

Development of Risk Assurance Criteria to the Utilization of Natural Resources and Environment for Sustainable Development of Life Quality, Economy and Society in Rural Thai Communities

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Received: 5 June 2012 Accepted: 4 July 2012 Published: 15 July 2012

Abstract

The research aimed at developing model of the risk assurance indicators to the utilization of natural resources and environment for sustainable development of Thai communities and evaluation of risks indicators on natural recourses and environment for sustainability of life quality, economy, and society. Mixed research methodology—both quantitative and qualitative—was employed to collect data from the various sources, related documents experts, and indigenous group from three villages—namely, upper north (Nan), central north (Uttaradit), and lower north (Pijit) with 10 villages of each to construct and validate the hypothetical indicators. A multi-stage sample size was included 80 community experts, 140 general experts, 350 community leaders, and 407 family delegates in Northern Thailand to evaluate the practicality and appropriateness of the constructed risk assurance indicators. The data were collected by group discussion, deep interview, and questionnaires.

Index terms— Sustainable Development, Risk Assurance Indicators, Natural Resources and the Environment.

The models of risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality were fitted the empirical data with $\chi^2 = 62.04$, $p = 0.06$, $GFI = 0.98$, $AGFI = 0.94$, $RMSEA = 0.03$, $CN = 401.96$, to the utilization of natural resources and environment.

In evaluation of the risk assurance indicators, the data confirmed their practicality at a high level, the means were different of different part with statistical significance at the level of 0.05, the relation of risk assurance indicators to the utilization of natural resources and environment for sustainable development were significance. For the appropriate model and guidelines for developing there were 8 major activities, In conclusion, the developing model were appropriate.

1 Introduction

The development of our nation from the past have always been placing more emphasis on economic growth rather than the happiness of man in society. Thus, it is the development that lack equilibrium. And it is evident that the environment and natural resources are being depleted with exerting a huge impact on life quality of Thai people. The Thai people are facing a number of diseases, the worst of which is cancer. As to economy, farmers are getting poorer, running into debts in social life and culture, and crimes are becoming threatening problem of Thai society. Such impact indicates unsustainable development, the fact that economic growth is beyond the carrying capacity of our existing natural resources is confirmed. Through lack of evaluation criteria as to what indicators to use and how to use so as to assure the risk against damaging impact on life quality, economy, and society in the future—especially the utilization of natural resources in rural communities. The researcher is interested in developing the measuring criteria for use in policy-making at national and local level of administration.

2 II.

Objectives of

3 Research Methodology

Mixed research methodology -both quantitative and qualitative, was employed to collect data, to address the objectives through Participatory Learning Appraisal: PLA and Participatory Action Research: PAR a) Population and Samples i.

The population was determined, consisting of learned men of the community experts, local organization leaders, family leaders in rural communities of the north. ii.

4 Focus Group Structured Interviews

A set of questions as guidelines for dialogues with the experts and learned men of the villages intended for definitions of factors and associated indicators.

iv. Video camera and sound recorders for group discussion recordings.

5 c) Research Procedures and Data Collection

Four phases of research were conducted as follows:

Phase 1: Constructing tentative factors with associated indicators, which consist of two steps.

Step 1. Determine a set of risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality, economy and society in rural Thai communities through research and document analysis

Step 2. Determine the definitions and factors with the association indicators, using Qualitative Analysis- Participatory Learning Appraisal: PLA of the participants from academic institutions, government, local organization leaders and community leaders through focus group discussion, intended for the factors and indicators based on authentic conditions of 3 geographical areas in the north, classified by ecological features. The sample consists of 80 community experts

Step 3. Validate the indicators through group discussion by the determined sample of 140 general experts Phase 2 : a confirmatory analysis was conducted in order to check the model with the empirical data collected by interviews with 350 community leaders from 30 communities of 3 provinces in the north. For this particular analysis LISREL Program Version 8.30 was used Phase 3 : Evaluate the risk assurance indicators, the data confirmed their practicality at a high level, as well as sustainable development for life quality, economy and society, using the constructed and validated indicators. Data were collected from 407 participants from 30 communities as evaluators, and the results were recorded and stored as database of communities.

Phase 4 : Proposed Guidelines for Practices in developing participatory learning process, leading to action planning of the utilization of natural resources and the environment have been developed. This was done in a brain storming session of 30 community leaders chosen from the three communities with the highest mean scores from the evaluation in stage 3. iii. Recording forms to record the data for further analysis to formulate a model. 3. F-test, using MANOVA technique to compare the differences between means of each factor on the basis of independent variables-3 geographical areas.

6 d) Statistics for Data Analysis

IV.

7 Research Results

a) Construction and development of risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality, economy and society in rural Thai communities.

i.

Research ii.

Analysis of evaluation of sustainable development for life quality, economy and society ,using the constructed and validated indicators yielded the overall picture at a high level with $X = 2.52$, $S.D. = .28$ When taking each dimension into account, the researcher found that life quality was at a high level with $X = 2.48$, $S.D. = .41$; economy, at a high level with $X = 2.42$, $S.D. = .36$; society, at a high level with $X = 2.48$, $S.D. = .41$. The high level indicators numbered 60, accounting for 90.91 %; the moderate level indicators, 23, accounting for 9.09 % of the variation in all, respectively. iii.

Results of the comparison of the level of risk assurance indicators to the utilization of natural resources and environment on the basis of geographical areas: the upper north, the central north and the lower north. Analysis of the comparison results yielded a significant difference between means at the .05 level. whereby the levels of risk assurance were placed at a descending ranks: the central north, at the high level with $X = 2.51$, $S.D. = .48$; the lower north at a high level with $X = 2.40$, $S.D. = .51$ and the upper north at a moderate level with $X = 2.30$, $S.D. = .33$. iv.

Results of the comparison of the level of sustainable development of life quality, economy and society in rural Thai communities on the basis of geographical areas: the upper north, the central north and the lower north. Analysis of the comparison results yielded a significant difference between means at the .05 level whereby sustainable development for life quality, economy and society were placed at descending ranks: the central north, the most developed at the high level with $X = 2.60$, $S.D. = .02$; the lower north at a high level with $X = 2.43$, $S.D. = .02$ and the upper north at a high level with $X = 2.43$, $S.D. = .02$ v.

In an analysis of correlation between all factors dimensions of risk assurance of the utilization of natural resources and environment and d) Proposed Guidelines for Practices in developing participatory learning process, leading to action planning of the utilization of natural resources and the environment have been developed. In sum, 3 main factors with associated subfactors as risk indicators to the utilization of natural resources and the environment emerges: first, natural resources and environmental revitalization with 4 sub-factors, namely, variety of plants, wildlife, forests, soil, and water; second, hazardous waste substance prevention with 4 sub-factors, namely, hazardous waste, rubbish, smoke and dust, and natural disasters, third, resource management in community, with 5 sub-factors, namely, forest, wildlife, and water animals, soil, water and energy.

All these factors are main resources, extremely important to human living. If over consumed beyond the carrying capacity of the natural resources, they are bound to exert a high impact on man as evident in natural and social phenomena that humans are experiencing today such as global warming, diseases and health problem, social problem and economic crisis.

As for the sustainable development of life quality, economy and society in rural Thai communities, 3 main factors with associated sub factors indicators to sustainable development emerged: first, life quality with 6 sub-factors, namely, food, clothes, household equipments, health cares, housing, environment management, all of which are basic necessities for life quality of humans, which is the economic system of community connected with ii.

Action planning based on the problems and needs of each community.

iii.

Seeking for alliances and supports for those involved to participate. iv.

Facilitating community learning process. v.

Cultivating public awareness of natural resources and the environment. Disseminating through networking and building agricultural learning centre for sufficiency economy or the neo-theory, to tighten food security and food safety for community.

viii.

Asking for supports from local organizations and external agencies.

sustainable development of life quality, economy and society, a high relationship was found with correlation coefficient $r = .80$, which was significant at the .05 level.

8 vi.

In comparison between means of all factors dimensions of risk assurance of the utilization of natural resources and environment and sustainable development of life quality, economy and society, it was found the former exerts a great impact on the latter at the .05 level of significance. cares, safety, peace, luxury mitigation, moral ethical values, all of which are indicators to rural society based upon sufficiency economy and sustainable development. Development must be carried on and aiming at the equilibrium in life quality of man and the environment, economy, and society. (Pradhampidok, 2003). b) In the confirmatory factor analysis of the models of risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality by using LISREL Program it was found that all Model were fitted the empirical data, it was found that on the whole the factors and the indicators jived with the empirical data, proving the appropriateness of the model. (Somkid, 2004; ??annee, 2002) As for the order of importance based on the weight of the factors, it was found that resource management in community factor ranked the highest followed respectively by hazardous waste substance prevention and natural resources and environmental revitalization c) Evaluation results of risk assurance indicators to the utilization of natural resources and environment and sustainable development of life quality, economy and society in rural Thai communities. It was found that of risk assurance indicators to the utilization of natural resources and environment as a whole are at a high level. Taken into account each dimension of the evaluation, however, factor hazardous waste substance prevention, which may impact on natural resources of community, consists of a number of risk assurance indicators at a high level: appropriate use of plants in community, building community database, household's participation in smoke and dust reduction, planning to monitor smoke and dust, and waste hazard prevention. The research result indicates unsatisfactory management of natural resources and environmental revitalization in community. As for the sustainable development of life quality, economy and society in rural Thai communities, the results of the evaluation came out as a whole at a high level, which concur with the findings by Som Na-saarn. (2551). Na-saarn says that the economy and culture of community in the North East is still stable ; the rural people still conserve their cultural heritage: arts and culture, social values and traditional folkways However, his finding seems to contrast with Hansupo's in which the data show some aspects of social change in the North East. Most people are socially and culturally self-reliant at a low level, accounting for 56 % of the population, which seems to concur with Gamage's in which

the evaluation data show self-reliance of families in rural Thailand in such a way that conservation of cultural arts are at a moderate level.

life quality, economy and society on the basis of geographical areas, the difference is found significant; this shows the discriminating power of the constructed factors and indicators. (Tabanick and Fidell, 1996) ¹



Figure 1:

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a) To construct and develop sets of risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality, economy and society in rural Thai communities.

b) To Confirm Factors Analysis Model assurance indicators to the utilization of natural resources and environment for sustainable development of life quality, economy and society.

c) To evaluate the constructed risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality, economy and society in rural Thai communities.

d) To search for guidelines for developing community learning process leading to action planning for utilization of natural resources and the environment of community for sustainable development of life quality, economy and society.

of risk

[Note: III.]

Figure 2:

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hazardous waste substance prevention, at a high level with $X = 2.42$, $S.D. = .65$; resource management in community at a high level with $X = 2.56$, $S.D. = .42$. The high level indicators numbered 34, accounting for 59.64 %; the moderate level indicators, 23, accounting for 40.36 % of the variation in all, respectively.
- ii. Research yielded 3 main factors with associated indicators to sustainable development are found: first, life quality with 6 sub-factors, namely, food, clothes, household equipments, health cares, housing, environment management with 29 indicators, second, economy with 4 sub-factors, namely, raw material for productivity, distribution and transportation, capital, with 18 associated indicators in all; third, society with 4 sub-factors, namely, cooperation, cares, safety, peace, luxury mitigation, moral ethical values, with 19 indicators in all.
- b) In the confirmatory factor analysis of the models of risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality were fitted the empirical data with $\chi^2 = 62.04$, $p = 0.06$, $GFI = 0.98$, $AGFI = 0.94$, $RMSEA = 0.03$, $CN = 401.96$, The other indexes were all in accord with the set standards.
- c) Analysis of evaluation of risk assurance indicators to the utilization of natural resources and environment for sustainable development of life quality, economy and society in rural Thai communities.

[Note: i. Risk assurance indicators to the utilization of natural resources and the environment were evaluated as a whole at a high level with $X = 2.40$, $S.D. = .46$. When taking each dimension into account, the researcher found that natural rated at a high level with $X = 2.33$, $S.D. = .]$

Figure 3:

community leadership development which is to society with 4 sub-factors, namely, cooperation, be carried out for a purpose, through use of three principles: 1)

Empowerment 2) Education

Participation. Empowerment is intended to cultivate leaders' awareness in the importance of development. I

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