The Sustainable Community Strategies:
To Evaluate The Sustainable Development of Community

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ABSTRACT

When Sustainable Development (SD) has become *the* major paradigm of the global development trend, how to objectively and holistically examine whether developments progress toward or away from sustainability is one of the crucial issues. Among the measurement tools for SD, sustainability indicators are one commonly and widely accepted tool. Sustainability indicators have been applied at global, national, and urban levels, without much discussion in the community level. In the "bottom-up" *participation* pattern, how to move toward and construct a sustainable community turns out to be a critical challenge for professionals and community residents as well.

This study examines the definition and content of SD from relevant literature, and categorizes its components into three principles: sustainability, equity, and collectivity. This study examines SD concepts of residents living in Mingshan Li, Taipei, Taiwan and explores what the appropriate set of Community Sustainable Development Indicators (CSDIs) is for communities in Taipei. From literature review and questionnaire analyses, this study first establishes a set of CSDIs, which includes environmental, social, economic, and institutional dimensions. Focus group discussions are adopted to evaluate these indicators. After establishing CSDIs, through residents' attitude and cognition surveys, this study draws up framework and context of CSDIs for different types of communities and proposes appropriate CSDIs for different communities to explore possible SD strategies. The results demonstrate that the context of SD will continuously evolve and transform and CSDIs should include local characteristics and residents' attitudes and needs.

KEYWORDS: sustainable development, sustainable community, community sustainable development indicators, Taipei

1. INTRODUCTION

The key successful factor of community consensus depends on the gratitude and attitude of citizens participated in the community public affairs (Cooper, 2002; Gibson et al., 2005). In fact, the entire nature of *Agenda 21* is about participation and open government (Dresner, 2004). The construction of community consensus will influence the willingness and ways of citizens participating in the community public affairs. The difference between community and neighborhood is not only geographically. The difference also includes members affirm self conscious to the area, groups, and the community, and mutually share the related living benefits (Lin et al., 2006). Therefore, if community members are interested in community issues, or express their concerns, then community consensus can be established and sustainable community context can be realized.

2. LITERATURE REVIEW

Sustainable cities are embedded in the broad concepts of sustainability and SD, and a definition, however problematic, of city. Sustainability is a rather abstract and broad concept, subject to numerous interpretations. When sustainability is associated with the notion of city, also a relatively abstract concept, pinpointing a specific definition becomes a controversial issue.

2.1 The context of community sustainable development

Under the concept of SD, involving the concept of ecosystem as the main idea and designing a "green community" without destroying the ecosystem while fulfilling the needs of a community has become the main goal for sustainable communities. Moreover, community residents must integrate different levels of work in ecological design, permaculture, ecological construction, recycle products, substitute energies, and community construction practices (GEN, 2005) and implement these activities to create environmentally friendly activity patterns and living behavior to build up the foundation for community SD.

According to Beatley and Manning, "a sustainable community is a place that seeks to contain the extent of the urban 'footprint' and strives to keep to a minimum the conversion of natural and open lands to urban and developed uses" (Beatley and Manning, 1997: 28).

Through the helps of the third parties, promoting the quality of life, making community decision making open, and continuous supports from governmental sectors to build a new community that can be recognized by future generations. Deakin (2003) discussed the development management of residential areas in Edinburgh where SD and growth management strategies are implemented leading communities moving toward SD.

1. Local culture: special urban culture;
2. Spatial patterns: Keep the characteristics of cultural diversity;
3. Landscape framework: Rural area landscape development structure;
4. Neighborhood relationships;
5. Population density: high population density (concentration);
6. Balance between land use and socio-economic structure;
7. High efficiency, energy saving mass transit;
8. Connecting existing communities; integrating settlement patterns of existing community developments;
9. Maintaining sustainable financial policies.

It is necessary to explain self-cognition and characteristics building during community development processes. Therefore, to make communities to build under the idea of development and sustainable growth. The development vision of community SD includes the following:

1. Building a safe and healthy community with characteristics.
2. Building the basic idea of carrying capacity in environment and development.
3. Through citizen participation, realizing community self-governance.
4. Sustainable use of community resources (including physical environmental resources, cultural heritages, economic resources and so on)
5. Community diversity (including biodiversity and cultural diversity) conservation.
6. Implementing the 4R policy, "Reduction, Reuse, Recycle, and Regeneration."
7. Realization of "green consumption" and "green transportation."

As to the composition and measurement of community indicators, the basic principle should be that communities can function by themselves. During the development process of previous indicators, it can be found that the necessity of citizen participation is a very important fundamental process to construct community SDIs. Thus, to build CSDIs should consider the following factors:

1. Indicators should include social, economic, environmental, and systematical dimensions.
2. Selection of indicators should come from discussions of public participation.
3. Indicators should be user-friendly and easy to use.
4. The content of indicators should fulfill local requirements or characteristics.
5. Indicators should consider the change of time frame.

3. CASE STUDY

3.1 Sustainable development strategies for Taipei

Taking in consideration of national SD policies and Local Agenda 21, Taipei City proposed an outline of urban SD policy in 2003. The sustainable community indicators are reconciled through focus group discussions or with interviews conducted with experts and scholars. Moreover, refining the indicators by collecting opinions on the item of indicators, the content of indicators through interviews with local organizations and community residences are carried out. The purpose of this study is to create a SDIs system fitting the community itself, to evoke community participation, and to implement the actions toward SD.

Table 1: Items of Taipei sustainable development policies that are related to communities

Objective	Sustainable development strategy
Environmental resources recycle and reuse	Provide different housing units
	Create a better living environment
	Enforce "Green consumerism"
	Construct a resources recycling society
	Provide humane pedestrians facilities
Sharing the progression and safety of society	Improve and implement natural disaster prevention
	Improve a health risk evaluation mechanism
	Protect particular groups
	Community health care
	Community construction work groups
	"A Study of Taipei" research
	City cultural improvement
	Promote traditional culture
	Enrich culture
	Continuous learning
	Children environmental rights
Prosperous of economics and technology	Green technology applications
	Transformation of agriculture management
	Internet applications

3.2 Case profile

MingShan Li in Shi-Lin District, which is a community at the foot of the Yang-Ming-Shan Mountain and located in the northwest side of the Taipei basin terrain. This study investigated through survey questionnaires and interviews in the community. Take the current residents in the community as the Population, and arrange random interviews in accordance with the data in household registration office. The households of residence were 2,488 in 2004. A total of 265 copies of questionnaires were conducted. Among them, 173 copies were collected (65.28%). With the deduction of 15 invalid copies, the valid copies of questionnaires collected are 158 copies.

4. RESULT

This study discusses each of the following categories of 38 indicators . The list of indicators is created and divided into four dimensions and ten sub-categories by different contents of indicators. The suitability of each category is discussed to analyze the acknowledgment and acceptance of these 38 indicators with residents as the results in Table 2.

Table 2: Agreement of community sustainable development indicators (agree or strongly agree)

Main dimensions	Sub-categories	Indicator listings	Acceptanc

(average acceptance)			e %
Environment (71.48%)	Ecological protection (78.2%)	1. Biodiversity	**75.7**
		2. Green coverage in the community	**83.4**
		3. Water conservation and penetration rate	**77.8**
		4. Soil degradation and recuperation	**75.9**
	Environmental protection （70.0%）	5. Amount of disposal and recycle generated by each individual per year	72.2
		6. Recycling of rainwater and sewerage water	65.8
		7. Number of decent air quality days above standard	72.2
	Energy consumption （65.0%）	8. Mileage and petroleum consumption by transportation of each individual	65.0
		9. Consumption of reusable and un-reusable energy	70.3
		10. Energy conservation efficiency	67.1
		11. Consumption of resource by each family (gas and electricity)	63.9
		12. Water usage of each individual per day	58.6
	Surrounding areas （72.7%）	13. Utilization dangerous areas for non dangerous purposes	63.3
		14. Percentage of pedestrian sidewalk	**79.1**
		15. Number of green architecture	**75.8**
Society (65.77%)	Population （59.2%）	16. Community population (annual population growth rate)	63.1
		17. Mortality rate of newborns	52.2
		18. Ratio of low income families	64.3
		19. Average life expectancy at birth	57.3
	Education （64.5%）	20. Chinese education in primary and secondary schools	67.5
		21. Number of art class hours in primary and secondary schools	70.7
		22. Percentage of graduation from senior high schools	56.4
		23. Percentage of adult literacy	63.5
	Social Service （73.6%）	24. Use of community facilities and library	**75.8**
		25. Social welfare available to medium-low income families	**79.0**
		26. Percentage of public art anticipation	64.1
		27. Medical care professionals per hundred people	**75.5**
Economy (58.00%)	Productivity (64.1%)	28. Average GDP of individual in the community	64.5
		29. Unemployment rate	66.5
		30. Number of work hours needed with average salary to sustain a living	61.4
	Community economy （51.9%）	31. Dependency on the local and reusable resources	61.7
		32. Production, import and export of food by the community	41.0
		33. Average savings of each family	52.9
Institution (70.70%)	Community anticipation and management (70.7%)	34. Number of volunteer in community	69
		35. Familiarity with surrounding neighbors	65.8
		36. Number of plans of construction and administration	69.6
		37. Number of community organizations/non governmental organizations	63.5
		38. Crime rate and safety of the community	**85.5**

Note: Shaded areas indicate the percentage of "agree" and "strongly agree" is over 80

5. CONCLUSION AND SUGGESTIONS

The evaluation of CSDIs gives the residents a new concept of community development and management. Although the actions are done within this small community, individuals can participate in global activities and achieve a sustainable future through the community's own efforts. Eventually, the change of MingShan Li can help Taipei city and other cities to transform as a whole, like the "Butterfly Effect".

In this study, different members of the community reflect their various thoughts over a sustainable community and the ways of making a plan for the future. This study also indicates what facilities should be implemented to help achieve community SD. The degrees of importance on CSDIs are different with respect to residents' age and education level. This suggests the goal of SD will change over time, and the development has different mission and goals and the uniqueness of every community with their own indicators. Restated, CSDIs are unique with local characteristics.

In the cross analysis, the Chi-square values have minor changes in gender and marital status compared with other CSDIs. Respondents' age in the social dimension requires a further study. Education levels in social and institution dimensions show a significant relationship. The Chi-square value of occupation in social dimension is close to zero, which indicates occupation and social dimension has a significant relationship. In the cross analysis of basic socio-economic data and CSDIs, age shows a significant relationship with social welfare. Education level shows a significant relationship with institution dimension - community participation and management, while occupation has significant relationship with education and culture and social welfare. In the cross analysis in basic information and CSDIs, age shows a strong relationship on indicator 27 - Medical care professionals per hundred people. The education level has a higher significant value in indicator 34 - Number of volunteer in community, indicator 35 - Familiarity with surrounding neighbors, and indicator 37 - Number of community organizations/non governmental organizations. In the occupation aspects, indicator 21- Number of art class hours in primary and secondary schools is more important.

From factor analysis we can see the residents' approval toward CSDIs, and the residents according to the relative characteristics of the indicators concludes 11 main factors. SD is the most common concept, and the relatives are cultural economics, health, ecology, resource applications, social welfares, law enforcement, community security, environmental standard, survival jobs, and medical attentions. These represent the macro and micro views of the community and the expectation of a fair and disciplined community from the residents. This analysis also shows community SD has multiple dimensions.

Moreover, a different community background affects the selection of community indicators; thus, community backgrounds and structures will be included in future studies to obtain indicators that can present community differences. Furthermore, in the future studies will evolve the way of collecting data from the community such as the difficulty of field study, the privacy of participants, a better observation on the social welfares, and the evaluation of community participation. Through a continuous adjustment of CSDIs, it is expected to establish a more thorough evaluation tool to represent the trend of community SD.

Additionally, different background of the community also influences the selection of CSDIs. The community composition, background of how the community was formed and so on should be studied in the future to obtain a better CSDIs model to identify the differences of communities. In order to build an assessment tool to represent the trend of community development, CSDIs need to be adjusted in the future by considering residents' suggestions, such as the ease of statistical analyses, protection on privacy, deeper observation on the social benefits, and the evaluation of community participation and so on.

Based on the integration of the above analyses and research purpose, this research also considers the direction of community sustainable development strategy and provides readers with the following discussion direction as the basic thinking skeleton of setting up community sustainable development strategy:

A. Rebuild community competition: enhance base construction and create community benefit.
B. Master the public's thinking: create earning-profit opportunities for the public and assist them with self-learning.

C. Cohere community: raise local economic achievements, maintain social fairness, and construct community concern network.

After carries on the correlation diagnosis to be possible to induce the following several conclusions:

First, the populace regarding sustainable development idea of the development still to be unable to have clear thought about the idea, therefore the administrative department impetus to be unable meaning of the accurate clear its transmission to contain.

Second, the community inhabitants regarding the self- living conditions to sustainable development still to be unable to imagine, can show now as before lies in the administrative department to instill into idea of the environmental protection, was unable to construct the construction to have the place self-evident target of content, to will impel the place to sustainable development target is a difficult work from top to bottom.

Third, floods in the situation in the education level universal promotion and the media information, the populace regarding sustainable development policy still to be unable clearly to grasp, explained the administrative department still was in phenomenon of the heat, is unable to seize the chance relevance of the guidance and the other policy, formed effect of the wasted effort.

Meanwhile regarding sustainable development cognition of the development, based on the above populace to be in the passive situation, the following research will face the following direction to carry on:

First, expanded investigation community object, promotes representation of the research.

Second, provides the domestic and foreign correlations to the sustainable development city and to the sustainable development community indicators system, makes the participant to increase to understanding this subject then devised its sustainable development ideal .

Third, reorganization all previous years come the administrative department administration policy with to the sustainable development relevance analysis , then discusses the populace to commentary the policy, So as to discusses this policy to the populace whether has sustainable development significance of the natural.

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