Indicators of environmental aspects that contribute to a sustainable city

With the factors that are considered important in ensuring desirable quality of life, the national and local government can, plan the direction of development. Cities with similar characteristics can also use the information for their localities, for sustainable development of the city.

IV.   Conclusion

Data from both SWOT and questionnaires surveys were adopted by local governments to further develop participatory action plans of the cities. Factors affecting the quality of life and the sustainability of the cities are the same in studied cities. However, cities have their own characteristics and the planning for future development needs to take these characteristics into consideration. In order for sustainable development to occur, national policy as well as local policy should be consistent.

Table 3 Overall score from each city.

Indicator groups	Thailand		Laos	
	Chiang Khan	Nan	Vientiane	Laung Phrabang
Economic indicator	3.48	3.31	3.75	3.64
Healthcare indicator	3.26	3.45	3.78	3.55
Social welfare indicator	3.59 [2]	3.48 [3]	3.67	3.67
Physical-Infrastructure indicator	3.37	3.38	3.86 [2]	3.55
Environmental indicator	3.51 [3]	3.60 [2]	3.84 [3]	3.74 [2]
Agricultural practice	3.33	3.41	2.90	3.34
Architectural dimension	3.35	3.29	3.43	3.71 [3]
Art and cultural indicator	3.68 [1]	3.74 [1]	3.91 [1]	4.10 [1]

V.   References

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